NTS
WE ENGINEER SUCCESS

NTS Silicon Valley
www.nts.com

41039 Boyce Road
Fremont, CA 94538

510-578-3500 Phone
510-440-9525 Fax

EMC Test Report
Application for Grant of Equipment Authorization
Class II Permissive Change/Reassessment
Industry Canada RSS-Gen Issue 4 / RSS 247 Issue 1
FCC Part 15, Subpart E
Model: APINM210

IC CERTIFICATION #:	4675A-APINM210
FCC ID:	Q9DAPINM210
APPLICANT:	Aruba Networks, Inc. 1344 Crossman Ave Sunnyvale, CA 94089
REPORT PREPARED FOR:	Ericsson Canada 349 Terry Fox Drive Kanata, ON K2K 2V6
TEST SITE(S):	National Technical Systems - Silicon Valley 41039 Boyce Road. Fremont, CA. 94538-2435
IC SITE REGISTRATION #:	2845B-4, 2845B-5, 2845B-7
REPORT DATE:	July 27, 2016
REISSUE DATE:	August 31, 2016
FINAL TEST DATES:	November 23, 24, 25 and December 2, 3, 4, 7, 8, 17, 2015
TOTAL NUMBER OF PAGES:	131

PROGRAM MGR /
TECHNICAL REVIEWER:

Mark E. Hill
Staff Engineer

QUALITY ASSURANCE DELEGATE /
FINAL REPORT PREPARER:

David Guidotti
Senior Technical Writer

A2LA ACCREDITED
Testing Cert #0214.26

National Technical Systems - Silicon Valley is accredited by the A2LA, certificate number 0214.26, to perform the test(s) listed in this report, except where noted otherwise. This report and the information contained herein represent the results of testing test articles identified and selected by the client performed to specifications and/or procedures selected by the client. National Technical Systems (NTS) makes no representations, expressed or implied, that such testing is adequate (or inadequate) to demonstrate efficiency, performance, reliability, or any other characteristic of the articles being tested, or similar products. This report should not be relied upon as an endorsement or certification by NTS of the equipment tested, nor does it represent any statement whatsoever as to its merchantability or fitness of the test article, or similar products, for a particular purpose. This report shall not be reproduced except in full

REVISION HISTORY

Rev#	Date	Comments	Modified By
-	July 27, 2016	First release	
1.0	August 25, 2016	Updated power/psd measurement procedure. Clarified output power for UNII2c	MEH
2.0	August 31, 2016	Clarified Applicant on the title page	MEH

TABLE OF CONTENTS

SCOPE

An electromagnetic emissions test has been performed on the Ericsson Canada model APINM210, pursuant to the following rules:

Industry Canada RSS-Gen Issue 4
RSS 247 Issue 1 "Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices"
FCC Part 15, Subpart E requirements for UNII Devices

Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in the following reference standards and as outlined in National Technical Systems - Silicon Valley test procedures:

ANSI C63.10-2013
FCC General UNII Test Procedures KDB789033

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant Industry Canada performance and procedural standards.

Final system data was gathered in a mode that tended to maximize emissions by varying orientation of EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

OBJECTIVE

The primary objective of the manufacturer is compliance with the regulations outlined in the previous section.

Prior to marketing in the USA, all unlicensed transmitters and transceivers require certification. Receive-only devices operating between 30 MHz and 960 MHz are subject to either certification or a manufacturer's declaration of conformity, with all other receive-only devices exempt from the technical requirements.

Prior to marketing in Canada, Class I transmitters, receivers and transceivers require certification. Class II devices are required to meet the appropriate technical requirements but are exempt from certification requirements.

Certification is a procedure where the manufacturer submits test data and technical information to a certification body and receives a certificate or grant of equipment authorization upon successful completion of the certification body's review of the submitted documents. Once the equipment authorization has been obtained, the label

indicating compliance must be attached to all identical units, which are subsequently manufactured.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

STATEMENT OF COMPLIANCE

The tested sample of Ericsson Canada model APINM210 complied with the requirements of the following regulations:

RSS 247 Issue 1 "Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices"
FCC Part 15, Subpart E requirements for UNII Devices

Maintenance of compliance is the responsibility of the manufacturer. Any modifications to the product should be assessed to determine their potential impact on the compliance status of the device with respect to the standards detailed in this test report.

The test results recorded herein are based on a single type test of Ericsson Canada model APINM210 and therefore apply only to the tested sample. The sample was selected and prepared by Nancy Langford of Ericsson Canada.

DEVIATIONS FROM THE STANDARDS

No deviations were made from the published requirements listed in the scope of this report.

TEST RESULTS SUMMARY

UNII / LELAN DEVICES

Operation in the 5.25 – 5.35 GHz Band

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.407(a) (2)		26dB Bandwidth	>20MHz for all modes	N/A – limits output power if < 20MHz	N/A
15.407(a) (2)	RSS-247 6.2.2 (1)	Output Power	a: 23.0dBm (198mW) n20: 23.3dBm (213mW) n40: 23.7dBm (237mW) ac80: 19.5dBm (90mW)	24dBm (250mW)	Complies
15.407(a) (2)	-	Power Spectral Density	a: 10.9 mW/MHz n20: 10.8dBm/MHz n40: 8.3dBm/MHz ac80: 2.6dBm/MHz	11 dBm/MHz	Complies
-	RSS-247 6.2.2 (1)	Power Spectral Density		11 dBm / MHz	Complies

Operation in the 5.47 – 5.725 GHz Band

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.407(a) (2)		26dB Bandwidth	>20MHz for all modes	N/A – limits output power if < 20MHz	N/A
15.407(a) (2)	-	Output Power	a: 23.1dBm (204mW) n20: 23.1dBm (203mW) n40: 23.5dBm (224mW) ac80: 23.7dBm (235mW)	24dBm (250mW)	Complies
-	RSS-247 6.2.3 (1)	Output Power	a: 23.1dBm (204mW) n20: 23.1dBm (203mW) n40: 23.5dBm (224mW) ac80: 23.4dBm (217mW)	24dBm (250mW)	Complies
15.407(a) (2))	-	Power Spectral Density	a: 10.9dBm/MHz n20: 11.0dBm/MHz n40: 8.7dBm/MHz ac80: 5.4dBm/MHz	11 dBm/MHz	Complies
-	RSS-247 6.2.3 (1)	Power Spectral Density	a: 10.9dBm/MHz n20: 11.0dBm/MHz n40: 8.7dBm/MHz ac80: 5.3dBm/MHz	11 dBm / MHz	Complies
-	RSS-247 6.2.3	Non-operation in 5600 – 5650 MHz sub band	Device cannot operate in the 5600 – 5650 MHz band –refer to Operational Description		Complies

Requirements for all U-NII/LELAN bands

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.407	RSS 247 6.1	Modulation	Unchanged from original filing		
15.407(b) / 15.209	RSS 247 6.0	Spurious Emissions	53.0 dBµV/m @ 5357.5 MHz (-1.0 dB)	Refer to page 21	Complies
	RSS 247 6.4 (1)	Channel Selection	Spurious emissions tested at outermost channels in each band	Device was tested on the top, bottom and center channels in each band	N/A
15			Measurements on three channels in each band		Complies
15.407 (c)	RSS 247 6.4 (2)	Operation in the absence of information to transmit	Unchanged from original filing		
15.407 (g)	-	Frequency Stability	Unchanged from original filing		
15.407 (h)(1)	RSS-247 6.2.2 (1) and 6.2.3(1)	Transmit Power Control	TCP mechanism is discussed in the Operational Description TPC is not required as the device operates at below 500mW eirp	The U-NII device shall have the capability to operate with a mean EIRP value lower than 24dBm (250mW)	Complies
15.407 (h)(2)	RSS-247 6.3	Dynamic frequency Selection (device with radar detection)	Refer to separate test report	Threshold -62dBm (-64dBm if eirp > 200mW) Channel Availability Check > 60s Channel closing transmission time < 260ms Channel move time < 10s Non occupancy period > 30minutes	Complies
	RSS-247 6.3 (5)	User manual information	Refer to manual for details	Warning regarding interference from Satellite Systems	Complies

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	Unchanged from original filing		
15.207	RSS GEN Table 3	AC Conducted Emissions	Unchanged from original filing		
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to MPE calculations in separate exhibit, RSS 102 declaration and User Manual statements.	Refer to OET 65, FCC Part 1 and RSS 102	Complies
-	RSS GEN 8.3	User Manual	-	Statement for products with detachable antenna	Complies
-	RSP 100 RSS GEN 6.6	Occupied Bandwidth	a: 17.2 MHz n20: 18.4 MHz n40: 37.2 MHz ac80: 75.7 MHz	Information only	N/A

MEASUREMENT UNCERTAINTIES

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level and were calculated in accordance with UKAS document LAB 34.

Measurement Type	Measurement Unit	Frequency Range	Expanded Uncertainty
RF power, conducted (power meter)	dBm	25 to 7000 MHz	± 0.52 dB
RF power, conducted (Spectrum analyzer)	dBm	25 to 7000 MHz	± 0.7 dB
Conducted emission of transmitter	dBm	25 to 26500 MHz	± 0.7 dB
Conducted emission of receiver	dBm	25 to 26500 MHz	± 0.7 dB
Radiated emission (substitution method)	dBm	25 to 26500 MHz	± 2.5 dB
Radiated emission (field strength)	dBµV/m	25 to 1000 MHz	± 3.6 dB
		1000 to 40000 MHz	± 6.0 dB
Conducted Emissions (AC Power)	dBµV	0.15 to 30 MHz	± 2.4 dB

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Ericsson Canada model APINM210 is an IEEE 802.11 a/b/g/n wireless module that operates in both the 2.4 GHz and 5 GHz bands. The module supports n20, n40 and ac80 modes.
This test report covers 5250 - 5350 MHz and 5475 – 5725 MHz bands of operation.

The sample was received on November 19, 2015 and tested on November 23, 24, 25 and December 2, 3, 4, 7, 8, 17, 2015. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Aruba	APINM210	Radio Module	-	Q9DAPINM210

OTHER EUT DETAILS

The radiated emission tests were performed with the host unit.

ANTENNA SYSTEM

PCB trace, integral antennas (3 chains)

ENCLOSURE

The EUT has no enclosure. It is designed to be installed within the enclosure of a host unit.

MODIFICATIONS

No modifications were made to the EUT during the time the product was at NTS Silicon Valley.

SUPPORT EQUIPMENT

No local support equipment was used during testing.
The following equipment was used as remote support equipment for emissions testing:

Company	Model	Description	Serial Number	FCC ID
Dell	LATITUDE E5440	Laptop Computer	HMPNP12	-
Dell	LA65NM130	AC Adaptor	CN-0JNKWD-72438	-

EUT INTERFACE PORTS

The I/O cabling configuration during testing was as follows:

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Ethernet	Laptop Computer	Cat5e Ethernet	Unshielded	10
DC Power	AC Adaptor	Two-wire	Unshielded	1
AC Adaptor	AC Mains	Three-wire	Unshielded	1

EUT OPERATION

During testing, the EUT was configured to continuously transmit at maximum output power and noted data rate on the channel indicated.

TEST SITE

GENERAL INFORMATION

Final test measurements were taken at the test sites listed below. Pursuant to section 2.948 of the FCC's Rules and section 3.3 of RSP-100, construction, calibration, and equipment data has been filed with the Commission and with industry Canada.

Site	Designation / Registration Numbers		Location
	FCC	Canada	
Chamber 4	US0027	2845B-4	41039 Boyce Road Fremont, CA 94538-2435
Chamber 5	US0027	2845B-5	
Chamber 7	US0027	2845B-7	

ANSI C63.4 recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement. The test site(s) contain separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements of ANSI C63.4.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.10. Measurements are made with the EUT connected to the public power network through a nominal, standardized RF impedance, which is provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment or in a semi-anechoic chamber. The test sites are maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4 guidelines and meet the Normalized Site Attenuation (NSA) requirements of ANSI C63.4.

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1-1 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 2000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements. If the repetition frequency of the signal being measured is below 20Hz, peak measurements are made in lieu of Quasi-Peak measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz, unless the signal is pulsed in which case the average (or video) bandwidth of the measuring instrument is reduced to onset of pulse desensitization and then increased.

INSTRUMENT CONTROL COMPUTER

The receivers utilize either a Rohde & Schwarz EZM Spectrum Monitor/Controller or contain an internal Spectrum Monitor/Controller to view and convert the receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers. The software used for radiated and conducted emissions measurements is NTS EMI Test Software (rev 2.10)

The Spectrum Monitor provides a visual display of the signal being measured. In addition, the controller or a personal computer run automated data collection programs which control the receivers. This provides added accuracy since all site correction factors, such as cable loss and antenna factors are added automatically.

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

Line conducted measurements utilize a fifty microhenry Line Impedance Stabilization Network as the monitoring point. The LISN used also contains a 250 uH CISPR adapter. This network provides for calibrated radio frequency noise measurements by the design of the internal low pass and high pass filters on the EUT and measurement ports, respectively.

FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high amplitude transient events.

ANTENNAS

A loop antenna is used below 30 MHz. For the measurement range 30 MHz to 1000 MHz either a combination of a biconical antenna and a log periodic or a bi-log antenna is used. Above 1000 MHz, horn antennas are used. The antenna calibration factors to convert the received voltage to an electric field strength are included with appropriate cable loss and amplifier gain factors to determine an overall site factor, which is then programmed into the test receivers or incorporated into the test software.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor-drive to vary the antenna height. Measurements below 30 MHz are made with the loop antenna at a fixed height of 1m above the ground plane.

ANSI C63.10 specifies that the test height above ground for table mounted devices shall be 80 centimeters. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor as specified in ANSI C63.4. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. All antennas are calibrated at regular intervals with respect to tuned half-wave dipoles. An exhibit of this report contains the list of test equipment used and calibration information.

TEST PROCEDURES

EUT AND CABLE PLACEMENT

The regulations require that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.10, and the worst-case orientation is used for final measurements.

CONDUCTED EMISSIONS

Conducted emissions are measured at the plug end of the power cord supplied with the EUT. Excess power cord length is wrapped in a bundle between 30 and 40 centimeters in length near the center of the cord. Preliminary measurements are made to determine the highest amplitude emission relative to the specification limit for all the modes of operation. Placement of system components and varying of cable positions are performed in each mode. A final peak mode scan is then performed in the position and mode for which the highest emission was noted on all current carrying conductors of the power cord.

