

Test Report

As per

FCC Part 96 SAS requirements (CBRS Test Plan)



Add value.
Inspire trust.

on the

**Ericsson Remote Radio Unit LTE KRC 161 711/1
Radio 2208 B48 (3550-3700MHz)**

Issued by:
TÜV SÜD Canada Inc.
1280 Teron Rd
Ottawa, ON K2K 2C1
Canada

Testing produced for

Ericsson Canada

See Appendix A for full
client & EUT details.

Scott Drysdale.
Test Personnel

Handwritten signature of Scott Drysdale in black ink, positioned above a horizontal line.

Glen WestWell
Report Reviewer

Handwritten signature of Glen WestWell in black ink, positioned above a horizontal line.



Testing Laboratory
Certificate #2955.19

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

Table of Contents

Table of Contents	2
Report Scope	3
Summary	4
Test Results Summary	5
Notes, Justifications, or Deviations	14
Applicable Standards, Specifications and Methods	15
Document Revision Status	16
Definitions and Acronyms	17
Testing Facility	18
Calibrations and Accreditations	18
Testing Environmental Conditions and Dates	19
Detailed Test Results Section	20
Authorization transmit after it receives authorization from a SAS	21
Check the device registration and authorization with the SAS	29
Confirm that the device changes its operating power and/or channel in response to a command from the SAS and Confirm that the device correctly configures based on the different license classes.	29
Confirm that the device transmits at a power level less than or equal to the maximum power level approved by the SAS	44
WINNF Security Test Case Analysis	52
WINNF.FT.C.SCS.1	52
WINNF.FT.C.SCS.2	56
WINNF.FT.C.SCS.3	62
WINNF.FT.C.SCS.4	67
WINNF.FT.C.SCS.5	71
Appendix A – EUT & Client Provided Details	76
Technical Description	78
Appendix B – EUT, Peripherals, and Test Setup Photos	79

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

Report Scope

This report addresses the EMC verification testing and test results of the **LTE KRC 161 711/1 Radio 2208 B48(3550-3700 MHz)** herein referred to as EUT (Equipment Under Test). The EUT was tested for compliance against the following standards:

FCC Part 96 SAS requirements (CBRS Test Plan)

. Test procedures, results, justifications, and engineering considerations, if any, follow later in this report.

For a more detailed list of the standards and the revision used, see the "Applicable Standards, Specifications and Methods" section of this report.

This report does not imply product endorsement by any government, accreditation agency, or TÜV SÜD Canada Inc.

Opinions or interpretations expressed in this report, if any, are outside the scope of TÜV SÜD Canada Inc accreditations. Any opinions expressed do not necessarily reflect the opinions of TÜV SÜD Canada Inc, unless otherwise stated.


Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

Summary

The results contained in this report relate only to the item(s) tested.

Equipment Under Test (EUT)	LTE KRC 161 711/1 Radio 2208 B48(3550-3700 MHz)
EUT passed all tests performed	Yes
Tests conducted by	Scott Drysdale


For testing dates, see 'Testing Environmental Conditions and Dates'.

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	


Test Results Summary

Section as per Working Document WINNF-TS-0122


Section	CBS D	D P	Test Case ID	Test Case Title	RF Measurement Requirement	Pass / Fail
6.1.4.1.1	X	--	WINNF.FT.C.R EG.1	Multi-Step registration	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.1.2	--	X	WINNF.FT.D.R EG.2	Domain Proxy Multi-Step registration	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.1.4.1.3	X	--	WINNF.FT.C.R EG.3	Single-Step registration for Category A CBSD	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.1.4	--	X	WINNF.FT.D.R EG.4	Domain Proxy Single-Step registration for Cat A CBSD (Note: Mandatory for without CPI, if EUT will always have signed CPI – asked for email waiver)	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.1.5	X	--	WINNF.FT.C.R EG.5	Single-Step registration for CBSD with CPI signed data	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.1.6	--	X	WINNF.FT.D.R EG.6	Domain Proxy Single-Step registration for CBSD with CPI signed data	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.1.4.1.7	X	X	WINNF.FT.C.R EG.7	Registration due to change of an installation parameter	Test waits until transmission starts, then trigger an	N/A

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

					installationParam change. <ul style="list-style-type: none"> Record time at which transmission stops. Time must be within 60 seconds of the installationParam change taking effect. 	
6.1.4.2.1	X	--	WINNF.FT.C.R EG.8	Missing Required parameters (responseCode 102)	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.2.2	--	X	WINNF.FT.D.R EG.9	Domain Proxy Missing Required parameters (responseCode 102)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.1.4.2.3	X	--	WINNF.FT.C.R EG.10	Pending registration (responseCode 200)	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.2.4	--	X	WINNF.FT.D.R EG.11	Domain Proxy Pending registration (responseCode 200)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.1.4.2.5	X	--	WINNF.FT.C.R EG.12	Invalid parameter (responseCode 103)	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.2.6	--	X	WINNF.FT.D.R EG.13	Domain Proxy Invalid parameters (responseCode 103)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.1.4.2.7	X	--	WINNF.FT.C.R EG.14	Blacklisted CBSD (responseCode 101)	Monitor for 60 seconds after REG message sent. No	N/A

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

					transmission during test.	
6.1.4.2.8	--	X	WINNF.FT.D.R EG.15	Domain Proxy Blacklisted CBSD (responseCode 101)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.1.4.2.9	X	--	WINNF.FT.C.R EG.16	Unsupported SAS protocol version (responseCode 100)	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.2.10	--	X	WINNF.FT.D.R EG.17	Domain Proxy Unsupported SAS protocol version responseCode 100)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.1.4.2.11	X	--	WINNF.FT.C.R EG.18	Group Error (responseCode 201)	Monitor for 60 seconds after REG message sent. No transmission during test.	N/A
6.1.4.2.12	--	X	WINNF.FT.D.R EG.19	Domain Proxy Group Error (responseCode 201)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.1.4.3.1	X	X	WINNF.FT.C.R EG.20	Category A CBSD location update		N/A
6.3.4.2.1	X	X	WINNF.FT.C.G RA.1 (TYPO FIXED D TO C)	Unsuccessful Grant responseCode=400 (INTERFERENCE)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.3.4.2.2	X	X	WINNF.FT.C.G RA.2	Unsuccessful Grant responseCode=401 (GRANT_CONFLICT)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
6.4.4.1.1	X	--	WINNF.FT.C.H BT.1	Heartbeat Success Case (first Heartbeat Response)	Monitor RF from start of test. Ensure that: <ul style="list-style-type: none"> Transmission does not start until time of first 	N/A

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	


					<p>heartbeat response or after.</p> <ul style="list-style-type: none"> After transmission starts, measure that transmission is within the granted channel (frequencyLow, frequencyHigh) 	
6.4.4.1.2	--	X	WINNF.FT.D.H BT.2	Domain Proxy Heartbeat Success Case (first Heartbeat Response)	<p>Monitor RF from start of test. Ensure that:</p> <ul style="list-style-type: none"> Transmission does not start until time of first heartbeat response or after. After transmission starts, measure that transmission is within the granted channel (frequencyLow, frequencyHigh) 	P
6.4.4.2.1	X	X	WINNF.FT.C.H BT.3	Heartbeat responseCode=105 (DEREGISTER)	<p>Monitor RF transmission. Ensure that:</p> <ul style="list-style-type: none"> CBSD stops transmission within 60 seconds of the heartbeatResponse which contains 	P

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	


					responseCode = 105	
6.4.4.2.2	X	--	WINNF.FT.C.H BT.4	Heartbeat responseCode=500 (TERMINATED_GRANT)		N/A
6.4.4.2.3	X	X	WINNF.FT.C.H BT.5	Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response	Monitor RF transmission from start of test. Ensure there is no transmission during the test	p
6.4.4.2.4	X	X	WINNF.FT.C.H BT.6	Heartbeat responseCode=501 (SUSPENDED_GRANT) in Subsequent Heartbeat Response	Monitor RF transmission. Ensure: <ul style="list-style-type: none"> • CBSD stops transmission within 60 seconds of heartbeatResponse which contains responseCode=501 	p
6.4.4.2.5	X	X	WINNF.FT.C.H BT.7	Heartbeat responseCode=502 (UNSYNC_OPERATION)	Monitor RF transmission. Ensure: <ul style="list-style-type: none"> • CBSD stops transmission within 60 seconds of heartbeatResponse which contains responseCode=502 	p
6.4.4.2.6	--	X	WINNF.FT.D.H BT.8	Domain Proxy Heartbeat responseCode=500 (TERMINATED_GRANT)	Monitor RF transmission. CBSDs will have different behavior: <ul style="list-style-type: none"> • CBSD1: will continue to transmit to end of test 	P

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	


					<p>(this is not a pass/fail criteria, but check)</p> <ul style="list-style-type: none"> • CBSD2: must stop transmission within 60 seconds of being sent heartbeatResponse with responseCode = 500 	
6.4.4.3.1	X	X	WINNF.FT.C.H BT.9	Heartbeat Response Absent (First Heartbeat)	Monitor RF from start of test to 60 seconds after last heartbeatResponse message was sent. CBSD should not transmit at any time during test	P
6.4.4.3.2	X	X	WINNF.FT.C.H BT.10	Heartbeat Response Absent (Subsequent Heartbeat)	Monitor RF transmission. Verify: <ul style="list-style-type: none"> • CBSD must stop transmission within transmitExpirationTime+60 seconds, where transmitExpirationTime is from last successful heartbeatResponse message 	P
6.5.4.2.1	X	--	WINNF.FT.C.M ES.1	Registration Response contains measReportConfig	No RF monitoring	N/A
6.5.4.2.2	--	X	WINNF.FT.D.M ES.2	Domain Proxy Registration Response contains measReportConfig	No RF monitoring	P

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.5.4.2.3	X	X	WINNF.FT.C.M ES.3	Grant Response contains measReportConfig	No RF monitoring	P
6.5.4.2.4	X	--	WINNF.FT.C.M ES.4	Heartbeat Response contains measReportConfig	No RF monitoring	N/A
6.5.4.2.5	--	X	WINNF.FT.D.M ES.5	Domain Proxy Heartbeat Response contains measReportConfig	No RF monitoring	P
6.6.4.1.1	X	--	WINNF.FT.C.R LQ.1	Successful Relinquishment	Monitor RF transmission. Ensure: <ul style="list-style-type: none"> • CBSD stops transmission at any time prior to sending the relinquishmentRequest message. 	N/A
6.6.4.1.2	--	X	WINNF.FT.D.R LQ.2	Domain Proxy Successful Relinquishment	Monitor RF transmission. Ensure: <ul style="list-style-type: none"> • CBSD stops transmission at any time prior to sending the relinquishmentRequest message. 	P
6.7.4.1.1	X	--	WINNF.FT.C.D RG.1	Successful Deregistration	Monitor RF transmission. Ensure: <ul style="list-style-type: none"> • CBSD stops transmission at any time prior to sending the relinquishmentRequest message or deregistrationRequest message (whichever is sent first) 	N/A


Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.7.4.1.2	--	X	WINNF.FT.D.D RG.2	Domain Proxy Successful Deregistration	Monitor RF transmission. Ensure : • CBSD stops transmission at any time prior to sending the relinquishmentReque st message or deregistrationReques t message (whichever is sent first)	P
6.8.4.1.1	X	X	WINNF.FT.C.SC S.1	Successful TLS connection between UUT and SAS Test Harness	No RF transmission during test Check the tcpdump for the TLS information	P
6.8.4.2.1	X	X	WINNF.FT.C.SC S.2	TLS failure due to revoked certificate	No RF transmission during test Check the tcpdump for the TLS information	P
6.8.4.2.2	X	X	WINNF.FT.C.SC S.3	TLS failure due to expired server certificate	No RF transmission during test Check the tcpdump for the TLS information	P
6.8.4.2.3	X	X	WINNF.FT.C.SC S.4	TLS failure when SAS Test Harness certificate is issue by unknown CA	No RF transmission during test Check the tcpdump for the TLS information	P
6.8.4.2.4	X	X	WINNF.FT.C.SC S.5	TLS failure when certificate at the SAS Test Harness is corrupted	No RF transmission during test Check the tcpdump for the TLS information	P
7.1.4.1.1	X	X	WINNF.PT.C.H BT	UUT RF Transmit Power Measurement	Power Spectral Density test case. Assume we use 1 carrier bandwidth	P

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

					(say, 5 or 10 MHz), one frequency (say middle channel in band) for test. Measure at max transmit power, and reduce in steps of 3 dB to minimum declared transmit power.	
--	--	--	--	--	---	--

If the product as tested complies with the specification, the EUT is deemed to comply with the standard and is deemed a 'PASS' or 'P' grade. If not 'FAIL' grade is issued. Where 'N/A' is stated this means the test case is not applicable, and see Notes, Justifications or Deviations Section for details.

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

Notes, Justifications, or Deviations

The following notes, justifications for tests not performed or deviations from the above listed specifications apply:


A later revision of the standard may have been substituted in place of the previous dated referenced revision. The year of the specification used is listed under applicable standards. Using the later revision accomplishes the goal of ensuring compliance to the intent of the previous specification, while allowing the laboratory to incorporate the extensions and clarifications made available by a later revision.

For the N/A test cases, the following justifications apply:

- a. EUT is a CBSD with Domain Proxy
- b. EUT supports the following Conditional functionality from WINNF-TS-0122-V1.0.0, Table 6-2:
 - i. C3 – Single step registration containing CPI-signed data in the registration message (WINNF.FT.D.REG.6)
 - ii. C4 – RECEIVED_POWER_WITHOUT_GRANT measurement report (WINNF.FT.D.MES.2)
 - iii. C5 – RECEIVED_POWER_WITH_GRANT measurement report (WINNF.FT.D.MES.3, WINNF.FT.D.MES.5)
- c. The only optional test case performed was WINNF.FT.C.HBT.11
- d. The device does not use single-step registration (as defined in condition C2 in WINNF-TS-0122-V1.0.0, Table 6-2), therefore test cases 6.1.4.1.4, and 6.1.4.3.1 are not applicable as per WINNF-TS-0122-V1.0.0, Table 6-3 and therefore not required or performed.

Note, where graph sweeps are incomplete, this was used to set the time stamp of when the events occurred. This can be accomplished by determining the time at which the graph was captured and subtracting the remaining time. For example if there was a 30 second sweep, and 9 out of 10 is complete, that means the end occurred at the 27 second mark. If the time on the graph was 12:03:35, this means the graph started at 12:03:08. This allows us to co-ordinate graph with UTC in the logs.

Logs are kept on file.

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	


Applicable Standards, Specifications and Methods

ANSI C63.4:2014 Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

CFR47 FCC Part 96 Code of Federal Regulations – Citizens Broadband Radio Service


WINNF-TS-0122 Conformance and Performance Test Technical Specification;
Version V1.0.0 CBSD/DP as Unit Under Test (UUT)
19 December 2017 Working Document

ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories

Client	Ericsson	 TUV SUD Canada
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

Document Revision Status

Revision 000: Dec 16, 2019 First Revision

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

Definitions and Acronyms

The following definitions and acronyms are applicable in this report.
See also ANSI C63.14.

AE – Auxiliary Equipment. A digital accessory that feeds data into or receives data from another device (host) that in turn, controls its operation.

AM – Amplitude Modulation

Class A device – A device that is marketed for use in a commercial, industrial or business environment. A 'Class A' device should not be marketed for use by the general public and the instructions for use accompanying the product shall contain the following text:

Caution: This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.

Class B device – A device that is marketed for use in a residential environment and may also be used in a commercial, business or industrial environments.

EMC – Electro-Magnetic Compatibility. The ability of an equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment.

EMI – Electro-Magnetic Immunity. The ability to maintain a specified performance when the equipment is subjected to disturbance (unwanted) signals of specified levels.

Enclosure Port – Physical boundary of equipment through which electromagnetic fields may radiate or impinge.

EUT – Equipment Under Test. A device or system being evaluated for compliance that is representative of a product to be marketed.

LISN – Line Impedance Stabilization Network

NCR – No Calibration Required

NSA – Normalized Site Attenuation

RF – Radio Frequency

EMC Test Plan – An EMC test plan established prior to testing. See 'Appendix A – EUT & Client Provided Details'.

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

Testing Facility

Testing for EMC on the EUT was carried out at customer location as described in Appendix A.

Calibrations and Accreditations

TÜV SÜD Canada Inc is accredited to ISO/IEC 17025 by A2LA with Testing Certificate #2955.19. The laboratory's current scope of accreditation listing can be found as listed on the A2LA website. All measuring equipment is calibrated on an annual or bi-annual basis as listed for each respective test.

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	


Testing Environmental Conditions and Dates

Following environmental conditions were recorded in the facility during time of testing

Date	Test	Initials	Temperature (°C)	Humidity (%)	Pressure (kPa)
Nov 22-23 2019	All	SD	20-23	40-55	96.106

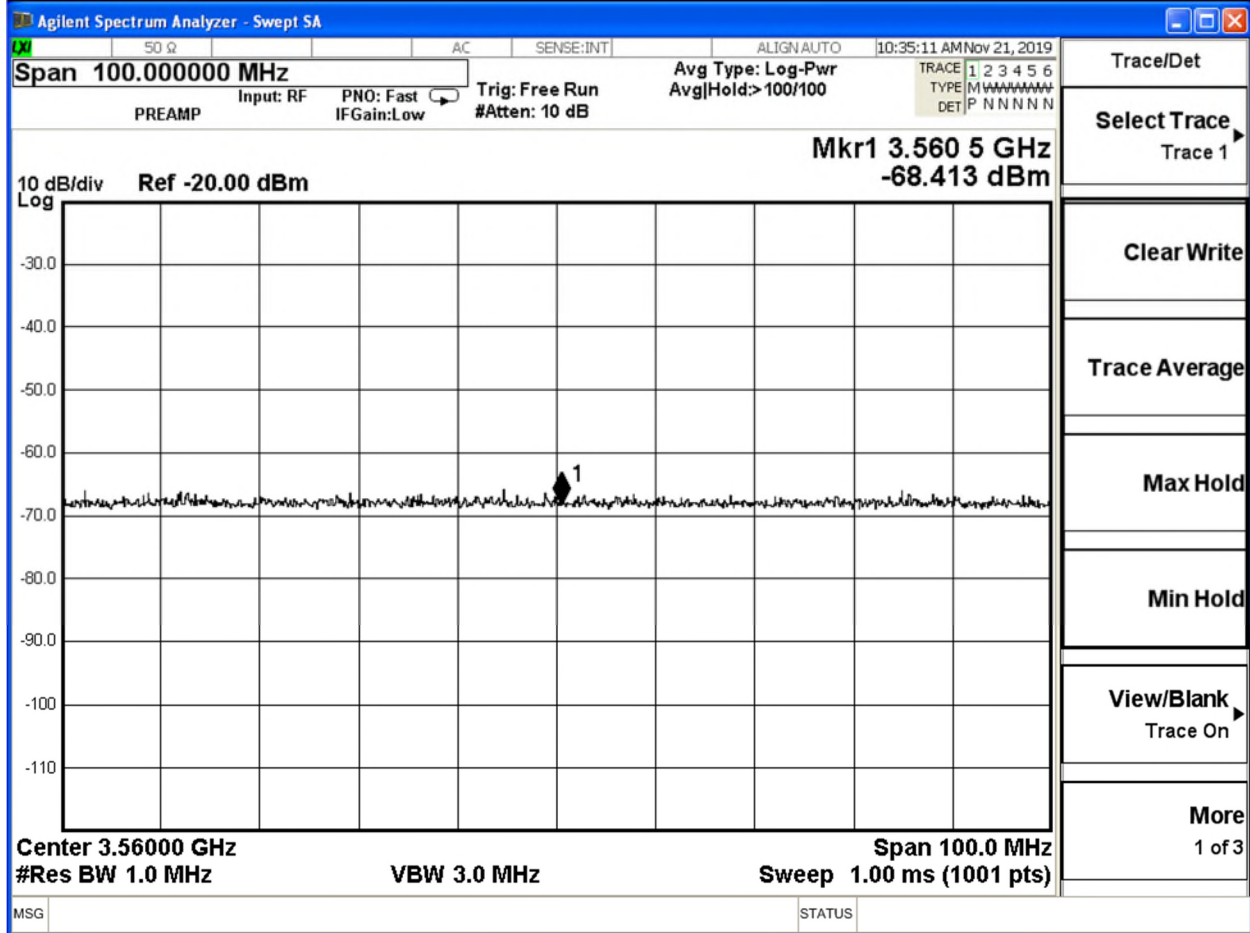
Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	


Detailed Test Results Section

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

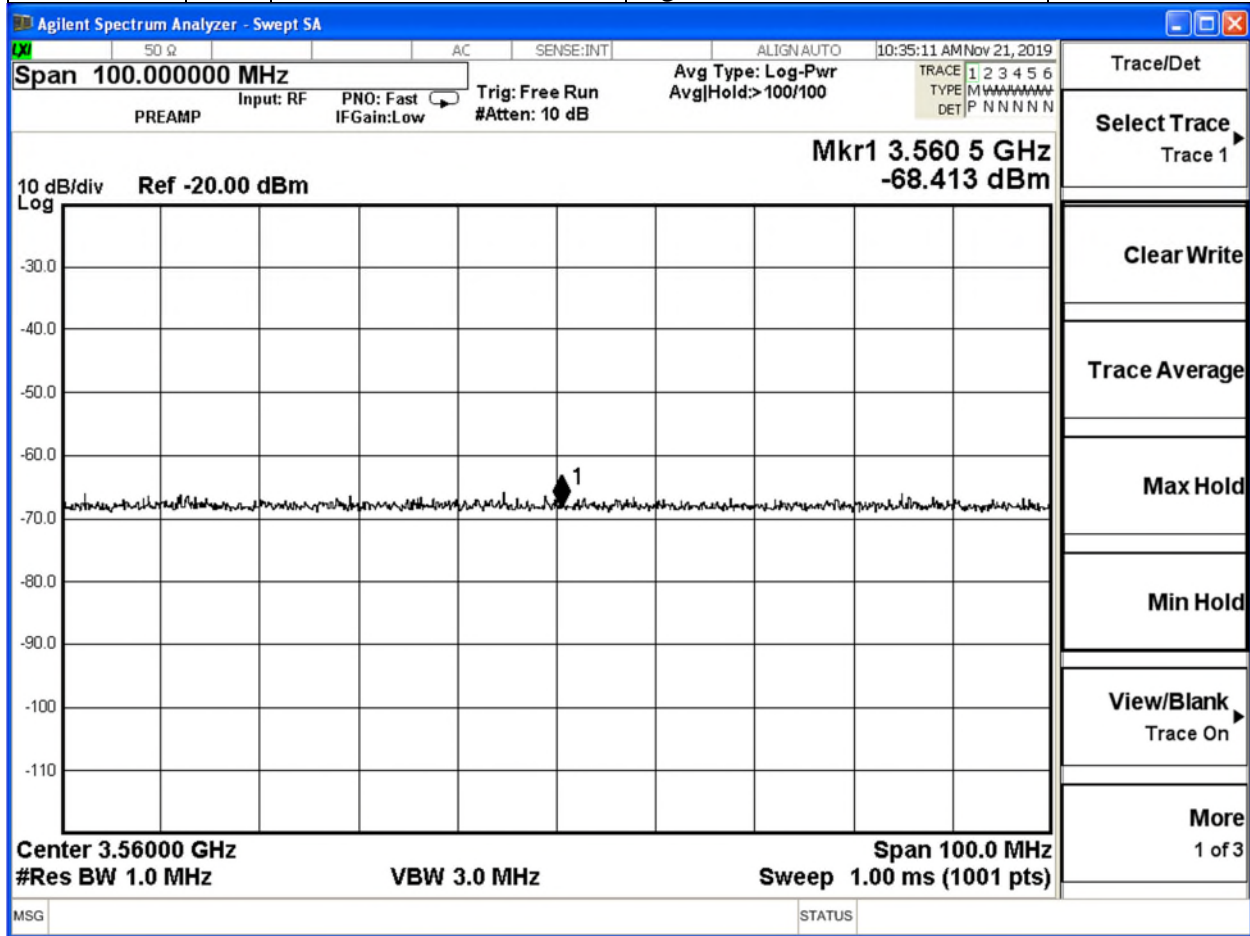
Authorization transmit after it receives authorization from a SAS.


