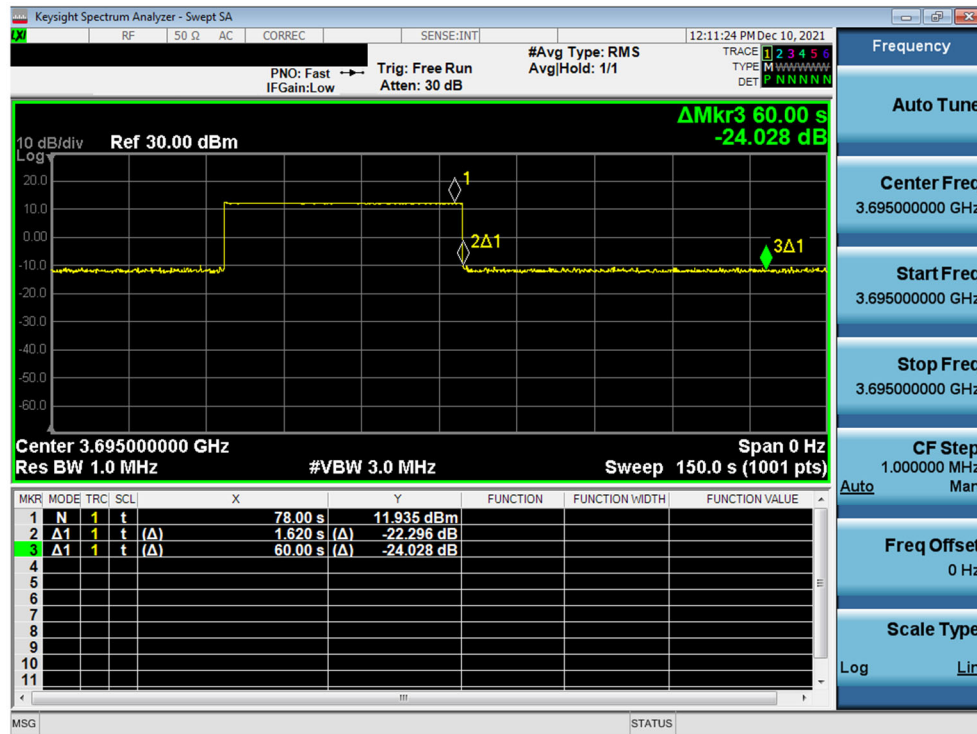


Test Plots:



Plot 21. Conducted Measurement - RF transmission stops (WINNF.FT.C.RLQ.1)

FCC ID: 2AXTR-ECL4248-2401	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	EUCAST	Approved by: Quality Manager
Test Report S/N: 1M2112130161-01.2AXTR	Test Dates: 12/09/2021 – 12/15/2021	EUT Type: LTE Picocell base station for CBRS		Page 45 of 63

A23 [WINNF.FT.C.DRG.1] Successful Deregistration

	Test Execution Steps	PASS	FAIL
1	Ensure the following conditions are met for test entry: • UUT has successfully completed SAS Discovery and Authentication with SAS Test Harness • UUT has successfully registered with SAS Test Harness, with cbsdId=C • UUT has received a valid grant with grantId = G • UUT is in Grant State AUTHORIZED and is actively transmitting within the bounds of its grant. Invoke trigger to deregister UUT from the SAS Test Harness	--	--
2	UUT sends a Relinquishment request and receives Relinquishment response with responseCode=0	--	--
3	UUT sends Deregistration Request to SAS Test Harness with cbsdId = C.	☒	☐
4	SAS Test Harness shall approve the request with a Deregistration Response message with parameters: • cbsdId = C • responseCode = 0	--	--
5	After completion of step 3, SAS Test Harness will not provide any additional positive response (responseCode=0) to further request messages from the UUT	--	--
6	Monitor the RF output of the UUT from start of test until 60 seconds after Step 4 is complete. This is the end of the test. Verify: • UUT stopped RF transmission at any time between triggering the deregistration and either A OR B occurs: A. UUT sending a Registration Request message, as this is not mandatory B. UUT sending a Deregistration Request message	☒	☐

FCC ID: 2AXTR-ECL4248-2401		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2112130161-01.2AXTR	Test Dates: 12/09/2021 – 12/15/2021	EUT Type: LTE Picocell base station for CBRS		Page 46 of 63

Test Plots:



Plot 22. Conducted Measurement - RF transmission stops within 60s. The SAS message is indicated by Marker 1 (X) (WINNF.FT.C.DRG.1)

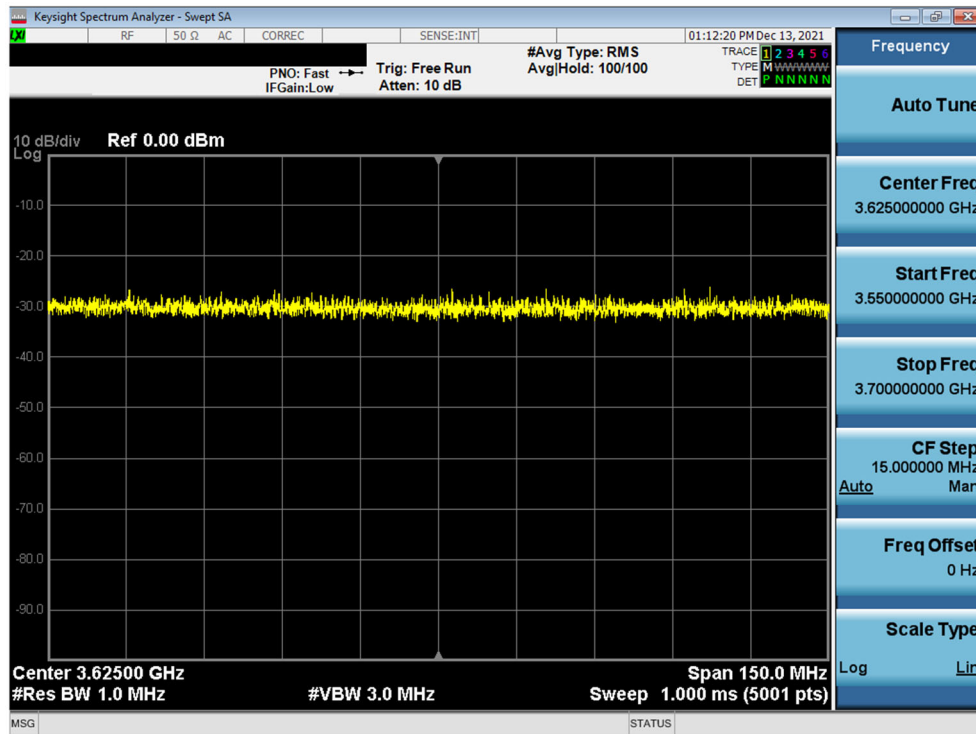
FCC ID: 2AXTR-ECL4248-2401	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	EUCAST	Approved by: Quality Manager
Test Report S/N: 1M2112130161-01.2AXTR	Test Dates: 12/09/2021 – 12/15/2021	EUT Type: LTE Picocell base station for CBRS		Page 47 of 63

A24 [WINNF.FT.C.SCS.1] Successful TLS connection between UUT and SAS Test Harness