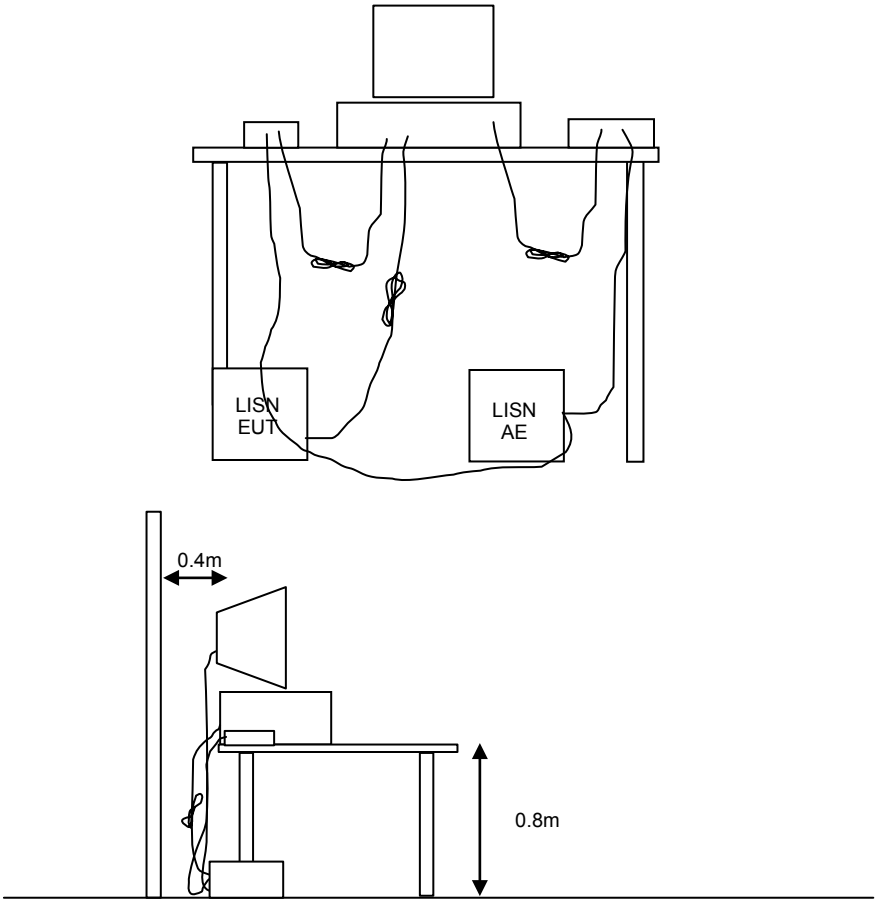


Figure 1 Typical Conducted Emissions Test Configuration

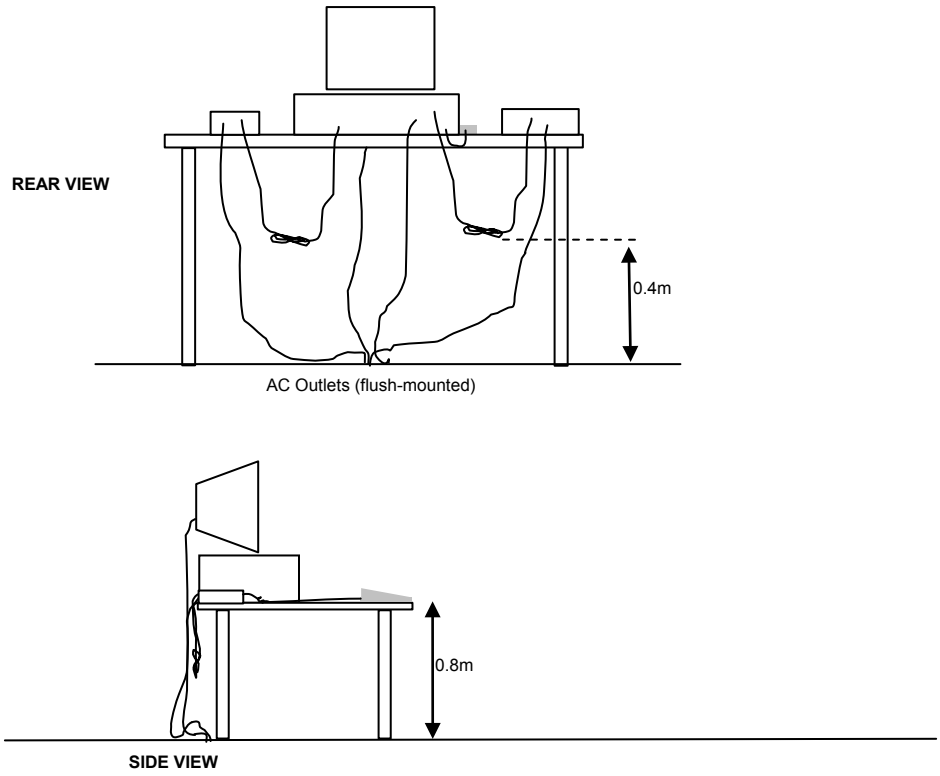
RADIATED EMISSIONS

A preliminary scan of the radiated emissions is performed in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed, one scan for each antenna polarization (horizontal and vertical; loop parallel and perpendicular to the EUT). During the preliminary scans, the EUT is rotated through 360˚, the antenna height is varied (for measurements above 30 MHz) and cable positions are varied to determine the highest emission relative to the limit. Preliminary scans may be performed in a fully anechoic chamber for the purposes of identifying the frequencies of the highest emissions from the EUT.

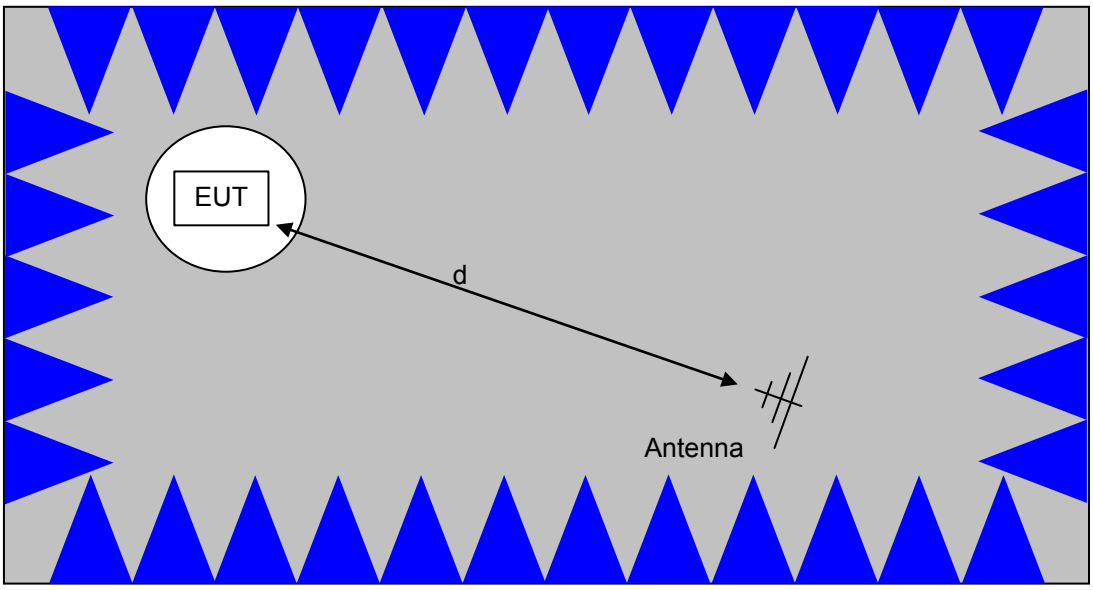
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth, which results in the highest emission is then maintained while varying the antenna height from one to four meters (for measurements above 30 MHz, measurements below 30 MHz are made with the loop antenna at a fixed height of 1m). The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain.

When testing above 18 GHz, the receive antenna is located at 1meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.

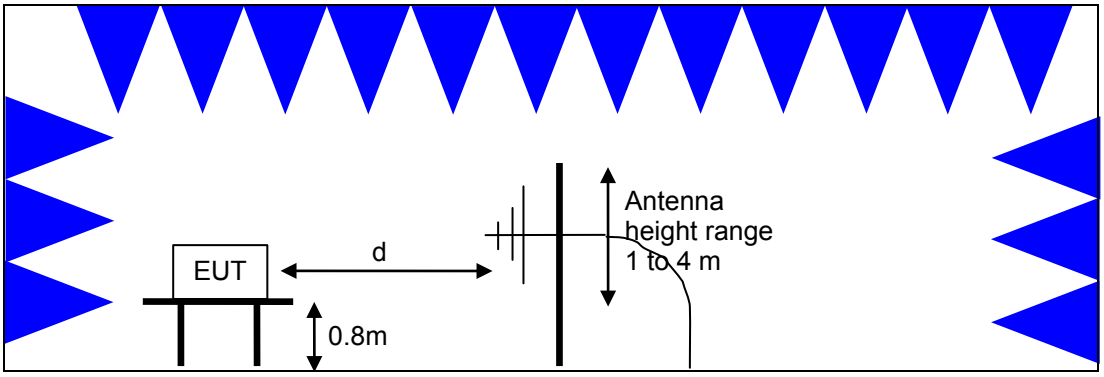


Typical Test Configuration for Radiated Field Strength Measurements



The anechoic materials on the walls and ceiling ensure compliance with the normalized site attenuation requirements of CISPR 16 / CISPR 22 / ANSI C63.4 for an alternate test site at the measurement distances used.

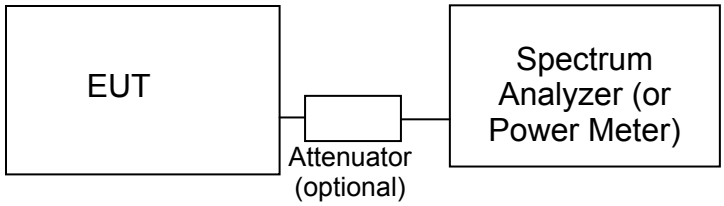
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



Test Configuration for Radiated Field Strength Measurements
Semi-Anechoic Chamber, Plan and Side Views

CONDUCTED EMISSIONS FROM ANTENNA PORT

Direct measurements of power, bandwidth and power spectral density are performed, where possible, with the antenna port of the EUT connected to either the power meter or spectrum analyzer via a suitable attenuator and/or filter. These are used to ensure that the front end of the measurement instrument is not overloaded by the fundamental transmission.



Test Configuration for Antenna Port Measurements

Measurement bandwidths (video and resolution) are set in accordance with the relevant standards and NTS Silicon Valley's test procedures for the type of radio being tested. When power measurements are made using a resolution bandwidth less than the signal bandwidth the power is calculated by summing the power across the signal bandwidth using either the analyzer channel power function or by capturing the trace data and calculating the power using software. In both cases the summed power is corrected to account for the equivalent noise bandwidth (ENBW) of the resolution bandwidth used.

If power averaging is used (typically for certain digital modulation techniques), the EUT is configured to transmit continuously. Power averaging is performed using either the built-in function of the analyzer or, if the analyzer does not feature power averaging, using external software. In both cases the average power is calculated over a number of sweeps (typically 100). When the EUT cannot be configured to continuously transmit then either the analyzer is configured to perform a gated sweep to ensure that the power is averaged over periods that the device is transmitting or power averaging is disabled and a max-hold feature is used.

If a power meter is used to make output power measurements the sensor head type (peak or average) is stated in the test data table.

BANDWIDTH MEASUREMENTS

The 6dB, 20dB, 26dB and/or 99% signal bandwidth are measured using the bandwidths recommended by ANSI C63.10 and RSS GEN.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

The limits for conducted emissions are given in units of microvolts, and the limits for radiated emissions are given in units of microvolts per meter at a specified test distance. Data is measured in the logarithmic form of decibels relative to one microvolt, or dB microvolts (dBuV). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dBuV/m). The results are then converted to the linear forms of uV and uV/m for comparison to published specifications.

For reference, converting the specification limits from linear to decibel form is accomplished by taking the base ten logarithm, then multiplying by 20. These limits in both linear and logarithmic form are as follows:

CONDUCTED EMISSIONS SPECIFICATION LIMITS: FCC 15.207; FCC 15.107(a), RSS GEN

The table below shows the limits for the emissions on the AC power line from an intentional radiator and a receiver.

Frequency (MHz)	Average Limit (dBuV)	Quasi Peak Limit (dBuV)
0.150 to 0.500	Linear decrease on logarithmic frequency axis between 56.0 and 46.0	Linear decrease on logarithmic frequency axis between 66.0 and 56.0
0.500 to 5.000	46.0	56.0
5.000 to 30.000	50.0	60.0

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands[1] (with the exception of transmitters operating under FCC Part 15 Subpart D and RSS 210 Annex 9), the limits for all emissions from a low power device operating under the general rules of RSS 310 (tables 3 and 4), RSS 210 (table 2) and FCC Part 15 Subpart C section 15.209.

Frequency Range (MHz)	Limit (uV/m)	Limit (dBuV/m @ 3m)
0.009-0.490	$2400/F_{KHz}$ @ 300m	$67.6-20*\log_{10}(F_{KHz})$ @ 300m
0.490-1.705	$24000/F_{KHz}$ @ 30m	$87.6-20*\log_{10}(F_{KHz})$ @ 30m
1.705 to 30	30 @ 30m	29.5 @ 30m
30 to 88	100 @ 3m	40 @ 3m
88 to 216	150 @ 3m	43.5 @ 3m
216 to 960	200 @ 3m	46.0 @ 3m
Above 960	500 @ 3m	54.0 @ 3m

RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from receivers as detailed in FCC Part 15.109, RSS 210 Table 2, RSS GEN Table 1 and RSS 310 Table 3. Note that receivers operating outside of the frequency range 30 MHz – 960 MHz are exempt from the requirements of 15.109.

Frequency Range (MHz)	Limit (uV/m @ 3m)	Limit (dBuV/m @ 3m)
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

FCC 15.407 (a) OUTPUT POWER LIMITS

The table below shows the limits for output power and output power density. Where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

Operating Frequency (MHz)	Output Power	Power Spectral Density
5150 – 5250	50mW (17 dBm)	4 dBm/MHz
5250 – 5350	250 mW (24 dBm)	11 dBm/MHz
5725 – 5825	1 Watts (30 dBm)	17 dBm/MHz

[1] The restricted bands are detailed in FCC 15.203, RSS 210 Table 1 and RSS 310 Table 2

For system using antennas with gains exceeding 6dBi, the output power and power spectral density limits are reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 – 5825 MHz band may use antennas with gains of up to 23dBi without this limitation. If the gain exceeds 23dBi then the output power limit of 1 Watt is reduced by 1dB for every dB the gain exceeds 23dBi.

The peak excursion envelope is limited to 13dB.

OUTPUT POWER LIMITS –LELAN DEVICES

The table below shows the limits for output power and output power density defined by RSS 210. Where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

Operating Frequency (MHz)	Output Power	Power Spectral Density
5150 – 5250	200mW (23 dBm) eirp	10 dBm/MHz eirp
5250 – 5350	250 mW (24 dBm)2 1W (30dBm) eirp	11 dBm/MHz
5470 – 5725	250 mW (24 dBm)3 1W (30dBm) eirp	11 dBm/MHz
5725 – 5825	1 Watts (30 dBm) 4W eirp	17 dBm/MHz

In addition, the power spectral density limit shall be reduced by 1dB for every dB the highest power spectral density exceeds the "average" power spectral density) by more than 3dB. The "average" power spectral density is determined by dividing the output power by 10log(EBW) where EBW is the 99% power bandwidth.

Fixed point-to-point applications using the 5725 – 5825 MHz band may use antennas with gains of up to 23dBi without this limitation. If the gain exceeds 23dBi then the output power limit of 1 Watt is reduced by 1dB for every dB the gain exceeds 23dBi.

SPURIOUS EMISSIONS LIMITS –UNII and LELAN DEVICES

The spurious emissions limits for signals below 1GHz are the FCC/RSS-GEN general limits. For emissions above 1GHz, signals in restricted bands are subject to the FCC/RSS GEN general limits. All other signals have a limit of –27dBm/MHz, which is a field strength of 68.3dBuV/m/MHz at a distance of 3m. For devices operating in the 5725-5850Mhz bands under the LELAN/UNII rules, the limit within 10MHz of the allocated band is increased to –17dBm/MHz.

[2] If EIRP exceeds 500mW the device must employ TPC
[3] If EIRP exceeds 500mW the device must employ TPC

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

Receiver readings are compared directly to the conducted emissions specification limit (decibel form) as follows:

$$R_r - S = M$$

where:

R_r = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

A distance factor, when used for electric field measurements above 30MHz, is calculated by using the following formula:

$$F_d = 20*LOG_{10} (D_m/D_s)$$

where:

F_d = Distance Factor in dB

D_m = Measurement Distance in meters

D_s = Specification Distance in meters

For electric field measurements below 30MHz the extrapolation factor is either determined by making measurements at multiple distances or a theoretical value is calculated using the formula:

$$F_d = 40*LOG_{10} (D_m/D_s)$$

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The antenna factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

R_r = Receiver Reading in dBuV/m

F_d = Distance Factor in dB

R_C = Corrected Reading in dBuV/m

L_S = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

Where the radiated electric field strength is expressed in terms of the equivalent isotropic radiated power (eirp), or where a field strength measurement of output power is made in lieu of a direct measurement, the following formula is used to convert between eirp and field strength at a distance of d (meters) from the equipment under test:

$$E = \frac{1000000 \sqrt{30 P}}{d} \quad \text{microvolts per meter}$$

where P is the eirp (Watts)

For a measurement at 3m the conversion from a logarithmic value for field strength (dBuV/m) to an eirp power (dBm) is -95.3dB.