Section	DP	Test Case ID	Test Case Title	Pass / Fail
6.1.4.1.2	X	WINNF.FT.D.REG.2	Domain Proxy Multi-Step registration	P



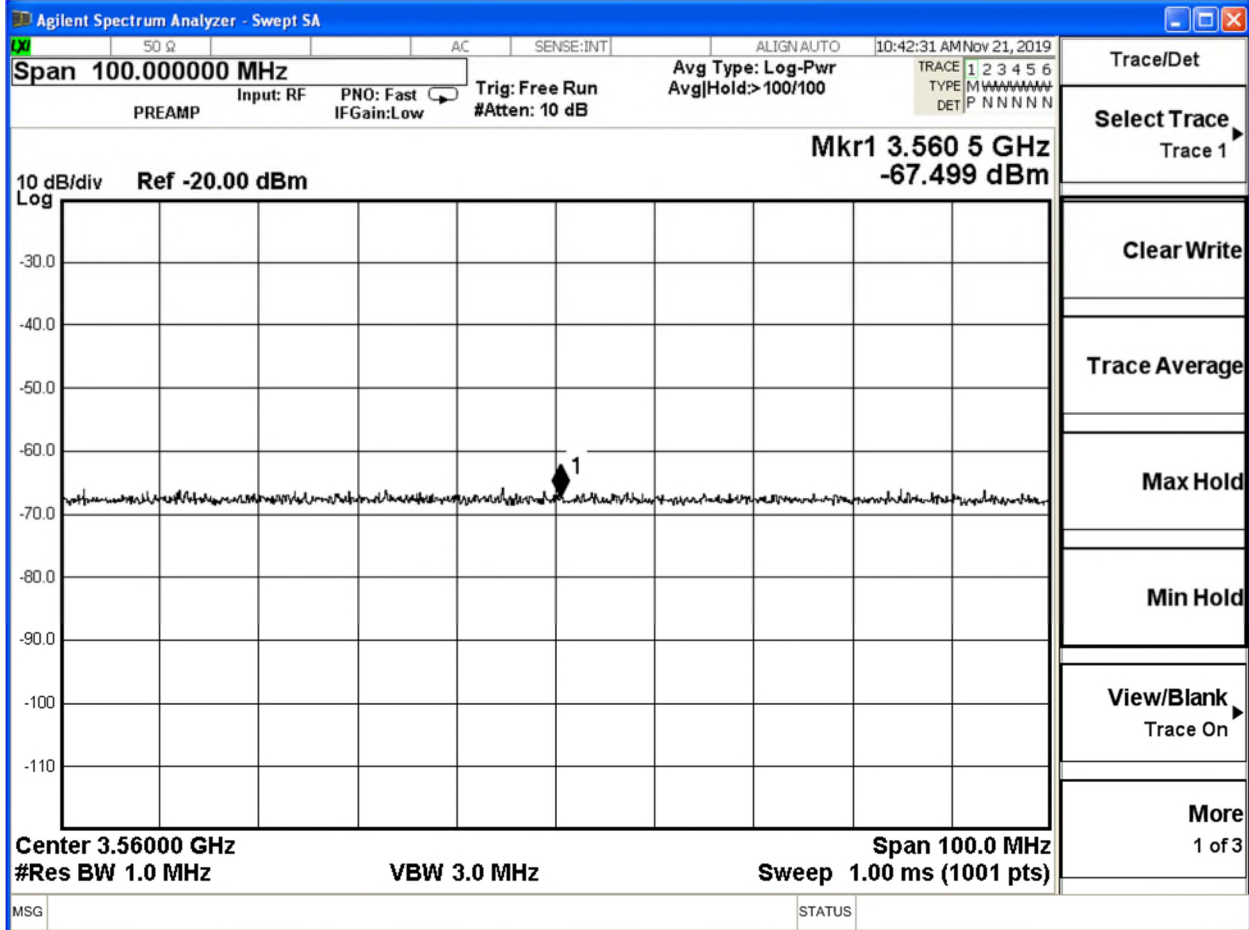
Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	


6.1.4.1.6	X	WINNF.FT.D.REG.6	Domain Proxy Single-Step registration for CBSD with CPI signed data	P
-----------	---	------------------	---	---



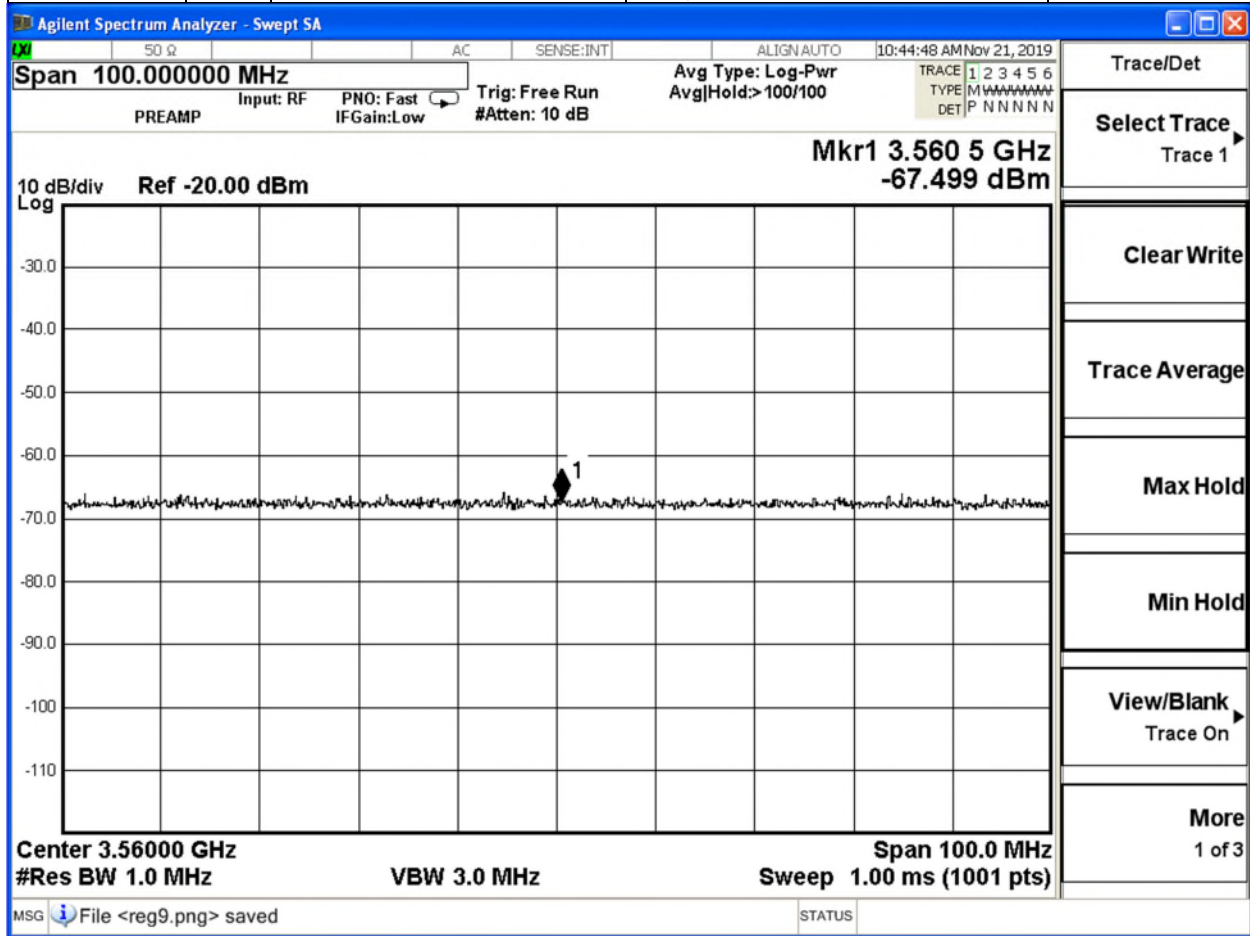
Client	Ericsson	 Canada
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.1.4.2.2	X	WINNF.FT.D.REG.9	Domain Proxy Missing Required parameters (responseCode 102)	P
-----------	---	------------------	---	---



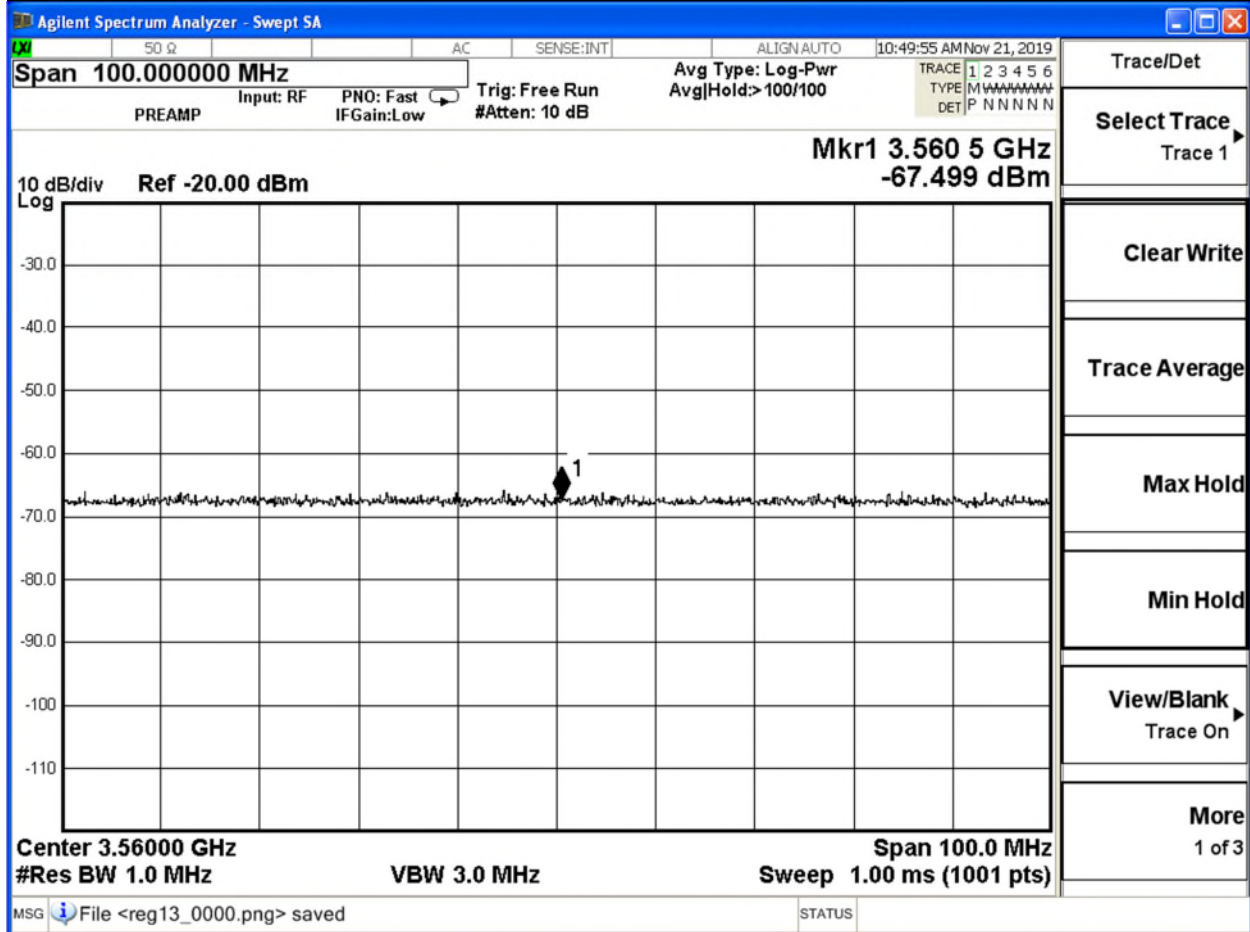
Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.1.4.2.4	X	WINNF.FT.D.REG.11	Domain Proxy Pending registration (responseCode 200)	P
-----------	---	-------------------	--	---



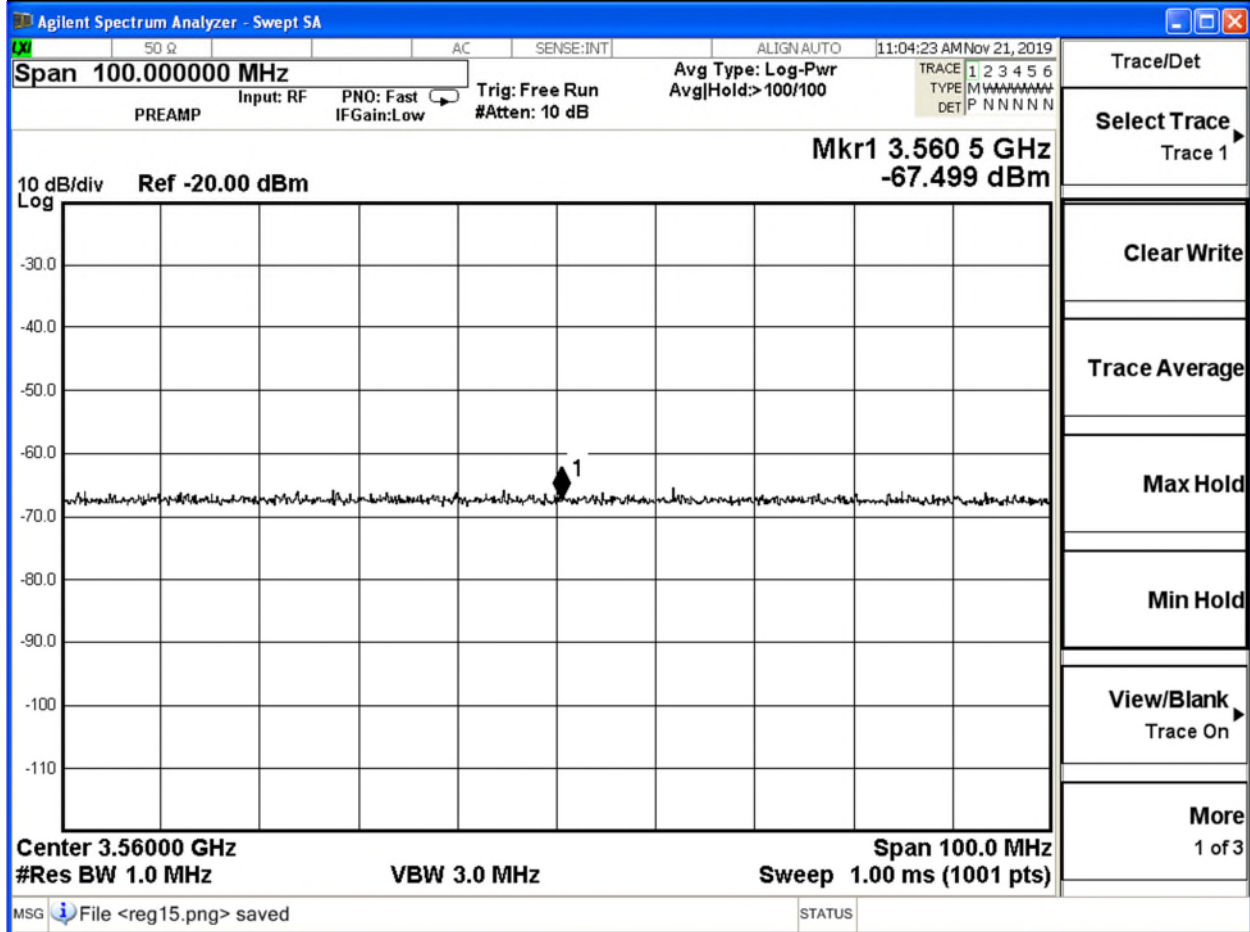
Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.1.4.2.6	X	WINNF.FT.D.REG.13	Domain Proxy Invalid parameters (responseCode 103)	P
-----------	---	-------------------	--	---



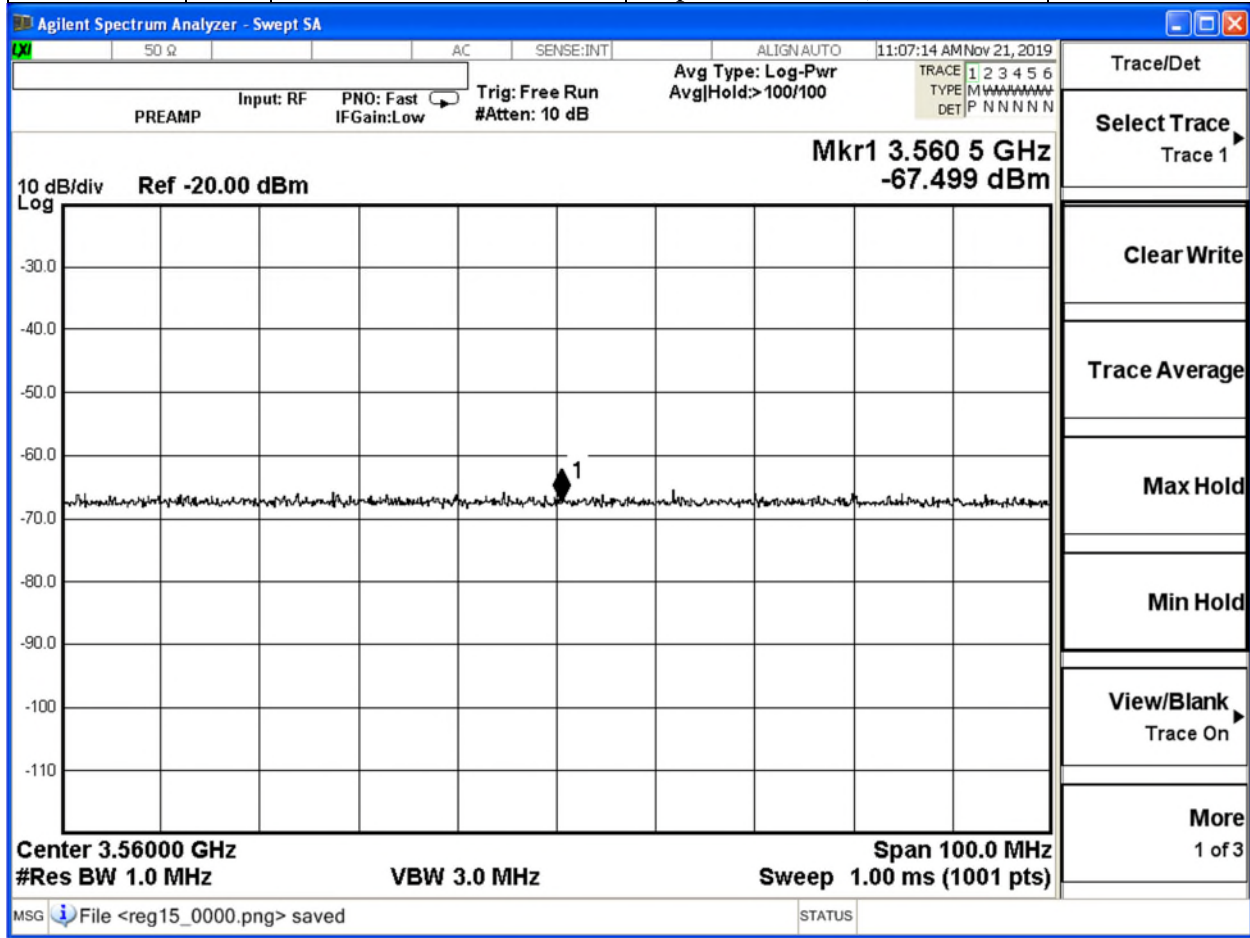
Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.1.4.2.8	X	WINNF.FT.D.REG.15	Domain Proxy Blacklisted CBSD (responseCode 101)	P
-----------	---	-------------------	---	---



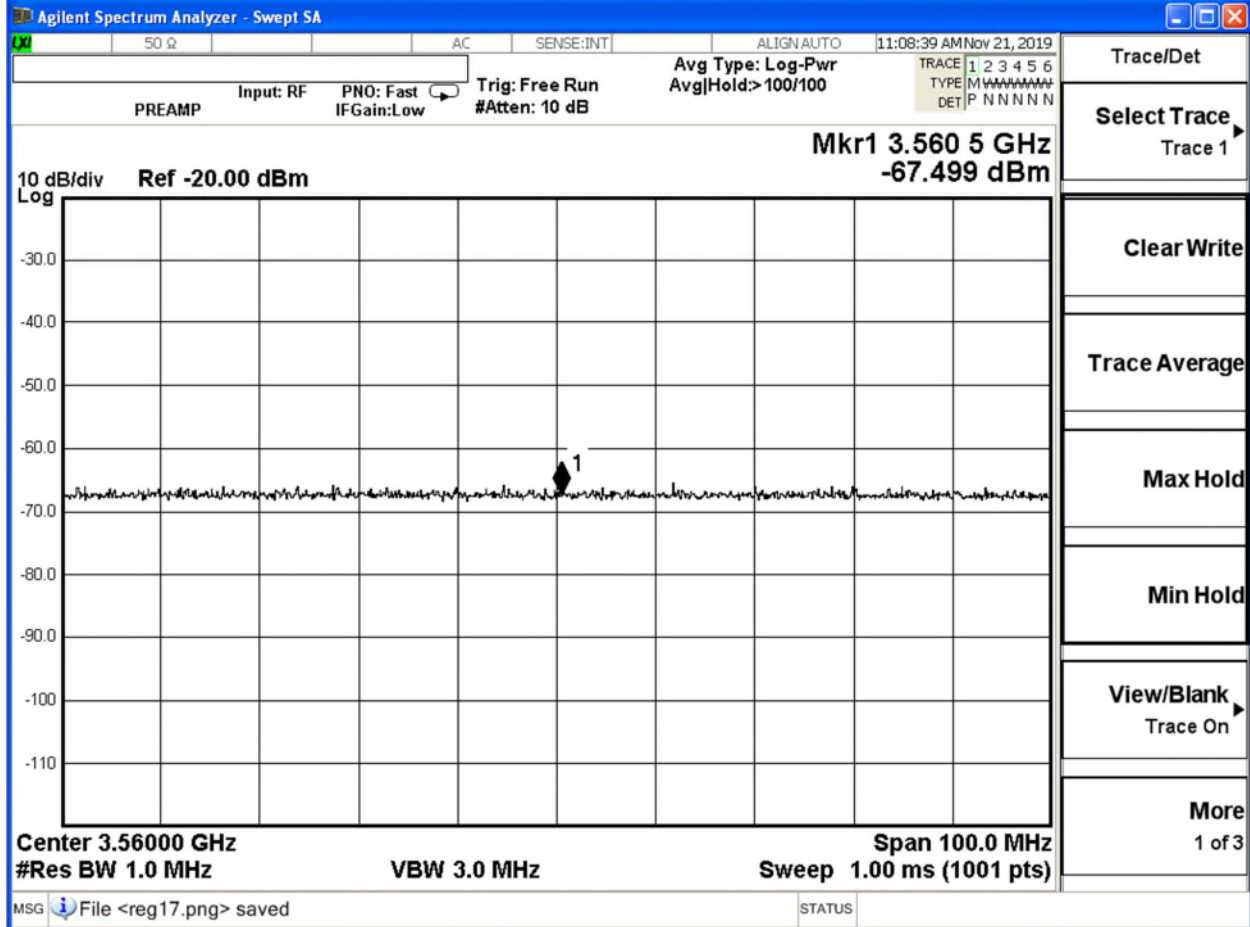
Client	Ericsson	 Canada
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.1.4.2.10	X	WINNF.FT.D.REG.17	Domain Proxy Unsupported SAS protocol version responseCode 100)	P
------------	---	-------------------	---	---



Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.1.4.2.12	X	WINNF.FT.D.REG.19	Domain Proxy Group Error (responseCode 201)	P
------------	---	-------------------	---	---



Agilent Spectrum Analyzer - Swept SA

50 Ω AC SENSE:INT ALIGN AUTO 11:08:39 AM Nov 21, 2019


PREAMP Input: RF PNO: Fast IFGain:Low Trig: Free Run #Atten: 10 dB Avg Type: Log-Pwr AvgHold:>100/100

Mkr1 3.560 5 GHz -67.499 dBm

10 dB/div Ref -20.00 dBm

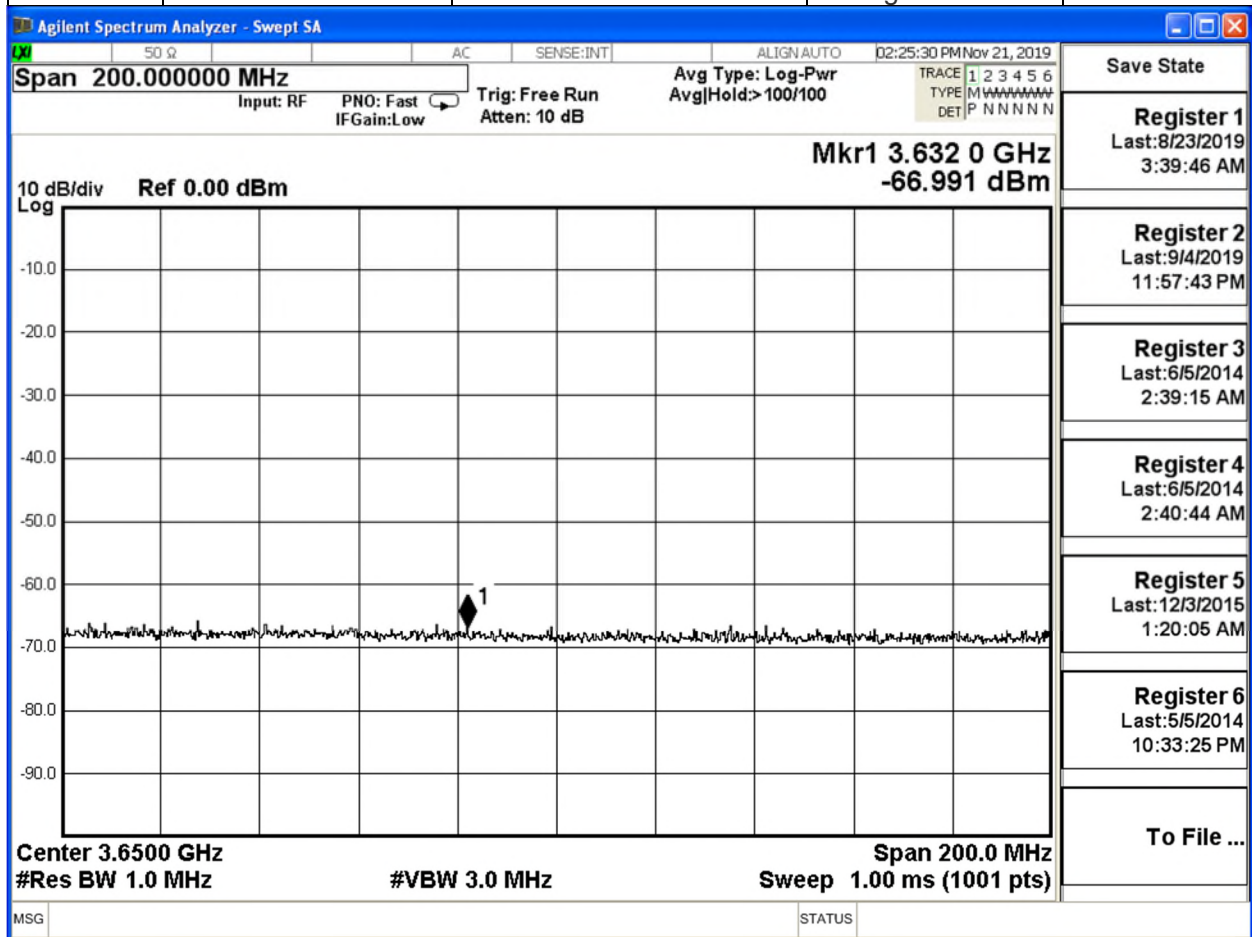
Center 3.56000 GHz Span 100.0 MHz
 #Res BW 1.0 MHz VBW 3.0 MHz Sweep 1.00 ms (1001 pts)


MSG File <reg17.png> saved STATUS

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

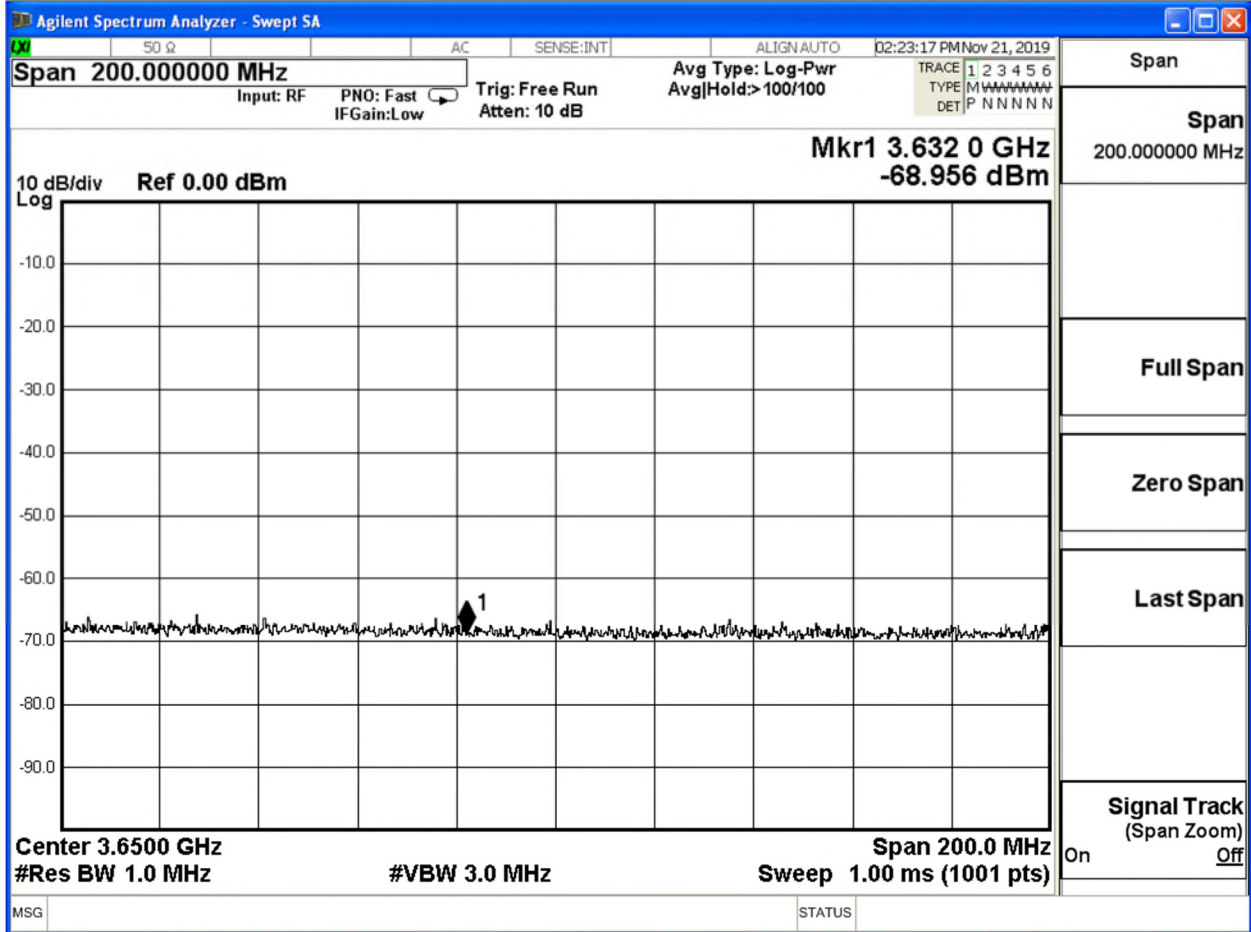
Check the device registration and authorization with the SAS, Confirm that the device changes its operating power and/or channel in response to a command from the SAS and Confirm that the device correctly configures based on the different license classes.