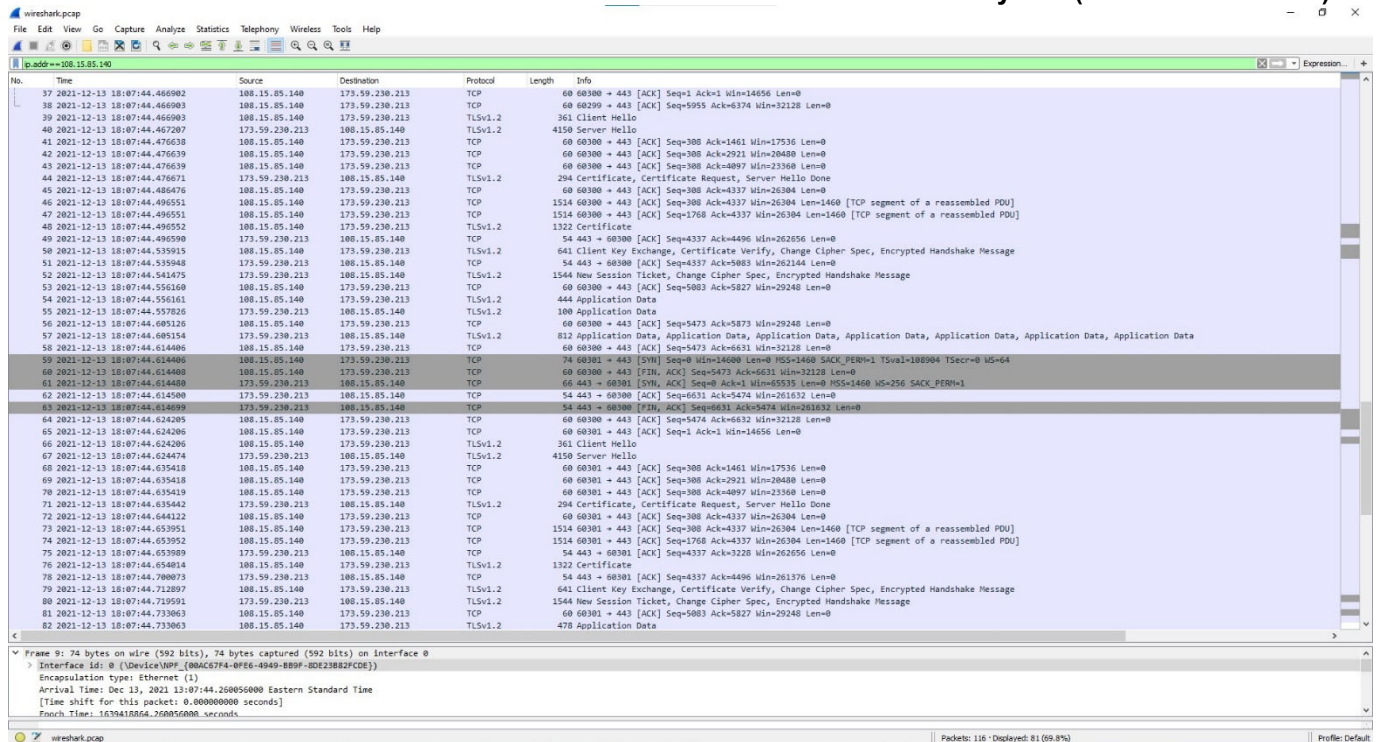
	Test Execution Steps	PASS	FAIL
1	• UUT shall start CBSD-SAS communication with the security procedure • The UUT shall establish a TLS handshake with the SAS Test Harness using configured certificate. • Configure the SAS Test Harness to accept the security procedure and establish the connection	☒	☐
2	• Make sure that Mutual authentication happens between UUT and the SAS Test Harness. • Make sure that UUT uses TLS v1.2 • Make sure that cipher suites from one of the following is selected, • TLS_RSA_WITH_AES_128_GCM_SHA256 • TLS_RSA_WITH_AES_256_GCM_SHA384 • TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256 • TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384 • TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256	☒	☐
3	A successful registration is accomplished using one of the test cases described in section 6.1.4.1, depending on CBSD capability. • UUT sends a registration request to the SAS Test Harness and the SAS Test Harness sends a Registration Response with responseCode = 0 and cbsdId.	☒	☐
4	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	☒	☐

FCC ID: 2AXTR-ECL4248-2401		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2112130161-01.2AXTR	Test Dates: 12/09/2021 – 12/15/2021	EUT Type: LTE Picocell base station for CBRS		Page 48 of 63

Test Plots:



Plot 23. Conducted Measurement – No RF transmission in entire band at anytime (WINNF.FT.C.SCS.1)



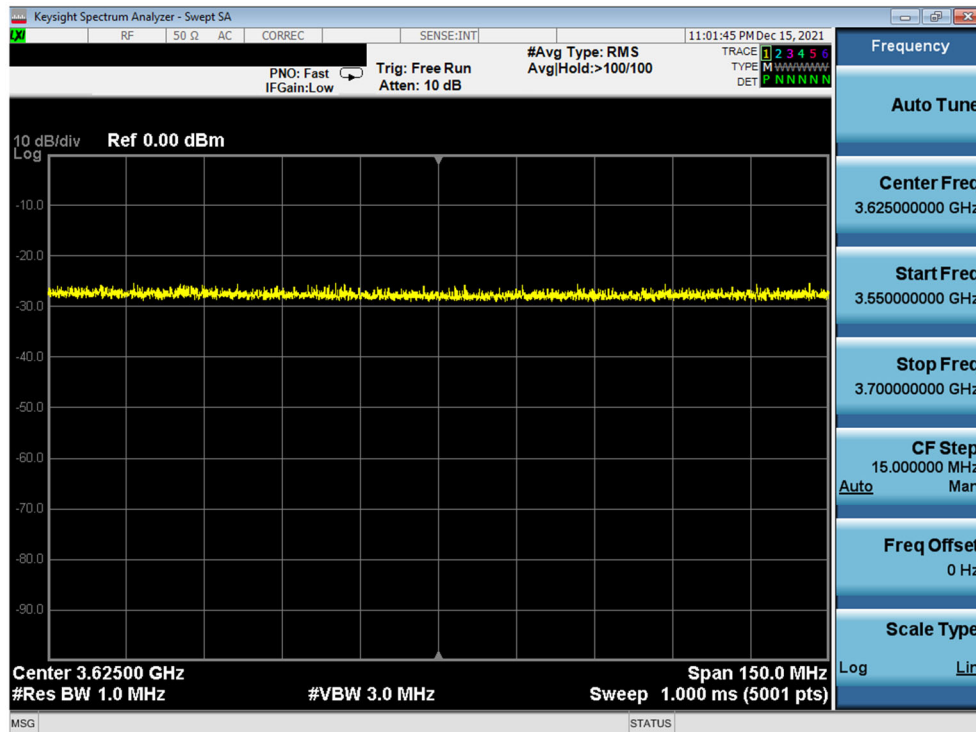
Plot 24. WireShark Screenshot (WINNF.FT.C.SCS.1)

FCC ID: 2AXTR-ECL4248-2401		MEASUREMENT REPORT (CERTIFICATION)	
Test Report S/N: 1M2112130161-01.2AXTR	Test Dates: 12/09/2021 – 12/15/2021	EUT Type: LTE Picocell base station for CBRS	Approved by: Quality Manager Page 49 of 63

A25 [WINNF.FT.C.SCS.2] TLS failure due to revoked certificate

	Test Execution Steps	PASS	FAIL
1	• UUT shall start CBSD-SAS communication with the security procedure	☒	☐
2	• Make sure that UUT uses TLS v1.2 for security establishment. • Make sure UUT selects the correct cipher suite. • UUT shall use CRL or OCSP to verify the validity of the server certificate. • Make sure that Mutual authentication does not happen between UUT and the SAS Test Harness	☒	☐
3	UUT may retry for the security procedure which shall fail	☒	☐
4	SAS Test-Harness shall not receive any Registration request or any application data.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	☒	☐

Test Plots:



Plot 25. Conducted Measurement – No RF transmission in entire band at anytime (WINNF.FT.C.SCS.2)

FCC ID: 2AXTR-ECL4248-2401	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	EUCAST	Approved by: Quality Manager
Test Report S/N: 1M2112130161-01.2AXTR	Test Dates: 12/09/2021 – 12/15/2021	EUT Type: LTE Picocell base station for CBRS		Page 50 of 63