Appendix A Test Equipment Calibration Data

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Radiated Emissions, 1000 - 6,000 MHz, 19-Nov-15					
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/26/2014	6/26/2016
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/20/2014	12/20/2015
Radiated Emissions, 1000 - 6,000 MHz, 23-Nov-15					
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/26/2014	6/26/2016
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/20/2014	12/20/2015
Radiated Spurious Emissions, 1000 - 6,500 MHz, Bandedges, 25-Nov-15					
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/26/2014	6/26/2016
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	12/20/2014	12/20/2015
Radiated Emissions, 1000 - 18,000 MHz, 25-Nov-15					
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/26/2014	6/26/2016
Hewlett Packard	High Pass filter, 3.5 GHz	P/N 84300-80038	1157	7/10/2015	7/10/2016
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	7/13/2015	7/13/2016
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	10/9/2015	10/9/2016
Hewlett Packard	Spectrum Analyzer (SA40) Purple 9 kHz - 40 GHz,	8564E (84125C)	2415	3/7/2015	3/7/2016
Radio Antenna Port (Power and Spurious Emissions), 30-Nov-15					
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	6/22/2015	6/22/2016
Radio Antenna Port (Power and Spurious Emissions), 01-Dec-15					
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	6/22/2015	6/22/2016
Radiated Emissions, 1000 - 25,000 MHz, 03-Dec-15					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	2/20/2015	2/20/2016
Hewlett Packard	SA40 Head (Red)	Miteq	1145	7/17/2015	7/17/2016
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/27/2014	6/27/2016
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	1729	7/8/2015	7/8/2016
A. H. Systems	Purple System Horn, 18-40GHz	SAS-574, p/n: 2581	2160	8/28/2014	8/28/2017
Radiated Emissions, 1000 - 12,000 MHz, 04-Dec-15					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	2/20/2015	2/20/2016
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/27/2014	6/27/2016

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1682	7/8/2015	7/8/2016
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	1729	7/8/2015	7/8/2016
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1730	7/10/2015	7/10/2016
Radiated Emissions, 1,000 - 12,000 MHz, 07-Dec-15					
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/26/2014	6/26/2016
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1682	7/8/2015	7/8/2016
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	10/9/2015	10/9/2016
Radiated Emissions, 30 - 1,000 MHz, 08-Dec-15					
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	7/6/2015	7/6/2016
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	2237	8/29/2014	8/29/2016
Com-Power	Preamplifier, 1-1000 MHz	PAM-103	2885	10/13/2015	10/13/2016
Radiated Emissions, 1000 - 40,000 MHz, 08-Dec-15					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	2/20/2015	2/20/2016
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/27/2014	6/27/2016
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2239	9/16/2015	9/16/2016
Hewlett Packard	SA40 Head (Red)	Miteq	1145	7/17/2015	7/17/2016
A. H. Systems	Purple System Horn, 18-40GHz	SAS-574, p/n: 2581	2160	8/28/2014	8/28/2017
Conducted Emissions - AC Power Ports, 9-Dec-15					
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1401	5/14/2015	5/14/2016
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESIB40 (1088.7490.40)	2493	1/23/2015	1/23/2016
Com-Power	9KHz-30MHz, 50uH, 15Aac, 10Adc, max	LI-215A	2672	6/26/2015	6/26/2016
Radiated Emissions, 1000 - 40,000 MHz, 14-Dec-15					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	2/20/2015	2/20/2016
Hewlett Packard	SA40 Head (Red)	Miteq	1145	7/17/2015	7/17/2016
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300-80039	1152	7/10/2015	7/10/2016
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/27/2014	6/27/2016
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	1729	7/8/2015	7/8/2016
A. H. Systems	Purple System Horn, 18-40GHz	SAS-574, p/n: 2581	2160	8/28/2014	8/28/2017
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2238	9/16/2015	9/16/2016

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Antenna port measurements, 17-Dec-15					
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	6/22/2015	6/22/2016
Frequency Stability (U-NII), 18-Dec-15					
Fluke	Fluke Mulitmeter, True RMS	175	1447	7/23/2015	7/23/2016
Watlow	Temp Chamber (w/ F4 watlow Controller)	96A0	2171	7/14/2015	7/14/2016
Agilent Technologies	3Hz -44GHz PSA Spectrum Analyzer	E4446A	2796	3/31/2015	3/31/2016
Radiated Emissions, 1,000 - 40,000 MHz, 23-Dec-15					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	2/20/2015	2/20/2016
HP / Miteq	SA40 Head (Red)	TTA1840-45-5P-HG-S	1145	7/17/2015	7/17/2016
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	6/27/2014	6/27/2016
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1730	7/10/2015	7/10/2016
Hewlett Packard	High Pass filter, 8.2 GHz (Purple System)	P/N 84300-80039	1767	11/3/2015	11/3/2016
Com-Power	Comb Generator, 1-10 GHz, 100 MHz Step	CGO-5100	2096	5/22/2015	5/22/2016
A. H. Systems	Purple System Horn, 18-40GHz	SAS-574, p/n: 2581	2160	8/28/2014	8/28/2017
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	9/16/2015	9/16/2016
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2251	9/16/2015	9/16/2016

Appendix B Test Data

T99885 Pages 28 - 130

Client:	Ericsson Canada	Job Number:	JD99841
Product	APINM210	T-Log Number:	T99885
System Configuration:	-	Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Emissions Standard(s):	FCC 15.247/15.E, RSS-247	Class:	-
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Ericsson Canada

Product

APINM210

Date of Last Test: 6/28/2016

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Power vs. Data Rate

In normal operating modes the card uses power settings stored on EEPROM to set the output power. For a given nominal output power the actual transmit power normally is reduced as the data rate increases, therefore testing was performed at the data rate in the mode with highest power to determine compliance with the requirements.
The following power measurements were made using a **GATED** average power meter and with the device configured in a continuous transmit mode on Chain 1 at the various data rates in each mode to verify the highest power mode:

Sample Notes

Sample S/N: -
Driver: -

Date of Test: 11/5/2012
Test Engineer: Mark Hill
Test Location: Lab #4

Mode	Data Rate	Power (dBm)	Power setting
802.11b	1	16.0	q66
	2	16.5	
	5.5	**16.7**	
	11	16.6	
802.11g	6	**16.6**	q69
	9	16.4	
	12	16.5	
	18	16.5	
	24	16.3	
	36	16.4	
	48	16.2	
	54	16.4	

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Mode	Data Rate	Power (dBm)	Power setting	
802.11n 20MHz	**6.5**	**16.6**	q69	
	13	16.6		
	19.5	16.5		
	26	16.5		
	39	16.5		
	52	16.5		
	58.5	16.5		
	65	16.5		
	78	16.5		<<-11ac mode only
802.11n/ac 40MHz	**13.5**	**16.9**	q70	
	27	16.8		
	40.5	16.8		
	54	16.8		
	81	16.8		
	108	16.9		
	121.5	16.9		
	135	16.8		
	162	16.6		<<-11ac mode only
	180	16.7		<<-11ac mode only
802.11ac 80MHz	**29.3**	**17.7**	q74	
	58.5	17.7		
	87.8	17.7		
	117	17.6		
	175.5	17.7		
	234	17.1		
	266.3	16.7		
	292.5	16.8		
	351	16.3		
	390	15.8		

Note :	Power setting - the software power setting used during testing, included for reference only.

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Duty Cycle

Date of Test: 11/5/2012
Test Engineer: Mark Hill
Test Location: Lab #4

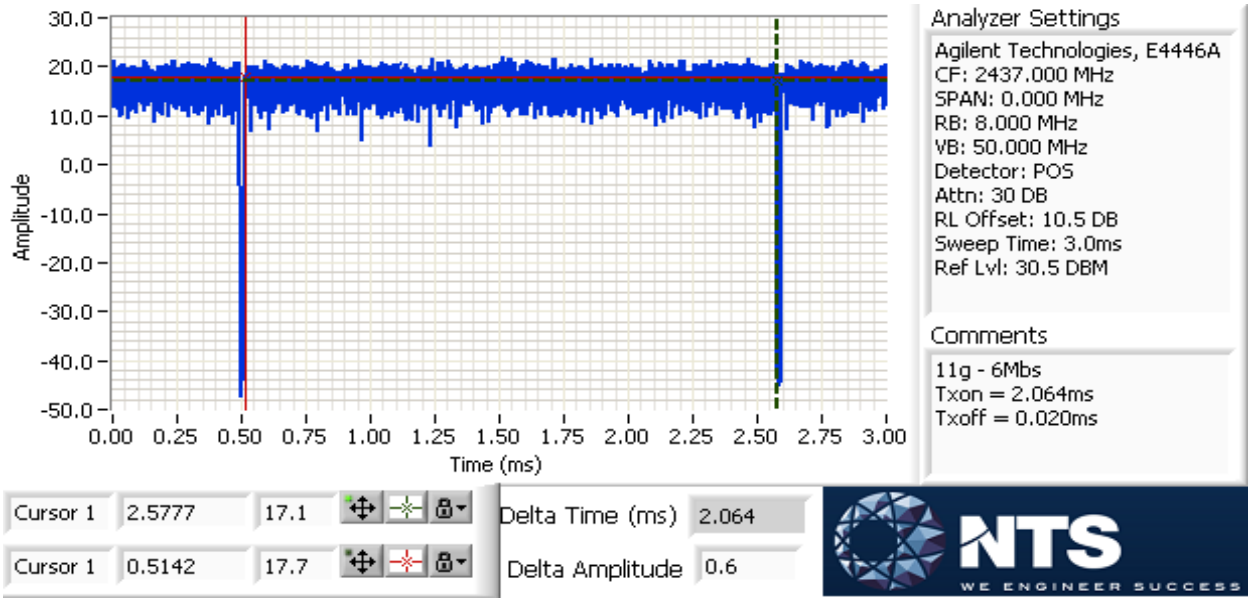
Duty cycle measurements performed on the worse case data rate for power.

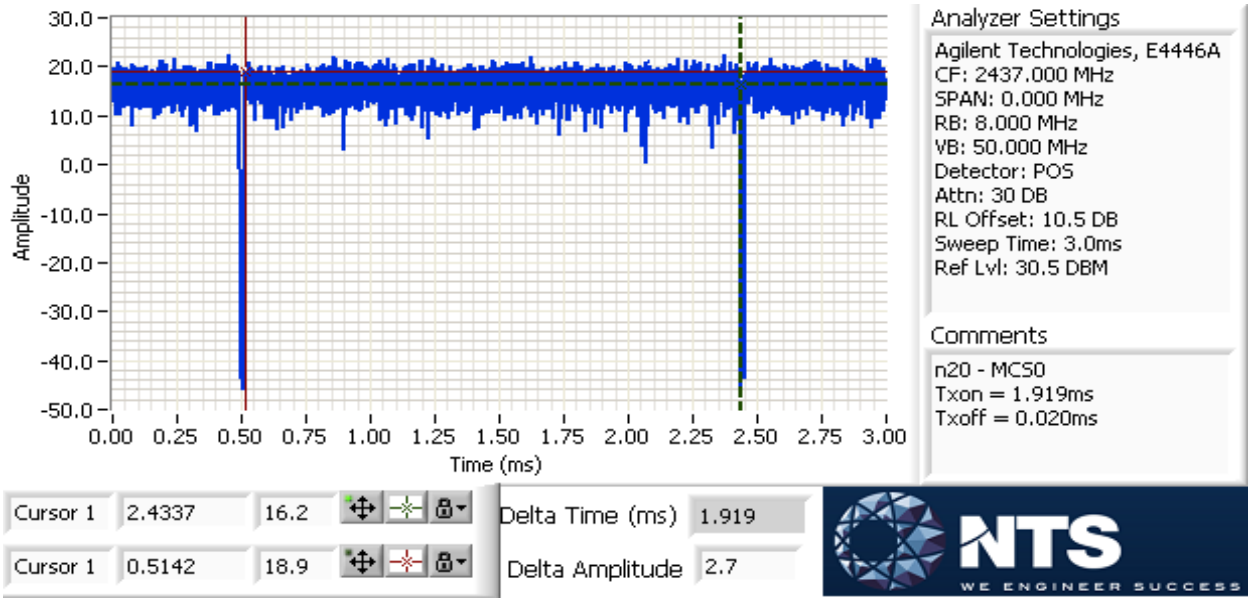
Notes: Measurements taken with maximum RBW/VBW settings allowed.

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11b	5.5	99.4%	Yes	2.32	0	0	10
11g	6	99.0%	Yes	2.06	0	0	10
n20	MCS0	99.0%	Yes	1.92	0	0	10
n40	MCS0	98.0%	Yes	0.94	0	0	10
ac80	VHT0	77.6%	Yes	0.21	1.1	2.2	4739

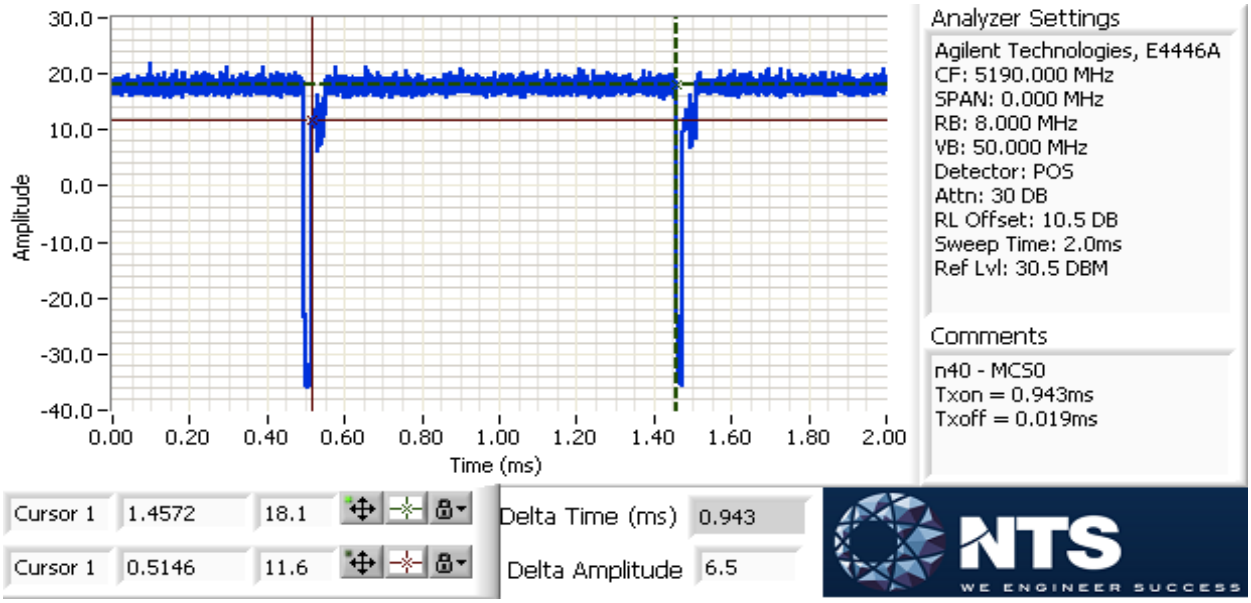
* Correction factor when using RMS/Power averaging - 10*log(1/x)
** Correction factor when using linear voltage average - 20*log(1/x)
T = Minimum transmission duration

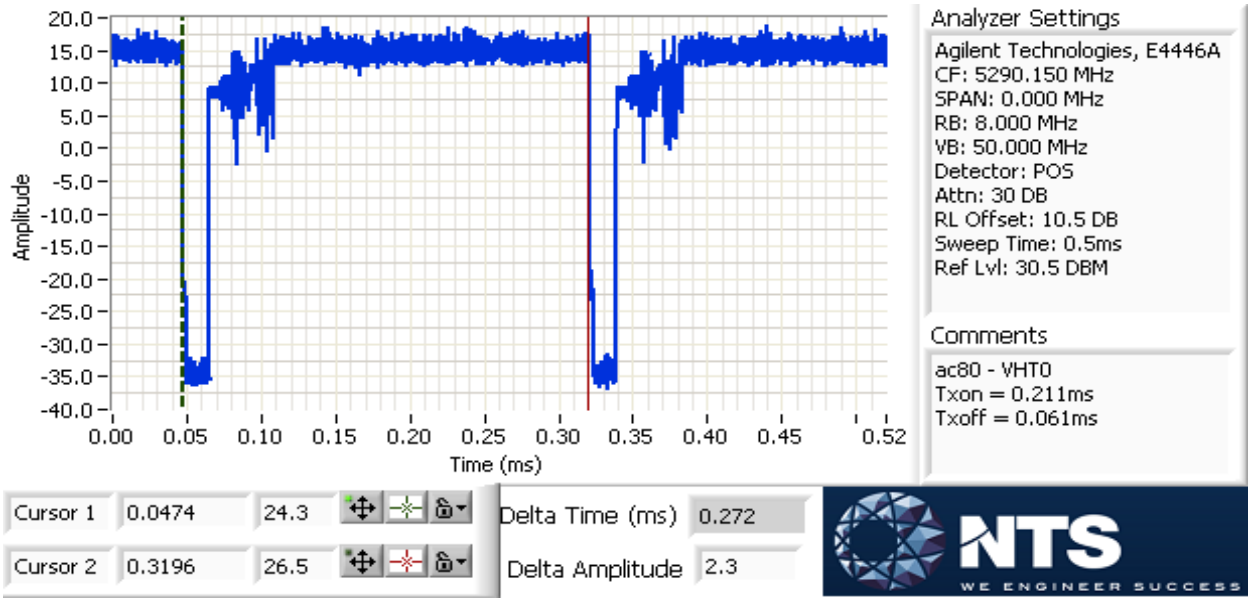
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A





Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A





Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

RSS-247 (LELAN) and FCC 15.407(UNII)
Antenna Port Measurements
Power, PSD, Bandwidth and Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5250 - 5350MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 23.0dBm (198mW) n20: 23.3dBm (213mW) n40: 23.7dBm (237mW) ac80: 19.5dBm (90mW)
1	PSD, 5250 - 5350MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 10.9 mW/MHz n20: 10.8dBm/MHz n40: 8.3dBm/MHz ac80: 2.6dBm/MHz
1	Max EIRP 5250 - 5350MHz	TPC required if EIRP≥ 500mW (27dBm). EIRP ≥ 200mW (23dBm) DFS threshold = -64dBm.	Pass	EIRP = 29.7 dBm (942 mW)
1	26dB Bandwidth	15.407 (Information only)	-	> 20MHz for all modes
1	99% Bandwidth	RSS-247 (Information only)	N/A	a: 17.2 MHz n20: 18.4 MHz n40: 37.2 MHz ac80: 75.7 MHz

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

General Test Configuration

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators and cables used.