6.3.4.2.1	WINNF.FT.C.GRA. 1	Unsuccessful Grant responseCode=400 (INTERFERENCE)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
-----------	----------------------	--	---	---



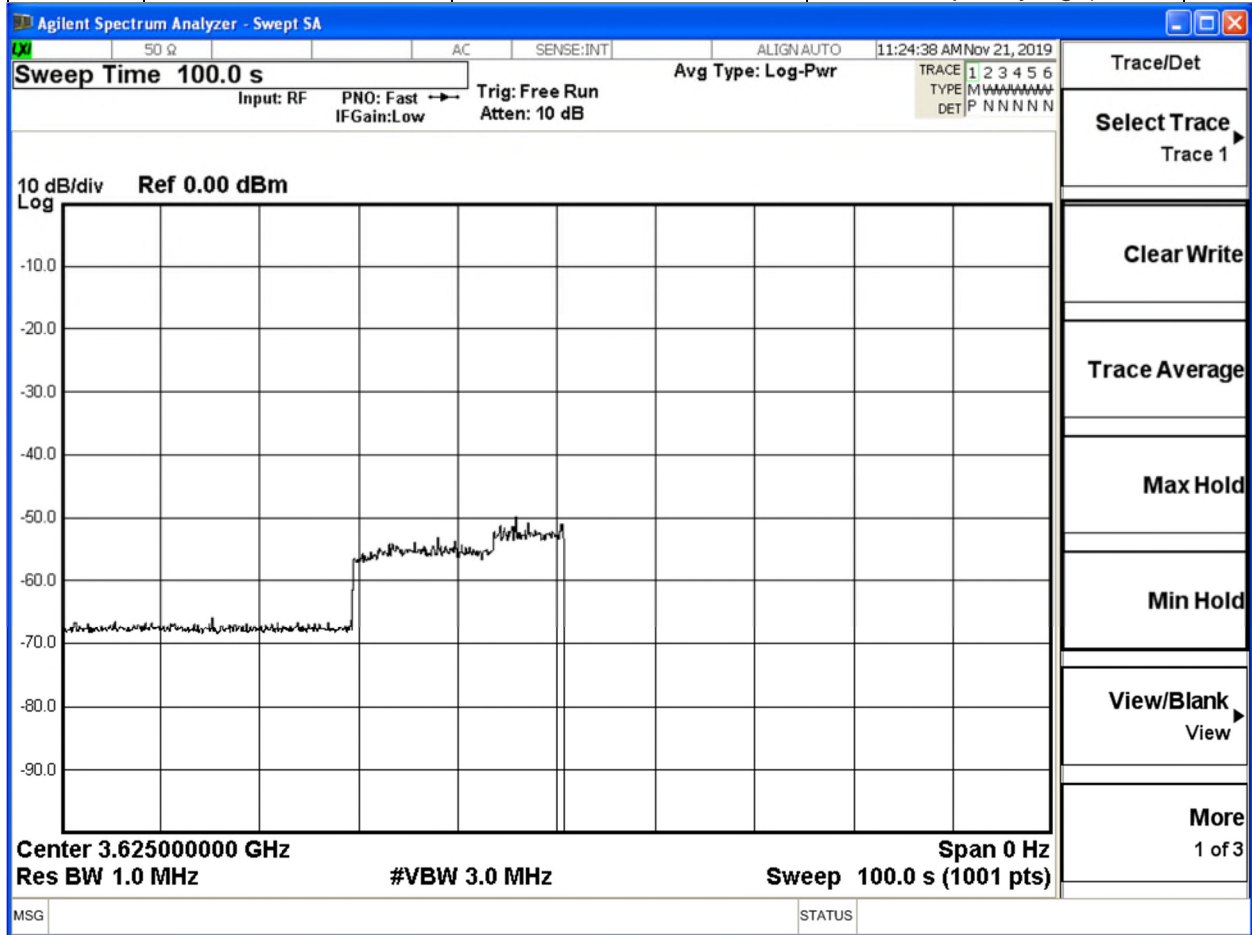
Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.3.4.2.2	WINNF.FT.C.GRA.2	Unsuccessful Grant responseCode=401 (GRANT_CONFLICT)	Monitor for 60 seconds after REG message sent. No transmission during test.	P
-----------	------------------	--	---	---



Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

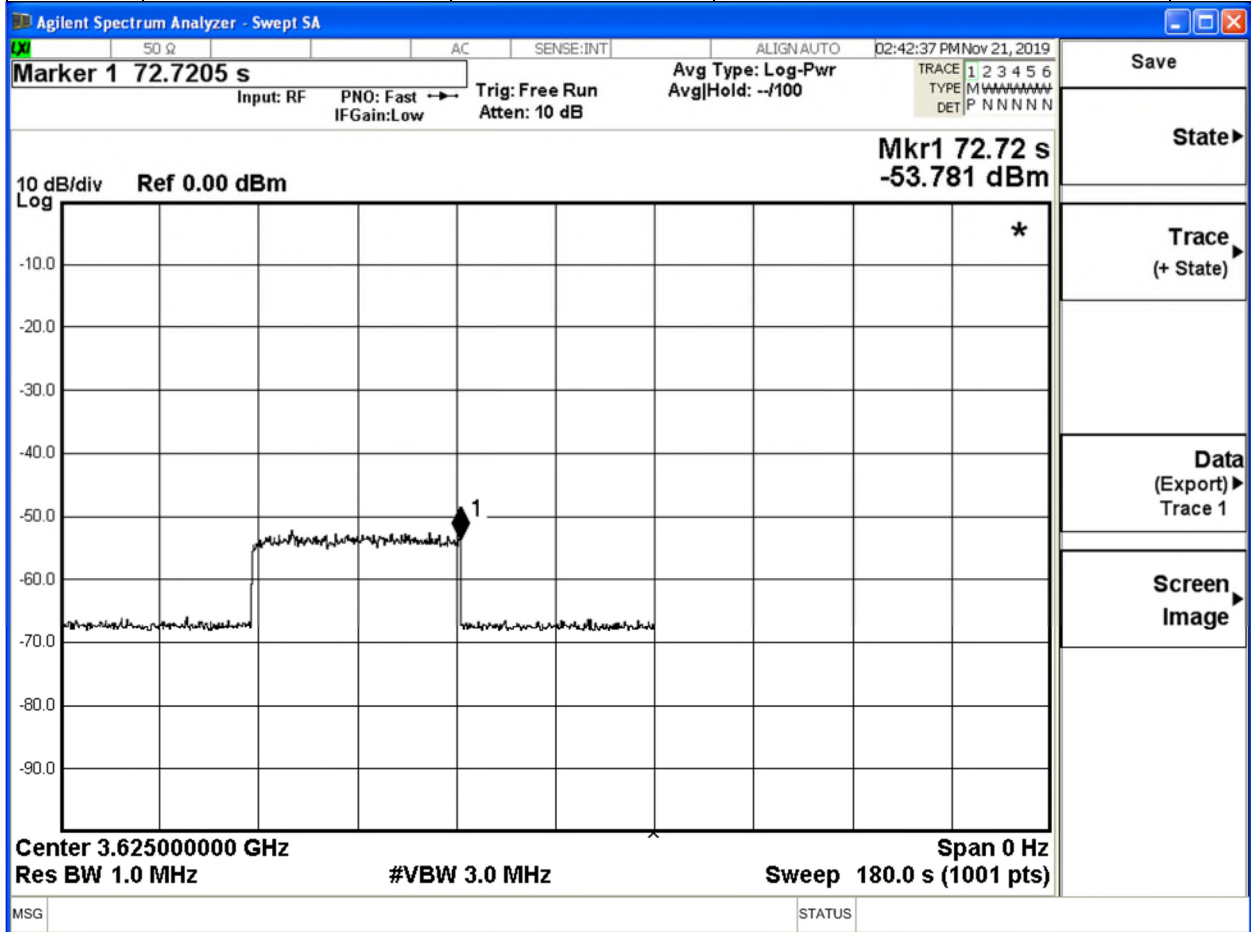
6.4.4.1.2	WINNF.FT.D.HBT.2	Domain Proxy Heartbeat Success Case (first Heartbeat Response)	Monitor RF from start of test. Ensure that: <ul style="list-style-type: none"> • Transmission does not start until time of first heartbeat response or after. • After transmission starts, measure that transmission is within the granted channel (frequencyLow, f requencyHigh) 	P
-----------	------------------	--	---	---



Note: Test harness logs were reviewed and compared to time stamps to the above graph, and the EUT was determined to have met the requirement.

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

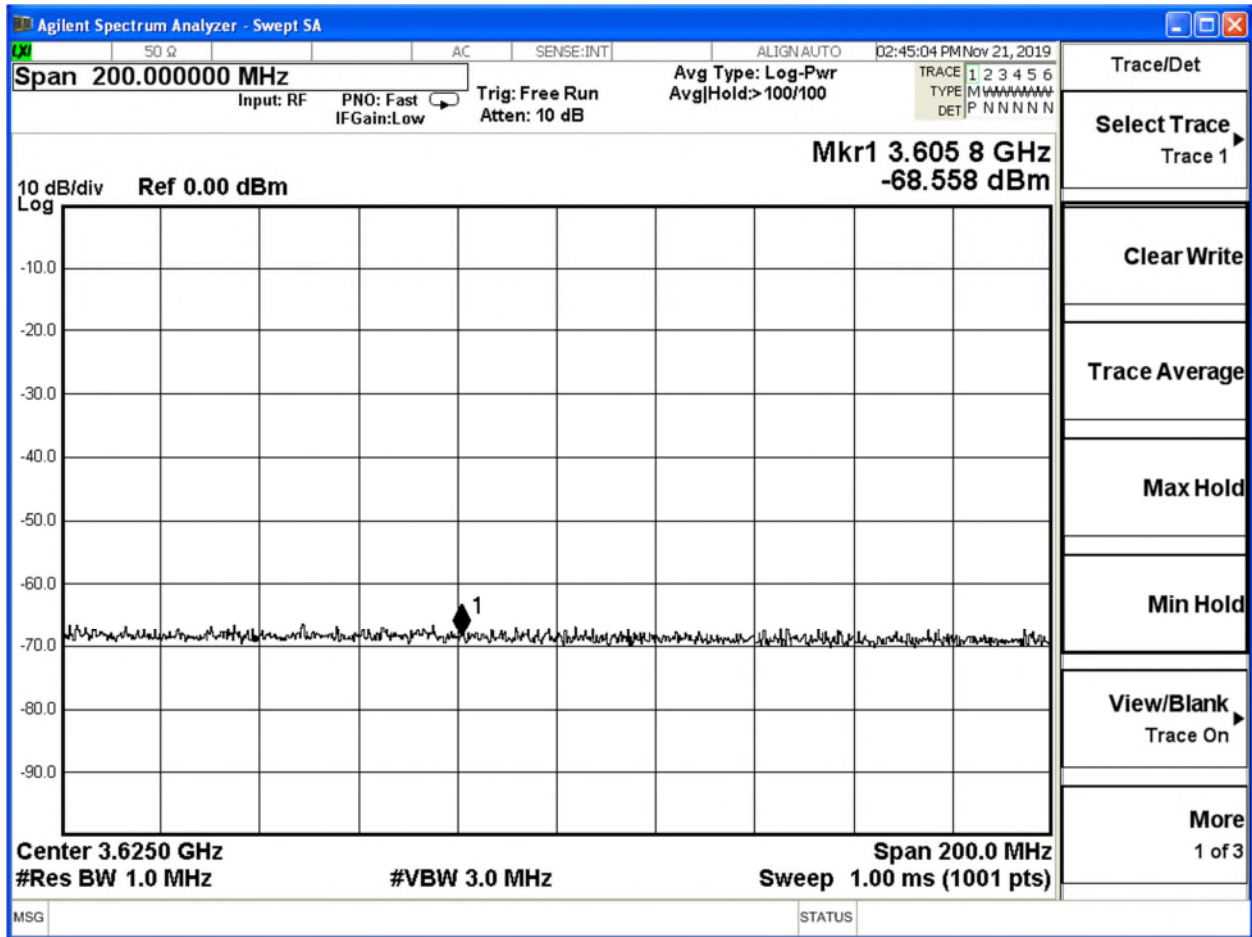
6.4.4.2.1	WINNF.FT.C.HBT.3	Heartbeat responseCode=105 (DEREGISTER)	Monitor RF transmission. Ensure that: <ul style="list-style-type: none"> • CBSD stops transmission within 60 seconds of the heartbeatResponse which contains responseCode = 105 	P
-----------	------------------	---	--	---



Note: Test harness logs were reviewed and compared to time stamps to the above graph, and the EUT was determined to have met the requirement.

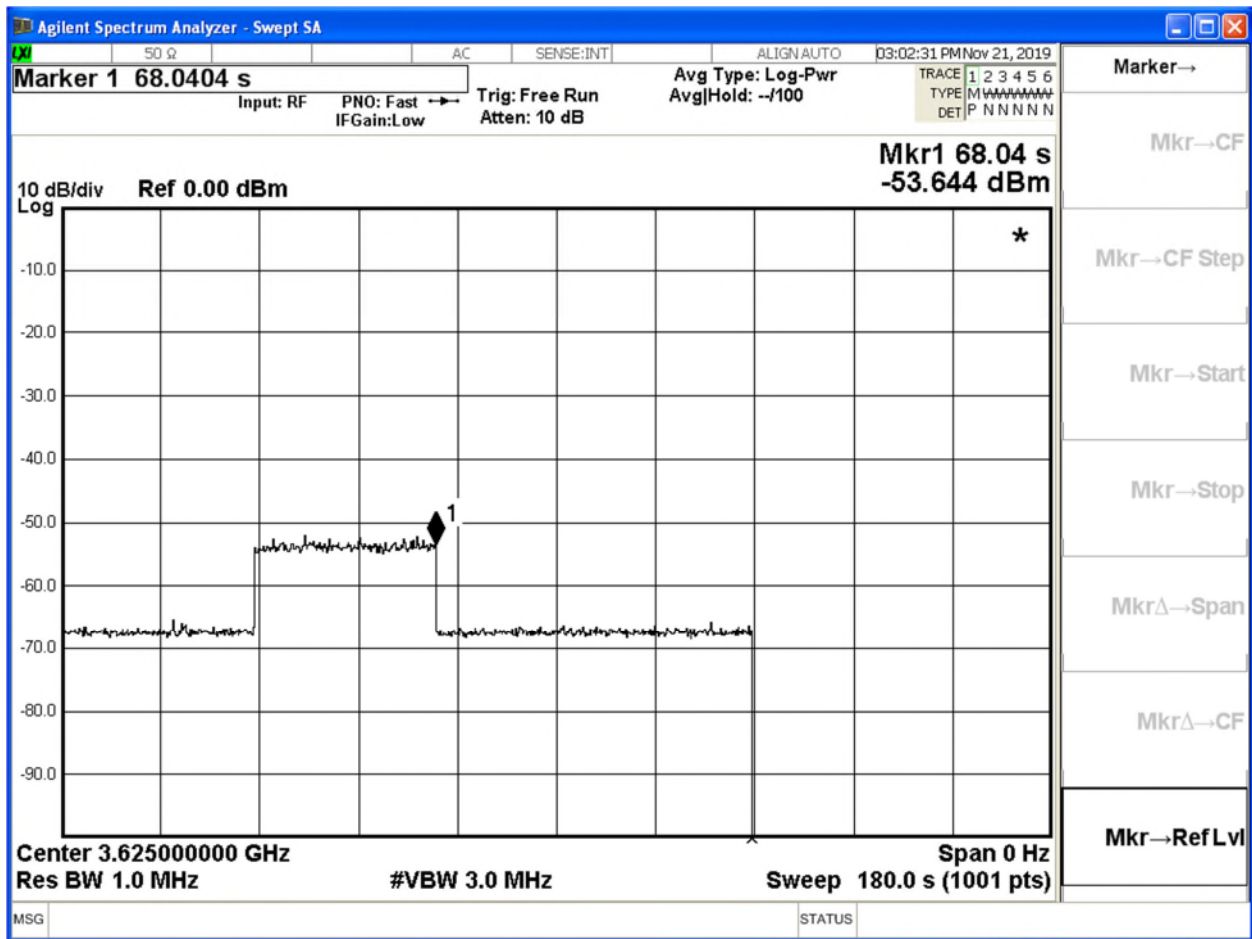
Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.4.4.2.3	WINNF.FT.C.HBT.5	Heartbeat responseCode=501 (SUSPENDED_GRANT) in First Heartbeat Response	Monitor RF transmission from start of test. Ensure there is no transmission during the test	p
-----------	------------------	--	---	---



Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

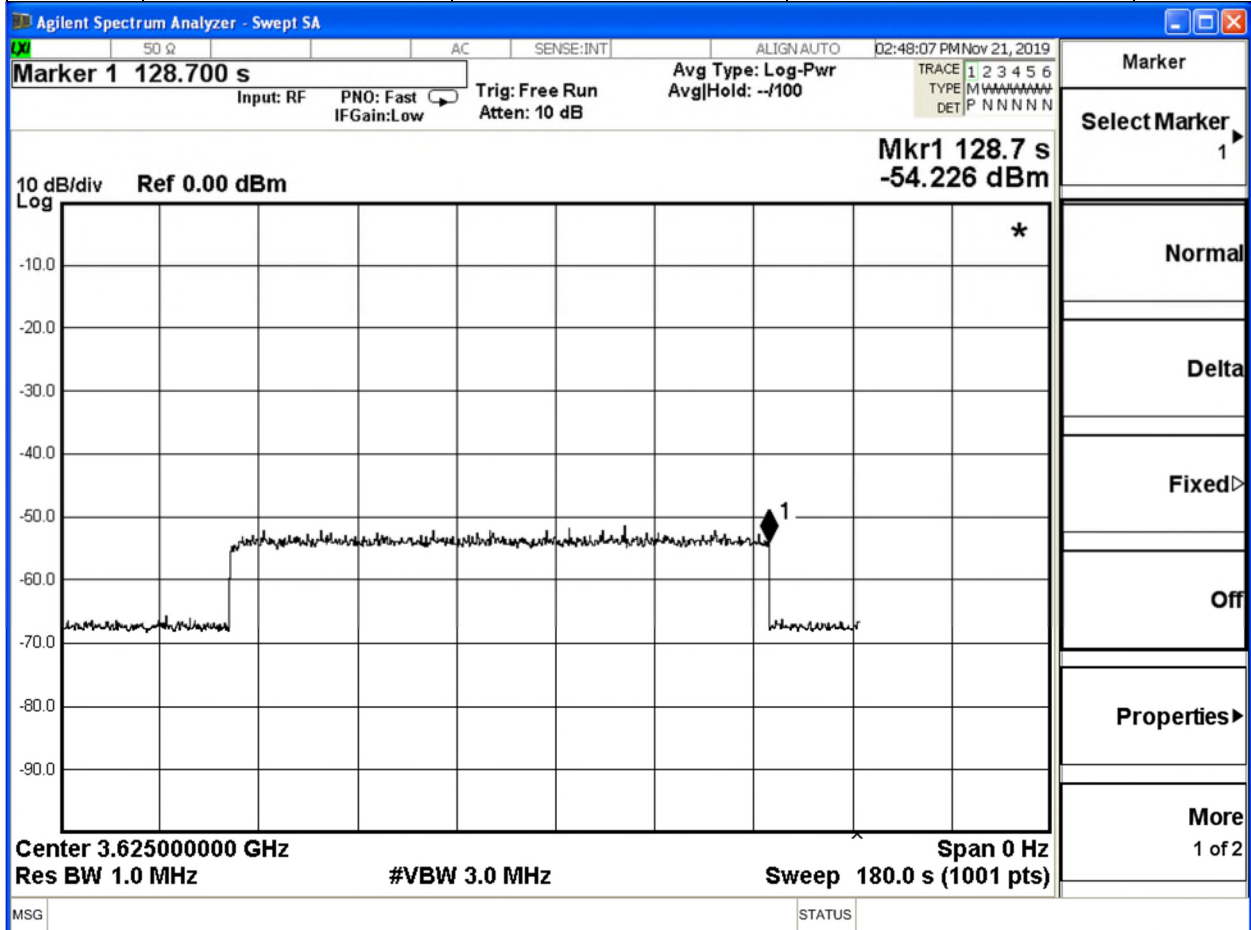
6.4.4.2.4	WINNF.FT.C.HBT.6	Heartbeat responseCode=501 (SUSPENDED_GR ANT) in Subsequent Heartbeat Response	Monitor RF transmission. Ensure: <ul style="list-style-type: none"> • CBSD stops transmission within 60 seconds of heartbeatResponse which contains responseCode=501 	p
-----------	------------------	--	---	---



Note: Test harness logs were reviewed and compared to time stamps to the above graph, and the EUT was determined to have met the requirement.

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

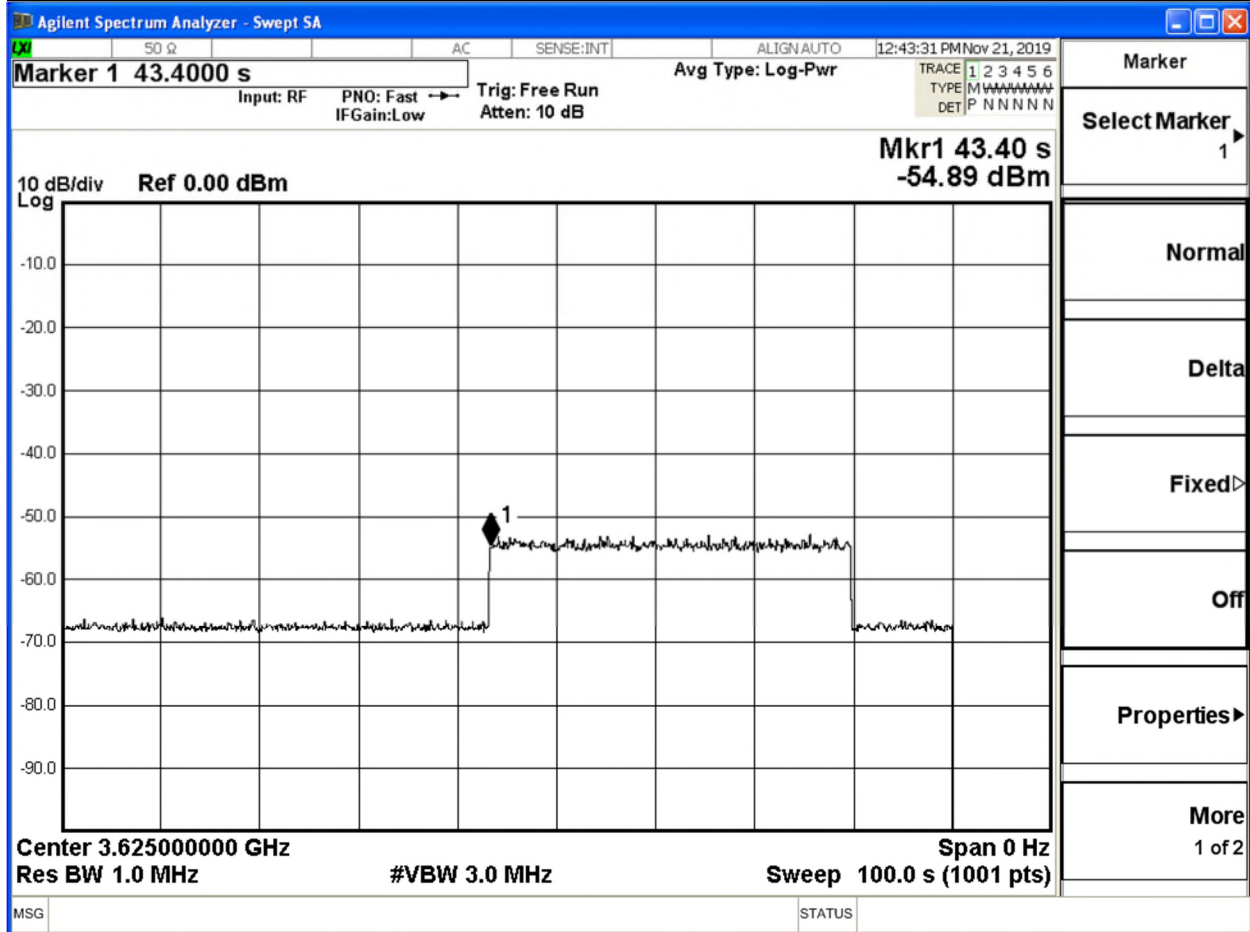
6.4.4.2.5	WINNF.FT.C.HBT.7	Heartbeat responseCode=502 (UNSYNC_OP_PARAM)	Monitor RF transmission. Ensure: <ul style="list-style-type: none"> • CBSD stops transmission within 60 seconds of heartbeatResponse which contains responseCode=502 	p
-----------	------------------	--	---	---




Note: Test harness logs were reviewed and compared to time stamps to the above graph, and the EUT was determined to have met the requirement.