No.	Time	Source	Destination	Protocol	Length	Info
36	2021-12-16 03:57:32.026998	173.59.230.213	108.15.85.140	TCP	60	443 → 43594 [SYN, ACK] Seq=0 Ack=1 Win=5535 Len=0 MSS=1460 WS=256 SACK_PERM=1
37	2021-12-16 03:57:32.038730	108.15.85.140	173.59.230.213	TCP	60	43594 → 443 [ACK] Seq=1 Ack=1 Win=14656 Len=0
38	2021-12-16 03:57:32.038731	108.15.85.140	173.59.230.213	TLV1.2	361	Client Hello
39	2021-12-16 03:57:32.039567	173.59.230.213	108.15.85.140	TLV1.2	3055	Server Hello, Certificate, Certificate Request, Server Hello Done
40	2021-12-16 03:57:32.057575	108.15.85.140	173.59.230.213	TCP	60	43594 → 443 [ACK] Seq=308 Ack=1461 Win=17536 Len=0
41	2021-12-16 03:57:32.057576	108.15.85.140	173.59.230.213	TCP	60	43594 → 443 [ACK] Seq=308 Ack=2921 Win=20480 Len=0
42	2021-12-16 03:57:32.057577	108.15.85.140	173.59.230.213	TCP	60	43594 → 443 [ACK] Seq=308 Ack=3012 Win=20480 Len=0
43	2021-12-16 03:57:32.060978	108.15.85.140	173.59.230.213	TCP	1514	43594 → 443 [ACK] Seq=308 Ack=3012 Win=20480 Len=1460 [TCP segment of a reassembled PDU]
44	2021-12-16 03:57:32.060979	108.15.85.140	173.59.230.213	TCP	1514	43594 → 443 [ACK] Seq=1768 Ack=3012 Win=20480 Len=1460 [TCP segment of a reassembled PDU]
45	2021-12-16 03:57:32.060986	108.15.85.140	173.59.230.213	TLV1.2	1428	Certificate
46	2021-12-16 03:57:32.060880	173.59.230.213	108.15.85.140	TCP	54	443 → 43594 [ACK] Seq=3012 Ack=4602 Win=262856 Len=0
47	2021-12-16 03:57:32.105217	108.15.85.140	173.59.230.213	TLV1.2	641	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encrypted Handshake Message
48	2021-12-16 03:57:32.105217	173.59.230.213	108.15.85.140	TCP	54	443 → 43594 [ACK] Seq=3012 Ack=5189 Win=262144 Len=0
50	2021-12-16 03:57:32.127935	173.59.230.213	108.15.85.140	TLV1.2	1592	New Session Ticket, Change Cipher Spec, Encrypted Handshake Message
51	2021-12-16 03:57:32.135495	108.15.85.140	173.59.230.213	TCP	60	43594 → 443 [ACK] Seq=5189 Ack=4550 Win=23360 Len=0
52	2021-12-16 03:57:32.135496	108.15.85.140	173.59.230.213	TLV1.2	478	Application Data
53	2021-12-16 03:57:32.139088	173.59.230.213	108.15.85.140	TLV1.2	108	Application Data
55	2021-12-16 03:57:32.194472	108.15.85.140	173.59.230.213	TCP	60	43594 → 443 [ACK] Seq=5613 Ack=4596 Win=23360 Len=0
56	2021-12-16 03:57:32.194543	173.59.230.213	108.15.85.140	TLV1.2	548	Application Data, Application Data, Application Data, Application Data, Application Data, Application Data
57	2021-12-16 03:57:32.213942	108.15.85.140	173.59.230.213	TCP	60	43594 → 443 [ACK] Seq=5613 Ack=5091 Win=26384 Len=0
58	2021-12-16 03:57:32.213943	108.15.85.140	173.59.230.213	TCP	60	43594 → 443 [FIN, ACK] Seq=5613 Ack=5091 Win=26384 Len=0
59	2021-12-16 03:57:32.214041	173.59.230.213	108.15.85.140	TCP	54	443 → 43594 [ACK] Seq=5091 Ack=5614 Win=261632 Len=0
60	2021-12-16 03:57:32.214444	173.59.230.213	108.15.85.140	TCP	54	443 → 43594 [FIN, ACK] Seq=5091 Ack=5614 Win=261632 Len=0
61	2021-12-16 03:57:32.233770	108.15.85.140	173.59.230.213	TCP	60	43594 → 443 [ACK] Seq=5614 Ack=5092 Win=26384 Len=0
176	2021-12-16 03:58:02.422176	108.15.85.140	173.59.230.213	TCP	74	43595 → 443 [SYN] Seq=0 Win=14600 Len=0 MSS=1460 SACK_PERM=1 TSval=61114 TSecr=0 WS=64
177	2021-12-16 03:58:02.422366	173.59.230.213	108.15.85.140	TCP	60	443 → 43595 [SYN, ACK] Seq=0 Ack=1 Win=5535 Len=0 MSS=1460 WS=256 SACK_PERM=1
178	2021-12-16 03:58:02.440590	108.15.85.140	173.59.230.213	TCP	60	43595 → 443 [ACK] Seq=1 Ack=1 Win=14656 Len=0
179	2021-12-16 03:58:02.440591	108.15.85.140	173.59.230.213	TLV1.2	361	Client Hello
180	2021-12-16 03:58:02.441858	173.59.230.213	108.15.85.140	TLV1.2	3175	Server Hello, Certificate, Certificate Request, Server Hello Done
181	2021-12-16 03:58:02.450530	108.15.85.140	173.59.230.213	TCP	60	43595 → 443 [ACK] Seq=308 Ack=1461 Win=17536 Len=0
182	2021-12-16 03:58:02.450531	108.15.85.140	173.59.230.213	TCP	60	43595 → 443 [ACK] Seq=308 Ack=2921 Win=20480 Len=0
183	2021-12-16 03:58:02.450532	108.15.85.140	173.59.230.213	TCP	60	43595 → 443 [ACK] Seq=308 Ack=3122 Win=23360 Len=0
184	2021-12-16 03:58:02.480299	108.15.85.140	173.59.230.213	TCP	74	34742 → 80 [SYN] Seq=0 Win=14600 Len=0 MSS=1460 SACK_PERM=1 TSval=61121 TSecr=0 WS=64
185	2021-12-16 03:58:02.480441	173.59.230.213	108.15.85.140	TCP	60	80 → 34742 [SYN, ACK] Seq=0 Ack=1 Win=5535 Len=0 MSS=1460 WS=256 SACK_PERM=1
186	2021-12-16 03:58:02.480963	108.15.85.140	173.59.230.213	TCP	60	34742 → 80 [ACK] Seq=1 Ack=1 Win=14656 Len=0
187	2021-12-16 03:58:02.480964	108.15.85.140	173.59.230.213	HTTP	108	GET /crlserver/crl HTTP/1.0
188	2021-12-16 03:58:02.517535	173.59.230.213	108.15.85.140	PKIX-CRL	1512	Certificate Revocation List
189	2021-12-16 03:58:02.529997	108.15.85.140	173.59.230.213	TCP	60	34742 → 80 [ACK] Seq=55 Ack=1460 Win=17536 Len=0
190	2021-12-16 03:58:02.529998	108.15.85.140	173.59.230.213	TLV1.2	81	Alert (Level: Fatal, Description: Unknown CA)
191	2021-12-16 03:58:02.530000	108.15.85.140	173.59.230.213	TCP	60	34742 → 80 [RST, ACK] Seq=55 Ack=1460 Win=17536 Len=0
192	2021-12-16 03:58:02.530000	108.15.85.140	173.59.230.213	TCP	60	34742 → 80 [FIN, ACK] Seq=55 Ack=1460 Win=17536 Len=0
193	2021-12-16 03:58:02.530000	108.15.85.140	173.59.230.213	TCP	60	34742 → 80 [RST, ACK] Seq=56 Ack=1460 Win=17536 Len=0
194	2021-12-16 03:58:02.530006	173.59.230.213	108.15.85.140	TCP	54	80 → 34742 [ACK] Seq=1400 Ack=56 Win=262856 Len=0
195	2021-12-16 03:58:02.539178	108.15.85.140	173.59.230.213	TCP	60	34742 → 80 [RST] Seq=56 Win=0 Len=0