Ambient Conditions:

Temperature: 22.4 °C
Rel. Humidity: 36 %

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033 D01

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6	99.0%	Yes	2.06	0	0	10
n20	MCS0	99.0%	Yes	1.92	0	0	10
n40	MCS0	98.0%	Yes	0.94	0	0	10
ac80	VHT0	77.6%	Yes	0.21	1.1	2.2	4739

Sample Notes

Sample S/N: Prototype
Driver:

Notes

Beamforming is supported for n20/n40/ac80. For FCC/IC, the conducted power remains the same for both non-beamforming and beamforming modes.

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #1: Bandwidth, Output Power and Power Spectral Density - MIMO Systems

Date of Test: 12/2/2015 0:00 Config. Used: 1

Test Engineer: R. Varelas / M. Birgani Config Change: None

Test Location: FT Lab #4A EUT Voltage: 120V/60Hz

Note 1:	Duty Cycle ≥ 98%. Output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, Span > OBW, # of points in sweep ≥ 2*span/RBW, auto sweep, **RMS sample** detector, power averaging on (transmitted signal was continuous, duty cycle ≥ 98%) and power integration over the OBW (method SA-1 of ANSI C63.10).
Note 2:	Measured using the same analyzer settings used for output power.
Note 3:	99% Bandwidth measured in accordance with C63.10 - RB between 1-5 % of OBW and VB ≥ 3*RB, Span between 1.5 and 5 times OBW.
Note 4:	For MIMO systems the total output power and total PSD are calculated from the sum of the powers of the individual chains (in linear terms). The antenna gain used to determine the EIRP and limits for PSD/Output power depends on the operating mode of the MIMO device. If the signals on the non-coherent between the transmit chains then the gain used to determine the limits is the highest gain of the individual chains and the EIRP is the sum of the products of gain and power on each chain. If the signals are coherent then the effective antenna gain is the sum (in linear terms) of the gains for each chain and the EIRP is the product of the effective gain and total power.
Note 5:	Constant Duty Cycle < 98%. Output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, Span > OBW, # of points in sweep ≥ 2*span/RBW, **RMS** detector, trace average **100** traces, power averaging on and power integration over the OBW. The measurements were corrected for duty cycle. This is based on 10log(1/x), where x is the duty cycle. (method SA-2 of ANSI C63.10)

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Antenna Gain Information

Freq	Antenna Gain (dBi) / Chain				BF	MultiChain Legacy	CDD	Sectorized / Xpol	Dir G (PWR)	Dir G (PSD)
	1	2	3	4						
5150-5250	5.5	4.79	4.17		No	Yes	Yes	No	1.50	6.00
5250-5350	5.5	4.79	4.17		No	Yes	Yes	No	1.50	6.00
5470-5725	5.23	5.15	5.16		No	Yes	Yes	No	1.10	5.80
5725-5825	5.79	3.92	5.1		No	Yes	Yes	No	0.60	5.20

For devices that support CDD modes

Min # of spatial streams: 1

Max # of spatial streams: 3

Notes:	BF = beamforming mode supported, Multichain Legacy = 802.11 legacy data rates supported for multichain transmissions, CDD = Cyclic Delay Diversity (or Cyclic Shift Diversity) modes supported, Sectorized / Xpol = antennas are sectorized or cross polarized.
Notes:	Dir G (PWR) = total gain (Gant + Array Gain) for power calculations; GA (PSD) = total gain for PSD calculations based on FCC KDB 662911. Depending on the modes supported, the Array Gain value for power could be different from the PSD value.
Notes:	Array gain for power/psd calculated per KDB 662911 D01.
Notes:	For systems with Beamforming and CDD, choose one the following options: Option 1: Delays are optimized for beamforming, rather than being selected from cyclic delay table of 802.11; Array gains calculated based on beamforming criteria. Option 2: Antennas are paired for beamforming, and the pairs are configured to use the cyclic delay diversity of 802.11; the array gain associated with beamforming with 2 antennas (3dB), and the array gain associated with CDD with two antennas (3dB for PSD and 0 dB for power)

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

MIMO Device - 5250-5350 MHz Band - FCC

Mode: 11a Max EIRP (mW): 280

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power[1] mW	Total Power[1] dBm	FCC Limit dBm	Max Power (W)	Result
5260	1	q76	21.6	99	18.2	195.2	22.9	24.0	0.198	Pass
	3				18.1					
	4									
	2				18.1					
5300	1	q75	20.8	99	18.3	198.2	23.0	24.0		Pass
	3				18.2					
	4									
	2				18.1					
5320	1	q60	20.3	99	15.1	95.6	19.8	24.0		Pass
	3				15.0					
	4									
	2				15.0					

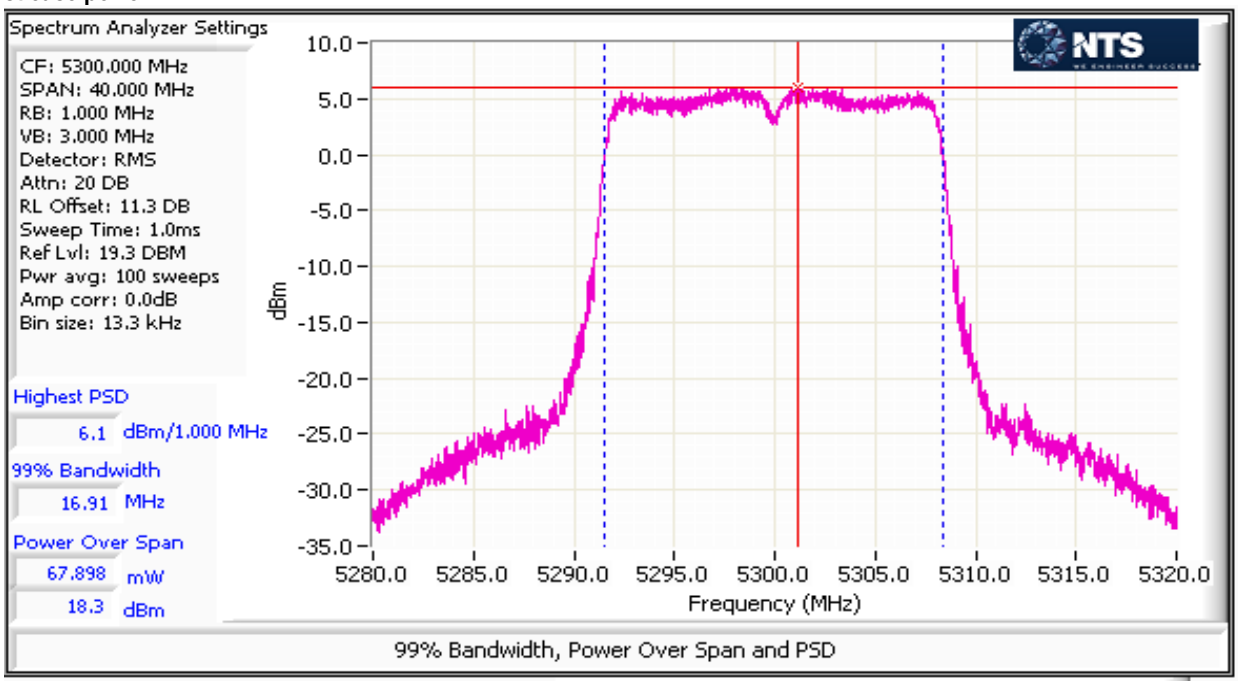
MIMO Device - 5250-5350 MHz Band - Industry Canada

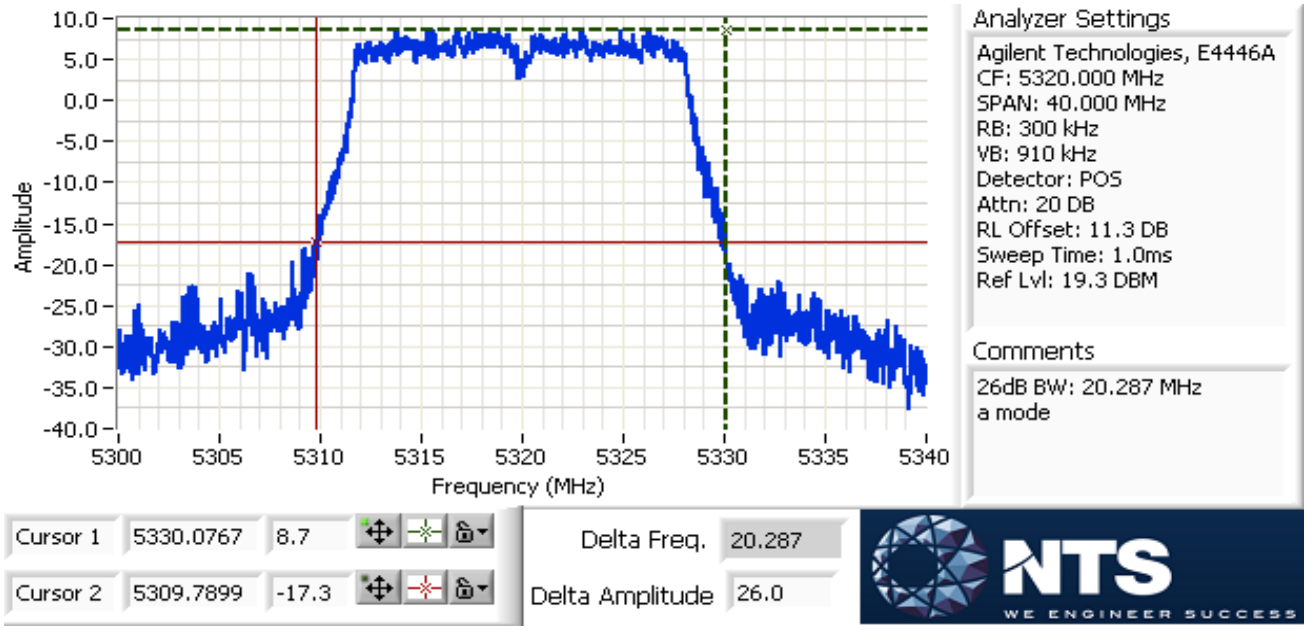
Mode: 11a Max EIRP (mW): 280

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power[1] dBm	Total Power mW	Total Power dBm	IC limit dBm	Max Power (W)	Result
5260	1	q76	17.2	99	18.2	195.2	22.9	23.4	0.198	Pass
	3				18.1					
	4									
	2				18.1					
5300	1	q75	17.2	99	18.3	198.2	23.0	23.4		Pass
	3				18.2					
	4									
	2				18.1					
5320	1	q60	16.8	99	15.1	95.6	19.8	23.3		Pass
	3				15.0					
	4									
	2				15.0					

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Worst case power





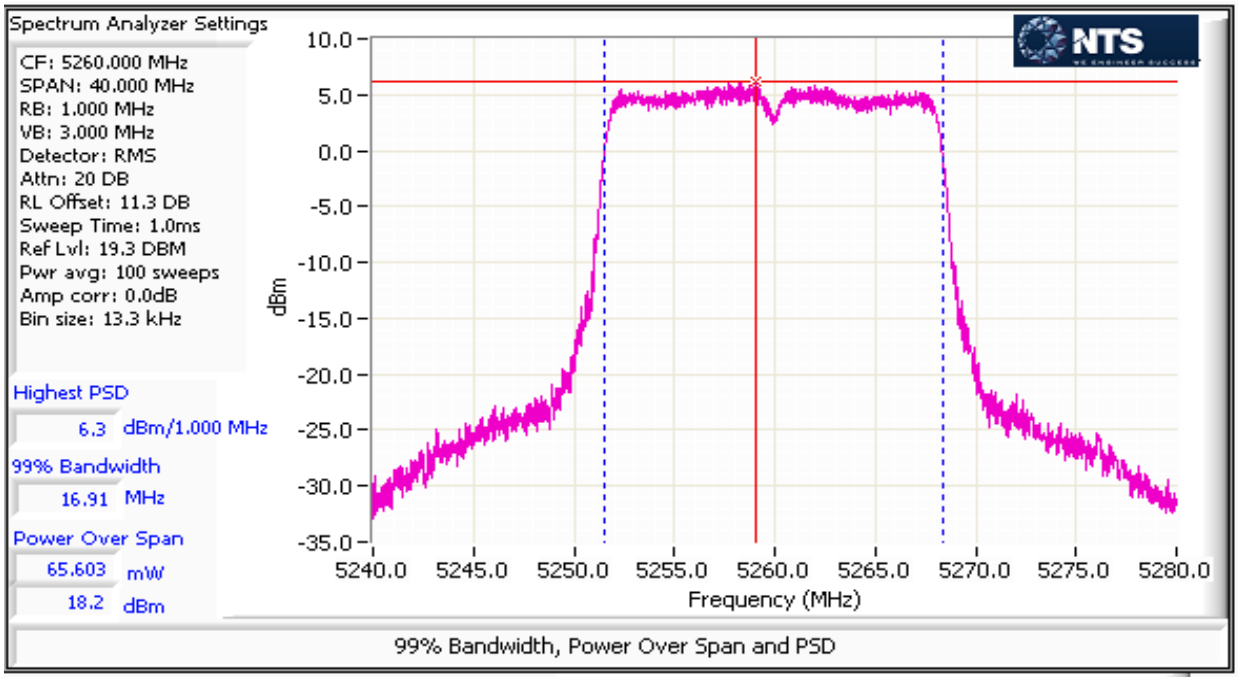
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

5250-5350 PSD - FCC/IC

Mode: 11a

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD[1] mW/MHz	Total PSD[1] dBm/MHz	FCC Limit dBm/MHz	IC Limit dBm/MHz	Result
5260	1	q76		99	6.3	12.3	10.9	11.0	11.0	Pass
	3				6.0					
	4									
	2				6.1					
5300	1	q75		99	6.1	11.9	10.8	11.0	11.0	Pass
	3				6.0					
	4									
	2				5.8					
5320	1	q60		99	2.8	5.9	7.7	11.0	11.0	Pass
	3				3.1					
	4									
	2				2.8					

Worst case PSD



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

MIMO Device - 5250-5350 MHz Band - FCC

Max EIRP (mW) Beamforming: 846.4

Mode: n20 Max EIRP (mW): 300.3

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power[1] mW	Total Power[1] dBm	FCC Limit dBm	Max Power (W)	Result
5260	1	q76	26	99.0	17.1	189.7	22.8	24.0	0.213	Pass
	3				18.4					
	4									
	2				18.4					
5300	1	q76	26	99.0	18.2	212.6	23.3	24.0		Pass
	3				18.7					
	4									
	2				18.6					
5320	1	q65	26	99.0	16.0	117.6	20.7	24.0		Pass
	3				15.9					
	4									
	2				15.9					