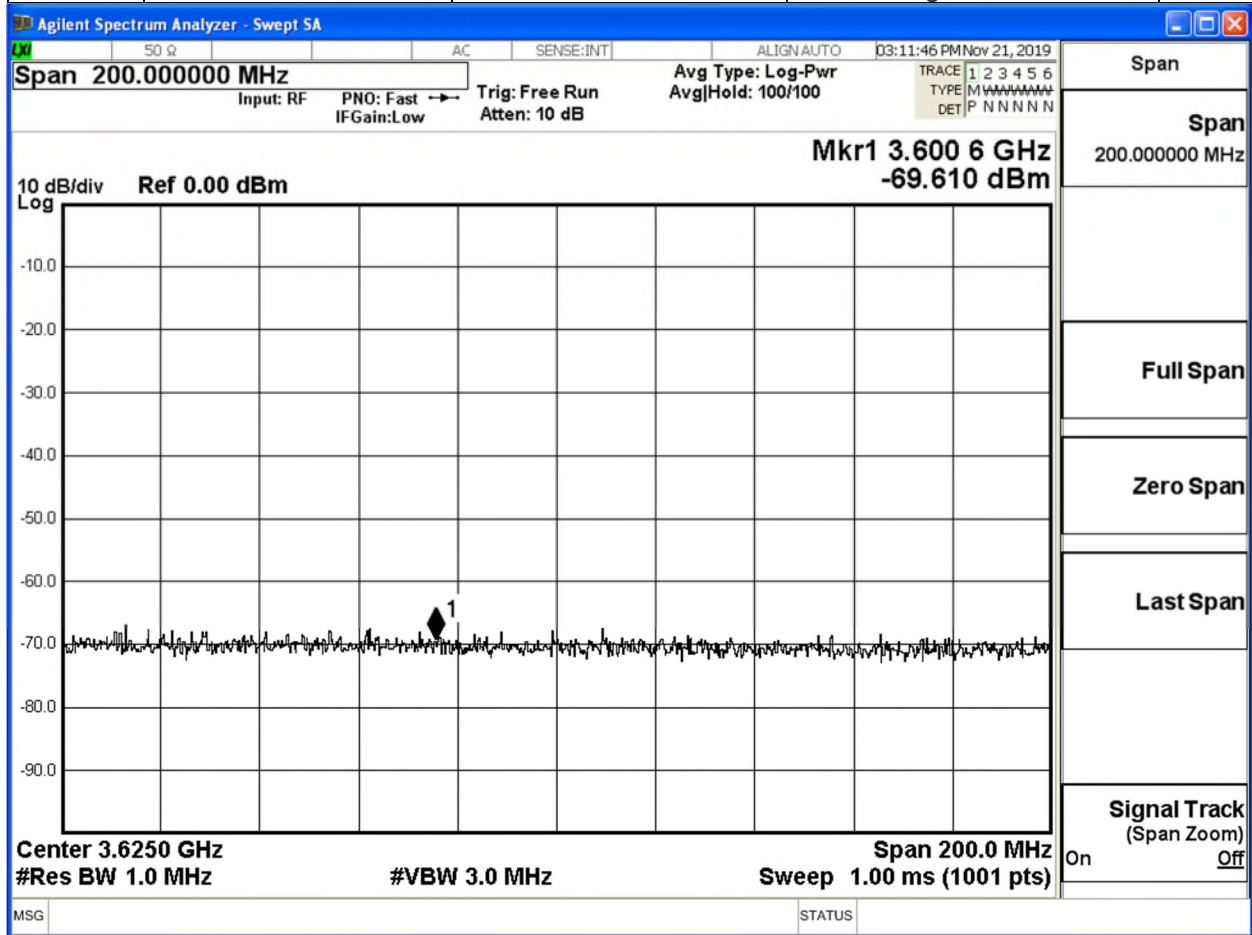
Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	


6.4.4.2.6	--	X	WINNF.F T.D.HBT. 8	Domain Proxy Heartbeat responseCode =500 (TERMINATE D_GRANT)	Monitor RF transmission. CBSDs will have different behavior: <ul style="list-style-type: none"> • CBSD1: will continue to transmit to end of test (this is not a pass/fail criteria, but check) • CBSD2: must stop transmission within 60 seconds of being sent heartbeatResponse with responseCode = 500 	P
-----------	----	---	--------------------------	---	---	---



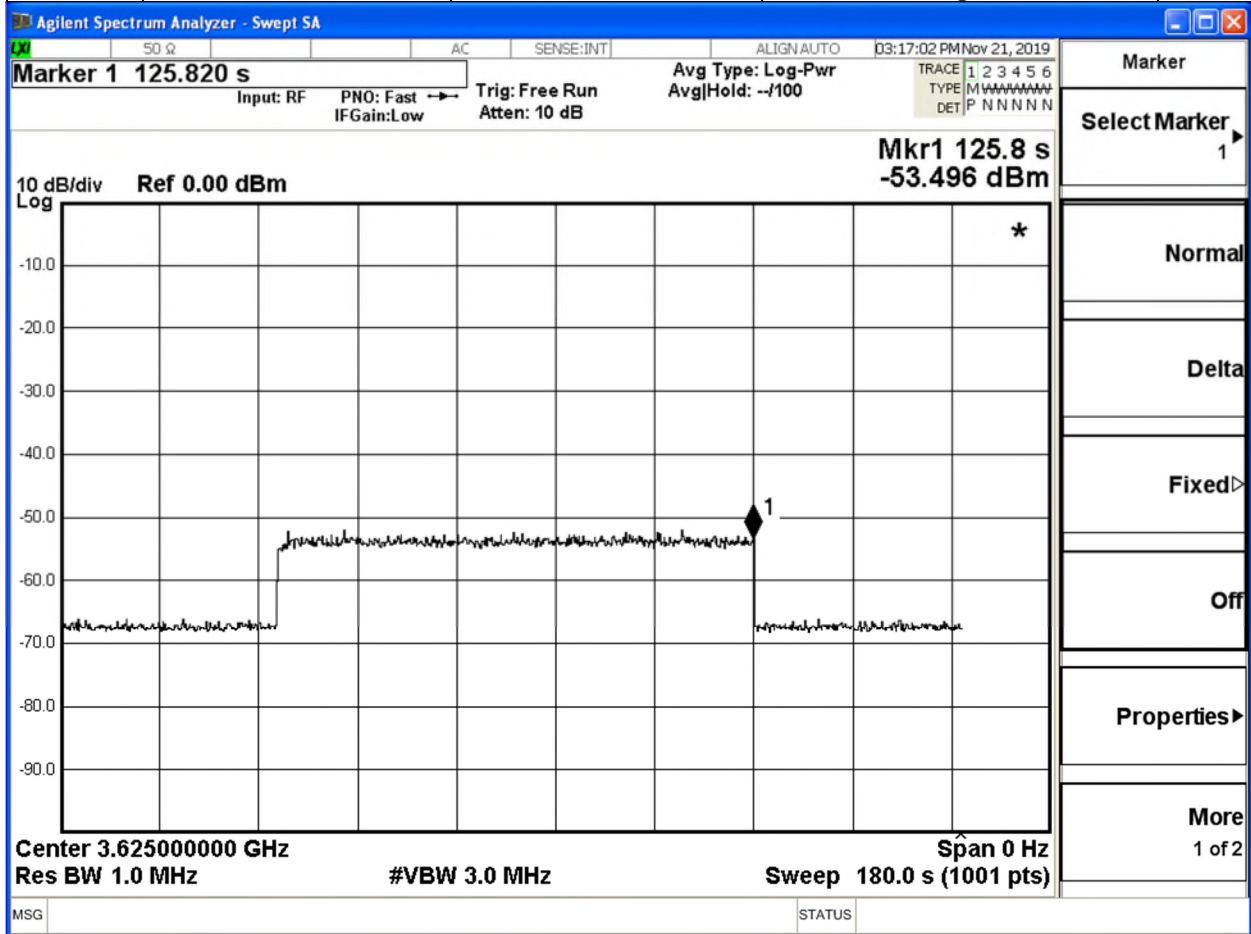
Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.4.4.3. 1	WINNF.FT.C.HBT.9	Heartbeat Response Absent (First Heartbeat)	Monitor RF from start of test to 60 seconds after last heartbeatResponse message was sent. CBSD should not transmit at any time during test	P
---------------	------------------	---	---	---




Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.4.4.3.2	WINNF.FT.C.HBT.10	Heartbeat Response Absent (Subsequent Heartbeat)	Monitor RF transmission. Verify: <ul style="list-style-type: none"> • CBSD must stop transmission within transmitExpireTime+60 seconds, where transmitExpireTime is from last successful heartbeatResponse message 	P
-----------	-------------------	--	---	---




Note: Test harness logs were reviewed and compared to time stamps to the above graph, and the EUT was determined to have met the requirement.

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.5.4.2. 2	WINNF.FT.D.MES.2	Domain Proxy Registration Response contains measReportConfig	No RF monitoring	P
---------------	------------------	---	------------------	---

Pass saw “measreportconfig” in logs

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.5.4.2. 3	WINNF.FT.C.MES.3	Grant Response contains measReportConfig	No RF monitoring	P
---------------	------------------	--	------------------	---

Pass saw “measreportconfig” in logs

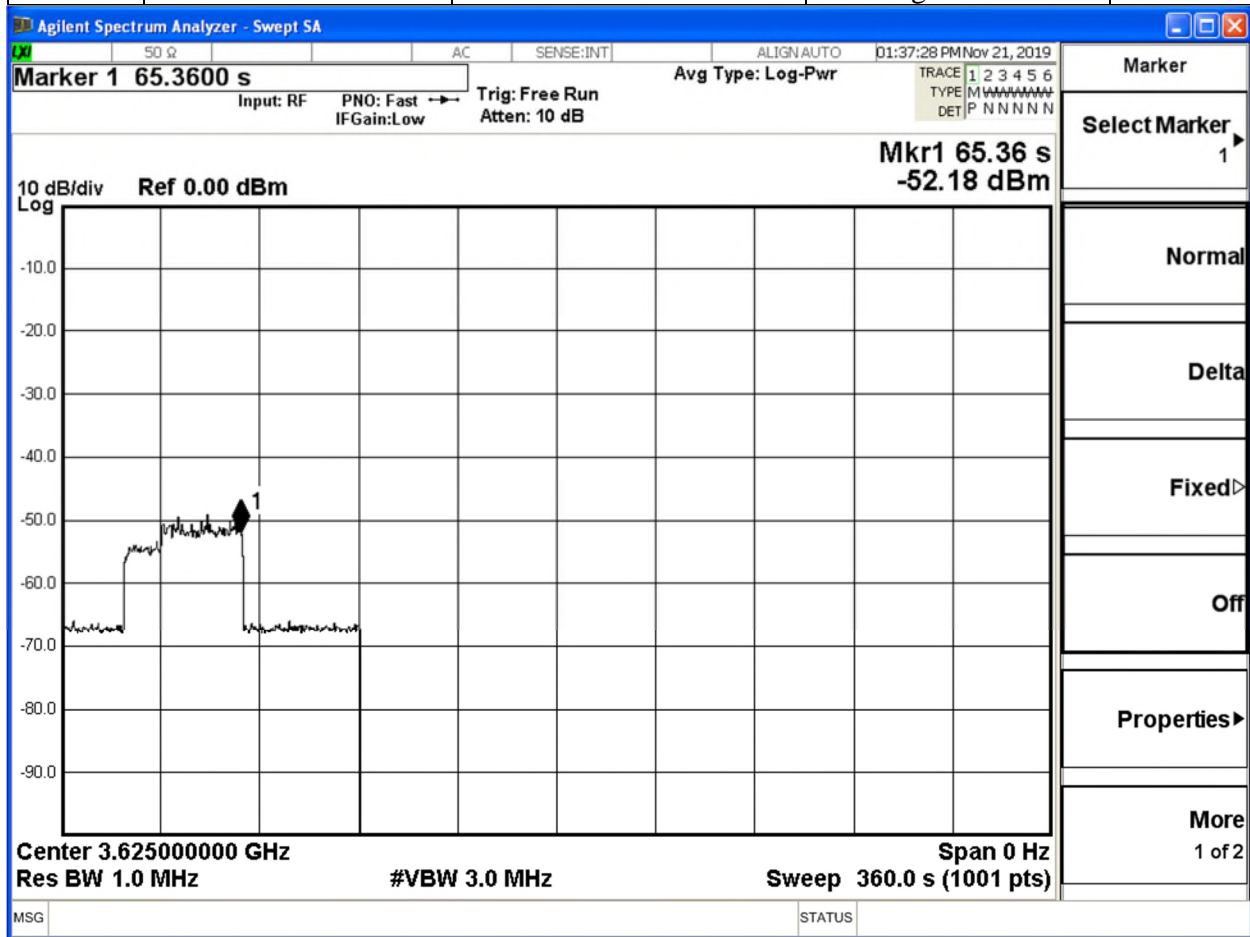
Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.5.4.2. 5	WINNF.FT.D.MES.5	Domain Proxy Heartbeat Response contains measReportConfig	No RF monitoring	P
---------------	------------------	---	------------------	---

Pass saw “measreportconfig” in logs

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

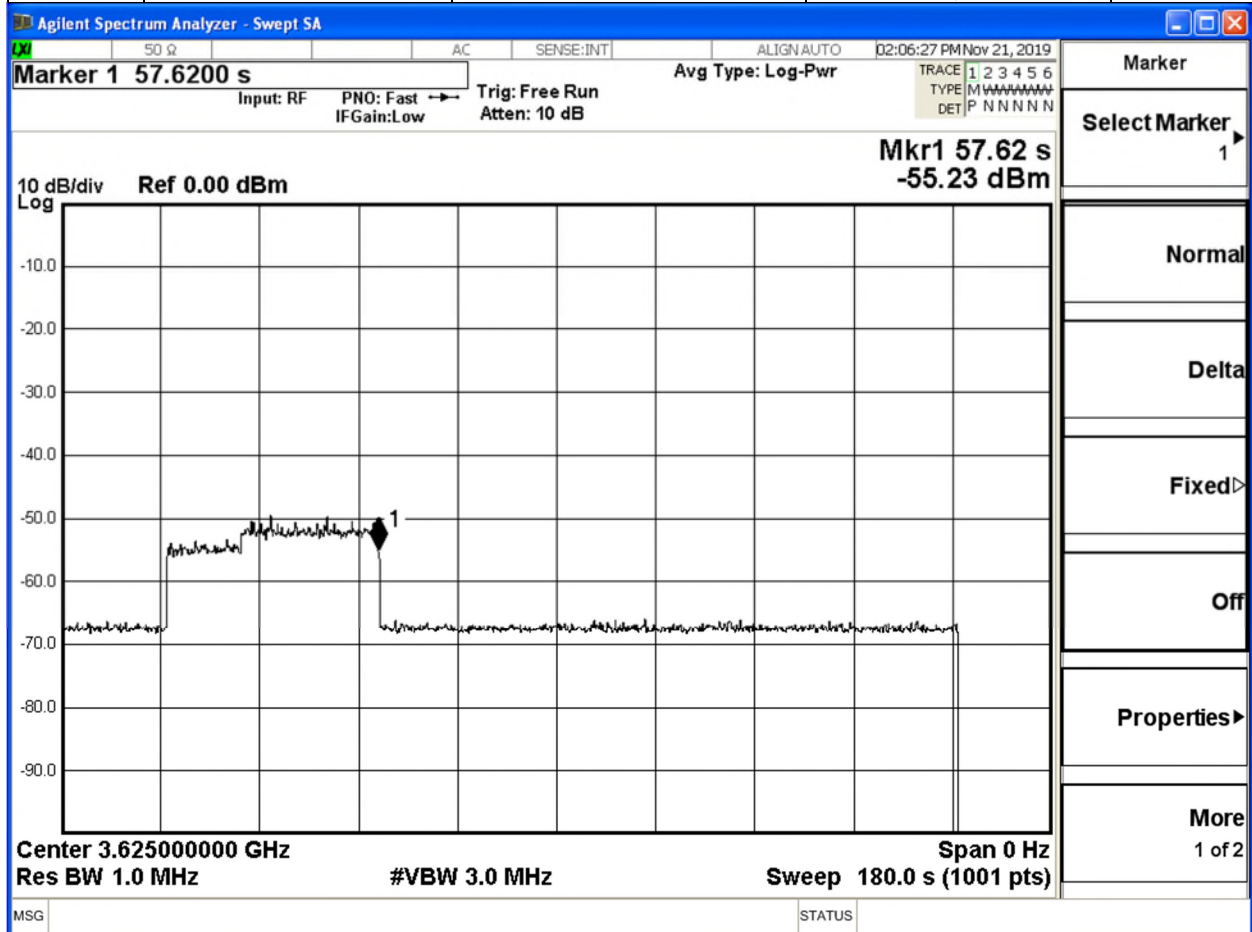
6.6.4.1.2	WINNF.FT.D.RLQ.2	Domain Proxy Successful Relinquishment	Monitor RF transmission. Ensure: <ul style="list-style-type: none"> • CBSD stops transmission at any time prior to sending the relinquishmentRequest message. 	P
-----------	------------------	--	--	---



Note: Test harness logs were reviewed and compared to time stamps to the above graph, and the EUT was determined to have met the requirement.

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

6.7.4.1.2	WINNF.FT.D.DRG.2	Domain Proxy Successful Deregistration	Monitor RF transmission. Ensure: <ul style="list-style-type: none"> • CBSD stops transmission at any time prior to sending the relinquishmentRequest message or deregistrationRequest message (whichever is sent first) 	P
-----------	------------------	--	--	---




Note: Test harness logs were reviewed and compared to time stamps to the above graph, and the EUT was determined to have met the requirement.


Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

Confirm that the device transmits at a power level less than or equal to the maximum power level approved by the SAS.

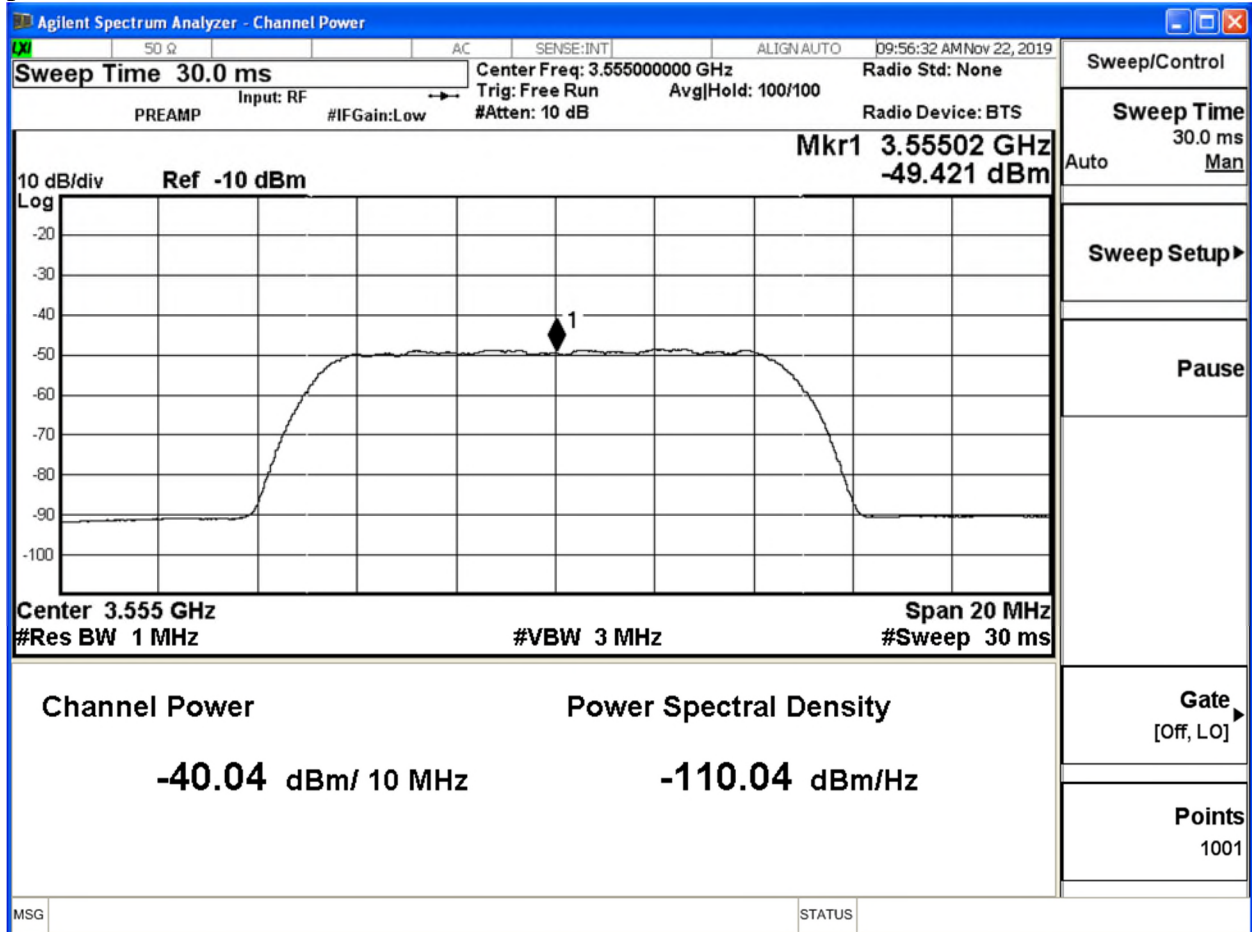
7.1.4.1.1	X	X	WINNF.PT.C.H BT	UUT RF Transmit Power Measurement	Power Spectral Density test case. Assume we use 1 carrier bandwidth (say, 5 or 10 MHz), one frequency (say middle channel in band) for test. Measure at max transmit power, and reduce in steps of 3 dB to minimum declared transmit power.	P
-----------	---	---	--------------------	--------------------------------------	--	---


Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

Freq	1MHz EIRP limit (target) dBm	Raw 10 MHz	Raw 1MHz	External Losses (dB)	Conducted dBm/MHz	antenna gain dBi	ports	port gain (dB)	EIRP 1MHz dBm/MHz	EIRP 10 MHz dBm	margin dB
3555-Low	20	-40.04	-49.4	52.6	3.2	12	2	3.0103	18.2103	27.5703	1.7897
3555-High	37	-22.68	-32.08	52.6	20.52	12	2	3.0103	35.5303	44.9303	1.4697
3630-low	20	-40.18	-48.2	52.6	4.4	12	2	3.0103	19.4103	27.4303	0.5897
3630-high	37	-22.82	-30.86	52.6	21.74	12	2	3.0103	36.7503	44.7903	0.2497
3695-low	20	-40.08	-48.1	52.6	4.5	12	2	3.0103	19.5103	27.5303	0.4897
3695-high	37	22.74	-30.93	52.6	21.67	12	2	3.0103	36.6803	90.3503	0.3197

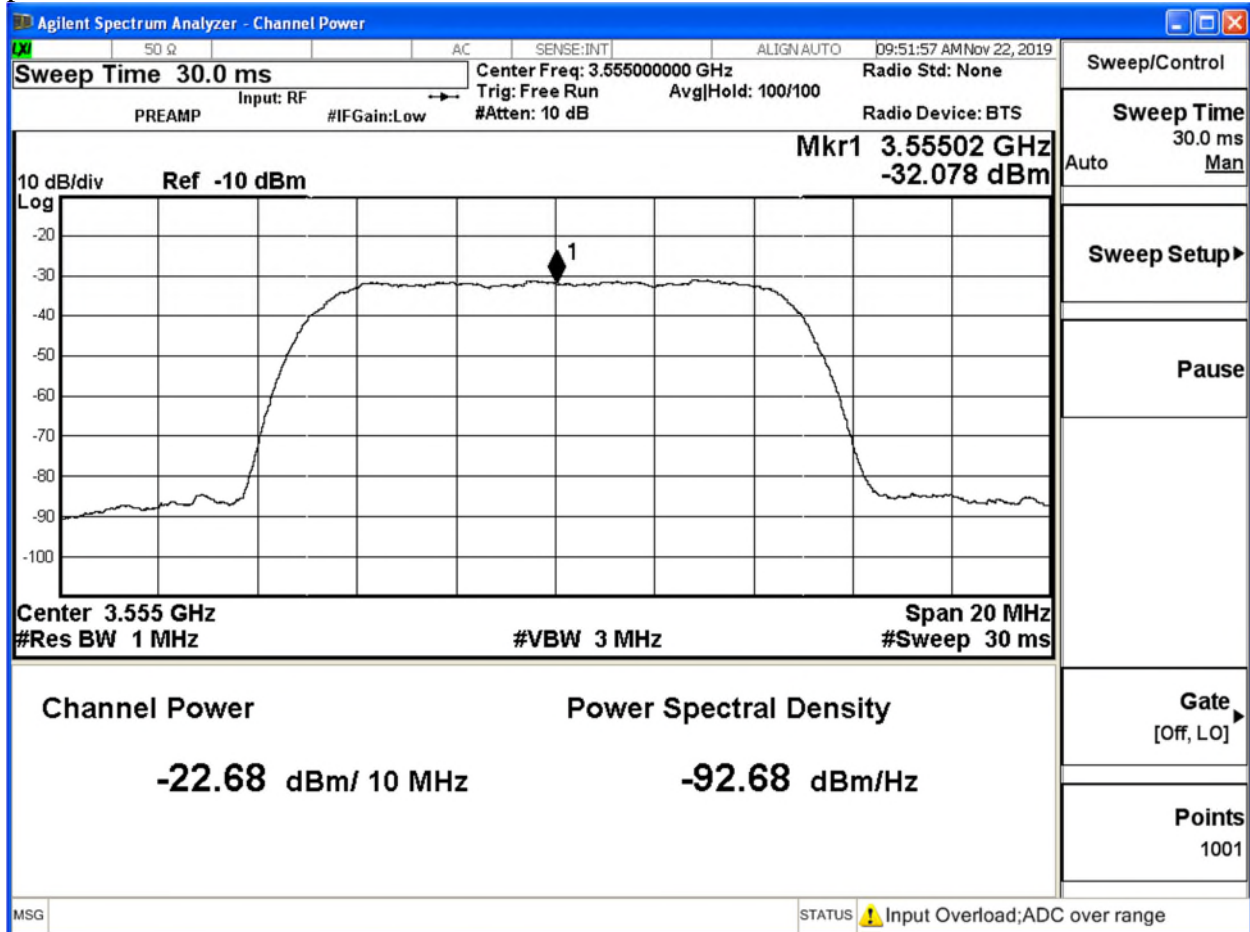
Client	Ericsson	 Canada
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	


psd low ch 20dbm



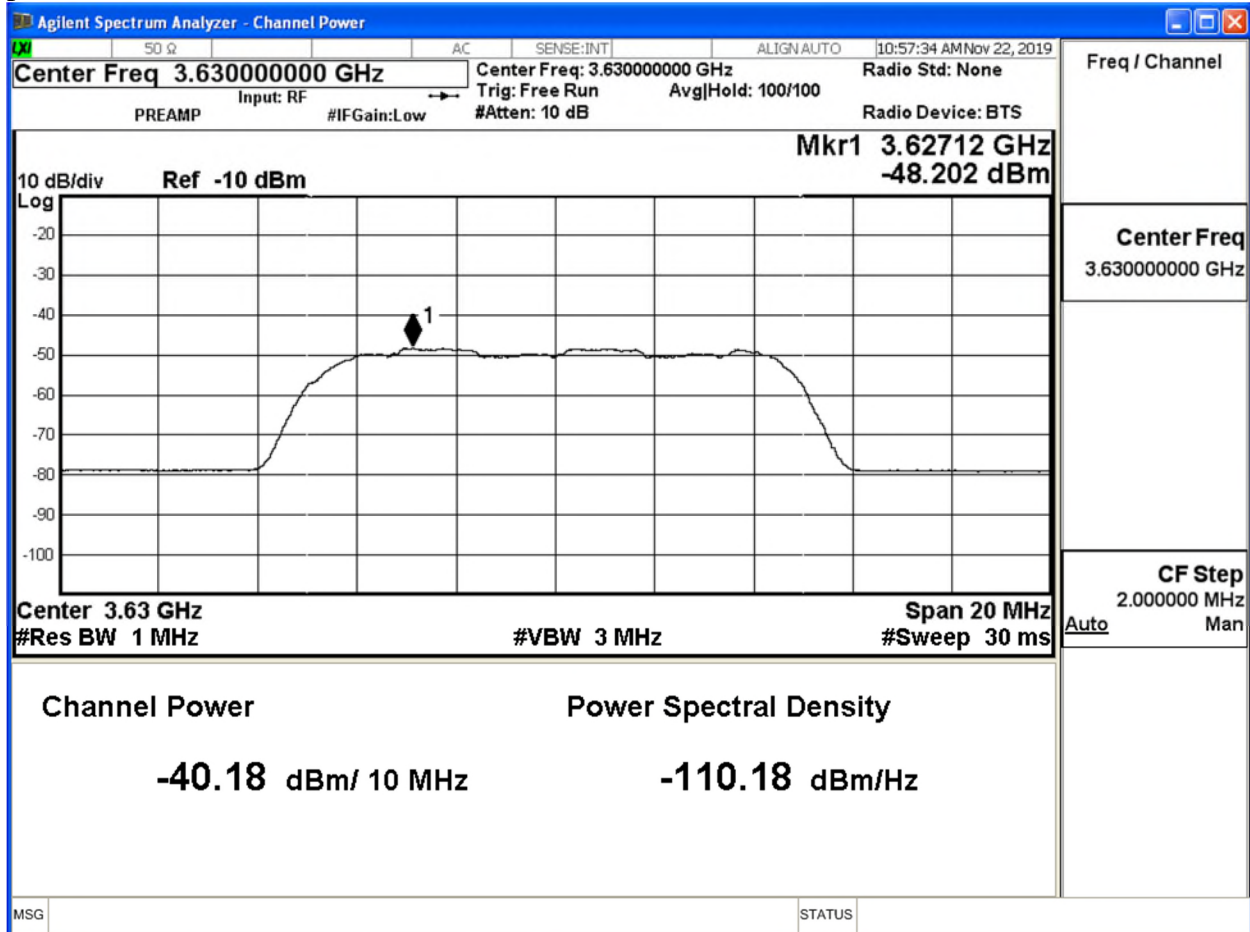
Client	Ericsson	 Canada
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