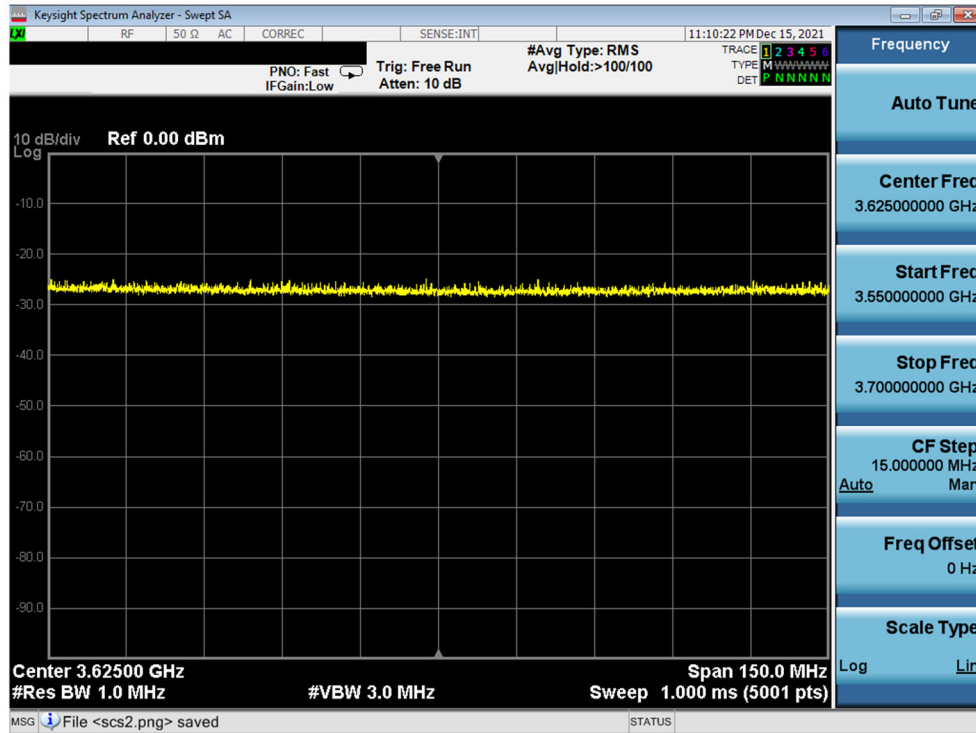
Plot 26. Failed Registration WireShark Screenshot (WINNF.FT.C.SCS.2)

FCC ID: 2AXTR-ECL4248-2401		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2112130161-01.2AXTR	Test Dates: 12/09/2021 – 12/15/2021	EUT Type: LTE Picocell base station for CBRS		Page 51 of 63

A26 [WINNF.FT.C.SCS.3] TLS failure due to expired server certificate

	Test Execution Steps	PASS	FAIL
1	• UUT shall start CBSD-SAS communication with the security procedure	☒	☐
2	• Make sure that UUT uses TLS v1.2 for security establishment. • Make sure UUT selects the correct cipher suite. • UUT shall use CRL or OCSP to verify the validity of the server certificate. • Make sure that Mutual authentication does not happen between UUT and the SAS Test Harness.	☒	☐
3	UUT may retry for the security procedure which shall fail	☒	☐
4	SAS Test-Harness shall not receive any Registration request or any application data.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	☒	☐

Test Plots:



Plot 27. Conducted Measurement – No RF transmission in entire band at anytime (WINNF.FT.C.SCS.3)

FCC ID: 2AXTR-ECL4248-2401	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	EUCAST	Approved by: Quality Manager
Test Report S/N: 1M2112130161-01.2AXTR	Test Dates: 12/09/2021 – 12/15/2021	EUT Type: LTE Picocell base station for CBRS		Page 52 of 63

No.	Time	Source	Destination	Protocol	Length	Info
406	2021-12-16 04:00:13.785942	100.15.85.140	173.59.230.213	TCP	74	43621 → 443 [SYN] Seq=0 Win=14608 Len=0 MSS=1460 SACK_PERM=1 TSval=122252 TSecr=0 WS=64
407	2021-12-16 04:00:13.786252	173.59.230.213	100.15.85.140	TCP	60	443 → 43621 [SYN, ACK] Seq=0 Ack=1 Win=5535 Len=0 MSS=1460 WS=256 SACK_PERM=1
408	2021-12-16 04:00:13.796604	100.15.85.140	173.59.230.213	TCP	60	43621 → 443 [ACK] Seq=1 Ack=1 Win=14656 Len=0
409	2021-12-16 04:00:13.796685	100.15.85.140	173.59.230.213	TLSv1.2	361	Client Hello
410	2021-12-16 04:00:13.797630	173.59.230.213	100.15.85.140	TLSv1.2	1516	Server Hello, Certificate, Certificate Request, Server Hello Done
411	2021-12-16 04:00:13.805434	100.15.85.140	173.59.230.213	TCP	60	43621 → 443 [ACK] Seq=300 Ack=1461 Win=17536 Len=0
412	2021-12-16 04:00:13.805435	100.15.85.140	173.59.230.213	TCP	60	43621 → 443 [ACK] Seq=300 Ack=1463 Win=17536 Len=0
413	2021-12-16 04:00:13.805436	100.15.85.140	173.59.230.213	TLSv1.2	61	Alert (Level: Fatal, Description: Unknown CA)
414	2021-12-16 04:00:13.805437	100.15.85.140	173.59.230.213	TCP	60	43621 → 443 [RST, ACK] Seq=315 Ack=1463 Win=17536 Len=0

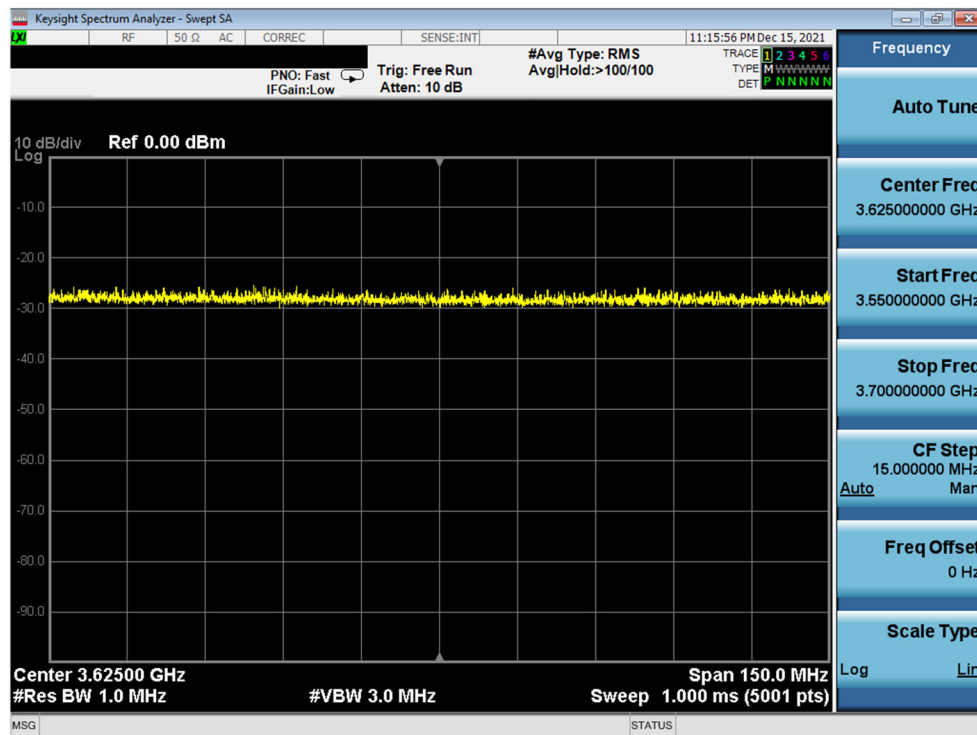
Plot 28. Failed Registration WireShark Screenshot (WINNF.FT.C.SCS.3)

FCC ID: 2AXTR-ECL4248-2401		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2112130161-01.2AXTR	Test Dates: 12/09/2021 – 12/15/2021	EUT Type: LTE Picocell base station for CBRS		Page 53 of 63

A27 [WINNF.FT.C.SCS.4] TLS failure when SAS Test Harness certificate is issued by an unknown CA

	Test Execution Steps	PASS	FAIL
1	• UUT shall start CBSD-SAS communication with the security procedure	☒	☐
2	• Make sure that UUT uses TLS v1.2 for security establishment. • Make sure UUT selects the correct cipher suite. • UUT shall use CRL or OCSP to verify the validity of the server certificate. • Make sure that Mutual authentication does not happen between UUT and the SAS Test Harness.	☒	☐
3	UUT may retry for the security procedure which shall fail	☒	☐
4	SAS Test-Harness shall not receive any Registration request or any application data.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	☒	☐

Test Plots:



Plot 29. Conducted Measurement – No RF transmission in entire band at anytime (WINNF.FT.C.SCS.4)