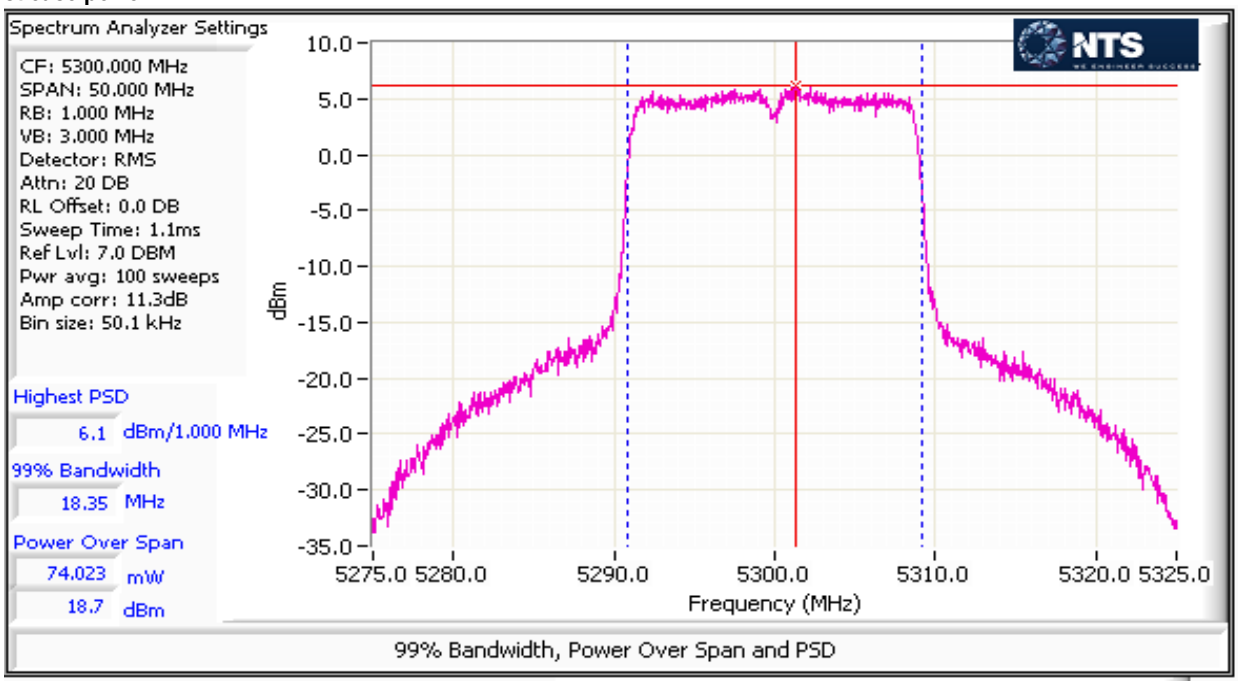
MIMO Device - 5250-5350 MHz Band - Industry Canada

Mode: n20 Max EIRP (mW): 300.3

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power[1] dBm	Total Power mW	Total Power dBm	IC limit dBm	Max Power (W)	Result
5260	1	q76	18.2	99.0	17.1	189.7	22.8	23.6	0.213	Pass
	3				18.4					
	4									
	2				18.4					
5300	1	q76	18.4	99.0	18.2	212.6	23.3	23.6		Pass
	3				18.7					
	4									
	2				18.6					
5320	1	q65	18.0	99.0	16.0	117.6	20.7	23.6		Pass
	3				15.9					
	4									
	2				15.9					

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Worst case power



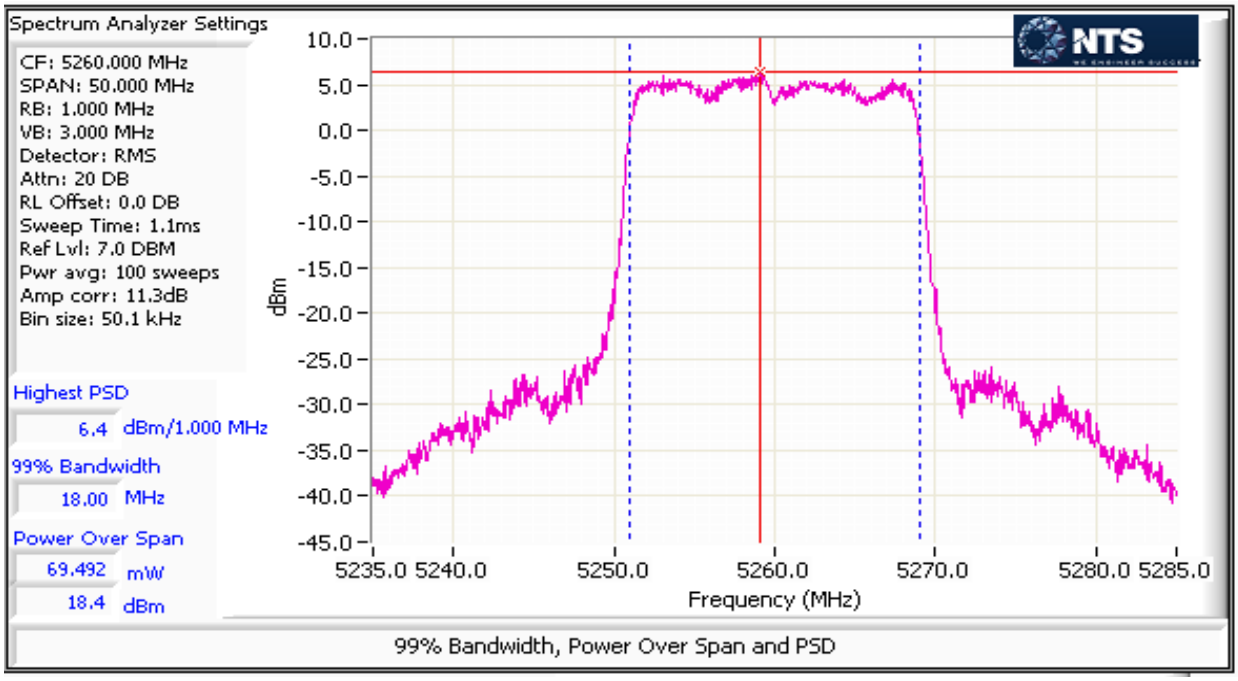
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

5250-5350 PSD - FCC/IC

Mode: n20

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD[1] mW/MHz	Total PSD[1] dBm/MHz	FCC Limit dBm/MHz	IC Limit dBm/MHz	Result
5260	1	q76		99.0	4.5	10.9	10.4	11.0	11.0	Pass
	3				5.7					
	4									
	2				6.4					
5300	1	q76		99.0	5.7	12.1	10.8	11.0	11.0	Pass
	3				6.1					
	4									
	2				6.3					
5320	1	q65		99.0	3.5	6.7	8.3	11.0	11.0	Pass
	3				3.4					
	4									
	2				3.5					

Worst case PSD



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

MIMO Device - 5250-5350 MHz Band - FCC

Max EIRP (mW) Bearmforming: 941.5

Mode: n40 Max EIRP (mW): 334.1

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power[1] mW	Total Power[1] dBm	FCC Limit dBm	Max Power (W)	Result
5270	1	q78	39.2	98	18.9	236.5	23.7	24.0	0.237	Pass
	3				19.0					
	4									
	2				19.0					
5310	1	q62	39.4	98	15.4	97.2	19.9	24.0		Pass
	3				15.0					
	4									
	2				14.9					

MIMO Device - 5250-5350 MHz Band - Industry Canada

Mode: n40 Max EIRP (mW): 334.1

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power[1] dBm	Total Power mW	Total Power dBm	IC limit dBm	Max Power (W)	Result
5270	1	q78	37.2	98	18.9	236.5	23.7	24.0	0.237	Pass
	3				19.0					
	4									
	2				19.0					
5310	1	q62	36.5	98	15.4	97.2	19.9	24.0		Pass
	3				15.0					
	4									
	2				14.9					

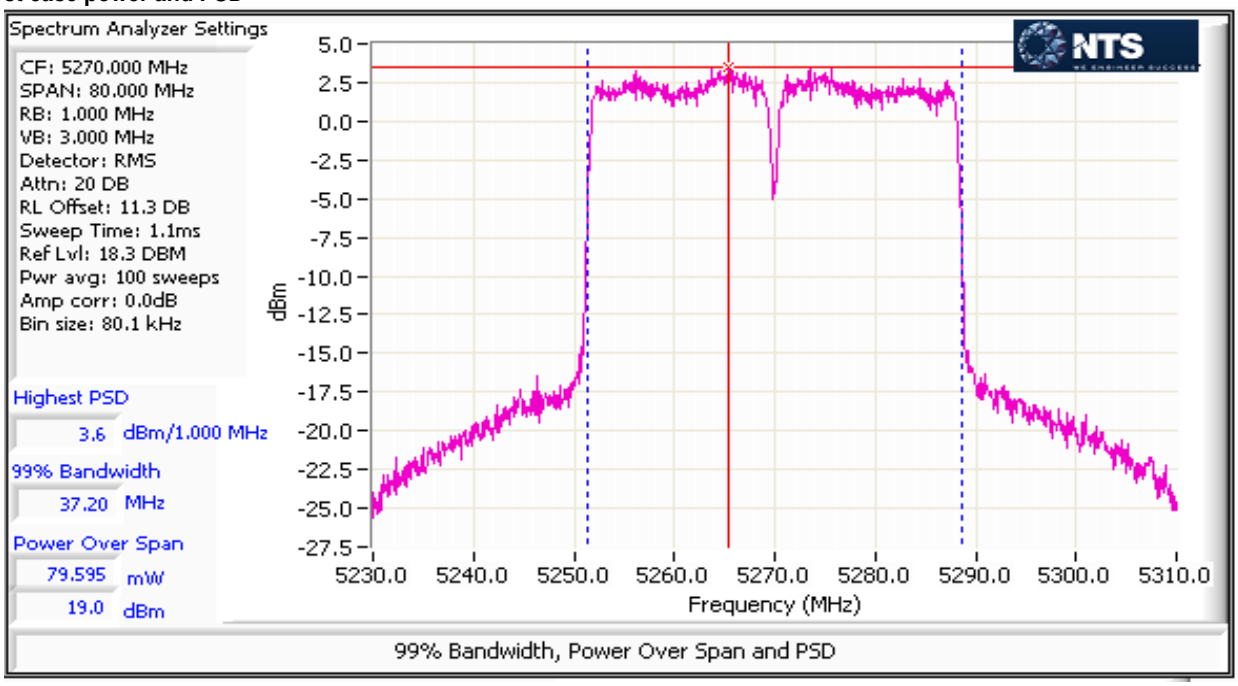
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

MIMO Device 5250-5350 PSD - FCC/IC

Mode: n40

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD[1] mW/MHz	Total PSD[1] dBm/MHz	FCC Limit dBm/MHz	IC Limit dBm/MHz	Result
5270	1	q78		98	3.4	6.8	8.3	11.0	11.0	Pass
	3				3.6					
	4									
	2				3.6					
5310	1	q62		98	0.0	2.8	4.5	11.0	11.0	Pass
	3				-0.4					
	4									
	2				-0.3					

Worst case power and PSD



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

MIMO Device - 5250-5350 MHz Band - FCC

Max EIRP (mW) Beamforming: 77.6

Mode: ac80 Max EIRP (mW): 27.5

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power[5] mW	Total Power[5] dBm	FCC Limit dBm	Max Power (W)	Result
5290	1	q61	82.5	77.6	13.4	90.0	19.5	24.0	0.020	Pass
	3				13.7					
	4									
	2				13.9					

MIMO Device - 5250-5350 MHz Band - Industry Canada

Mode: ac80 Max EIRP (mW): 127.1

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power dBm	Total Power[5] mW	Total Power[5] dBm	IC limit dBm	Max Power (W)	Result
5290	1	q61	75.7	77.6	13.4	90.0	19.5	24.0	0.090	Pass
	3				13.7					
	4									
	2				13.9					

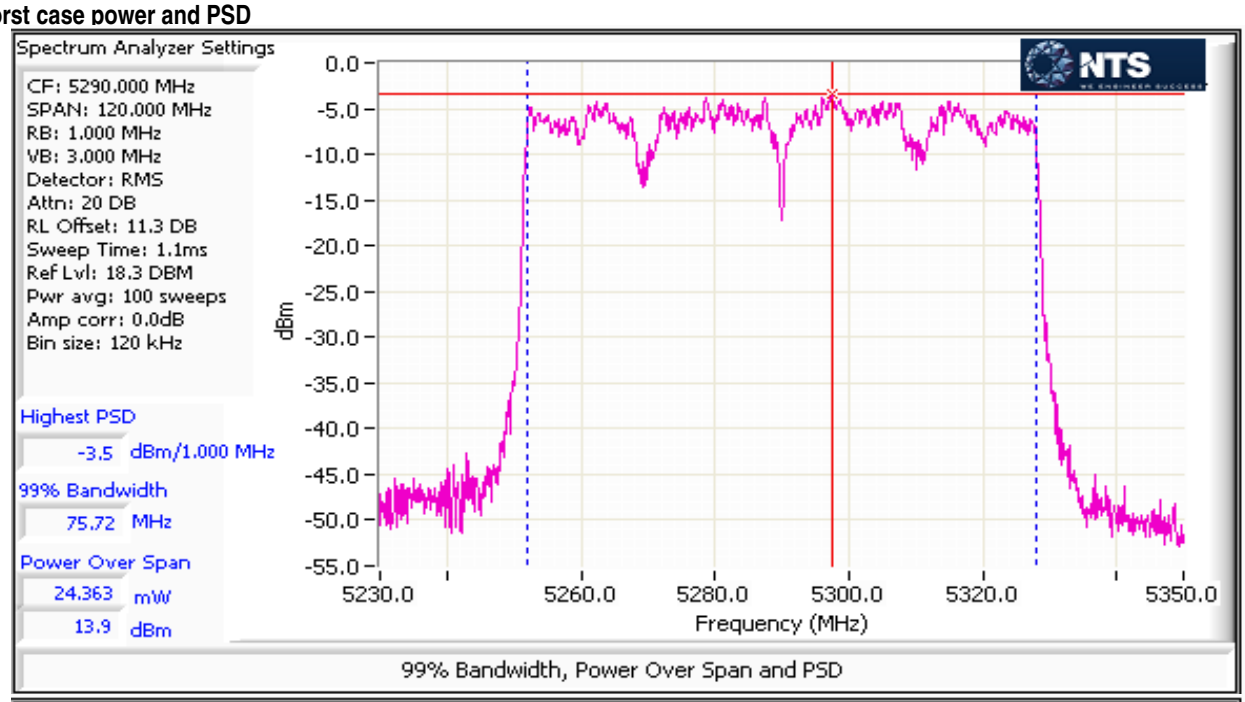
MIMO Device 5250-5350 PSD - FCC/IC

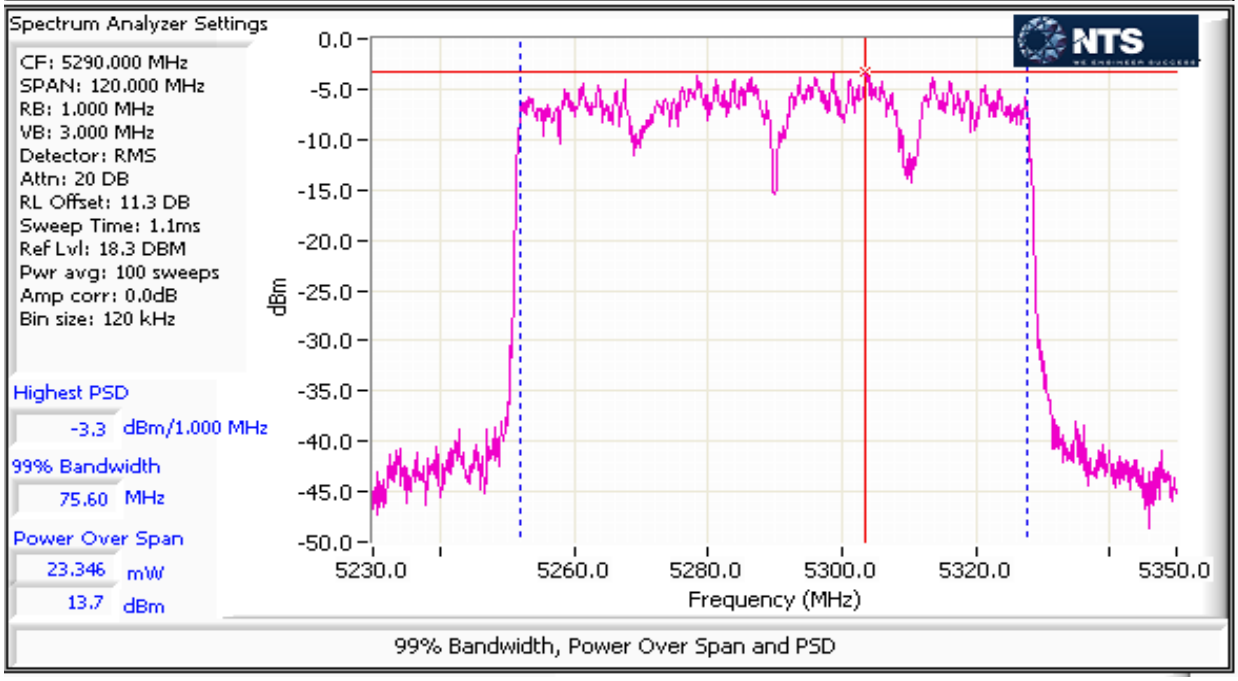
Mode: ac80

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD[5] mW/MHz	Total PSD[5] dBm/MHz	FCC Limit dBm/MHz	IC Limit dBm/MHz	Result
5290	1	q61		77.6	-3.4	1.8	2.6	11.0	11.0	Pass
	3				-3.3					
	4									
	2				-3.5					

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Worst case power and PSD





Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

RSS-247 (LELAN) and FCC 15.407(UNII)
Antenna Port Measurements
Power, PSD, Bandwidth and Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5470 - 5725MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 23.1dBm (204mW) n20: 23.1dBm (203mW) n40: 23.5dBm (224mW) ac80: 23.7dBm (235mW)
1	PSD, 5470 - 5725MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 10.9dBm/MHz n20: 11.0dBm/MHz n40: 8.7dBm/MHz ac80: 5.4dBm/MHz
1	Max EIRP 5470 - 5725MHz	TPC required if EIRP≥ 500mW (27dBm). EIRP ≥ 200mW (23dBm) DFS threshold	Pass	EIRP = 29.5dBm (894mW)
1	26dB Bandwidth	15.407 (Information only)	-	> 20MHz for all modes
1	99% Bandwidth	RSS-247 (Information only)	N/A	a: 16.9 MHz n20: 18.1 MHz n40: 36.5 MHz ac80: 75.7 MHz

General Test Configuration

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators and cables used.