psd low ch 37dbm



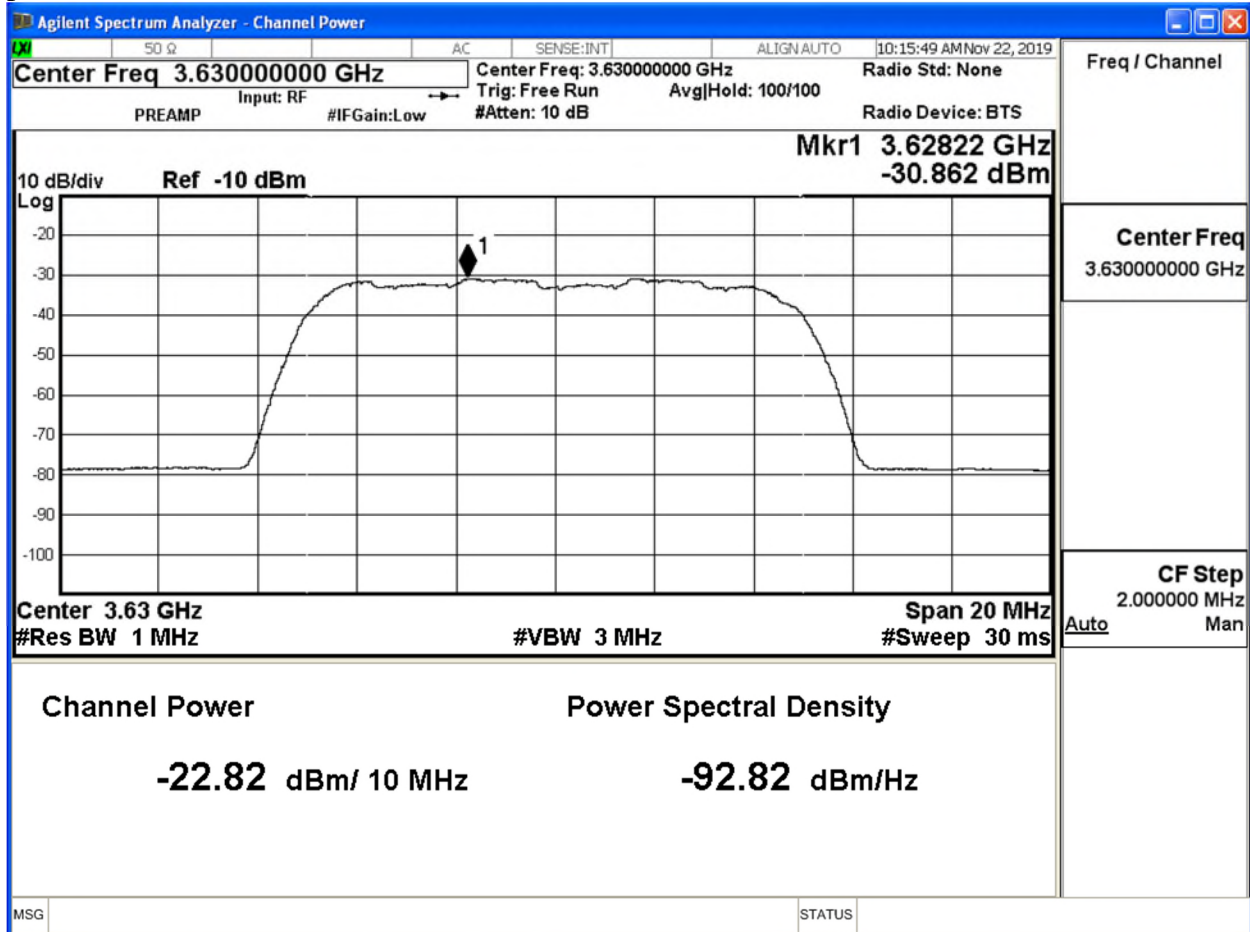
Client	Ericsson	 Canada
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

psd mid ch 20dbm



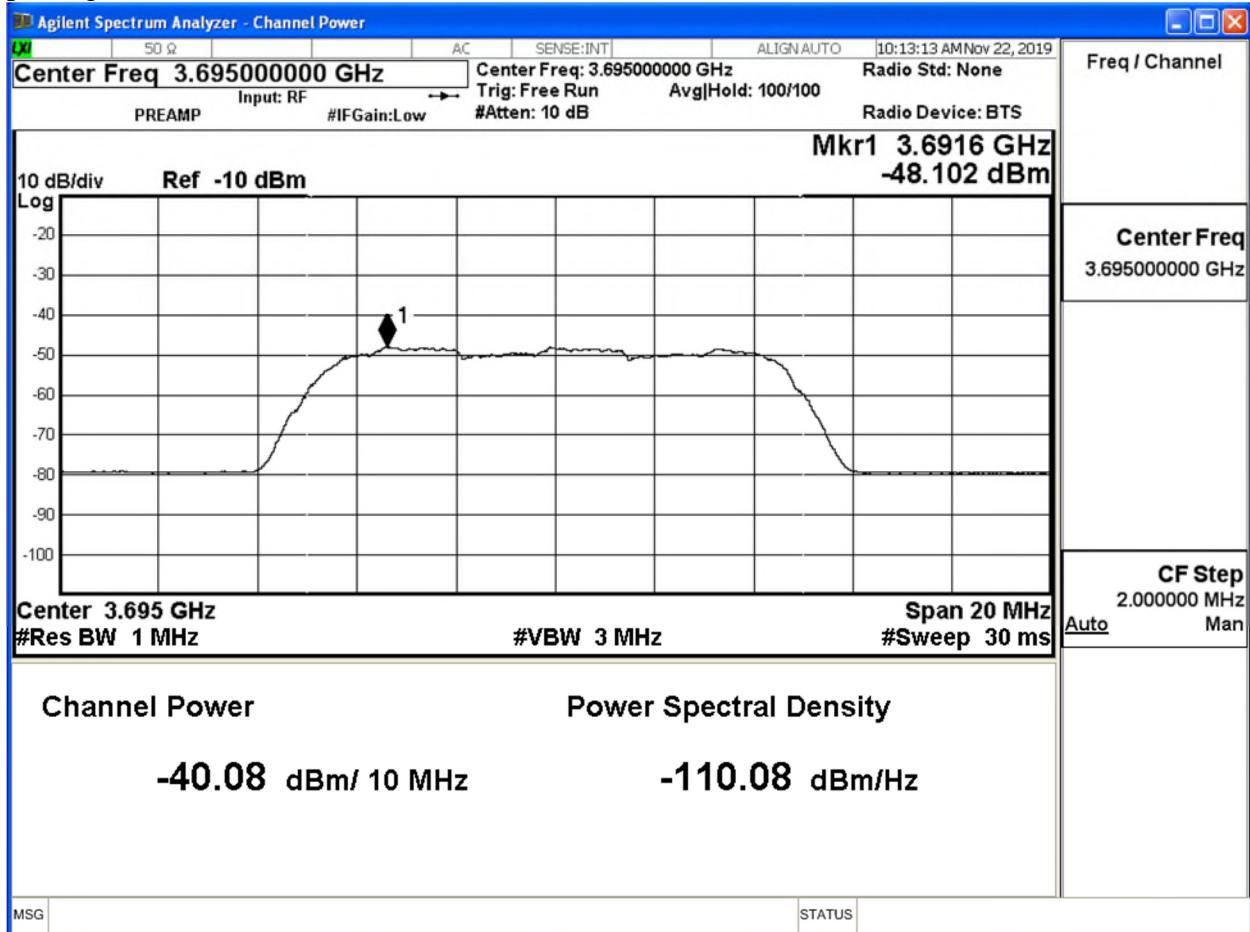
Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

psd mid ch 37dbm



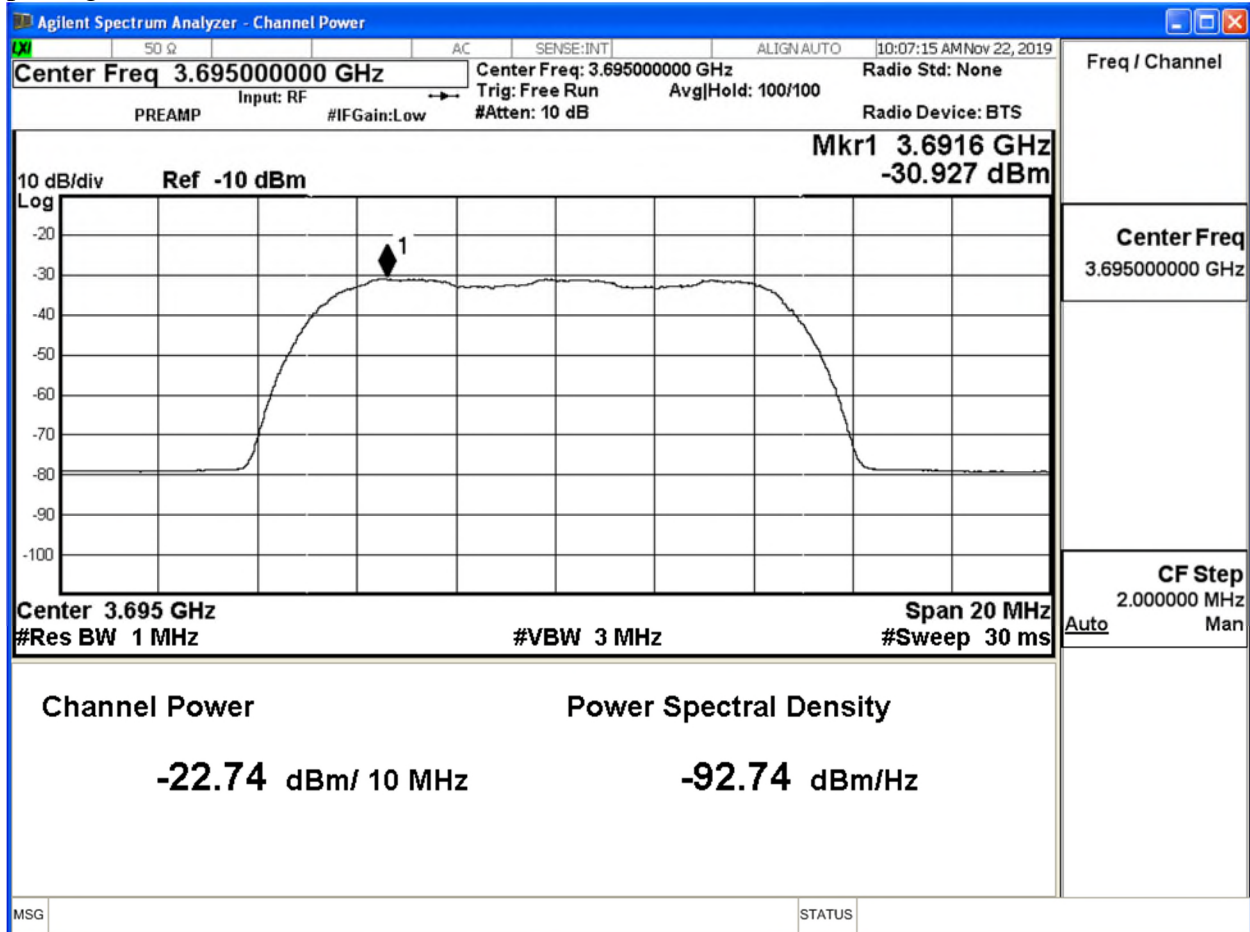
Client	Ericsson	 Canada
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

psd high ch 20dbm



Client	Ericsson	 Canada
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

psd high ch 37dbm



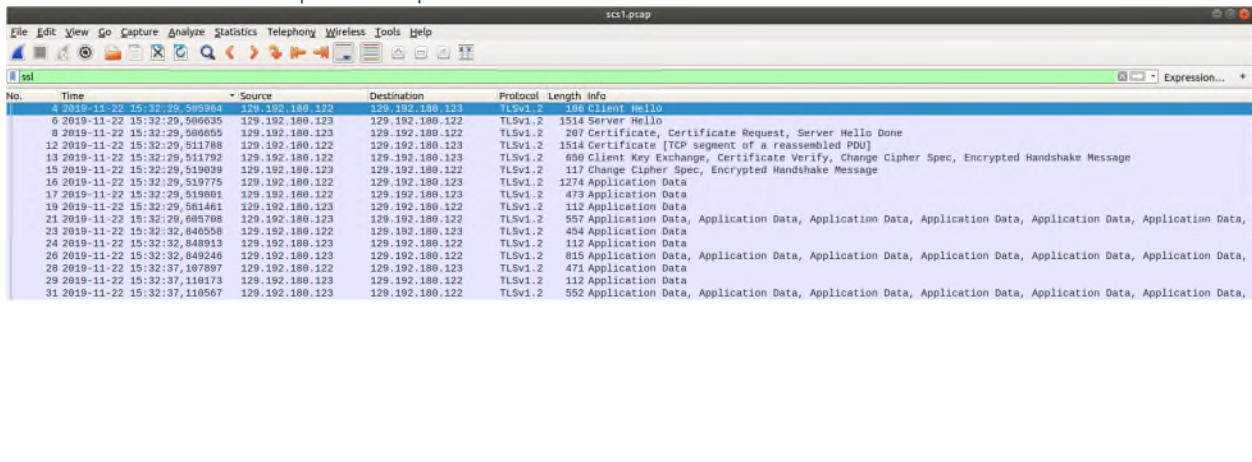
Client	Ericsson	 Canada
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

DOT CBRS Radio: WINNF / Security Test Case Analysis

WINNF Security Test Case Analysis

WINNF.FT.C.SCS.1


Packet Capture Sequence



No.	Time	Source	Destination	Protocol	Length	Info
4	2019-11-22 15:32:29,509964	129.192.180.122	129.192.180.123	TLSv1.2	100	Client Hello
6	2019-11-22 15:32:29,506635	129.192.180.123	129.192.180.122	TLSv1.2	1514	Server Hello
8	2019-11-22 15:32:29,509655	129.192.180.123	129.192.180.122	TLSv1.2	207	Certificate, Certificate Request, Server Hello Done
12	2019-11-22 15:32:29,511788	129.192.180.122	129.192.180.123	TLSv1.2	1514	Certificate [TCP segment of a reassembled PDU]
13	2019-11-22 15:32:29,511792	129.192.180.122	129.192.180.123	TLSv1.2	650	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encrypted Handshake Message
15	2019-11-22 15:32:29,519039	129.192.180.123	129.192.180.122	TLSv1.2	117	Change Cipher Spec, Encrypted Handshake Message
16	2019-11-22 15:32:29,519775	129.192.180.122	129.192.180.123	TLSv1.2	1274	Application Data
17	2019-11-22 15:32:29,519081	129.192.180.122	129.192.180.123	TLSv1.2	473	Application Data
19	2019-11-22 15:32:29,561461	129.192.180.123	129.192.180.122	TLSv1.2	112	Application Data
21	2019-11-22 15:32:29,605708	129.192.180.123	129.192.180.122	TLSv1.2	557	Application Data, Application Data, Application Data, Application Data, Application Data, Application Data
23	2019-11-22 15:32:32,840558	129.192.180.122	129.192.180.123	TLSv1.2	494	Application Data
24	2019-11-22 15:32:32,840913	129.192.180.123	129.192.180.122	TLSv1.2	112	Application Data
26	2019-11-22 15:32:32,849246	129.192.180.123	129.192.180.122	TLSv1.2	815	Application Data, Application Data, Application Data, Application Data, Application Data, Application Data
28	2019-11-22 15:32:37,107897	129.192.180.122	129.192.180.123	TLSv1.2	471	Application Data
29	2019-11-22 15:32:37,110173	129.192.180.123	129.192.180.122	TLSv1.2	112	Application Data
31	2019-11-22 15:32:37,110567	129.192.180.123	129.192.180.122	TLSv1.2	552	Application Data, Application Data, Application Data, Application Data, Application Data, Application Data

WINNF test requirements:

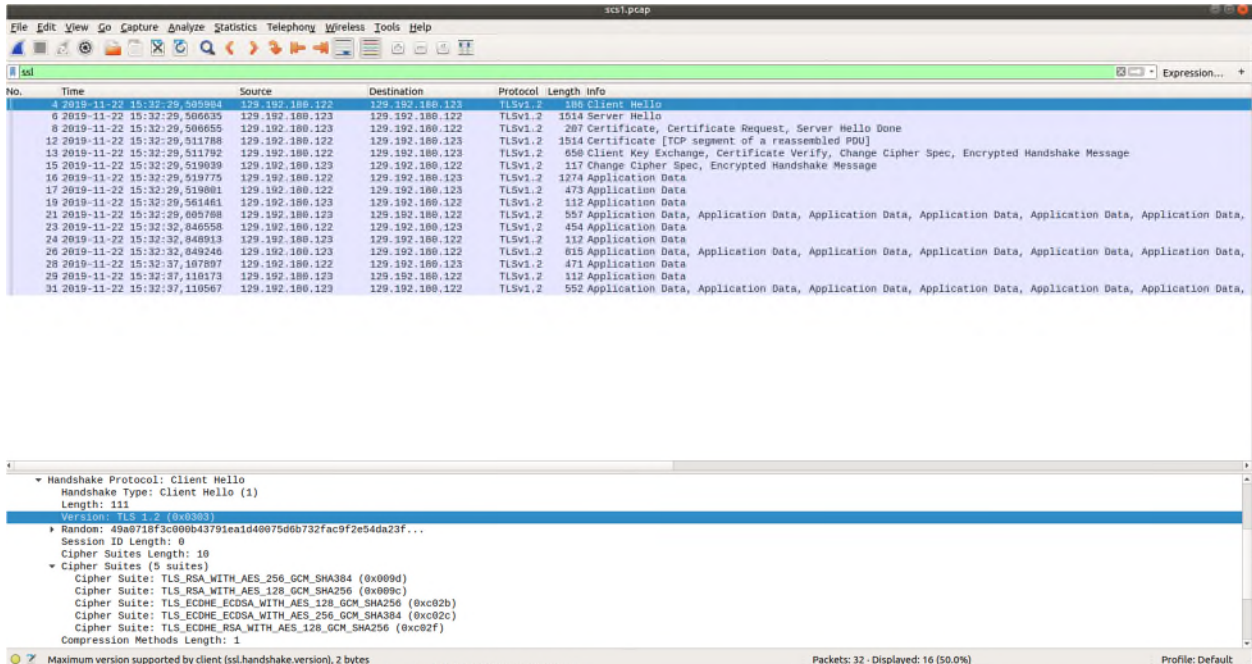
WINNF test requirements from WINNF-TS-0122-V1.0.0 CBRS CBSD Test Specification:

Client	Ericsson	 Canada
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

2	<ul style="list-style-type: none"> • 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, <ul style="list-style-type: none"> • 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 	PASS	F.
---	--	------	----

Analysis of WINNF Test Requirements

1. From Client Hello: TLS version = TLS 1.2

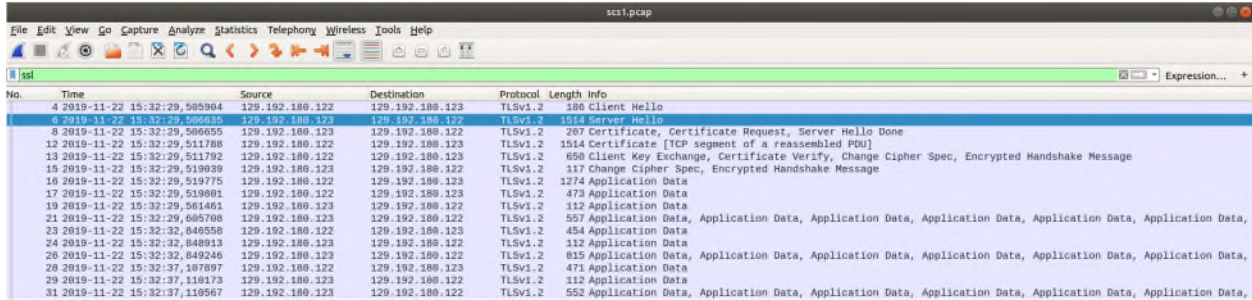


The screenshot shows a Wireshark capture of a TLS Client Hello message. The packet list pane shows a Client Hello packet (No. 4) from 129.192.180.123 to 129.192.180.123. The packet details pane shows the Client Hello structure, including the TLS version field set to 0x0003 (TLS 1.2). The supported cipher suites list includes TLS_RSA_WITH_AES_256_GCM_SHA384, TLS_RSA_WITH_AES_128_GCM_SHA256, TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256, and TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384.

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

2. Cipher suite list from Client Hello is from WINNF approved list:

TLS_RSA_WITH_AES_128_GCM_SHA256
 TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256
 TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256



No.	Time	Source	Destination	Protocol	Length	Info
4	2019-11-22 15:32:29.509904	129.192.188.122	129.192.188.123	TLSv1.2	186	Client Hello
6	2019-11-22 15:32:29.509925	129.192.188.123	129.192.188.122	TLSv1.2	1514	Server Hello
8	2019-11-22 15:32:29.509955	129.192.188.123	129.192.188.122	TLSv1.2	207	Certificate, Certificate Request, Server Hello Done
12	2019-11-22 15:32:29.511788	129.192.188.122	129.192.188.123	TLSv1.2	1514	Certificate [TCP segment of a reassembled PDU]
13	2019-11-22 15:32:29.511792	129.192.188.122	129.192.188.123	TLSv1.2	650	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encrypted Handshake Message
15	2019-11-22 15:32:29.519039	129.192.188.123	129.192.188.122	TLSv1.2	117	Change Cipher Spec, Encrypted Handshake Message
16	2019-11-22 15:32:29.519775	129.192.188.122	129.192.188.123	TLSv1.2	1274	Application Data
17	2019-11-22 15:32:29.520001	129.192.188.122	129.192.188.123	TLSv1.2	473	Application Data
19	2019-11-22 15:32:29.561461	129.192.188.123	129.192.188.122	TLSv1.2	112	Application Data
21	2019-11-22 15:32:29.605708	129.192.188.123	129.192.188.122	TLSv1.2	557	Application Data, Application Data, Application Data, Application Data, Application Data, Application Data
23	2019-11-22 15:32:32.040558	129.192.188.122	129.192.188.123	TLSv1.2	454	Application Data
24	2019-11-22 15:32:32.040913	129.192.188.122	129.192.188.123	TLSv1.2	112	Application Data
26	2019-11-22 15:32:32.049246	129.192.188.123	129.192.188.122	TLSv1.2	815	Application Data, Application Data, Application Data, Application Data, Application Data, Application Data
28	2019-11-22 15:32:37.107897	129.192.188.122	129.192.188.123	TLSv1.2	471	Application Data
29	2019-11-22 15:32:37.110173	129.192.188.123	129.192.188.122	TLSv1.2	112	Application Data
31	2019-11-22 15:32:37.110567	129.192.188.123	129.192.188.122	TLSv1.2	552	Application Data, Application Data, Application Data, Application Data, Application Data, Application Data



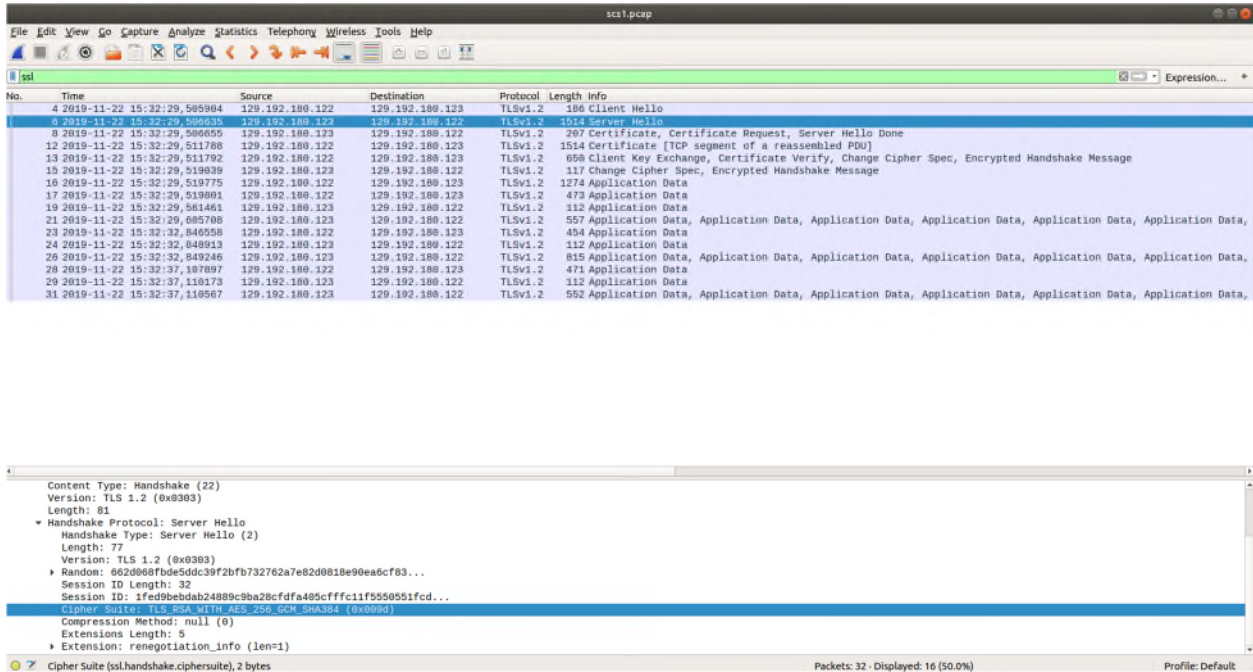
Content Type: Handshake (22)
 Version: TLS 1.2 (0x0303)
 Length: 81

- Handshake Protocol: Server Hello
 - Handshake Type: Server Hello (2)
 - Length: 77
 - Version: TLS 1.2 (0x0303)
 - Random: 662d068fbde5ddc39f2bf732762a7e82d0818e90ea6cf83...
 - Session ID Length: 32
 - Session ID: ifed9bebdab24889c9ba28cfdfa405cfff11f550551fcd...
 - Cipher Suite: TLS_RSA_WITH_AES_128_GCM_SHA256 (0x009d)
 - Compression Method: null (0)
 - Extensions Length: 5
 - Extension: renegotiation_info (len=1)

Cipher Suite (ssl.handshake.ciphersuite), 2 bytes

3. Cipher suite chosen (from Server Hello):
 TLS_RSA_WITH_AES_128_GCM_SHA256

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	



The screenshot shows a Wireshark capture of network traffic. The main pane displays a list of packets, with packet 6 selected. The packet list shows the following details:

No.	Time	Source	Destination	Protocol	Length	Info
4	2019-11-22 15:32:29.585904	129.192.188.122	129.192.188.123	TLSv1.2	186	Client Hello
6	2019-11-22 15:32:29.589635	129.192.188.122	129.192.188.122	TLSv1.2	1514	Server Hello
8	2019-11-22 15:32:29.590655	129.192.188.123	129.192.188.122	TLSv1.2	267	Certificate, Certificate Request, Server Hello Done
12	2019-11-22 15:32:29.511788	129.192.188.122	129.192.188.123	TLSv1.2	1514	Certificate [TCP segment of a reassembled PDU]
13	2019-11-22 15:32:29.511792	129.192.188.122	129.192.188.123	TLSv1.2	656	Client Key Exchange, Certificate Verify, Change Cipher Spec, Encrypted Handshake Message
15	2019-11-22 15:32:29.519339	129.192.188.123	129.192.188.122	TLSv1.2	117	Change Cipher Spec, Encrypted Handshake Message
16	2019-11-22 15:32:29.519775	129.192.188.122	129.192.188.123	TLSv1.2	1274	Application Data
17	2019-11-22 15:32:29.519801	129.192.188.122	129.192.188.123	TLSv1.2	473	Application Data
19	2019-11-22 15:32:29.561461	129.192.188.123	129.192.188.122	TLSv1.2	112	Application Data
21	2019-11-22 15:32:29.685708	129.192.188.123	129.192.188.122	TLSv1.2	557	Application Data, Application Data, Application Data, Application Data, Application Data,
23	2019-11-22 15:32:32.840558	129.192.188.122	129.192.188.123	TLSv1.2	454	Application Data
24	2019-11-22 15:32:32.848913	129.192.188.123	129.192.188.122	TLSv1.2	112	Application Data
26	2019-11-22 15:32:32.849246	129.192.188.123	129.192.188.122	TLSv1.2	815	Application Data, Application Data, Application Data, Application Data, Application Data, Application Data,
28	2019-11-22 15:32:37.187897	129.192.188.122	129.192.188.123	TLSv1.2	473	Application Data
29	2019-11-22 15:32:37.118173	129.192.188.123	129.192.188.122	TLSv1.2	112	Application Data
31	2019-11-22 15:32:37.118567	129.192.188.123	129.192.188.122	TLSv1.2	552	Application Data, Application Data, Application Data, Application Data, Application Data, Application Data,