FCC ID: 2AXTR-ECL4248-2401	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	EUCAST	Approved by: Quality Manager
Test Report S/N: 1M2112130161-01.2AXTR	Test Dates: 12/09/2021 – 12/15/2021	EUT Type: LTE Picocell base station for CBRS		Page 54 of 63

No.	Time	Source	Destination	Protocol	Length	Info
6	2021-12-16 04:12:47.968523	100.15.85.140	173.59.230.213	TCP	74	43633 → 443 [SYN] Seq=0 Win=14600 Len=0 MSS=1460 SACK_PERM=1 TSval=149671 TSecr=0 WS=64
7	2021-12-16 04:12:47.968761	173.59.230.213	100.15.85.140	TCP	86	443 → 43633 [SYN, ACK] Seq=0 Ack=1 Win=5535 Len=0 MSS=1460 WS=256 SACK_PERM=1
8	2021-12-16 04:12:47.977338	100.15.85.140	173.59.230.213	TCP	60	43633 → 443 [ACK] Seq=1 Ack=1 Win=14656 Len=0
9	2021-12-16 04:12:47.977340	100.15.85.140	173.59.230.213	TLShv1.2	361	Client Hello
10	2021-12-16 04:12:47.978714	173.59.230.213	100.15.85.140	TLShv1.2	1518	Server Hello, Certificate, Certificate Request, Server Hello Done
11	2021-12-16 04:12:47.987587	100.15.85.140	173.59.230.213	TCP	60	43633 → 443 [ACK] Seq=308 Ack=1461 Win=17536 Len=0
12	2021-12-16 04:12:47.987588	100.15.85.140	173.59.230.213	TCP	60	43633 → 443 [ACK] Seq=308 Ack=1465 Win=17536 Len=0
13	2021-12-16 04:12:47.987589	100.15.85.140	173.59.230.213	TLShv1.2	61	Alert (Level: Fatal, Description: Unknown CA)
14	2021-12-16 04:12:47.987589	100.15.85.140	173.59.230.213	TCP	60	43633 → 443 [RST, ACK] Seq=315 Ack=1465 Win=17536 Len=0

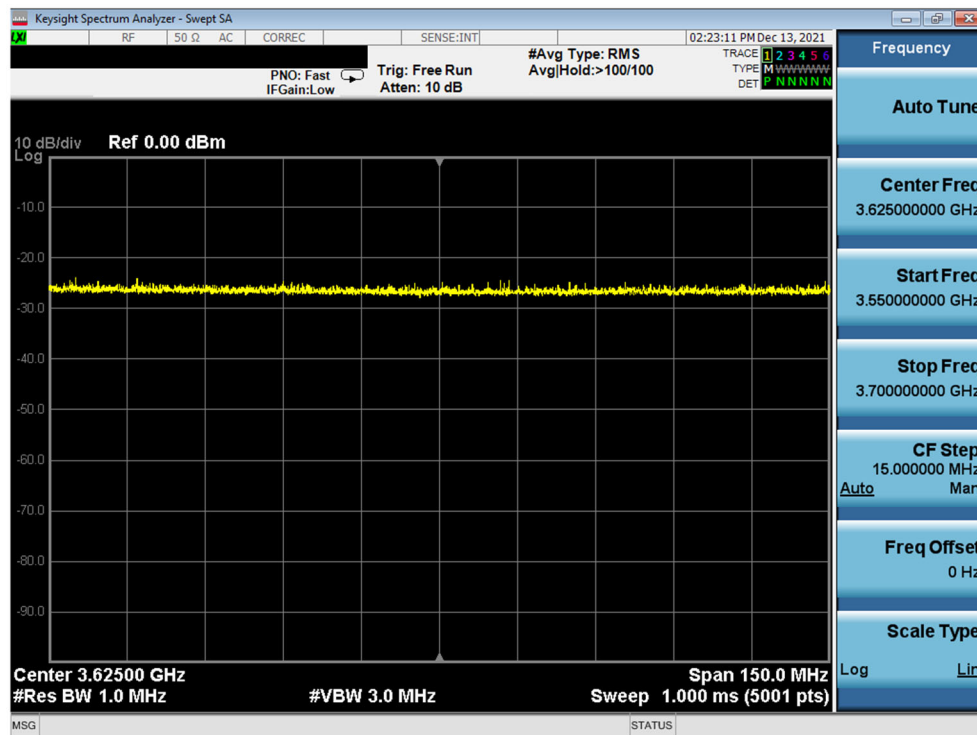
Plot 30. Failed Registration WireShark Screenshot (WINNF.FT.C.SCS.4)

FCC ID: 2AXTR-ECL4248-2401	 PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M2112130161-01.2AXTR	Test Dates: 12/09/2021 – 12/15/2021	EUT Type: LTE Picocell base station for CBRS		Page 55 of 63

A28 [WINNF.FT.C.SCS.5] TLS failure when certificate at the SAS Test Harness is corrupted

	Test Execution Steps	PASS	FAIL
1	• UUT shall start CBSD-SAS communication with the security procedure	☒	☐
2	• Make sure that UUT uses TLS v1.2 for security establishment. • Make sure UUT selects the correct cipher suite. • UUT shall use CRL or OCSP to verify the validity of the server certificate. • Make sure that Mutual authentication does not happen between UUT and the SAS Test Harness.	☒	☐
3	UUT may retry for the security procedure which shall fail	☒	☐
4	SAS Test-Harness shall not receive any Registration request or any application data.	--	--
5	Monitor the RF output of the UUT from start of test until 60 seconds after Step 3 is complete. This is the end of the test. Verify: • UUT shall not transmit RF	☒	☐

Test Plots:



Plot 31. Conducted Measurement – No RF transmission in entire band at anytime (WINNF.FT.C.SCS.5)

FCC ID: 2AXTR-ECL4248-2401	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	EUCAST	Approved by: Quality Manager
Test Report S/N: 1M2112130161-01.2AXTR	Test Dates: 12/09/2021 – 12/15/2021	EUT Type: LTE Picocell base station for CBRS		Page 56 of 63