Ambient Conditions:

Temperature: 20-22 °C
Rel. Humidity: 30 - 35 %

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033 D01

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6	99.0%	Yes	2.06	0	0	10
n20	MCS0	99.0%	Yes	1.92	0	0	10
n40	MCS0	98.0%	Yes	0.94	0	0	10
ac80	VHT0	77.6%	Yes	0.21	1.1	2.2	4739

Sample Notes

Sample S/N: Prototype
Driver:

Notes

Beamforming is supported for n20/n40/ac80. For FCC/IC, the conducted power remains the same for both non-beamforming and beamforming modes.

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #1: Bandwidth, Output Power and Power Spectral Density - MIMO Systems

Date of Test: 12/17/2015 0:00 Config. Used: 1

Test Engineer: Deniz Demirci / R. Varelas Config Change: None

Test Location: FT Lab #4a EUT Voltage: 120V/60Hz

Note 1:	Duty Cycle ≥ 98%. Output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, Span > OBW, # of points in sweep ≥ 2*span/RBW, auto sweep, **RMS** detector, power averaging on (transmitted signal was continuous, duty cycle ≥ 98%) and power integration over the OBW (method SA-1 of ANSI C63.10).
Note 2:	Measured using the same analyzer settings used for output power.
Note 3:	99% Bandwidth measured in accordance with C63.10 - RB between 1-5 % of OBW and VB ≥ 3*RB, Span between 1.5 and 5 times OBW.
Note 4:	For MIMO systems the total output power and total PSD are calculated from the sum of the powers of the individual chains (in linear terms). The antenna gain used to determine the EIRP and limits for PSD/Output power depends on the operating mode of the MIMO device. If the signals on the non-coherent between the transmit chains then the gain used to determine the limits is the highest gain of the individual chains and the EIRP is the sum of the products of gain and power on each chain. If the signals are coherent then the effective antenna gain is the sum (in linear terms) of the gains for each chain and the EIRP is the product of the effective gain and total power.
Note 5:	Constant Duty Cycle < 98%. Output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, Span > OBW, # of points in sweep ≥ 2*span/RBW, **RMS** detector, trace average **100** traces, power averaging on and power integration over the OBW. The measurements were corrected for duty cycle. This is based on 10log(1/x), where x is the duty cycle. (method SA-2 of ANSI C63.10)

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Antenna Gain Information

Freq	Antenna Gain (dBi) / Chain				BF	MultiChain Legacy	CDD	Sectorized / Xpol	Dir G (PWR)	Dir G (PSD)
	1	2	3	4						
5150-5250	5.5	4.79	4.17		No	Yes	Yes	No	1.50	6.00
5250-5350	5.5	4.79	4.17		No	Yes	Yes	No	1.50	6.00
5470-5725	5.23	5.15	5.16		No	Yes	Yes	No	1.10	5.80
5725-5825	5.79	3.92	5.1		No	Yes	Yes	No	0.60	5.20

For devices that support CDD modes

Min # of spatial streams: 1

Max # of spatial streams: 3

Notes:	BF = beamforming mode supported, Multichain Legacy = 802.11 legacy data rates supported for multichain transmissions, CDD = Cyclic Delay Diversity (or Cyclic Shift Diversity) modes supported, Sectorized / Xpol = antennas are sectorized or cross polarized.
Notes:	Dir G (PWR) = total gain (Gant + Array Gain) for power calculations; GA (PSD) = total gain for PSD calculations based on FCC KDB 662911. Depending on the modes supported, the Array Gain value for power could be different from the PSD value.
Notes:	Array gain for power/psd calculated per KDB 662911 D01.
Notes:	For systems with Beamforming and CDD, choose one the following options: Option 1: Delays are optimized for beamforming, rather than being selected from cyclic delay table of 802.11; Array gains calculated based on beamforming criteria. Option 2: Antennas are paired for beamforming, and the pairs are configured to use the cyclic delay diversity of 802.11; the array gain associated with beamforming with 2 antennas (3dB), and the array gain associated with CDD with two antennas (3dB for PSD and 0 dB for power)

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

MIMO Device - 5470-5725 MHz Band - FCC

Mode: **11a** Max EIRP (mW): 262.5

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5500	1	q73	25.8	99	18.3	199.8	23.0	24.0	0.204	Pass
	3				18.1					
	4									
	2				18.3					
5580	1	q73	25.9	99	18.9	203.8	23.1	24.0		Pass
	3				18.0					
	4									
	2				18.0					
5700	1	q66	20.5	99	16.9	133.3	21.2	24.0		Pass
	3				16.2					
	4									
	2				16.3					
5720	1	q73	20.6	99	17.9	164.2	22.2	24.0		Pass
	3				17.1					
	4									
	2				17.1					

Portion within 5725-5850 MHz band (UNII-3)

5720	1	q73		99	11.6	38.5	15.9	30.0	0.0385	Pass
	3				10.6					
	4									
	2				11.0					

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

MIMO Device - 5470-5725 MHz Band - Industry Canada

Mode: 11a Max EIRP (mW): 262.5

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power[1] dBm	Total Power mW	Total Power dBm	IC Limit dBm	Max Power (W)	Result
5500	1	q73	16.9	99	18.3	196.7	22.9	23.3	0.204	Pass
	3				18.1					
	4									
	2				18.1					
5580	1	q73	16.9	99	18.9	203.8	23.1	23.3		Pass
	3				18.0					
	4									
	2				18.0					
5700	1	q66	16.8	99	16.9	133.3	21.2	23.3		Pass
	3				16.2					
	4									
	2				16.3					
5720	1	q73	13.6	99	17.9	164.2	22.2	22.3		Pass
	3				17.1					
	4									
	2				17.1					

Portion within 5725-5850 MHz band (UNII-3)

5720	1	q73		99	11.6	38.5	15.9	30.0	0.0385	Pass
	3				10.6					
	4									
	2				11.0					

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

5470-5700 PSD - FCC/IC

Mode: 11a

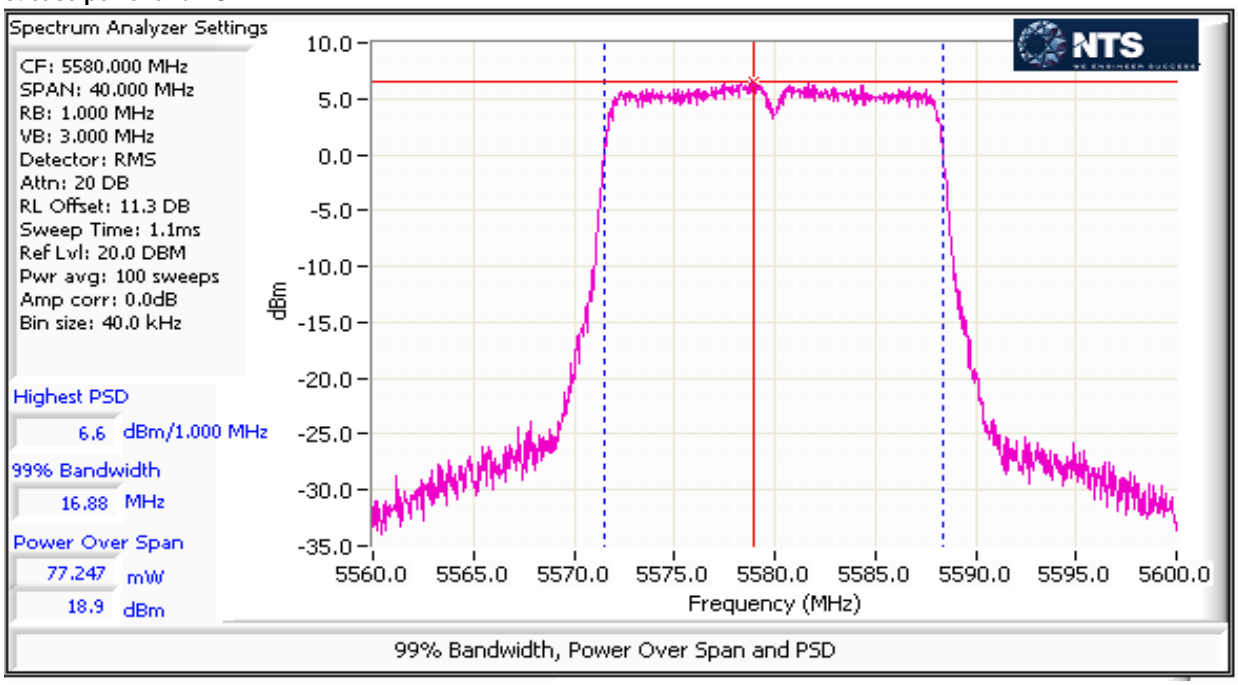
Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD[1] mW/MHz	Total PSD[1] dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5500	1	q73		99	6.3	12.4	10.9	11.0	11.0	Pass
	3				6.1					
	4									
	2				6.1					
5580	1	q73		99	6.6	12.4	10.9	11.0	11.0	Pass
	3				5.9					
	4									
	2				6.0					
5700	1	q66		99	5.0	8.1	9.1	11.0	11.0	Pass
	3				3.8					
	4									
	2				4.0					
5720	1	q73		99	6.7	12.4	10.9	11.0	11.0	Pass
	3				5.9					
	4									
	2				5.8					

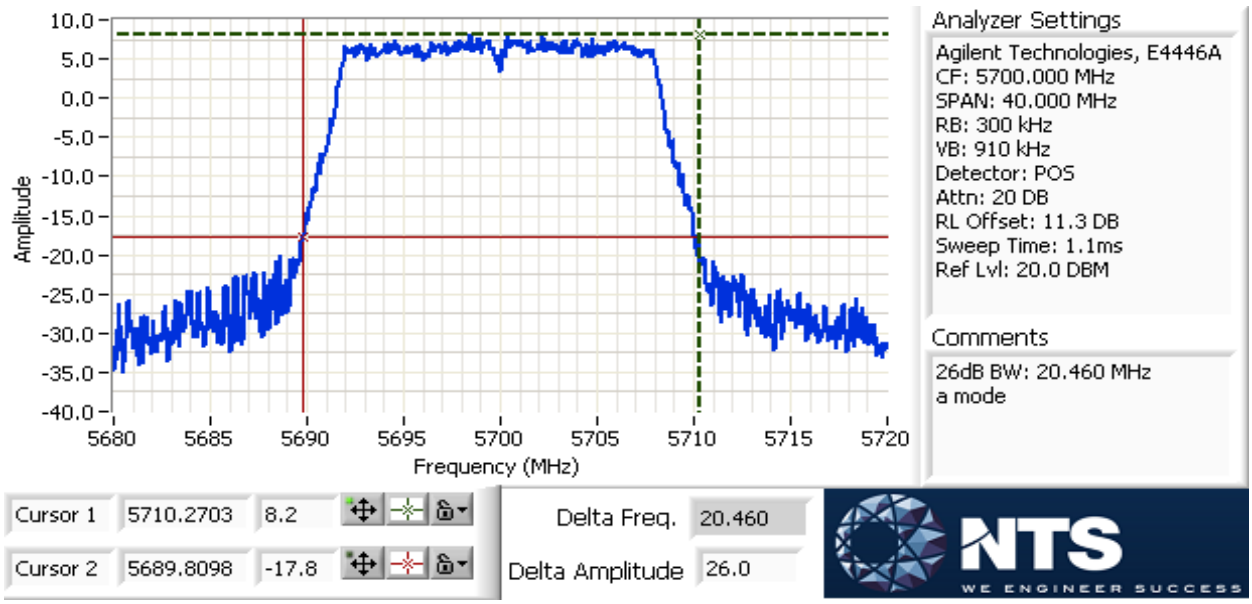
Portion within 5725-5850 MHz band (UNII-3)

5720	1	q73		99	6.0	10.5	10.2	30.0	30.0	Pass
	3				4.9					
	4									
	2				5.4					

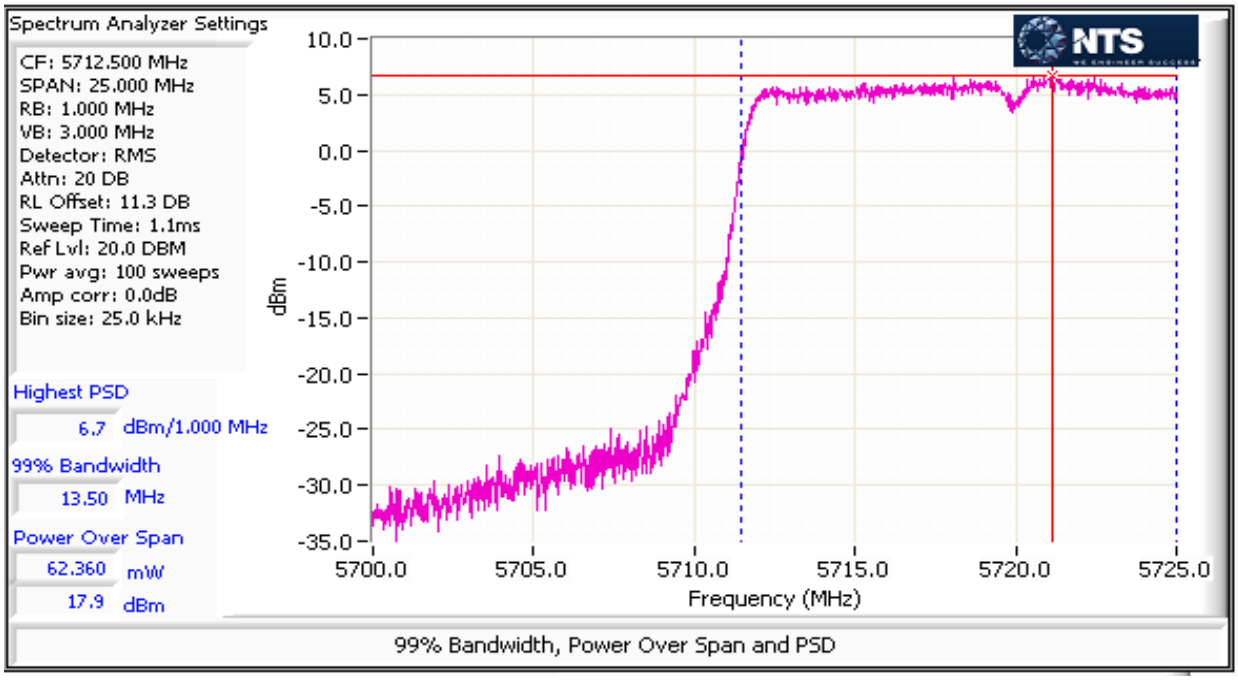
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