The details pane for packet 6 shows the following structure:

- Content Type: Handshake (22)
- Version: TLS 1.2 (0x0303)
- Length: 81
- Handshake Protocol: Server Hello
 - Handshake Type: Server Hello (2)
 - Length: 77
 - Version: TLS 1.2 (0x0303)
 - Random: 662d068fbd5dc39f2fb732762a7e82d0818e90ea6c783...
 - Session ID Length: 32
 - Session ID: 1fed9bebdab24889c9ba28cfdaf405cfff11f5550551fcd...
 - Cipher Suite: TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)
 - Compression Method: null (0)
 - Extensions Length: 5
 - Extension: renegotiation_info (len=1)

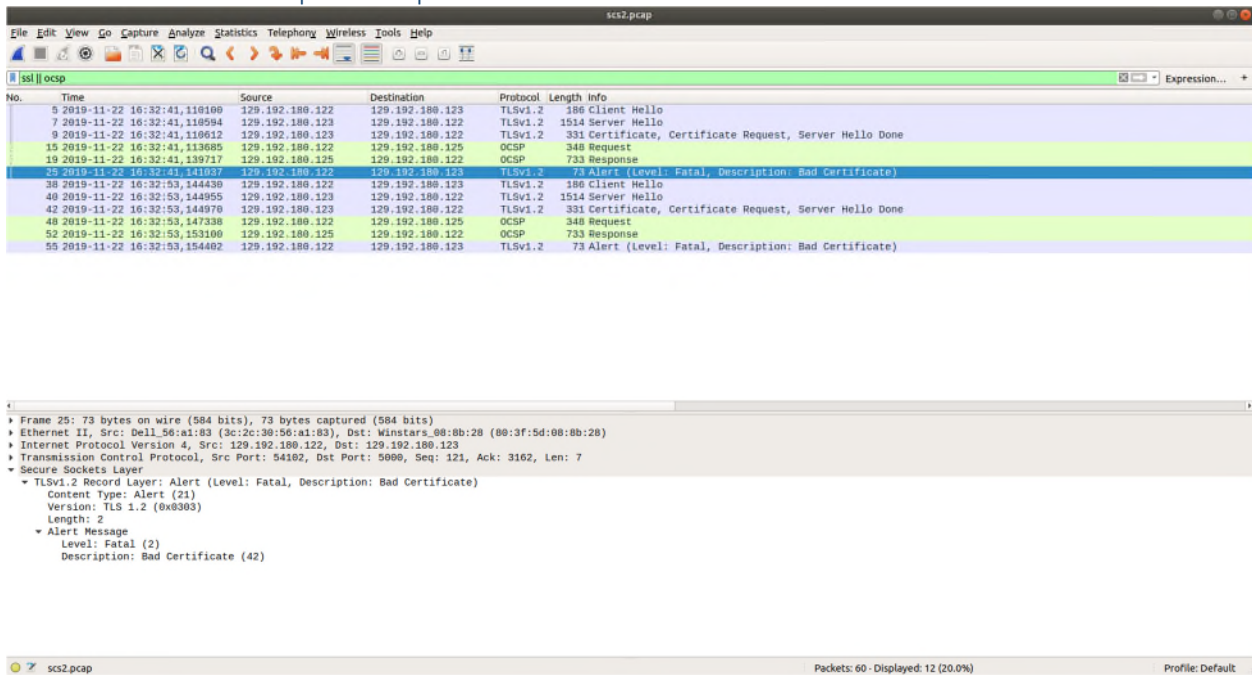
At the bottom of the details pane, it shows: Cipher Suite (ssl.handshake.ciphersuite), 2 bytes. Packets: 32 · Displayed: 16 (50.0%) Profile: Default

4. The Registration request message arrived at the Test Harness, so authentication was completed.

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

WINNF.FT.C.SCS.2

Packet Capture Sequence



WINNF Test Requirements:

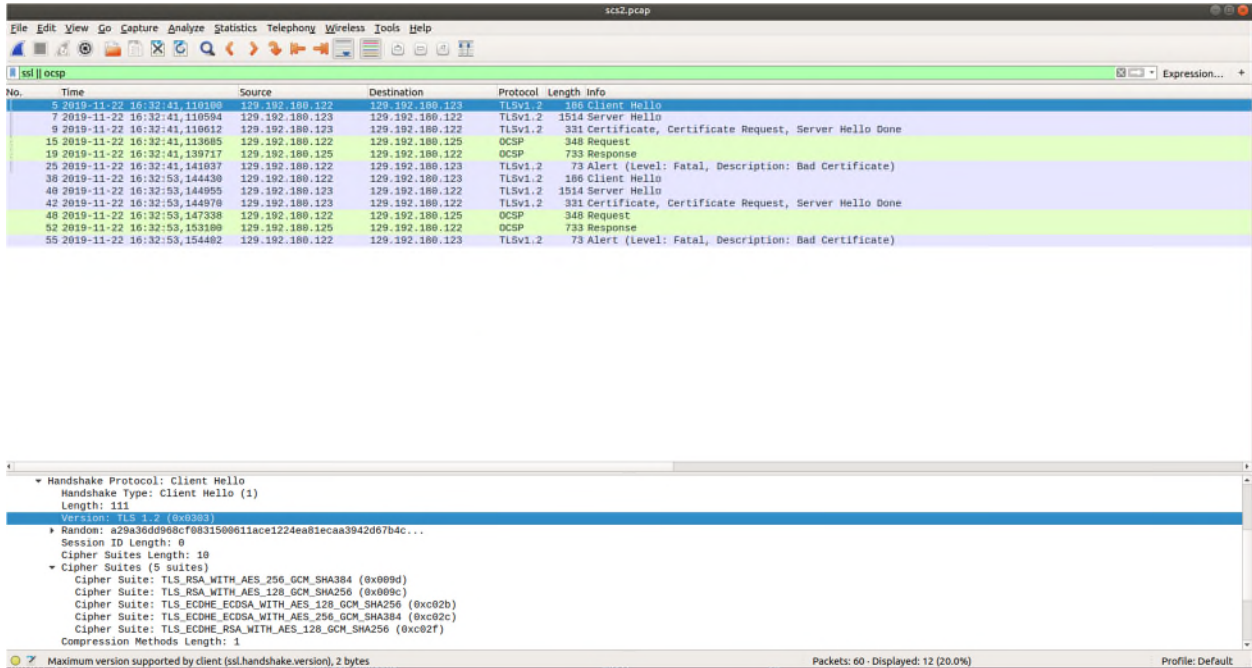
WINNF test requirements from WINNF-TS-0122-V1.0.0 CBRS CBSD Test Specification:

2	<ul style="list-style-type: none"> • 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. 	PASS
---	--	------

Analysis of WINNF Test Requirements

1. From Client Hello can read: TLS version = TLS 1.2

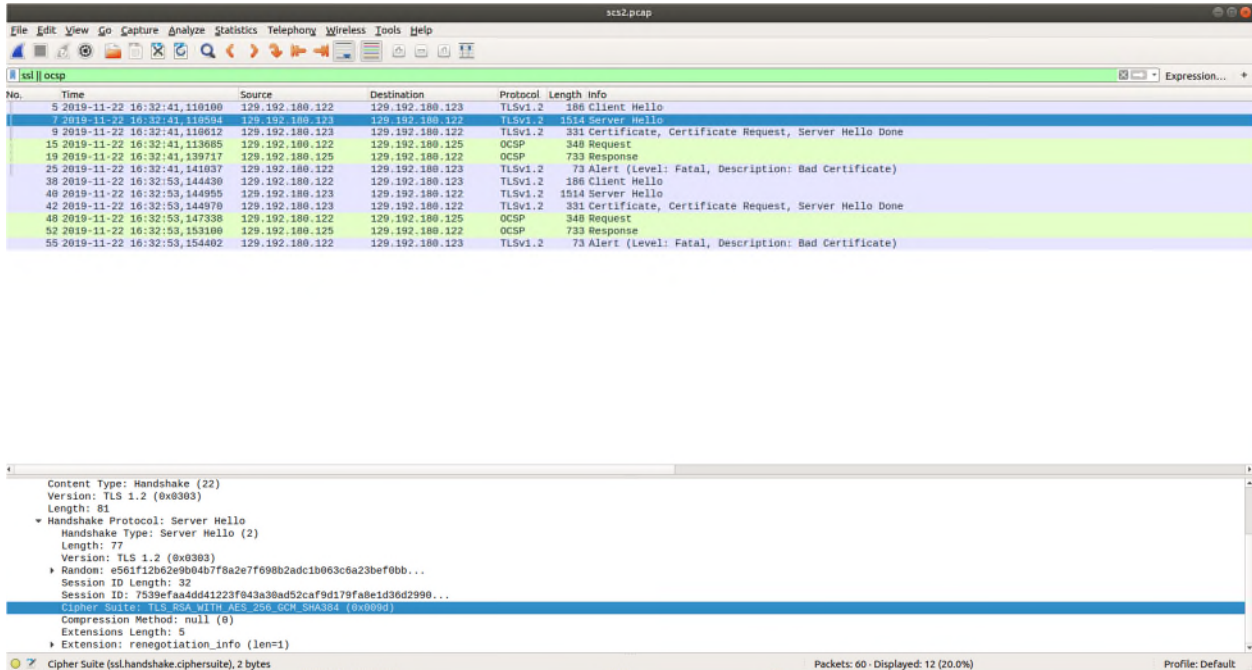
Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	



2. From Client Hello, cipher suite list is from WINNF approved list:

TLS_RSA_WITH_AES_128_GCM_SHA256
 TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256
 TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	

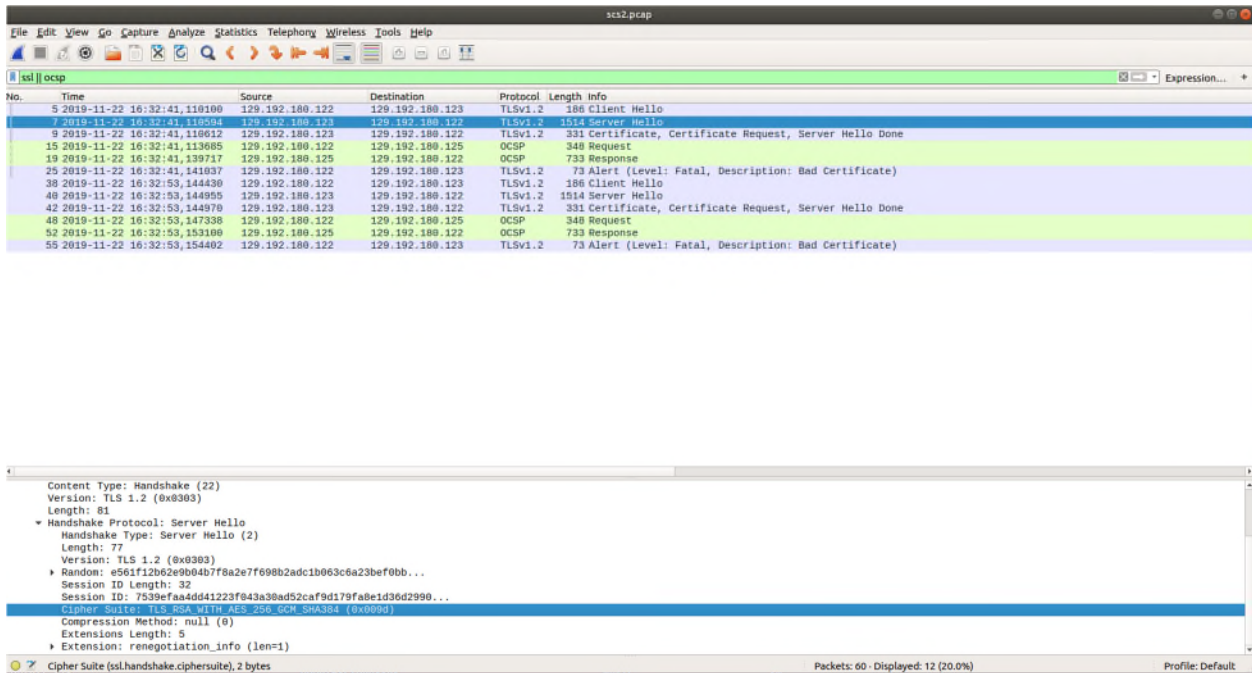


The image shows a Wireshark capture of a TLS handshake. The packet list pane shows several packets, with packet 7 (186 Client Hello) and packet 8 (331 Certificate, Certificate Request, Server Hello Done) highlighted. The packet details pane for packet 8 shows the following structure:

- Content Type: Handshake (22)
- Version: TLS 1.2 (0x0303)
- Length: 81
- Handshake Protocol: Server Hello
- Handshake Type: Server Hello (2)
- Length: 77
- Version: TLS 1.2 (0x0303)
- Random: e561f12b62e9b04b7f8a2e7f698b2adc1b063c6a23bef0bb...
- Session ID Length: 32
- Session ID: 7539faa4dd41223f643a3ad52caf9d179fa8e1d36d2990...
- Cipher Suite: TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)
- Compression Method: null (0)
- Extensions Length: 5
- Extension: renegotiation_info (len=1)

The status bar at the bottom indicates: Cipher Suite (ssl.handshake.ciphersuite), 2 bytes. Packets: 60 - Displayed: 12 (20.0%). Profile: Default.

3. From Server Hello, cipher suite chosen:
 TLS_RSA_WITH_AES_128_GCM_SHA256




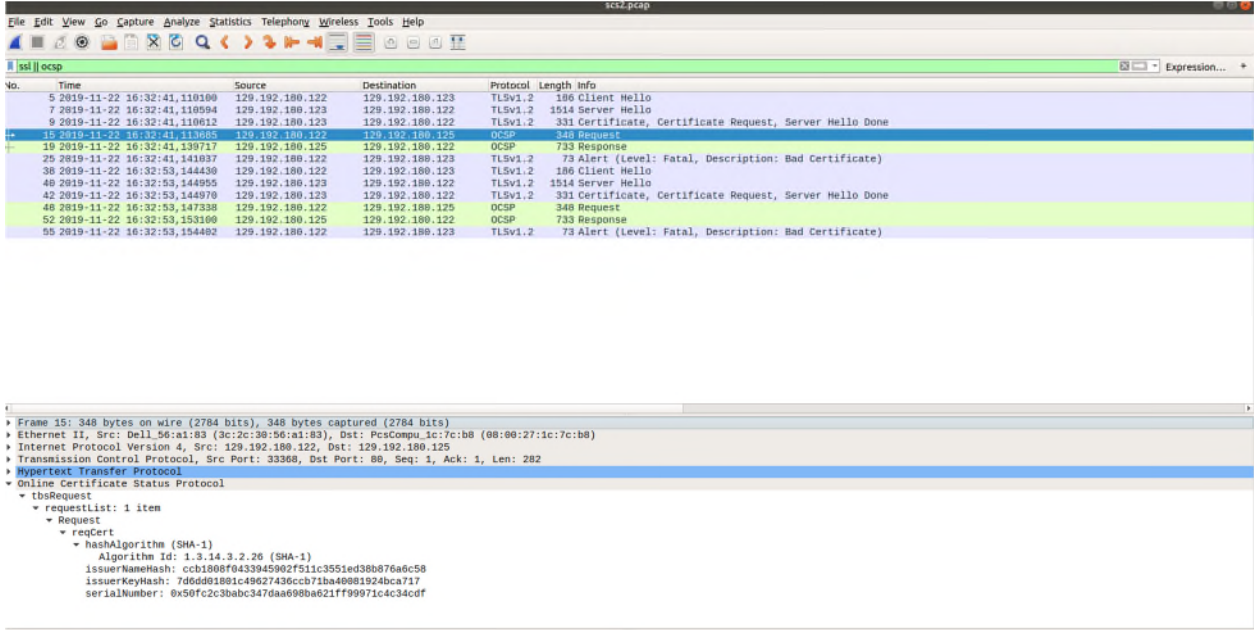
The image shows a Wireshark capture of a TLS handshake, similar to the previous one. The packet list pane shows several packets, with packet 8 (331 Certificate, Certificate Request, Server Hello Done) highlighted. The packet details pane for packet 8 shows the following structure:

- Content Type: Handshake (22)
- Version: TLS 1.2 (0x0303)
- Length: 81
- Handshake Protocol: Server Hello
- Handshake Type: Server Hello (2)
- Length: 77
- Version: TLS 1.2 (0x0303)
- Random: e561f12b62e9b04b7f8a2e7f698b2adc1b063c6a23bef0bb...
- Session ID Length: 32
- Session ID: 7539faa4dd41223f643a3ad52caf9d179fa8e1d36d2990...
- Cipher Suite: TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)
- Compression Method: null (0)
- Extensions Length: 5
- Extension: renegotiation_info (len=1)

The status bar at the bottom indicates: Cipher Suite (ssl.handshake.ciphersuite), 2 bytes. Packets: 60 - Displayed: 12 (20.0%). Profile: Default.

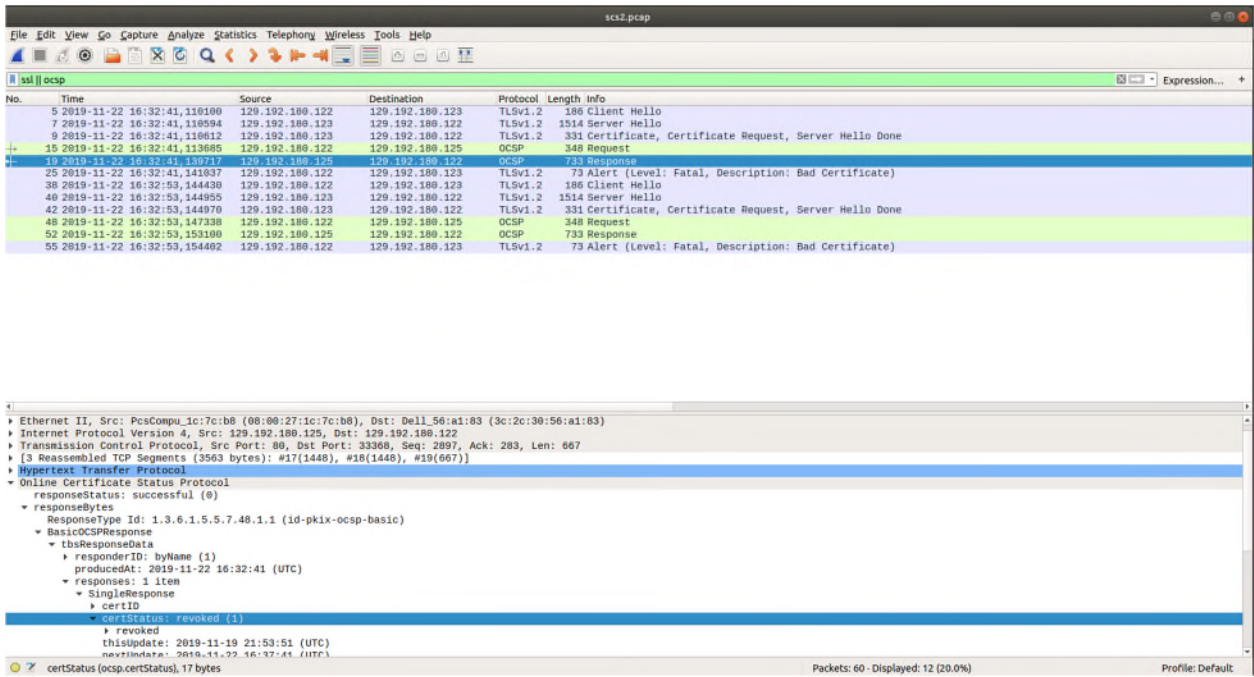
4. Read OSCP Request/Response to/from server:

Client	Ericsson	
Product	LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz)	
Standard(s)	FCC Part 96 SAS requirements (CBRS Test Plan)	



Frame 15: 348 bytes on wire (2784 bits), 348 bytes captured (2784 bits)

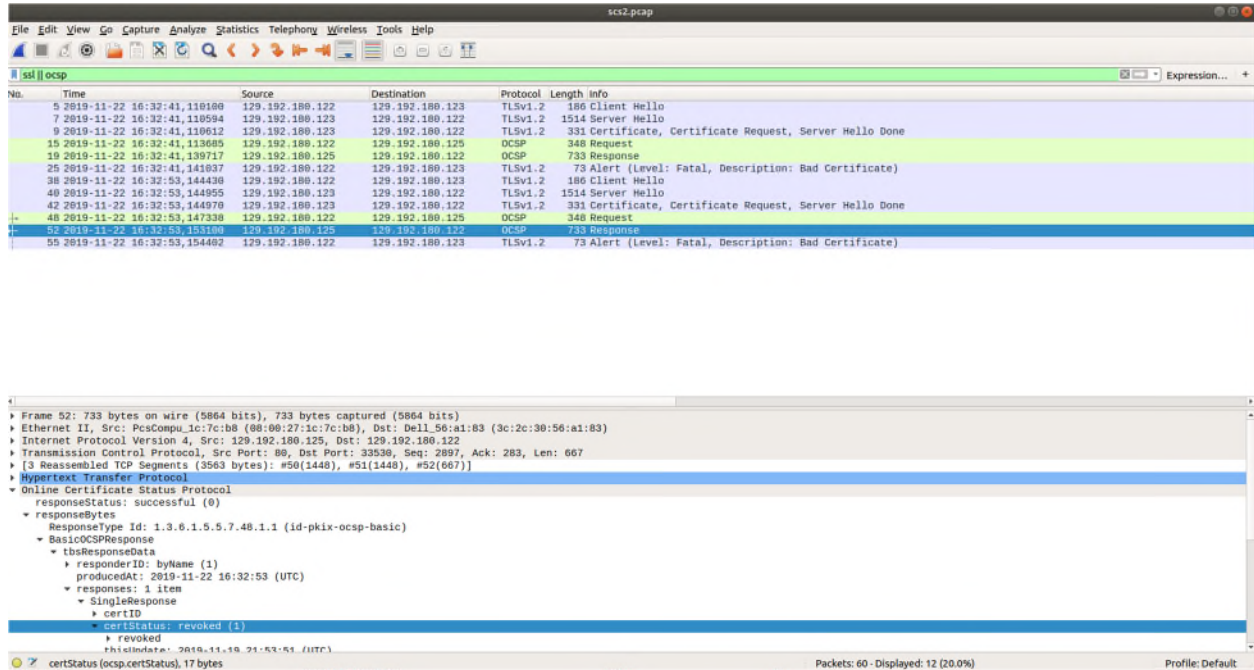
- Ethernet II, Src: Dell_56:a1:83 (3c:2c:30:56:a1:83), Dst: PcsCompu_1c:7c:b8 (08:00:27:1c:7c:b8)
- Internet Protocol Version 4, Src: 129.192.180.125, Dst: 129.192.180.125
- Transmission Control Protocol, Src Port: 33368, Dst Port: 80, Seq: 1, Ack: 1, Len: 282
- Hypertext Transfer Protocol
- Online Certificate Status Protocol
 - requestList: 1 item
 - request
 - reqCert
 - hashAlgorithm (SHA-1)
 - Algorithm Id: 1.3.14.3.2.26 (SHA-1)
 - issuerNameHash: ccbl808f0433945902f51c3551ed38b876a6c58
 - issuerKeyHash: 7d6d8d1891c49627436cc771aa408d1924bc217
 - serialNumber: 0x50f2c3babc347daa698ba621ff99971c4c34cdf



Ethernet II, Src: PcsCompu_1c:7c:b8 (08:00:27:1c:7c:b8), Dst: Dell_56:a1:83 (3c:2c:30:56:a1:83)

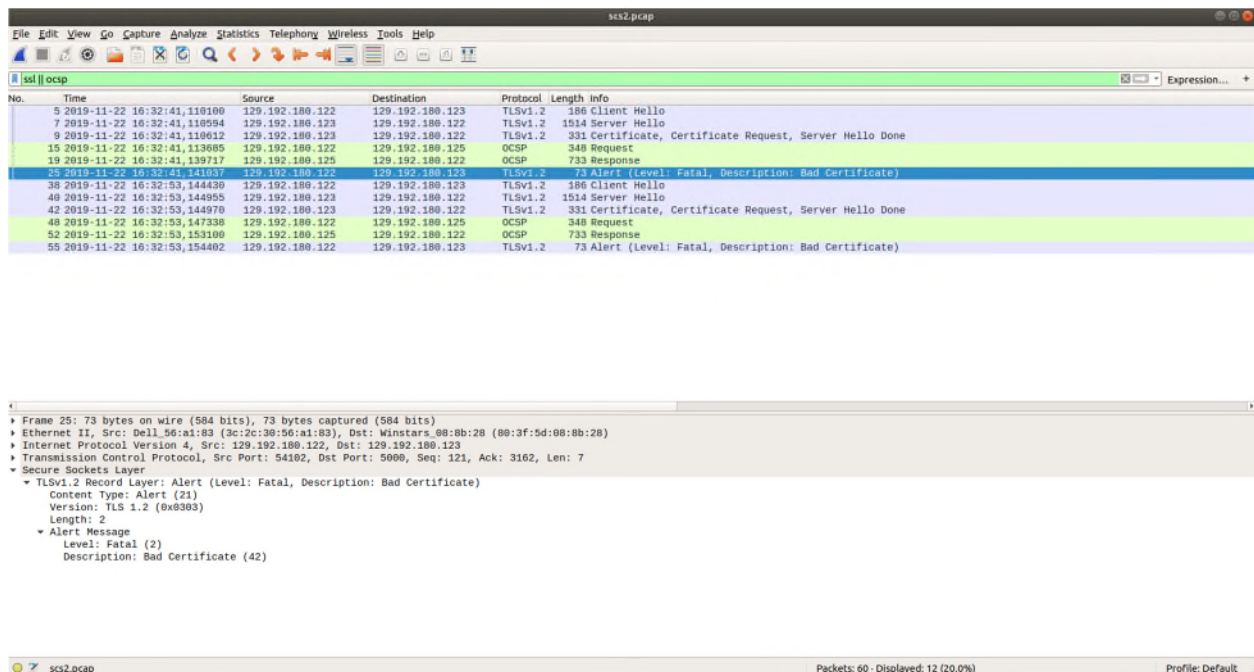
- Internet Protocol Version 4, Src: 129.192.180.125, Dst: 129.192.180.122
- Transmission Control Protocol, Src Port: 80, Dst Port: 33368, Seq: 2897, Ack: 283, Len: 667
- (3 Reassembled TCP Segments (3563 bytes): #17(1448), #18(1448), #19(567))
- Hypertext Transfer Protocol
- Online Certificate Status Protocol
 - responseStatus: successful (0)
 - responseBytes
 - ResponseType Id: 1.3.6.1.5.5.7.48.1.1 (id-pkix-ocsp-basic)
 - BasicOCSPResponse
 - responseData
 - responderID: byName (1)
 - producedAt: 2019-11-22 16:32:41 (UTC)
 - responses: 1 item
 - SingleResponse
 - certID
 - revoked
 - revoked
 - thisUpdate: 2019-11-19 21:53:41 (UTC)
 - nextUpdate: 2019-11-22 16:37:41 (UTC)

| | | |
|-------------|---|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |



The screenshot shows a Wireshark capture of an OCSP response. The packet list pane shows a TLSv1.2 alert message (73 bytes) with a fatal description: 'Bad Certificate'. The packet details pane shows the OCSP response structure, including the response type ID (1.3.6.1.5.5.7.48.1.1) and the certificate status (revoked). The response data includes the responder ID (byName), the produced at time (2019-11-22 16:32:53 UTC), and the certificate ID (certID).