No.	Time	Source	Destination	Protocol	Length	Info
125	2021-12-13 19:19:52.487622	108.15.85.140	173.59.230.213	TCP	74	59364 → 443 [SYN] Seq=0 Win=14600 Len=0 MSS=1460 SACK_PERM=1 TSval=140780 TSecr=0 WS=64
126	2021-12-13 19:19:52.487804	173.59.230.213	108.15.85.140	TCP	66	443 → 59364 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM=1
129	2021-12-13 19:19:53.488351	108.15.85.140	173.59.230.213	TCP	74	[TCP Retransmission] 59364 → 443 [SYN] Seq=0 Win=14600 Len=0 MSS=1460 SACK_PERM=1 TSval=140800 TSecr=0 WS=64
130	2021-12-13 19:19:53.489446	173.59.230.213	108.15.85.140	TCP	66	[TCP Retransmission] 443 → 59364 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM=1
138	2021-12-13 19:19:55.485316	108.15.85.140	173.59.230.213	TCP	74	[TCP Retransmission] 59364 → 443 [SYN] Seq=0 Win=14600 Len=0 MSS=1460 SACK_PERM=1 TSval=141000 TSecr=0 WS=64
139	2021-12-13 19:19:55.510076	173.59.230.213	108.15.85.140	TCP	66	[TCP Retransmission] 443 → 59364 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM=1
155	2021-12-13 19:19:59.493454	108.15.85.140	173.59.230.213	TCP	74	[TCP Retransmission] 59364 → 443 [SYN] Seq=0 Win=14600 Len=0 MSS=1460 SACK_PERM=1 TSval=141401 TSecr=0 WS=64
156	2021-12-13 19:19:59.524553	173.59.230.213	108.15.85.140	TCP	66	[TCP Retransmission] 443 → 59364 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM=1
177	2021-12-13 19:19:47.526471	108.15.85.140	173.59.230.213	TCP	74	[TCP Retransmission] 59364 → 443 [SYN] Seq=0 Win=14600 Len=0 MSS=1460 SACK_PERM=1 TSval=142204 TSecr=0 WS=64
178	2021-12-13 19:19:47.530436	173.59.230.213	108.15.85.140	TCP	66	[TCP Retransmission] 443 → 59364 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM=1
188	2021-12-13 19:19:53.552692	173.59.230.213	108.15.85.140	TCP	54	443 → 59364 [RST] Seq=1 Win=0 Len=0
214	2021-12-13 19:20:03.565041	108.15.85.140	173.59.230.213	TCP	74	[TCP Retransmission] 59364 → 443 [SYN] Seq=0 Win=14600 Len=0 MSS=1460 SACK_PERM=1 TSval=141800 TSecr=0 WS=64
215	2021-12-13 19:20:03.566040	173.59.230.213	108.15.85.140	TCP	66	[TCP Previous segment not captured] 443 → 59364 [SYN, ACK] Seq=7965019 Ack=1 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM=1
216	2021-12-13 19:20:03.575593	108.15.85.140	173.59.230.213	TCP	66	[TCP ACKED unseen segment] 59364 → 443 [ACK] Seq=1 Ack=7965020 Win=14656 Len=0
217	2021-12-13 19:20:03.575594	108.15.85.140	173.59.230.213	TLSv1.2	361	Client Hello
218	2021-12-13 19:20:03.576760	173.59.230.213	108.15.85.140	TLSv1.2	4150	Server Hello
219	2021-12-13 19:20:03.595471	108.15.85.140	173.59.230.213	TCP	68	59364 → 443 [ACK] Seq=308 Ack=7967280 Win=17536 Len=0
220	2021-12-13 19:20:03.595472	108.15.85.140	173.59.230.213	TCP	68	59364 → 443 [ACK] Seq=308 Ack=7968740 Win=20400 Len=0
221	2021-12-13 19:20:03.595472	108.15.85.140	173.59.230.213	TCP	68	59364 → 443 [ACK] Seq=308 Ack=7968916 Win=23360 Len=0
222	2021-12-13 19:20:03.595533	173.59.230.213	108.15.85.140	TLSv1.2	294	Certificate, Certificate Request, Server Hello Done
223	2021-12-13 19:20:03.606599	108.15.85.140	173.59.230.213	TCP	68	59364 → 443 [ACK] Seq=308 Ack=7970156 Win=26304 Len=0
224	2021-12-13 19:20:03.617294	108.15.85.140	173.59.230.213	TLSv1.2	61	Alert (Level: Fatal, Description: Decrypt Error)
225	2021-12-13 19:20:03.617295	108.15.85.140	173.59.230.213	TCP	68	59364 → 443 [RST, ACK] Seq=315 Ack=7970156 Win=26304 Len=0

Plot 32. Failed Registration WireShark Screenshot (WINNF.FT.C.SCS.5)

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A29 [WINNF.PT.C.HBT.1] UUT RF Transmit Power Measurement

	Test Execution Steps	PASS	FAIL
1	Ensure the following conditions are met for test entry: • UUT has successfully completed SAS Discovery and Authentication with the SAS Test Harness • UUT has registered with the SAS, with CBSID ID = C • UUT has a single valid grant G with parameters {lowFrequency = FL, highFrequency = FH, maxEirp = Pi}, with grant in AUTHORIZED state, and grantExpireTime set to a value far past the duration of this test case <i>Note: in order for the UUT to request a grant with the parameters {lowFrequency, highFrequency, maxEirp}, the SAS Test Harness may need to provide appropriate guidance in the availableChannel object of the spectrumInquiry response message, and the operationParam object of the grant response message. Alternately, the UUT vendor may provide the ability to set those parameters on the UUT so that the UUT will request a grant with those parameters.</i>	--	--
2	UUT and SAS Test Harness perform a series of Heartbeat Request/Response cycles, which continues until the other test steps are complete. Messaging for each cycle is as follows: • UUT sends Heartbeat Request, including: - o cbsdId = C - o grantId = G • SAS Test Harness responds with Heartbeat Response, including: - o cbsdId = C - o grantId = G - o transmitExpireTime = current UTC time + 200 seconds - o responseCode = 0	--	--
3	Tester performs power measurement on RF interface(s) of UUT, and verifies it complies with the maxEirp setting, Pi. The RF measurement method is out of scope of this document, but may include additional configuration of the UUT, as required, to fulfil the requirements of the power measurement method. <i>Note: it may be required for the vendor to provide a method or configuration to bring the UUT to a mode which is required by the measurement methodology. Any such mode is vendor-specific and depends upon UUT behavior and the measurement methodology.</i>	☒	☐

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RF Power Measurements:

Testing is performed per ANSI C63.26-2015 and across the transmit dynamic range of 36dBm/MHz to 33dBm/MHz for 20MHz Bandwidth.

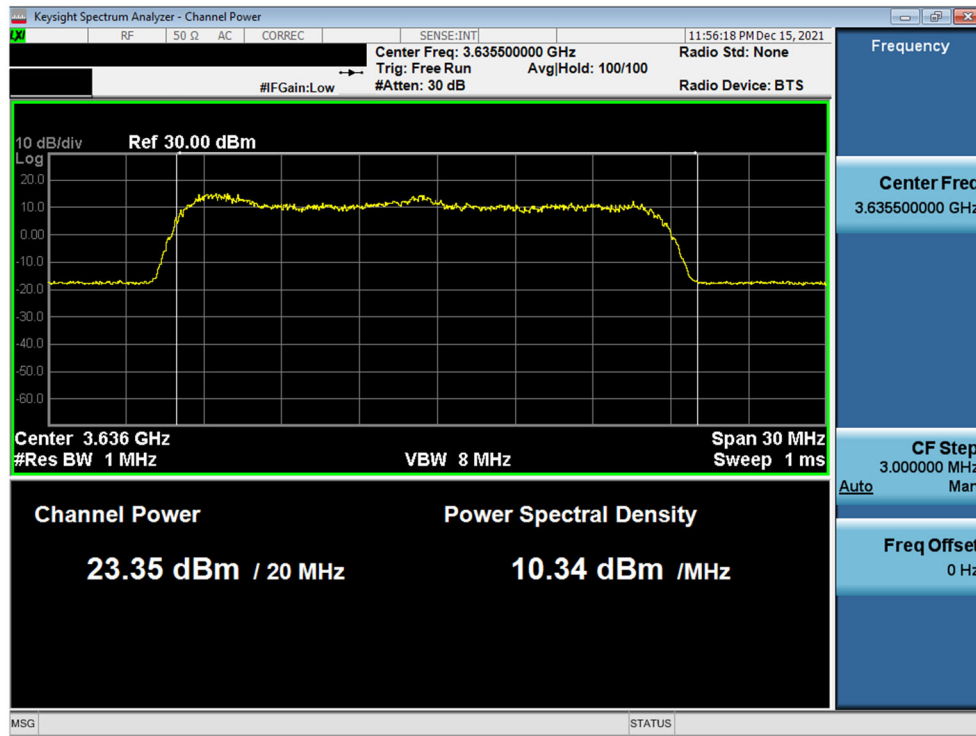
The UUT was configured such that all ports were transmitting at the same output power level. The 2 ports of the UUT are the same design and pretesting showed that the power levels between sampling of various ports is the same. As both ports are identical in design and equivalent power levels, the PSD was measured and the total MIMO Conducted Power was calculated for both ports. The MIMO EIRP was calculated with adding the antenna gain to the conducted power level. Since the antennas are cross-polarized, the individual antenna gain of 17dBi was used for the MIMO EIRP calculation.