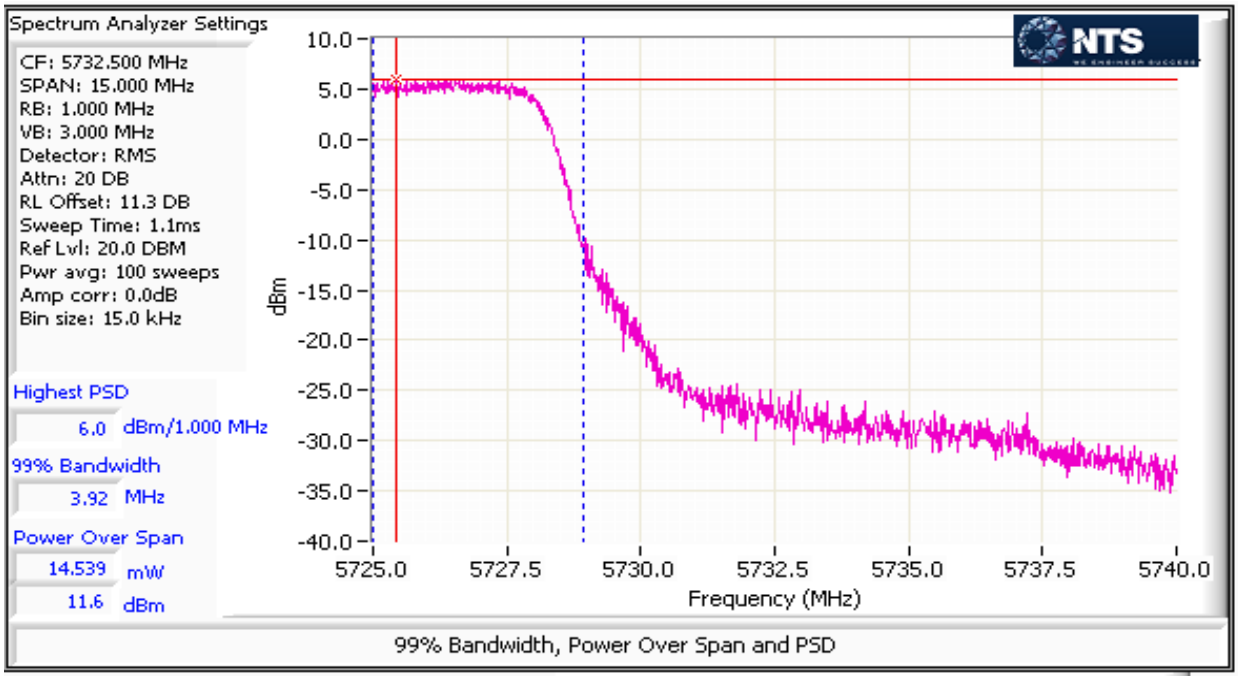
Worst case power and PSD



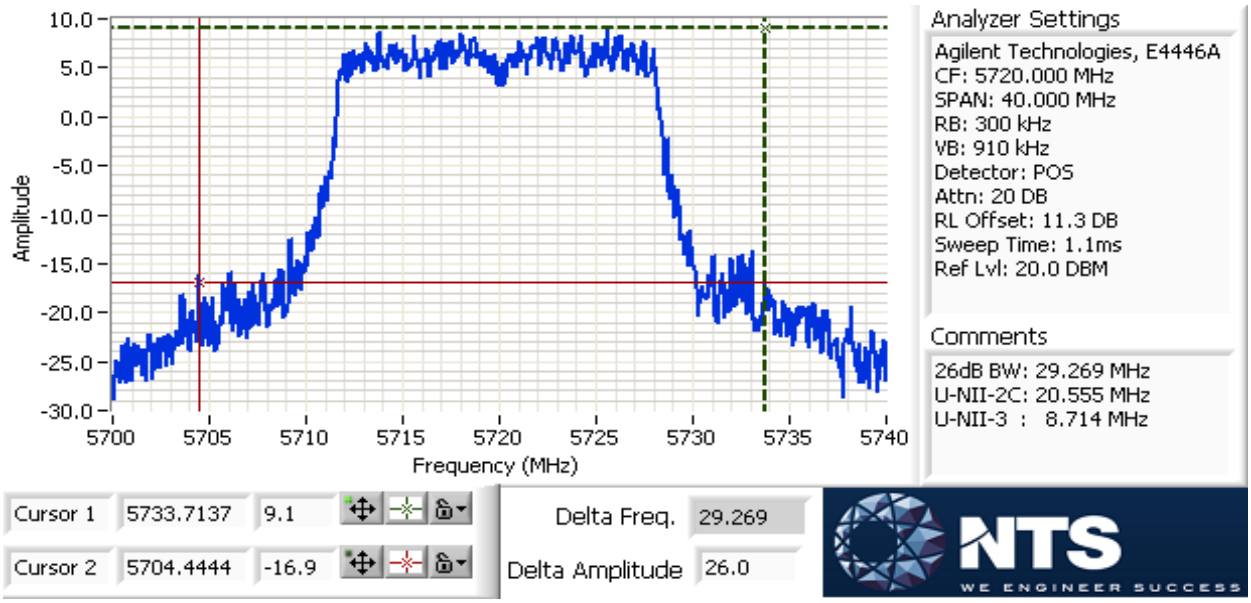


Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A





Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

MIMO Device - 5470-5725 MHz Band - FCC

Max EIRP (mW) Beamforming: 772.9

Mode: n20 Max EIRP (mW): 261.9

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5500	1	q71	23.0	99	18.3	181.4	22.6	24.0	0.203	Pass
	3				17.7					
	4									
	2				17.4					
5580	1	q74	25.8	99	18.6	203.3	23.1	24.0		Pass
	3				18.4					
	4									
	2				17.9					
5700	1	q62	20.5	99	15.8	105.1	20.2	24.0		Pass
	3				15.4					
	4									
	2				15.1					
5720	1	q74	18.0	99	17.9	165.5	22.2	23.6		Pass
	3				17.0					
	4									
	2				17.3					

Portion within 5725-5850 MHz band (UNII-3)

5720	1	q74		99	12.4	45.6	16.6	30.0	0.0456	Pass
	3				11.4					
	4									
	2				11.6					

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

MIMO Device - 5470-5725 MHz Band - Industry Canada

Mode: n20 Max EIRP (mW): 261.9

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power[1] dBm	Total Power mW	Total Power dBm	IC Limit dBm	Max Power (W)	Result
5500	1	q71	18.0	99	18.3	181.4	22.6	23.6	0.203	Pass
	3				17.7					
	4									
	2				17.4					
5580	1	q74	18.1	99	18.6	203.3	23.1	23.6		Pass
	3				18.4					
	4									
	2				17.9					
5700	1	q62	18.0	99	15.8	105.1	20.2	23.5		Pass
	3				15.4					
	4									
	2				15.1					
5720	1	q74	14.1	99	17.9	165.5	22.2	22.5		Pass
	3				17.0					
	4									
	2				17.3					

Portion within 5725-5850 MHz band (UNII-3)

5720	1	q74		99	12.4	45.6	16.6	30.0	0.0456	Pass
	3				11.4					
	4									
	2				11.6					

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

5470-5725 PSD - FCC/IC

Mode: n20

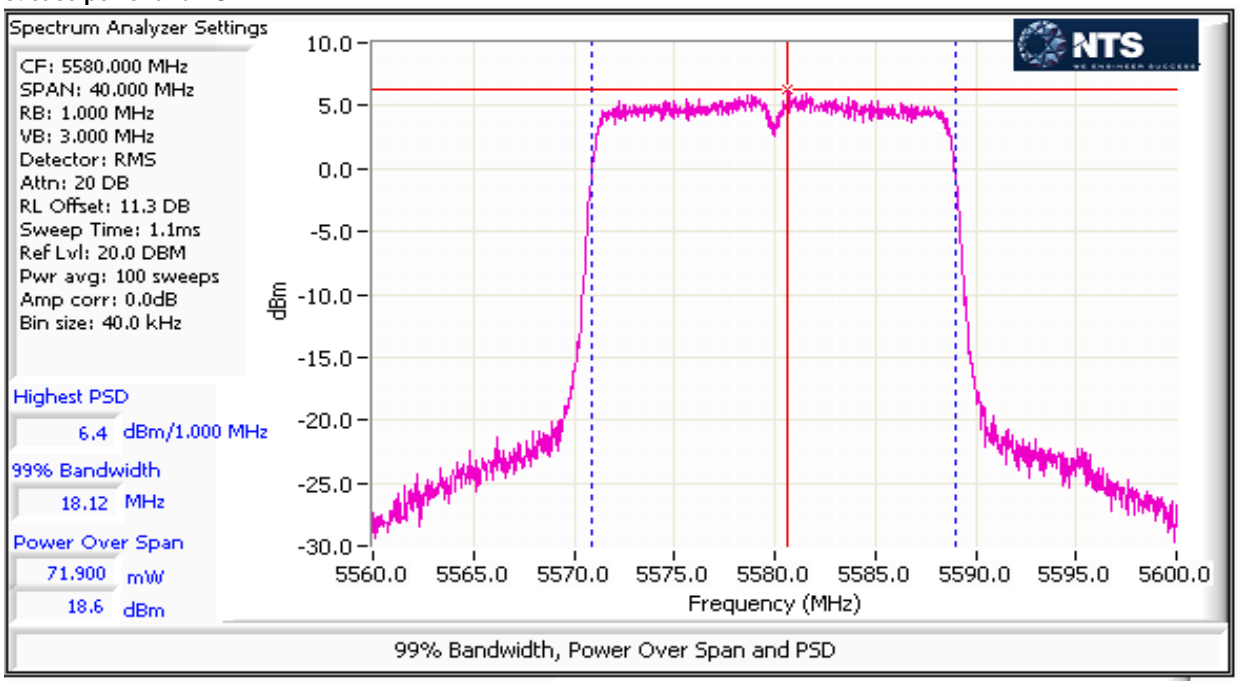
Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD[1] mW/MHz	Total PSD[1] dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5500	1	q71		99	5.6	10.4	10.2	11.0	11.0	Pass
	3				5.1					
	4									
	2				5.5					
5580	1	q74		99	6.4	12.2	10.9	11.0	11.0	Pass
	3				6.0					
	4									
	2				5.9					
5700	1	q62		99	3.2	6.5	8.1	11.0	11.0	Pass
	3				2.9					
	4									
	2				3.9					
5720	1	q74		99	6.4	12.6	11.0	11.0	11.0	Pass
	3				5.5					
	4									
	2				6.7					

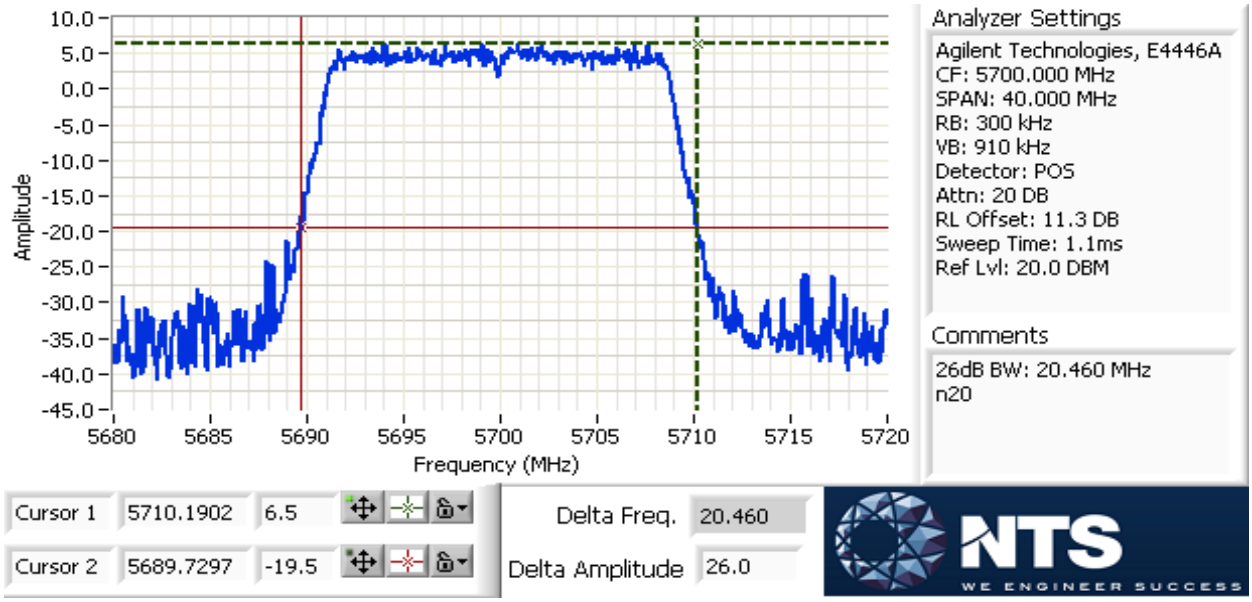
Portion within 5725-5850 MHz band (UNII-3)

5720	1	q74		99	6.2	11.5	10.6	30.0	30.0	Pass
	3				5.4					
	4									
	2				5.9					

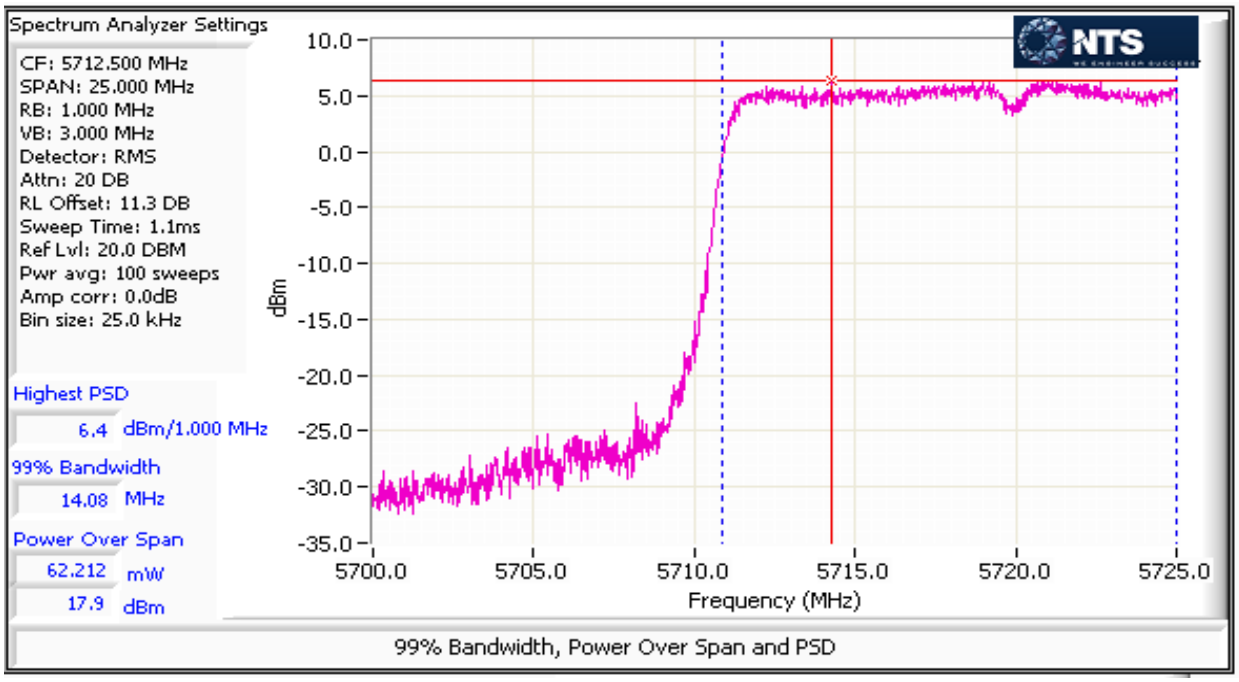
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