5. Authentication exchange ends with TLS Alert message (i.e. authentication fails):



The screenshot shows a Wireshark capture of a TLS alert message. The packet list pane shows a TLSv1.2 alert message (73 bytes) with a fatal description: 'Bad Certificate'. The packet details pane shows the alert message structure, including the content type (Alert), version (TLS 1.2), length (2), and the alert message itself (Level: Fatal, Description: Bad Certificate).

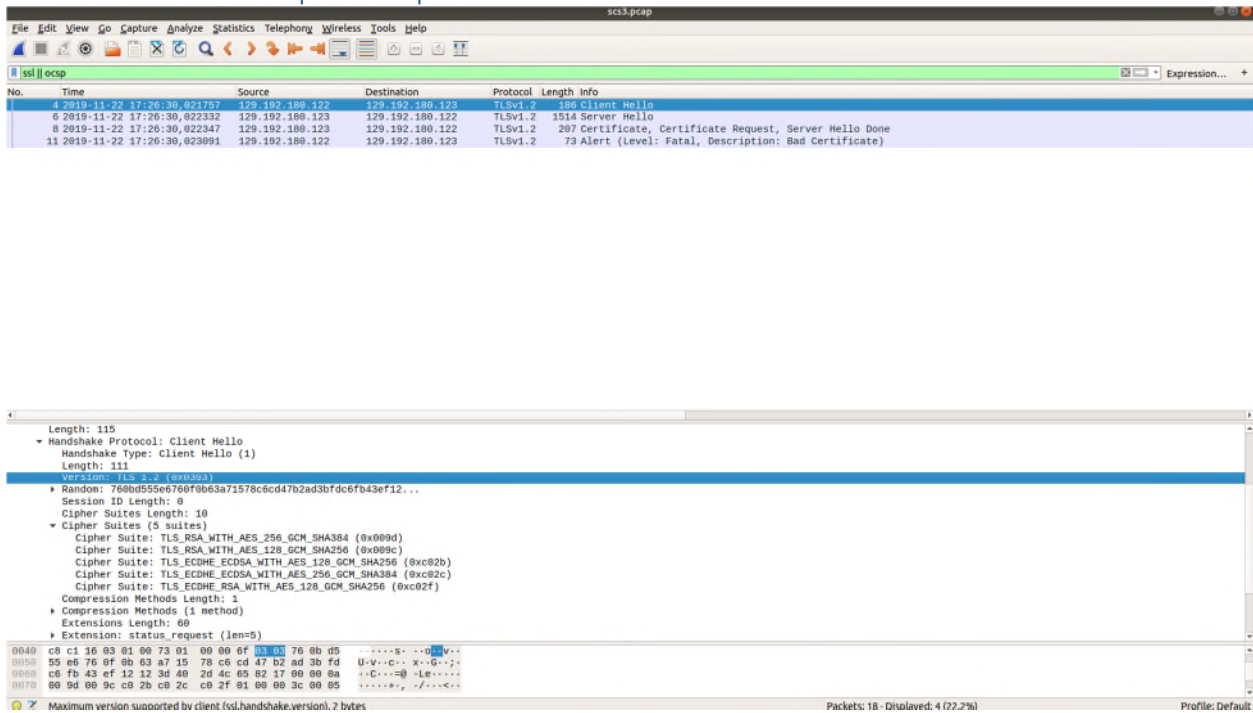
| | | |
|-------------|--|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |

6. Registration request message is not received at Test Harness (authentication fails)

| | | |
|-------------|---|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |

WINNF.FT.C.SCS.3

Packet Capture Sequence



WINNF Test Requirements:

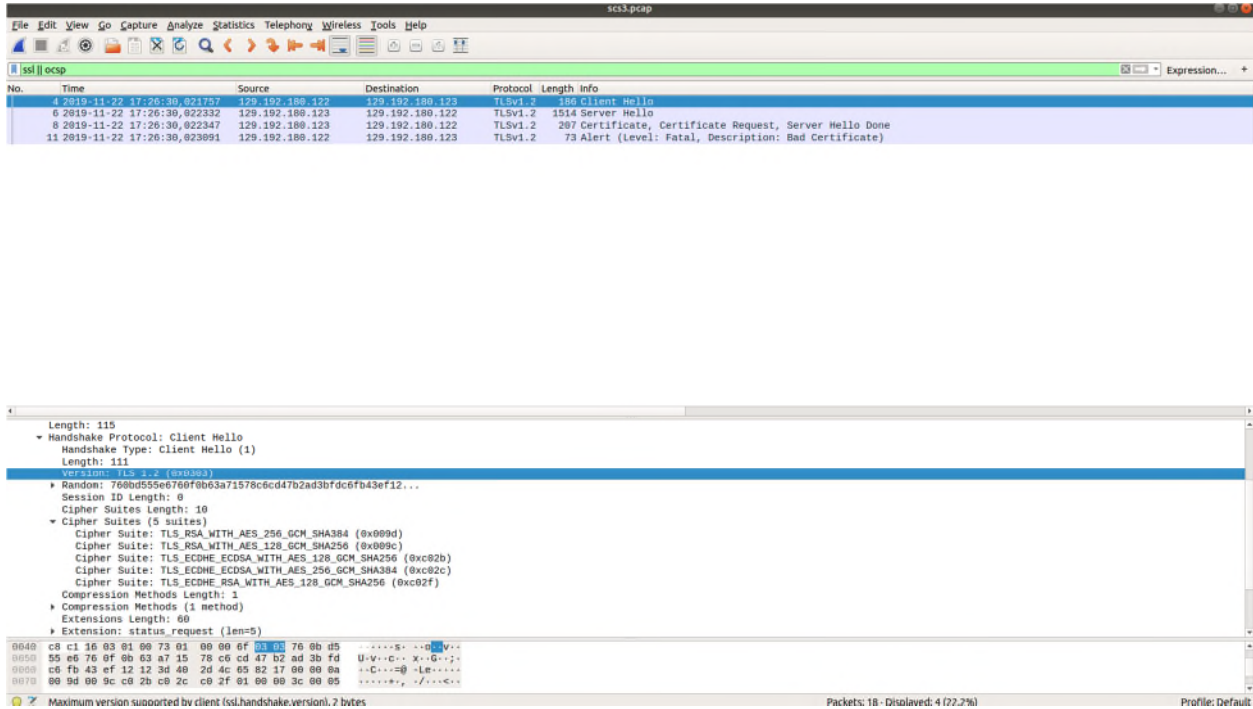
WINNF test requirements from WINNF-TS-0122-V1.0.0 CBRS CBSD Test Specification:

| | | |
|---|--|------|
| 2 | <ul style="list-style-type: none"> • 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. | PASS |
|---|--|------|

Analysis of WINNF Test Requirements

1. From Client Hello can read: TLS version = TLS 1.2

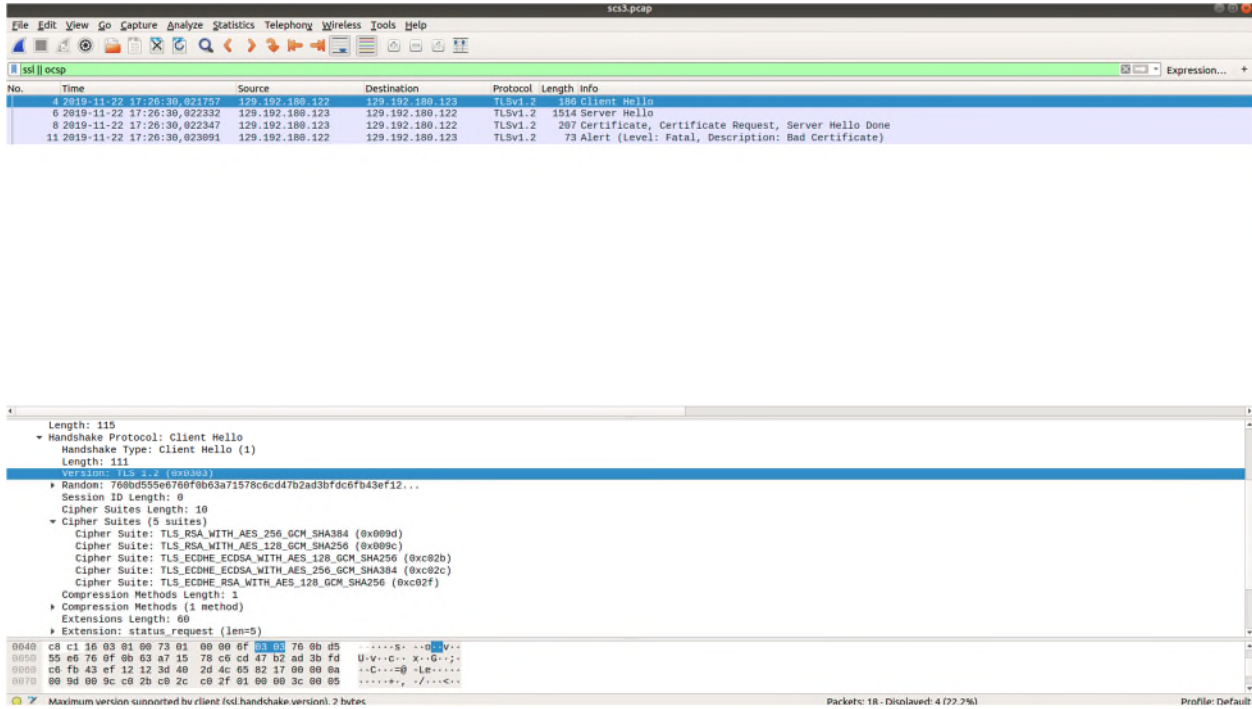
| | | |
|-------------|---|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |



2. From Client Hello, cipher suite list is from WINNF approved list:

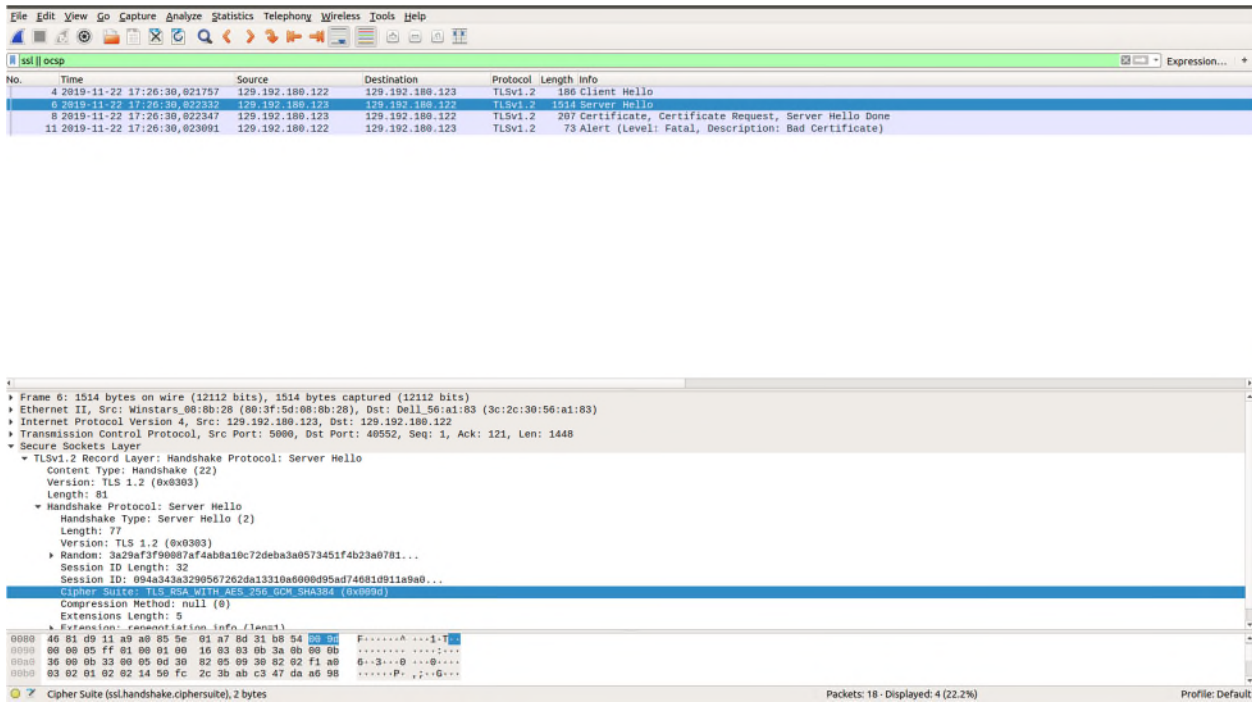
TLS_RSA_WITH_AES_128_GCM_SHA256
 TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256
 TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256

| | | |
|-------------|---|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |



Wireshark capture showing a Client Hello packet (No. 4) from source 129.192.180.122 to destination 129.192.180.123. The packet is a TLSv1.2 Client Hello with a length of 186 bytes. The handshake protocol details show the client's proposed cipher suites, including TLS_RSA_WITH_AES_128_GCM_SHA256, which is the chosen suite.

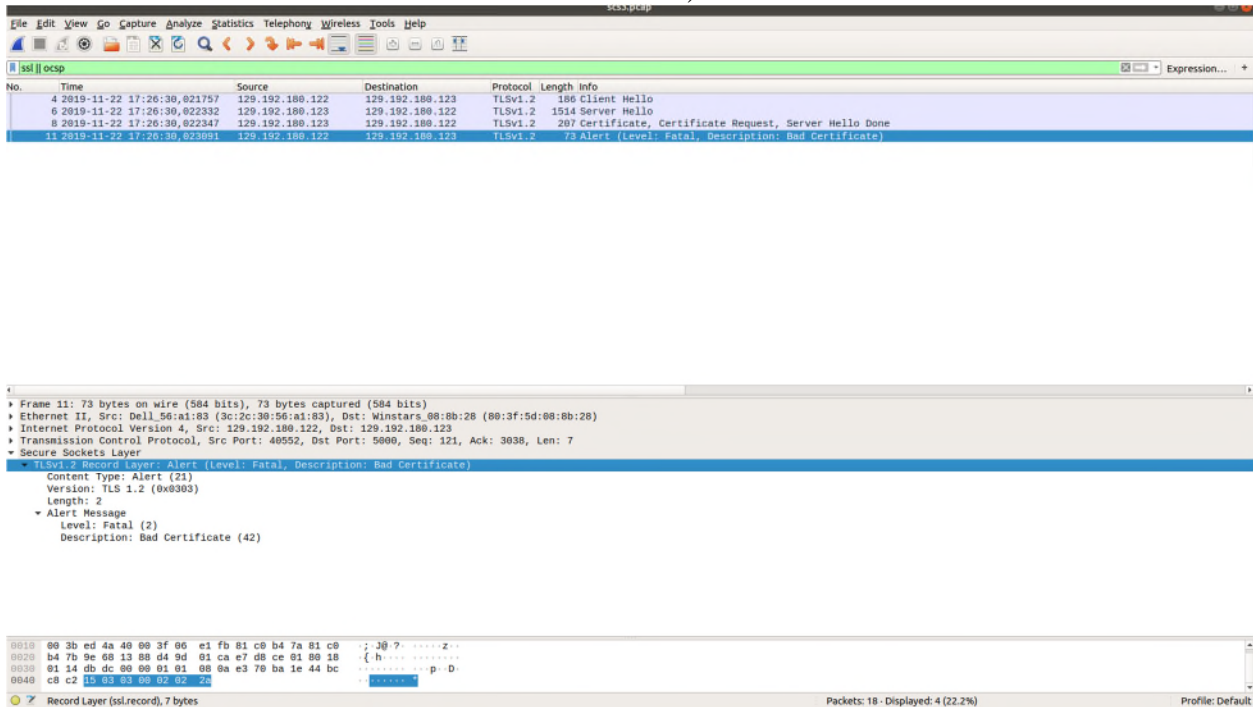
3. From Server Hello, cipher suite chosen:
 TLS_RSA_WITH_AES_128_GCM_SHA256



Wireshark capture showing a Server Hello packet (No. 6) from source 129.192.180.122 to destination 129.192.180.123. The packet is a TLSv1.2 Server Hello with a length of 154 bytes. The handshake protocol details show the server's response, including the chosen cipher suite: TLS_RSA_WITH_AES_128_GCM_SHA256.

| | | |
|-------------|--|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |

4. Authentication exchange ends with TLS Alert message (i.e. authentication fails):



5. Registration request message is not received at Test Harness (authentication fails)

| | | |
|-------------|---|---|
| Client | Ericsson | 
Canada |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |

| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|----------------------------|-----------------|-----------------|----------|--------|---|
| 4 | 2019-11-22 17:26:30,021757 | 129.192.180.122 | 129.192.180.123 | TLSv1.2 | 186 | Client Hello |
| 6 | 2019-11-22 17:26:30,022332 | 129.192.180.123 | 129.192.180.122 | TLSv1.2 | 1514 | Server Hello |
| 8 | 2019-11-22 17:26:30,022347 | 129.192.180.123 | 129.192.180.122 | TLSv1.2 | 207 | Certificate, Certificate Request, Server Hello Done |
| 11 | 2019-11-22 17:26:30,023091 | 129.192.180.122 | 129.192.180.123 | TLSv1.2 | 73 | Alert (Level: Fatal, Description: Bad Certificate) |

```

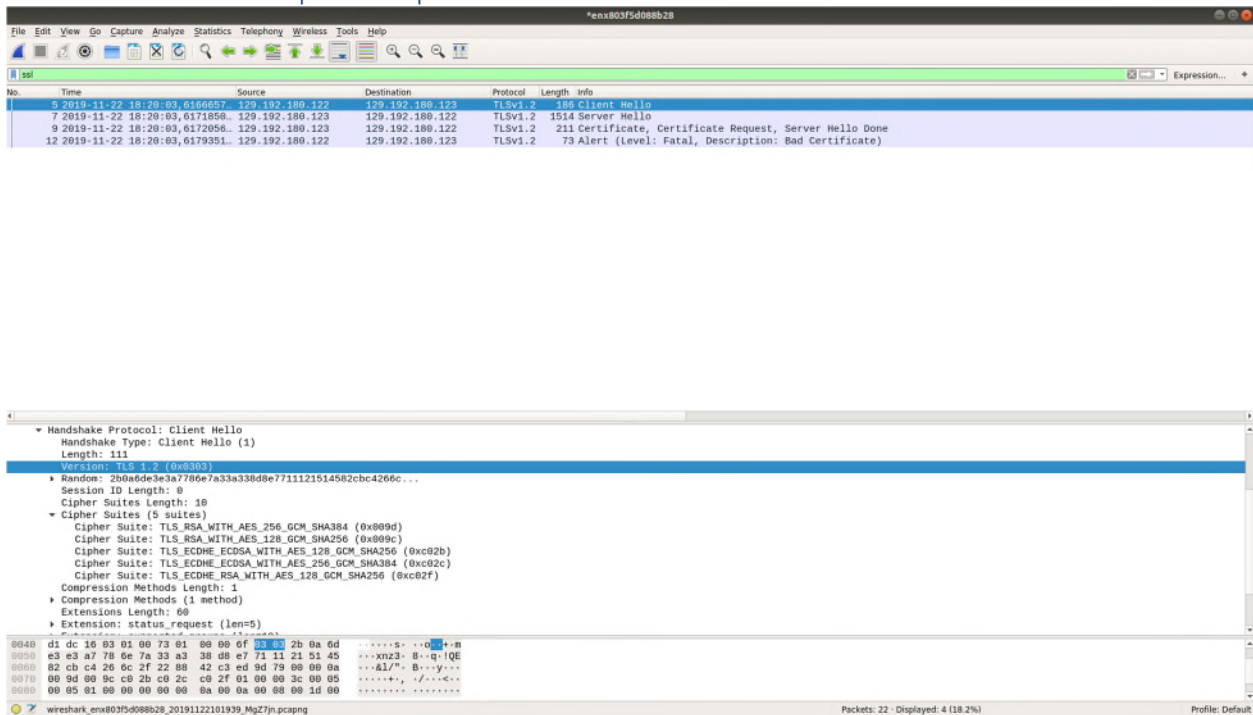
Certificates (2887 bytes)
Certificate Length: 1293
Certificate: 36820509388202f1a003020102021450fc2c3babc347daa6... (id-at-commonName=129.192.180.123,id-at-organizationalUnitName=WinnForum SAS Provider Certificate,id-at-organizationName=Ericsson)
  signedCertificate
    version: v3 (2)
    serialNumber: 0x50fc2c3babc347daa698ba621ff99971c4c34cde
    signature (sha256withRSAEncryption)
    issuer: rdnSequence (0)
    validity
      notBefore: utcTime (0)
      utcTime: 19-11-19 20:48:29 (UTC)
      notAfter: utcTime (0)
      utcTime: 19-11-19 20:48:29 (UTC)
    subject: rdnSequence (0)
    subjectPublicKeyInfo
    extensions: 5 items
      Extension (id-ce-subjectKeyIdentifier)
        Extension Id: 2.5.29.14 (id-ce-subjectKeyIdentifier)
        SubjectKeyIdentifier: eedb1816bbe4c4db40e30112aa4305bfcaa7eb1
  00c0 11 30 31 31 32 30 32 30 34 30 32 39 50 30 67 31 10112020 40292eq1
  0000 0b 30 09 06 03 55 04 00 13 02 55 53 31 11 30 0f 0...U...US1-0-
Frame (207 bytes) Reassembled TCP (2879 bytes)
  
```

© TÜV SÜD Canada Inc. This test report shall not be reproduced except in full, without written approval of TÜV SÜD Canada Inc.

| | | |
|-------------|---|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |

WINNF.FT.C.SCS.4

Packet Capture Sequence



Handshake Protocol: Client Hello
Handshake Type: Client Hello (1)
Length: 111
Version: TLS 1.2 (0x0303)
Randoms: 280a0de3e3a7786e7a33a338d8e7711221514582cbc4266c...
Session ID Length: 0
Cipher Suites Length: 10
Cipher Suites (5 suites)
Cipher Suite: TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)
Cipher Suite: TLS_RSA_WITH_AES_128_GCM_SHA256 (0x009c)
Cipher Suite: TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256 (0xc02b)
Cipher Suite: TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384 (0xc02c)
Cipher Suite: TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 (0xc02f)
Compression Methods Length: 1
Compression Methods (1 method)
Extensions Length: 60
Extension: status_request (len=5)

WINNF Test Requirements:

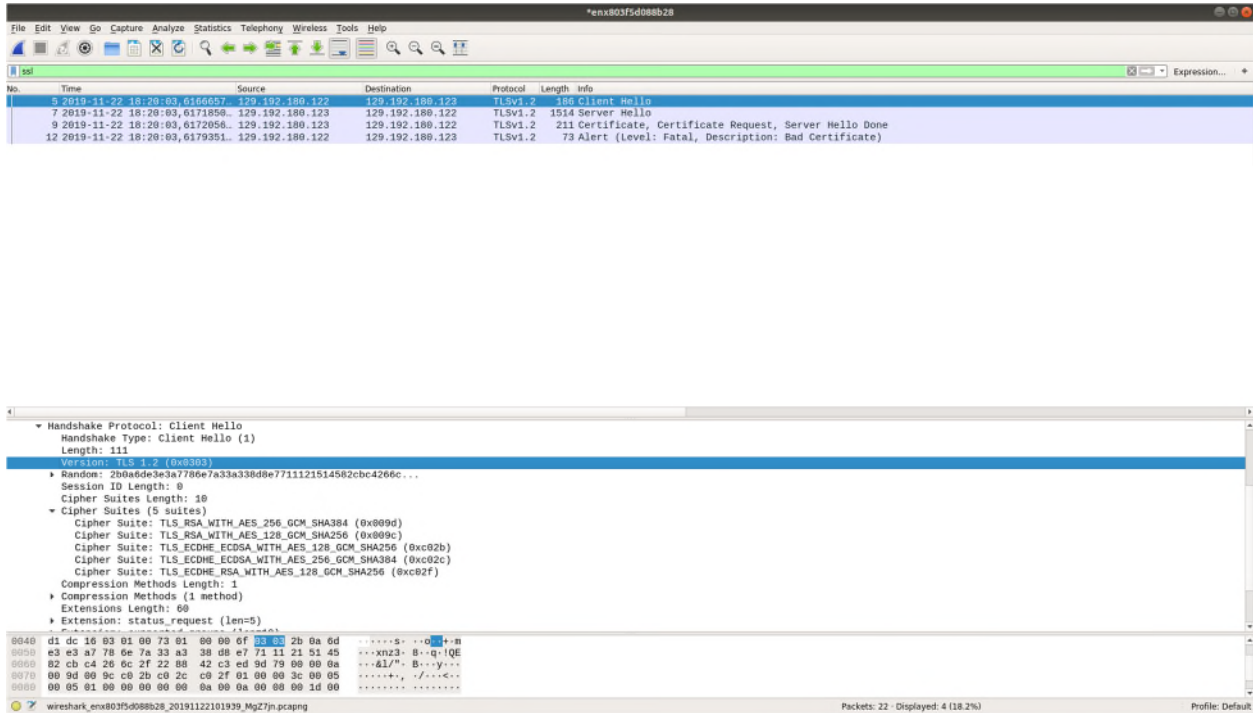
WINNF test requirements from WINNF-TS-0122-V1.0.0 CBRS CBSD Test Specification:

| | | |
|---|---|------|
| 2 | <ul style="list-style-type: none"> • 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. | PASS |
|---|---|------|

Analysis of WINNF Test Requirements

1. From Client Hello can read: TLS version = TLS 1.2

| | | |
|-------------|---|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |




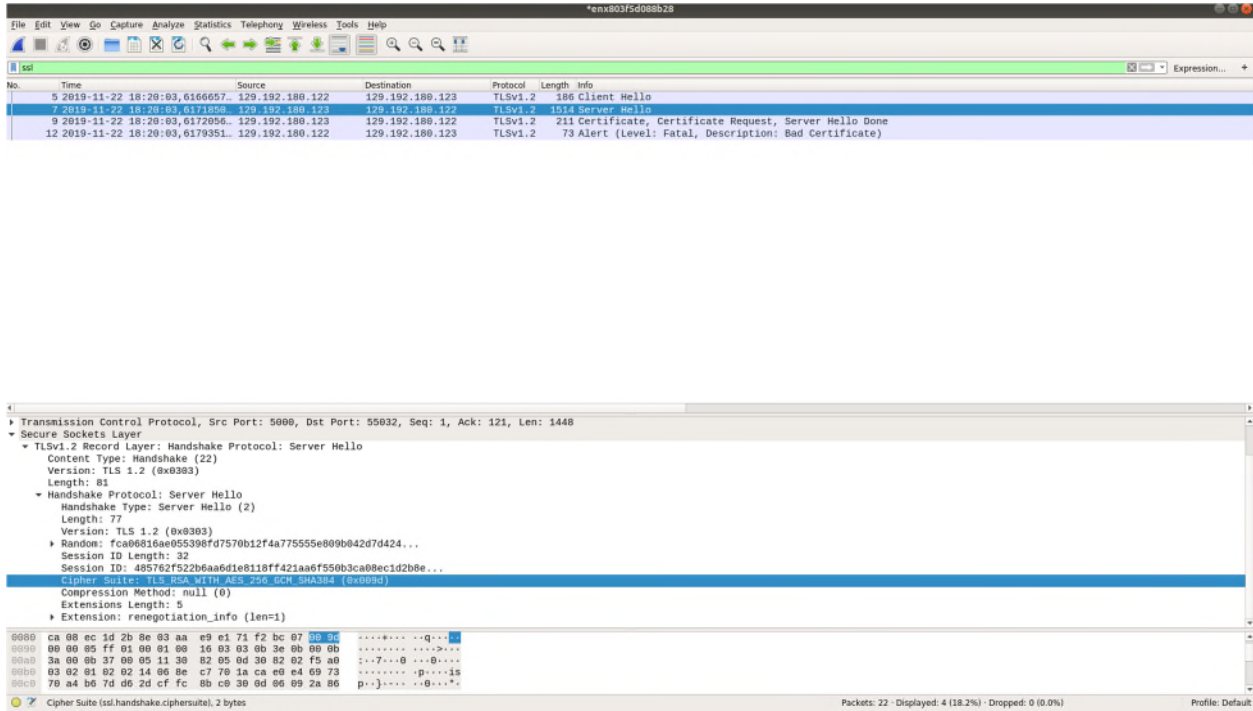
The image shows a Wireshark capture of a TLS handshake. The packet list pane shows several packets, with packet 5 being a Client Hello. The packet details pane is expanded to show the Client Hello structure, including the Cipher Suites list. The cipher suites listed are:

- TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)
- TLS_RSA_WITH_AES_128_GCM_SHA256 (0x009c)
- TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256 (0xc02b)
- TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384 (0xc02c)
- TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 (0xc02f)

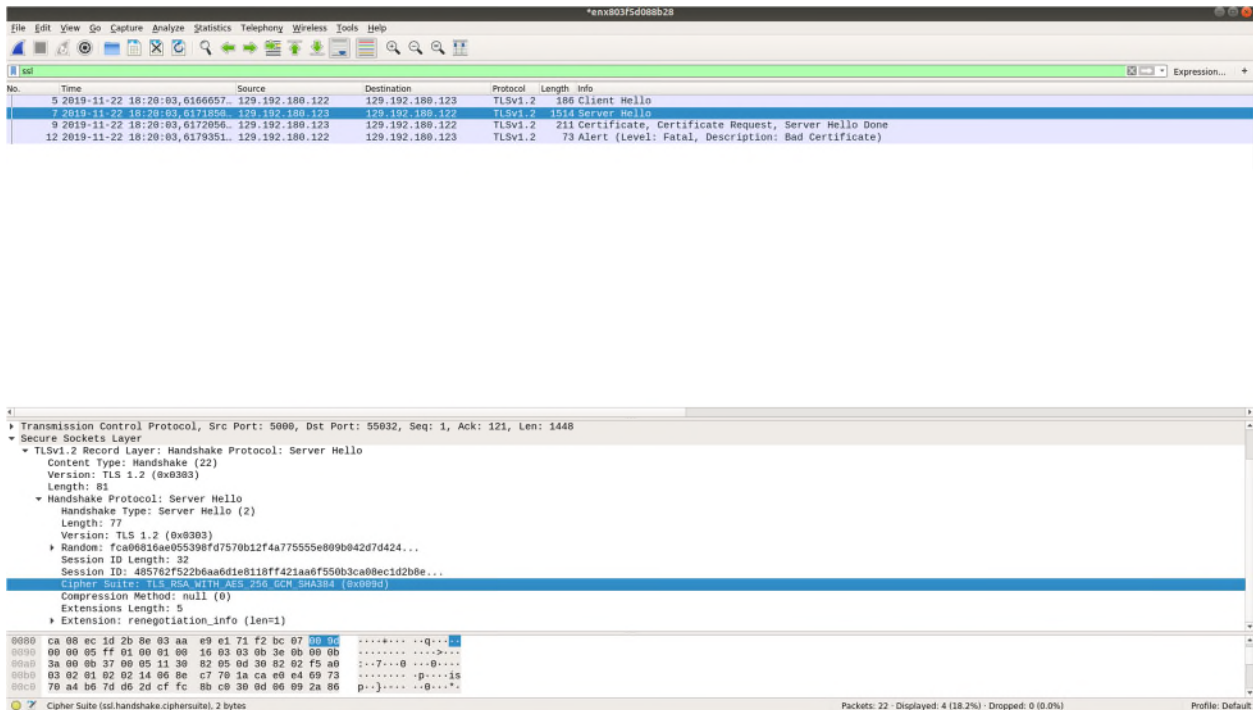
2. From Client Hello, cipher suite list is from WINNF approved list:


TLS_RSA_WITH_AES_128_GCM_SHA25
 TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256
 TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256

| | | |
|-------------|---|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |

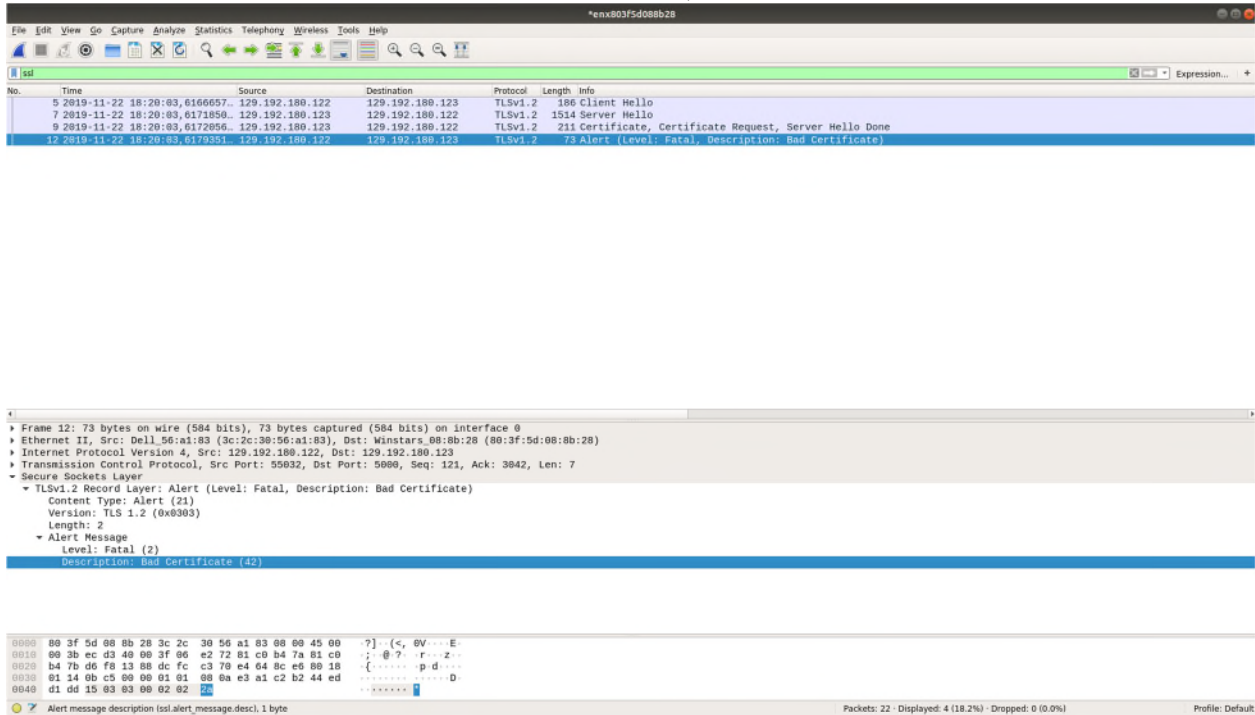


3. From Server Hello, cipher suite chosen:
TLS_RSA_WITH_AES_128_GCM_SHA256



| | | |
|-------------|--|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |

4. Authentication exchange ends with TLS Alert message (i.e. authentication fails):



Frame 12: 73 bytes on wire (584 bits), 73 bytes captured (584 bits) on interface 0
 Ethernet II, Src: Dell 56:a1:83 (3c:2c:30:56:a1:83), Dst: Minstars_08:8b:28 (08:3f:5d:08:8b:28)
 Internet Protocol Version 4, Src: 129.192.180.122, Dst: 129.192.180.123
 Transmission Control Protocol, Src Port: 55032, Dst Port: 5000, Seq: 121, Ack: 3042, Len: 7
 Secure Sockets Layer
 TLSv1.2 Record Layer: Alert (Level: Fatal, Description: Bad Certificate)
 Content Type: Alert (21)
 Version: TLS 1.2 (0x0303)
 Length: 2
 Alert Message
 Level: Fatal (2)
 Description: Bad Certificate (42)

0000 00 3f 5d 08 8b 28 3c 2c 30 56 a1 83 08 00 45 00 ?] -(<, 0V...E-
 0010 00 3b ec d3 40 00 3f 06 e2 72 81 c0 b4 7a 81 c0 ; :@? .F--z--
 0020 b4 7b d6 f6 13 88 dc fc c3 78 e4 64 8c e8 00 18 {p d...
 0030 01 14 0b c5 00 00 01 01 08 6a e3 a1 c2 b2 44 edD-
 0040 d1 dd 15 03 03 00 02 02 2cI

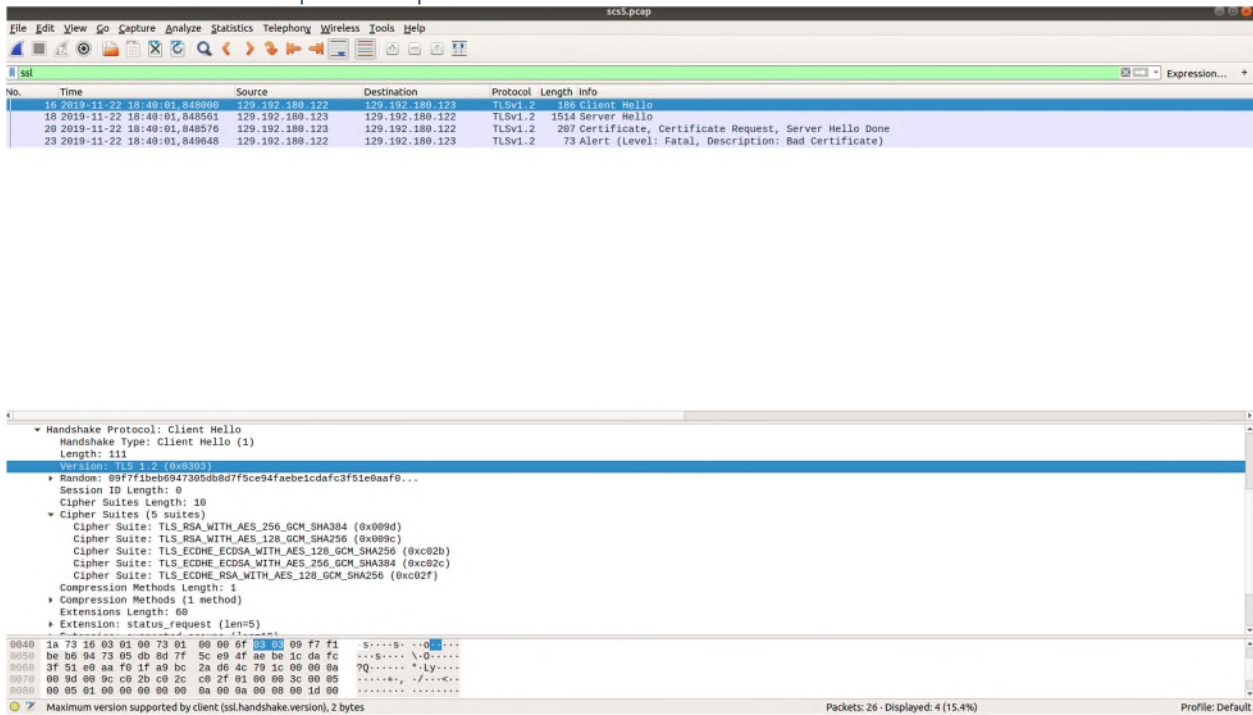
Alert message description (ssl.alert_message.desc), 1 byte

5. Registration request message is not received at Test Harness (authentication fails)

| | | |
|-------------|--|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |

WINNF.FT.C.SCS.5

Packet Capture Sequence



The screenshot displays a packet capture sequence for 'ssc5.pcap'. The packet list shows four TLSv1.2 packets:

- 18 2019-11-22 10:40:01,848900: 129.192.180.122 to 129.192.180.123, 186 bytes, Client Hello
- 19 2019-11-22 10:40:01,848961: 129.192.180.123 to 129.192.180.122, 1514 bytes, Server Hello
- 20 2019-11-22 10:40:01,848976: 129.192.180.123 to 129.192.180.122, 297 bytes, Certificate, Certificate Request, Server Hello Done
- 23 2019-11-22 10:40:01,848949: 129.192.180.122 to 129.192.180.123, 73 bytes, Alert (Level: Fatal, Description: Bad Certificate)

The details pane for the Client Hello packet shows the following structure:

- Handshake Protocol: Client Hello
- Handshake Type: Client Hello (1)
- Length: 111
- Version: TLS 1.2 (0x0303)
- Random: 09f7f1beb947395d8d7f9ce94faebe1cdafc3f51e8aaf0...
- Session ID Length: 0
- Cipher Suites Length: 10
- Cipher Suites (5 suites):
 - TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)
 - TLS_RSA_WITH_AES_128_GCM_SHA256 (0x009c)
 - TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256 (0xc02b)
 - TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384 (0xc02c)
 - TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 (0xc02f)
- Compression Methods (1 method)
- Extensions Length: 60
- Extension: status_request (len=5)

Hex dump and ASCII view of the packet data are also visible at the bottom of the details pane.

WINNF Test Requirements:

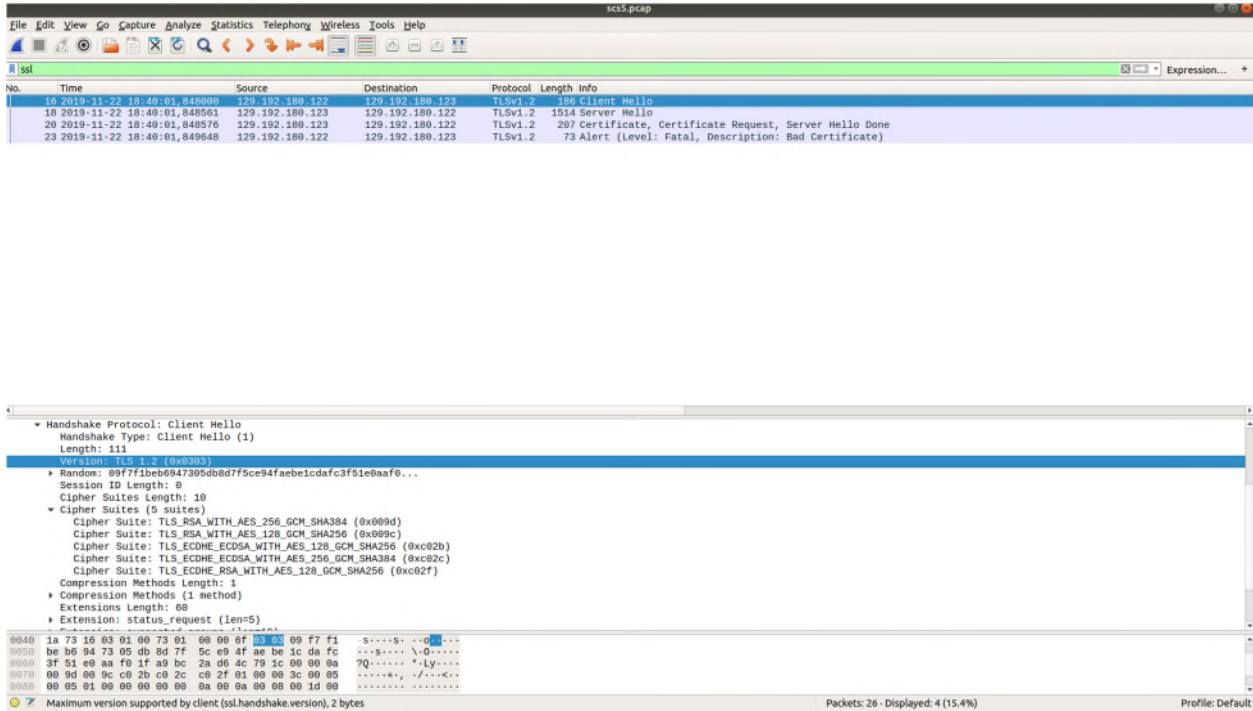
WINNF test requirements from WINNF-TS-0122-V1.0.0 CBRS CBSD Test Specification:

| | | | |
|---|--|------|------|
| 2 | <ul style="list-style-type: none"> • 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. | PASS | FAIL |
|---|--|------|------|

Analysis of WINNF Test Requirements

1. From Client Hello can read: TLS version = TLS 1.2

| | | |
|-------------|---|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |

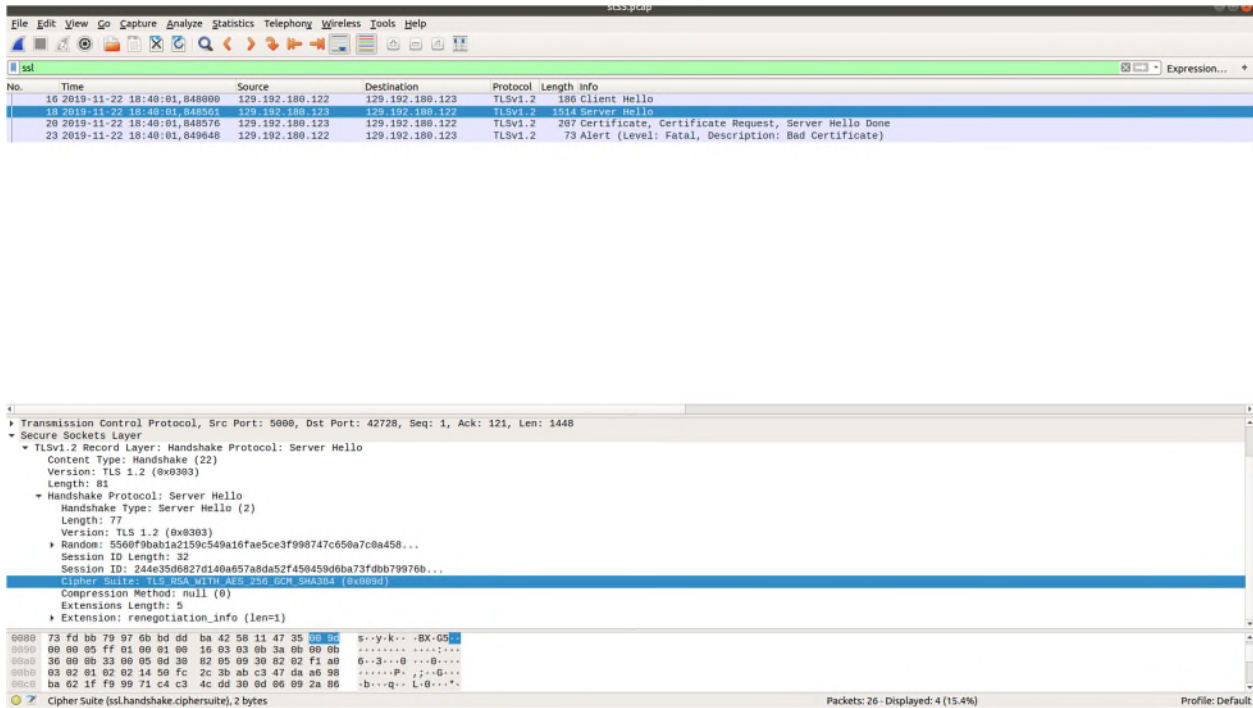


2. From Client Hello, cipher suite list is from WINNF approved list:

TLS_RSA_WITH_AES_128_GCM_SHA25
 TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256
 TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256

3. From Server Hello, cipher suite chosen:
 TLS_RSA_WITH_AES_128_GCM_SHA256

| | | |
|-------------|---|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |



The screenshot shows a Wireshark capture of a TLS handshake. The packet list pane displays the following entries:

| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|----------------------------|-----------------|-----------------|----------|--------|---|
| 16 | 2019-11-22 18:48:01.848800 | 129.192.180.122 | 129.192.180.123 | TLSv1.2 | 186 | Client Hello |
| 17 | 2019-11-22 18:48:01.848850 | 129.192.180.123 | 129.192.180.122 | TLSv1.2 | 154 | Server Hello |
| 20 | 2019-11-22 18:48:01.848876 | 129.192.180.123 | 129.192.180.122 | TLSv1.2 | 207 | Certificate, Certificate Request, Server Hello Done |
| 23 | 2019-11-22 18:48:01.849648 | 129.192.180.122 | 129.192.180.123 | TLSv1.2 | 73 | Alert (Level: Fatal, Description: Bad Certificate) |

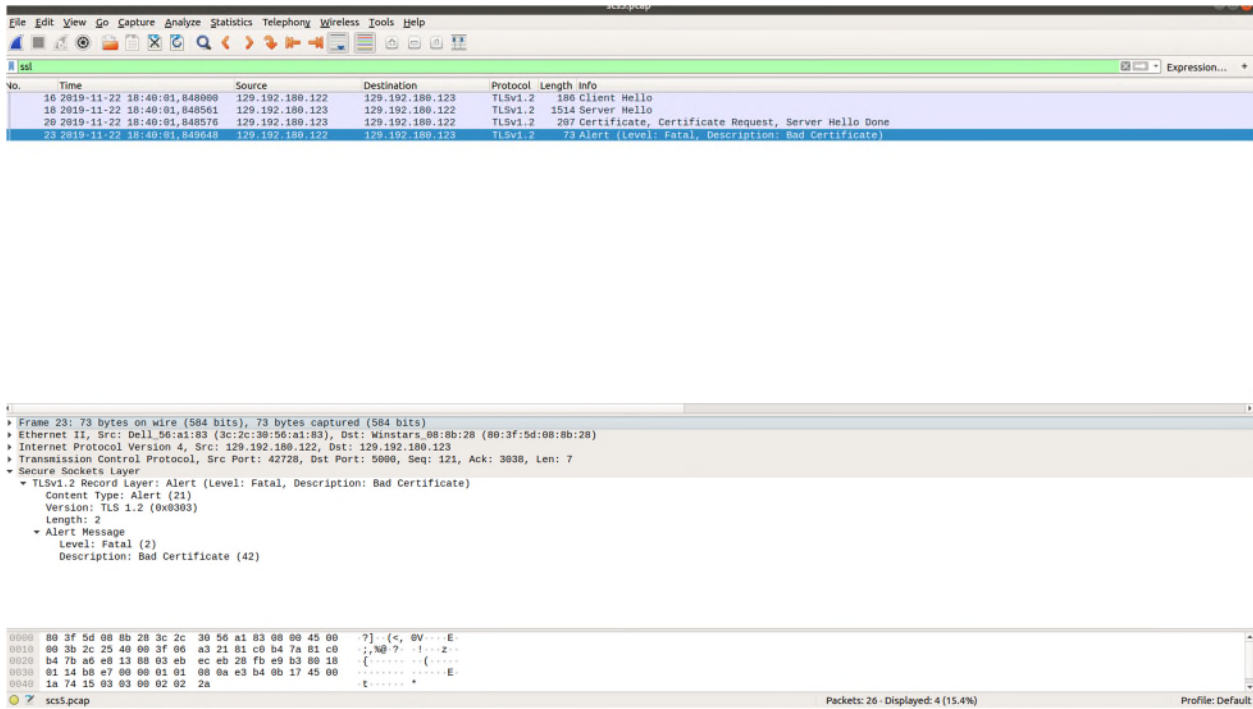
The packet details pane for the selected packet (No. 23) shows:

- Transmission Control Protocol, Src Port: 5000, Dst Port: 42728, Seq: 1, Ack: 121, Len: 1448
- Secure Sockets Layer
 - TLSv1.2 Record Layer: Handshake Protocol: Server Hello
 - Content Type: Handshake (22)
 - Version: TLS 1.2 (0x0303)
 - Length: 81
 - Handshake Protocol: Server Hello
 - Handshake Type: Server Hello (2)
 - Length: 77
 - Version: TLS 1.2 (0x0303)
 - Random: 5560f9bab1a2159c549a16fae5ce3f998747c650a7c0a458...
 - Session ID Length: 32
 - Session ID: 244e35d6827d140a657a8da52f458459d6ba73fdbb79976b...
 - Cipher Suite: TLS_RSA_WITH_AES_256_GCM_SHA384 (0x009d)
 - Compression Method: null (0)
 - Extensions Length: 5
 - Extension: renegotiation_info (len=1)

The packet bytes pane shows the raw data for the alert message, including the alert type (03) and level (01).

4. Authentication exchange ends with TLS Alert message (i.e. authentication fails):

| | | |
|-------------|--|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |



5. Registration request message is not received at Test Harness (authentication fails)


| | | |
|-------------|--|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |

Test Equipment

| Instrument | Manufacturer | Type No. | Serial No | Calibration Period (months) | Calibration Due |
|------------------------|-----------------|------------|-------------|-----------------------------|-----------------|
| THG | Fluke | 77 IV | 34770264 | 12 | 18-Apr-2020 |
| DVM | VWR | 61161-378 | 170120564 | 24 | 17-Feb-2021 |
| Power Supply | Xantrex | XKW 60-50 | E00109863 | O/P Mon | - |
| Spectrum Analyser | Keysight | N9020A | MY49100827 | 24 | 27-Dec-2021 |
| Attenuator | Pasternack | PE7004-10 | N/S | O/P Mon | - |
| Switching Control Unit | Hewlett Packard | 11713A | 3748A060876 | O/P Mon | - |
| RF Switch Unit | Burnsco | RARFSW 4x1 | 001 | O/P Mon | - |
| Power Supply | Leader | 730-3D | 9801135 | O/P Mon | - |


| | | |
|-------------|--|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |

Appendix A – EUT & Client Provided Details

| | | |
|-------------|--|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |

General EUT Description

| | |
|-------------------------------|---|
| Manufacturer | Ericsson |
| Address | Torshamnsgatan 23
Kista
SE-16480
Stockholm
Sweden |
| Product Name | Radio 2208 B48 |
| Serial Number(s) | D828007815 and D828007823 |
| Software Version | CXP 903 4711/4_R1L |
| Hardware Version | R1B |
| Test Specification/Issue/Date | FCC CFR 47 Part 96: 2018 |

| | | |
|-------------|--|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |

Technical Description

The Equipment Under Test (EUT) Radio 2208 B48 KRC 161 711/1 is an Ericsson AB Radio Unit working in the public mobile service (3550-3700 MHz) band which provides communication connections to 3550-3700 MHz network. The Radio 2208 B48 KRC 161 711/1 operates from a -48V DC or a 120V AC power supply.

The Equipment Under Test (EUT) is shown in the photograph below. A full technical description can be found in the Manufacturer's documentation.




EUT Configuration

Please see Appendix B for close up pictures of the unit as configured during testing


- Cables and earthing when applicable were connected as per manufacturer's specification.

Domain Proxy Software Version: 27.7

| | | |
|-------------|--|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |

Appendix B – EUT, Peripherals, and Test Setup Photos

© TÜV SÜD Canada Inc. This test report shall not be reproduced except in full, without written approval of TÜV SÜD Canada Inc.

| | | |
|-------------|--|---|
| Client | Ericsson |  |
| Product | LTE KRC 161 711/1 Radio 2208 B48 (3550-3700MHz) | |
| Standard(s) | FCC Part 96 SAS requirements (CBRS Test Plan) | |

Test setup

<Photo kept on file and may be accessed in separate photo exhibit>