Freq [MHz]	SAS Granted maxERP [dBm/MHz]	Tx1 Conducted PSD [dBm/MHz]	Tx1 Ant Gain [dBi]	Tx1 ERP [dBm/MHz]	Tx2 Conducted PSD [dBm/MHz]	Tx2 Ant Gain [dBi]	Tx2 ERP [dBm/MHz]	MIMO Conducted PSD [dBm/MHz]	Total MIMO maxERP [dBm/MHz]	Margin [dB]
3625	36	10.34	17	27.34	10.19	17	27.19	13.28	30.28	-5.72
3625	34	8.68	17	25.68	8.02	17	25.02	11.37	28.37	-5.63
3625	33	7.2	17	24.2	7.23	17	24.23	10.23	27.23	-5.77

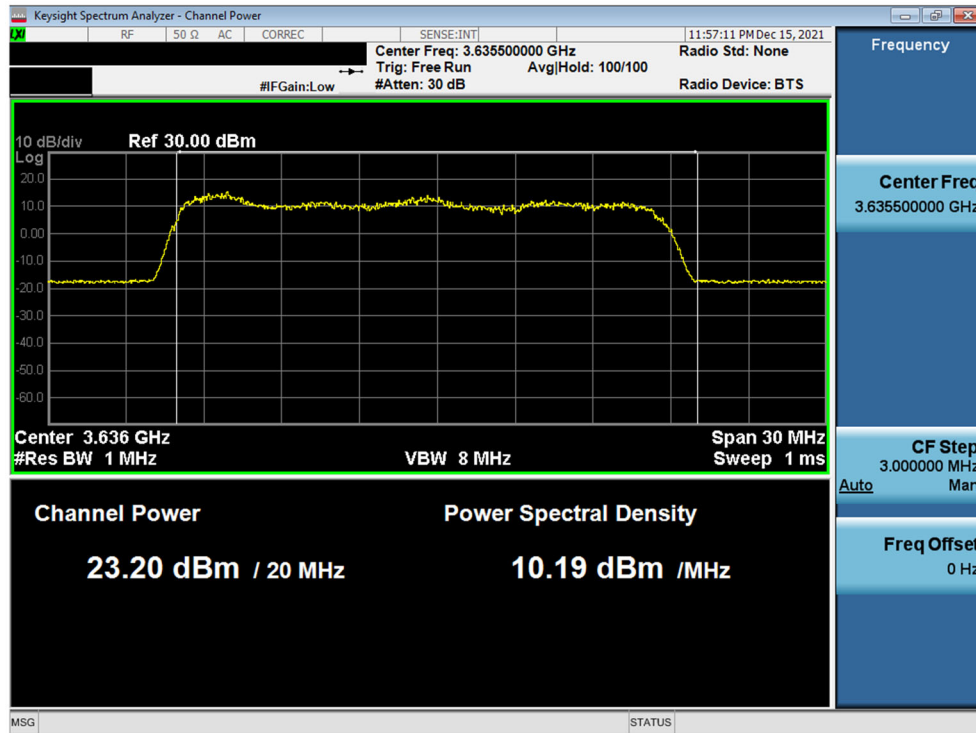
Table 7-1 RF Output Power Measurements (WINNF.PT.C.HBT.1)

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Test Plots:

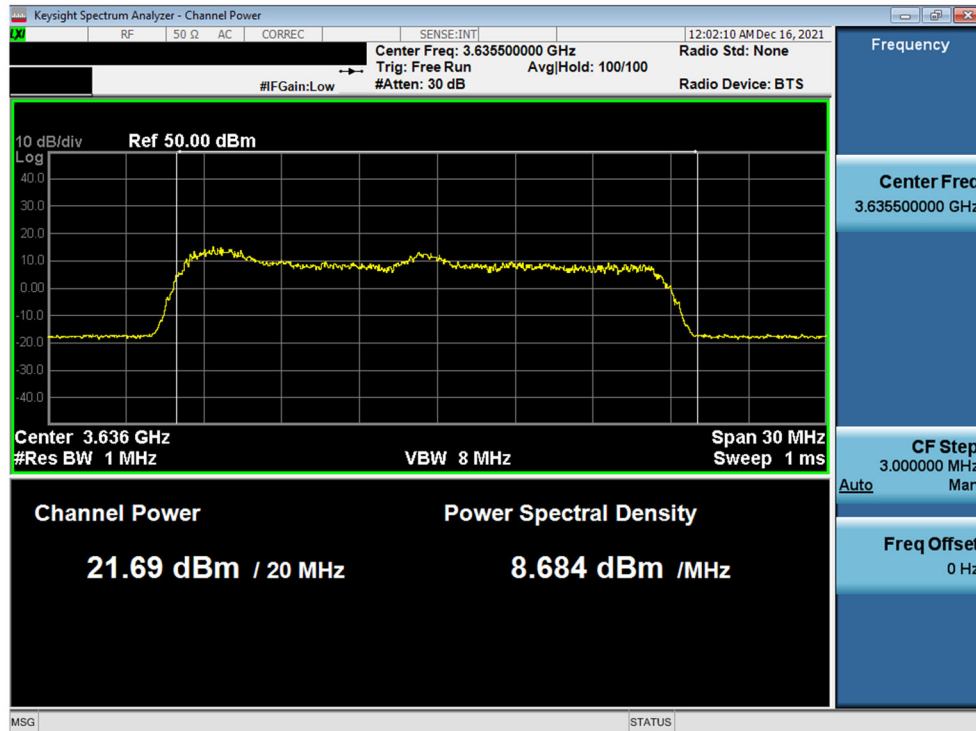


Plot 33. Conducted PSD, SAS Granted maxEIRP 36 dBm/MHz ANT1

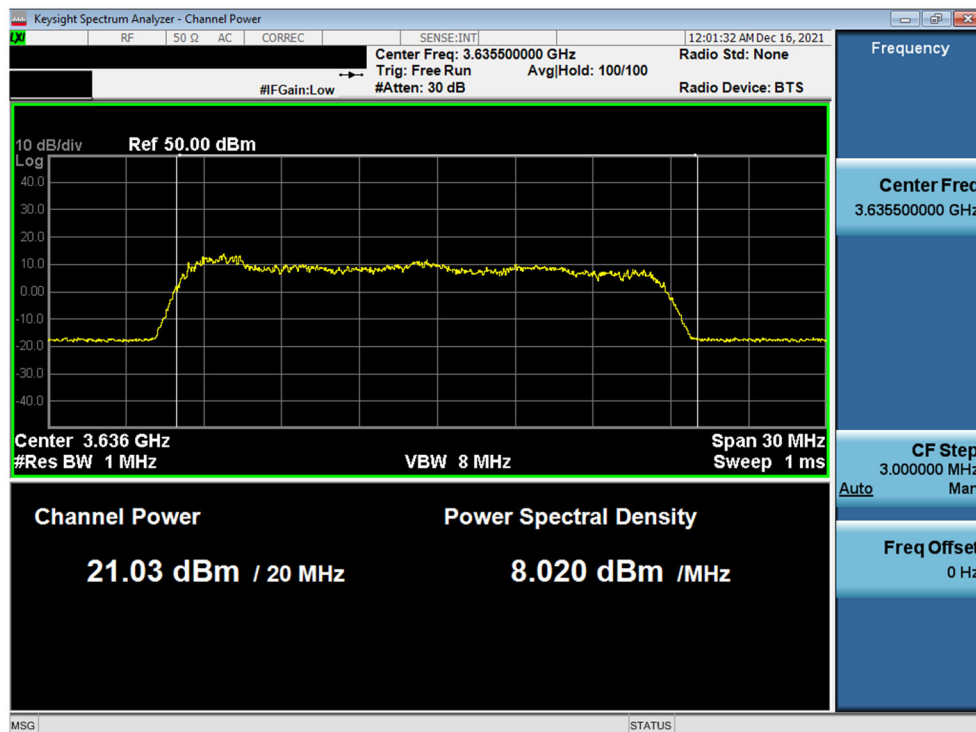


Plot 34. Conducted PSD, SAS Granted 36 dBm/MHz ANT2

FCC ID: 2AXTR-ECL4248-2401	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	EUCAST	Approved by: Quality Manager
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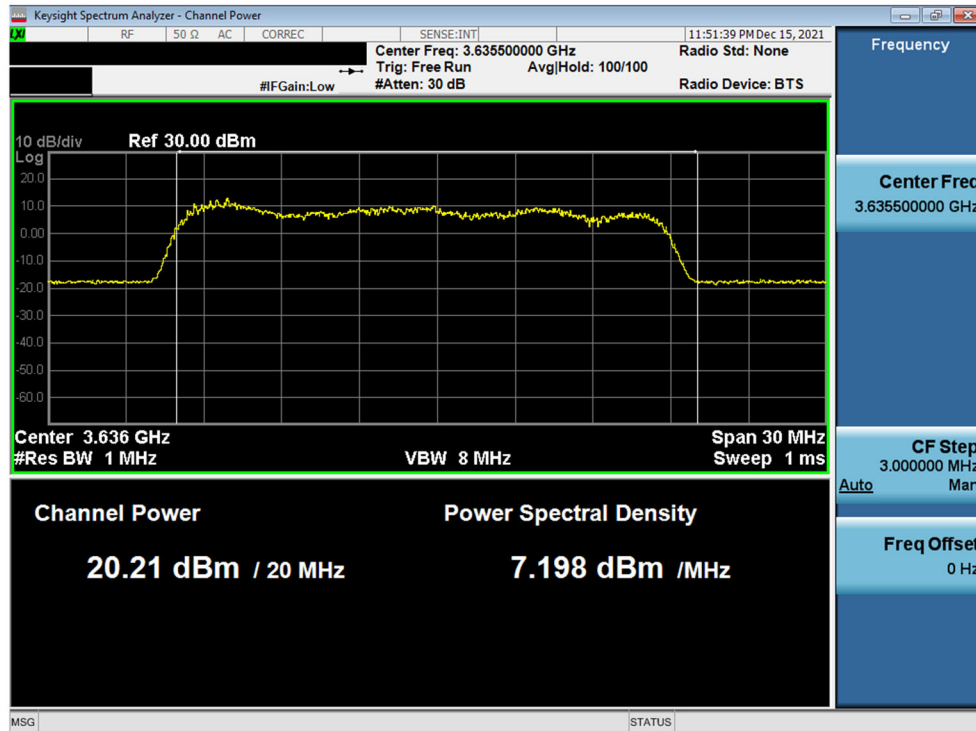


Plot 35. Conducted PSD, SAS Granted maxEIRP 34 dBm/MHz ANT1

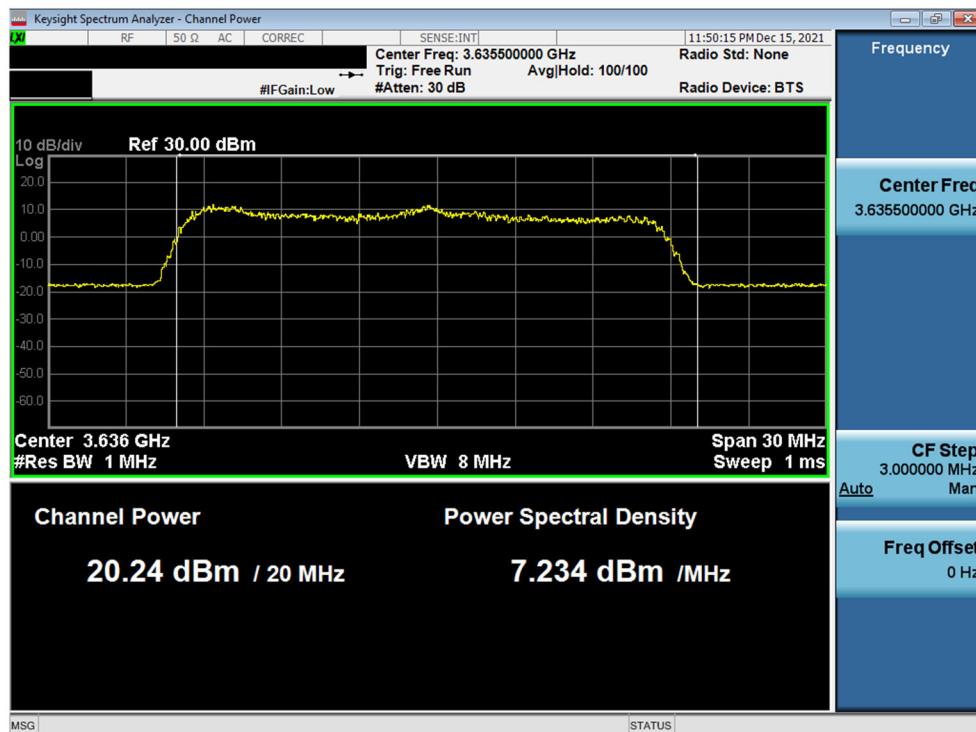


Plot 36. Conducted PSD, SAS Granted maxEIRP 34 dBm/MHz ANT2

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Plot 37. Conducted PSD, SAS Granted maxEIRP 33 dBm/MHz ANT1



Plot 38. Conducted PSD, SAS Granted maxEIRP 33 dBm/MHz ANT2

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APPENDIX B – TEST LOGS

Logs are available upon request

 cmdSessio n_2021-12- 10T17.21.16 Z	 WINNF.FT. C.DRG.1_20 21-12-10T1 7.21.31Z	 WINNF.FT. C.GRA.1_20 21-12-09T2 3.48.36Z	 cmdSessio n_2021-12- 09T23.48.21 Z	 cmdSessio n_2021-12- 09T23.50.21 Z	 WINNF.FT. C.GRA.2_20 21-12-09T2 3.50.39Z	 cmdSessio n_2021-12- 09T23.54.42 Z	 WINNF.FT. C.HBT.1_20 21-12-09T2 3.54.53Z
 cmdSessio n_2021-12- 10T00.30.05 Z	 WINNF.FT. C.HBT.3_20 21-12-10T0 0.33.14Z	 cmdSessio n_2021-12- 10T01.05.36 Z	 WINNF.FT. C.HBT.4_20 21-12-10T0 1.05.47Z	 cmdSessio n_2021-12- 10T15.17.15 Z	 WINNF.FT. C.HBT.5_20 21-12-10T1 5.17.19Z	 cmdSessio n_2021-12- 10T01.23.39 Z	 WINNF.FT. C.HBT.6_20 21-12-10T0 1.23.48Z
 cmdSessio n_2021-12- 10T01.37.11 Z	 WINNF.FT. C.HBT.7_20 21-12-10T0 1.37.17Z	 cmdSessio n_2021-12- 10T15.20.52 Z	 WINNF.FT. C.HBT.9_20 21-12-10T1 5.20.57Z	 cmdSessio n_2021-12- 10T16.04.16 Z	 WINNF.FT. C.HBT.10_2 021-12-10T 16.04.50Z	 cmdSessio n_2021-12- 13T17.22.06 Z	 WINNF.FT. C.MES.3_20 21-12-13T1 7.22.14Z
 cmdSessio n_2021-12- 13T17.29.11 Z	 WINNF.FT. C.MES.4_20 21-12-13T1 7.29.25Z	 WINNF.FT. C.REG.1_20 21-12-09T2 3.17.02Z	 cmdSessio n_2021-12- 09T23.16.42 Z	 cmdSessio n_2021-12- 09T23.26.13 Z	 WINNF.FT. C.REG.3_20 21-12-09T2 3.26.34Z	 cmdSessio n_2021-12- 09T23.13.45 Z	 WINNF.FT. C.REG.5_20 21-12-09T2 3.13.57Z
 cmdSessio n_2021-12- 09T23.30.55 Z	 WINNF.FT. C.REG.8_20 21-12-09T2 3.31.19Z	 cmdSessio n_2021-12- 09T23.34.29 Z	 WINNF.FT. C.REG.10_2 021-12-09T 23.35.16Z	 cmdSessio n_2021-12- 09T23.38.18 Z	 WINNF.FT. C.REG.12_2 021-12-09T 23.38.36Z	 cmdSessio n_2021-12- 09T23.41.21 Z	 WINNF.FT. C.REG.14_2 021-12-09T 23.41.26Z
 cmdSessio n_2021-12- 09T23.43.21 Z	 WINNF.FT. C.REG.16_2 021-12-09T 23.43.32Z	 cmdSessio n_2021-12- 09T23.45.20 Z	 WINNF.FT. C.REG.18_2 021-12-09T 23.45.40Z	 cmdSessio n_2021-12- 10T17.06.41 Z	 WINNF.FT. C.RLQ.1_20 21-12-10T1 7.06.44Z	 cmdSessio n_2021-12- 13T18.07.30 Z	 WINNF.FT. C.REG.1_20 21-12-13T1 8.07.35Z
 cmdSessio n_2021-12- 16T03.57.51 Z	 WINNF.FT. C.REG.1_20 21-12-16T0 3.57.58Z	 cmdSessio n_2021-12- 16T04.05.46 Z	 WINNF.FT. C.REG.1_20 21-12-16T0 4.05.50Z				

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