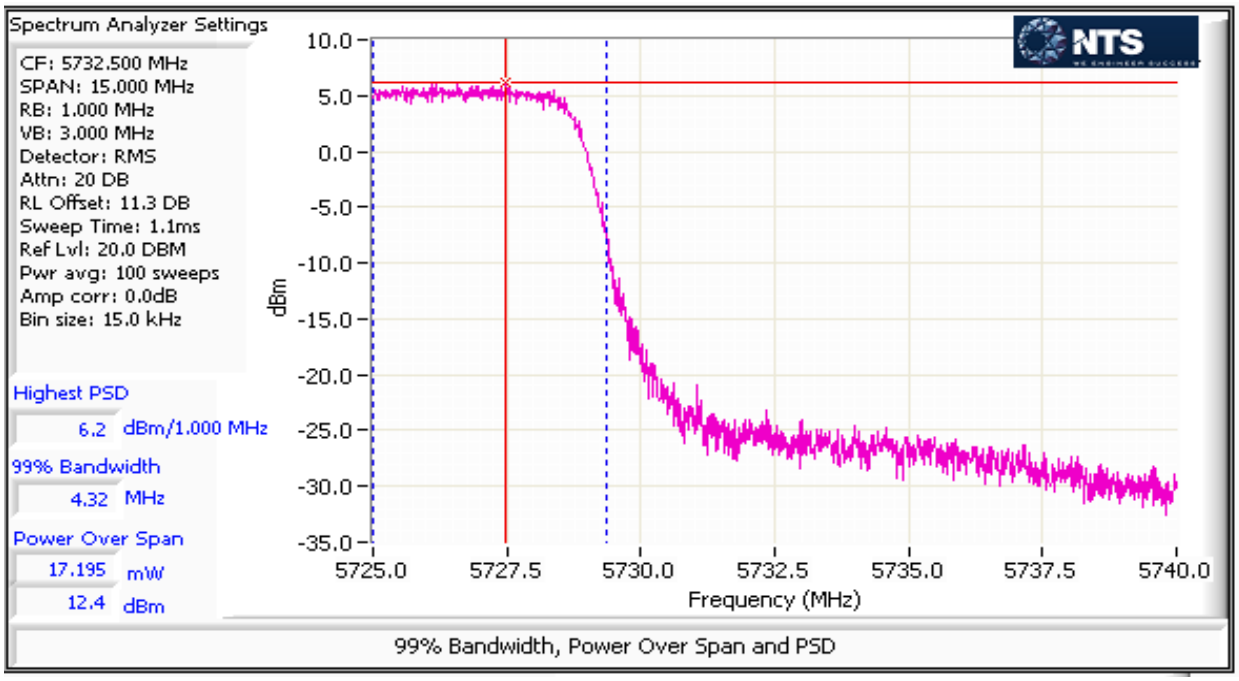
Worst case power and PSD



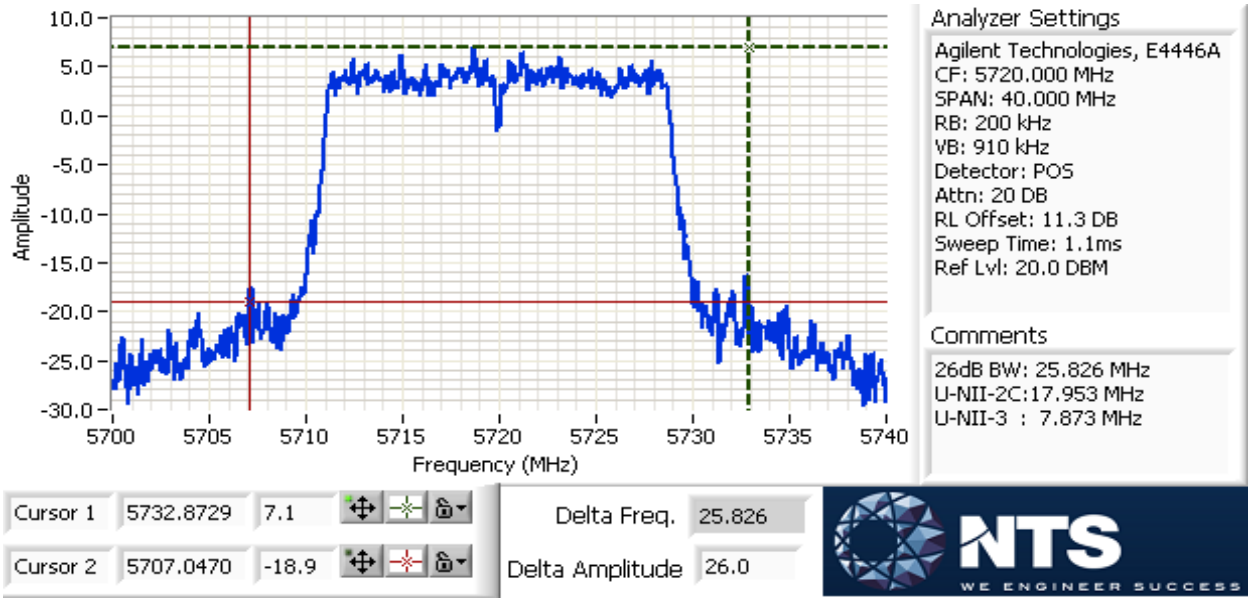


Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A





Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

MIMO Device - 5470-5725 MHz Band - FCC

Max EIRP (mW) Beamforming: 850.1

Mode: n40 Max EIRP (mW): 288.1

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5510	1	q58	40.36	98	15.0	84.9	19.3	24.0	0.224	Pass
	3				14.5					
	4									
	2				14.0					
5550	1	q76	47.9	98	19.3	223.6	23.5	24.0		Pass
	3				18.6					
	4									
	2				18.2					
5670	1	q66	39.6	98	16.7	125.5	21.0	24.0		Pass
	3				15.9					
	4									
	2				16.0					
5710	1	q76	48.75	98	19.0	217.8	23.4	24.0		Pass
	3				18.4					
	4									
	2				18.4					

Portion within 5725-5850 MHz band (UNII-3)

5710	1	q76		98	8.9	21.8	13.4	30.0	0.0218	Pass
	3				8.2					
	4									
	2				8.7					

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

MIMO Device - 5470-5725 MHz Band - Industry Canada

Mode: n40 Max EIRP (mW): 288.1

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power[1] dBm	Total Power mW	Total Power dBm	IC Limit dBm	Max Power (W)	Result
5510	1	q58	36.4	98	15.0	84.9	19.3	24.0	0.224	Pass
	3				14.5					
	4									
	2				14.0					
5550	1	q76	36.5	98	19.3	223.6	23.5	24.0		Pass
	3				18.6					
	4									
	2				18.2					
5670	1	q66	36.4	98	16.7	125.5	21.0	24.0		Pass
	3				15.9					
	4									
	2				16.0					
5710	1	q76	33.1	98	19.0	217.8	23.4	24.0		Pass
	3				18.4					
	4									
	2				18.4					

Portion within 5725-5850 MHz band (UNII-3)

5710	1	q76		98	8.9	21.8	13.4	30.0	0.0218	Pass
	3				8.2					
	4									
	2				8.7					

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

MIMO Device 5470-5725 PSD - FCC/IC

Mode: n40

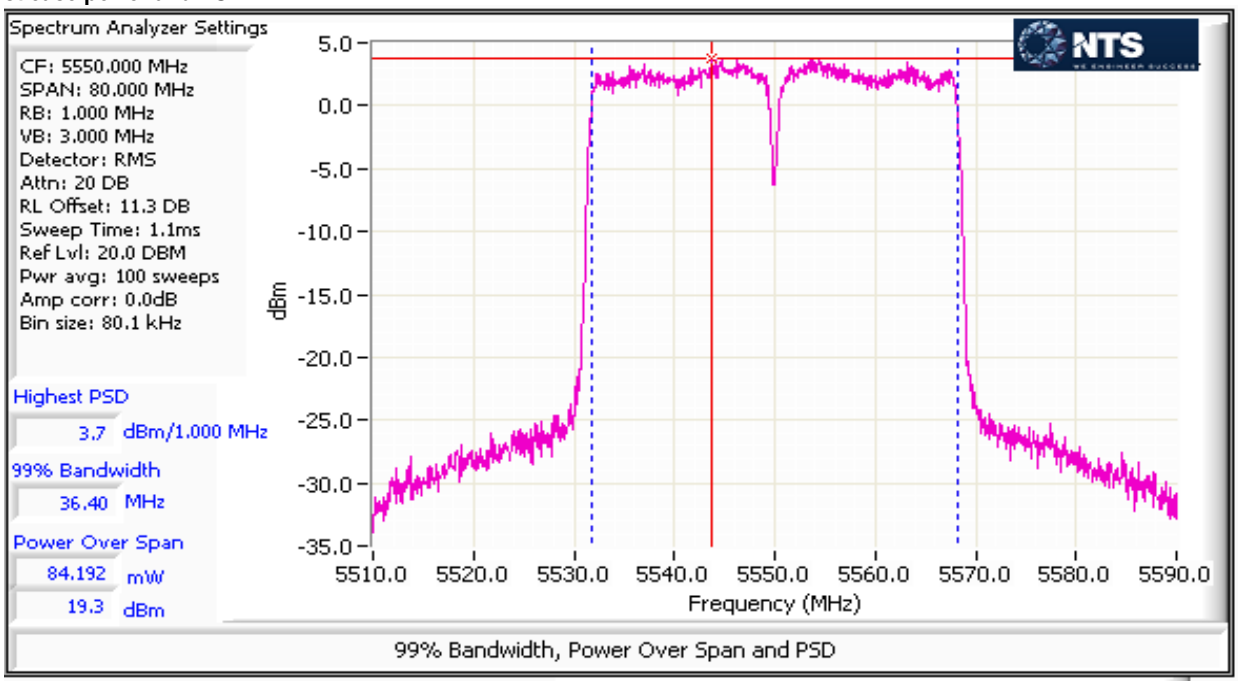
Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD[1] mW/MHz	Total PSD[1] dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5510	1	q58		98	-0.3	2.6	4.1	11.0	11.0	Pass
	3				-0.5					
	4									
	2				-1.1					
5550	1	q76		98	3.7	6.5	8.1	11.0	11.0	Pass
	3				3.2					
	4									
	2				3.2					
5670	1	q66		98	1.4	3.8	5.8	11.0	11.0	Pass
	3				0.5					
	4									
	2				1.1					
5710	1	q76		98	4.2	7.4	8.7	11.0	11.0	Pass
	3				3.5					
	4									
	2				4.1					

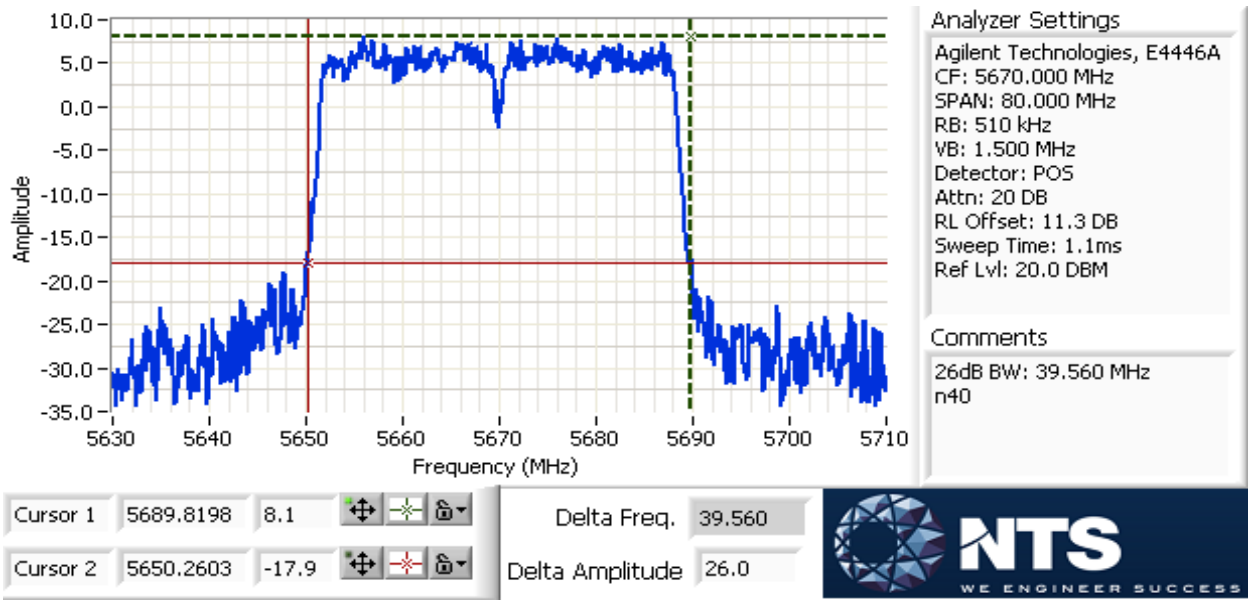
Portion within 5725-5850 MHz band (UNII-3)

5710	1	q76		98	3.2	6.1	7.9	30.0	30.0	Pass
	3				3.0					
	4									
	2				3.1					

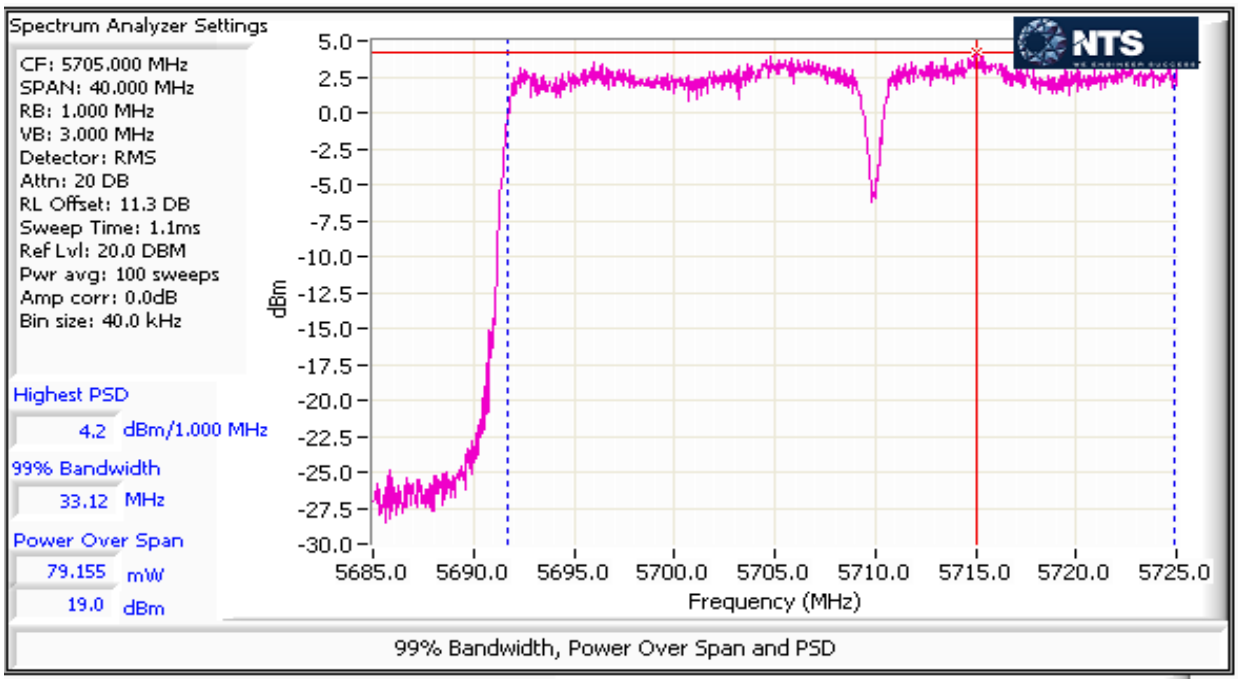
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

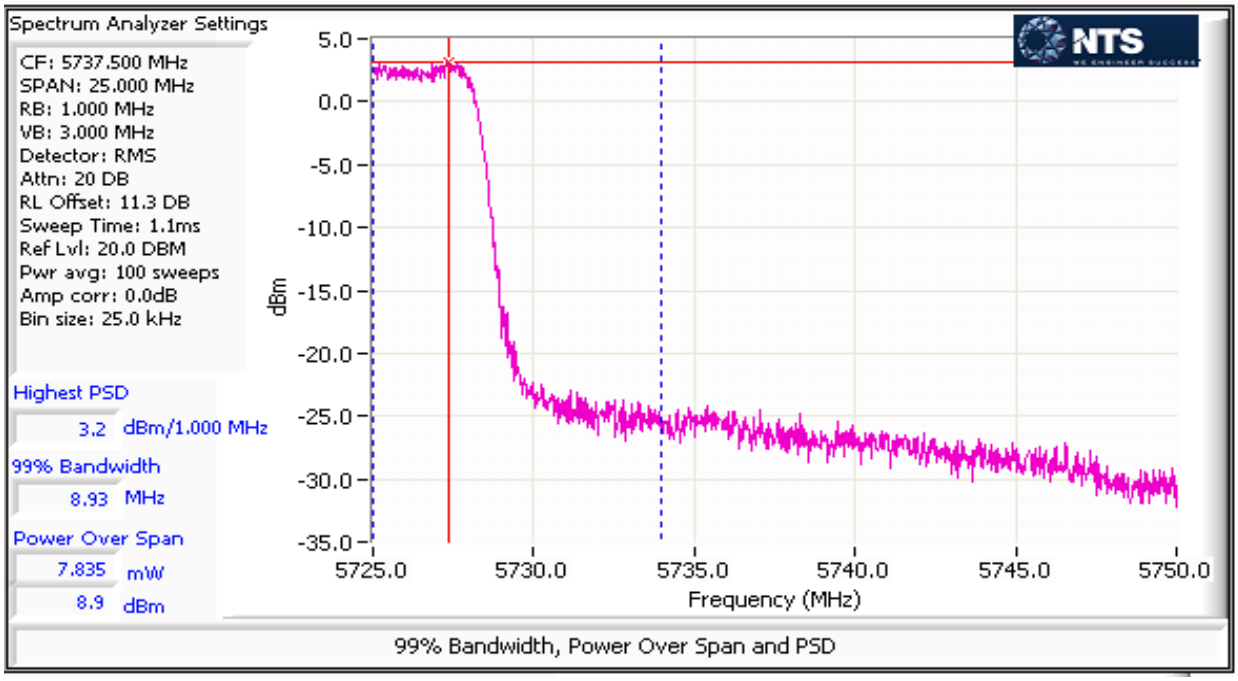
Worst case power and PSD



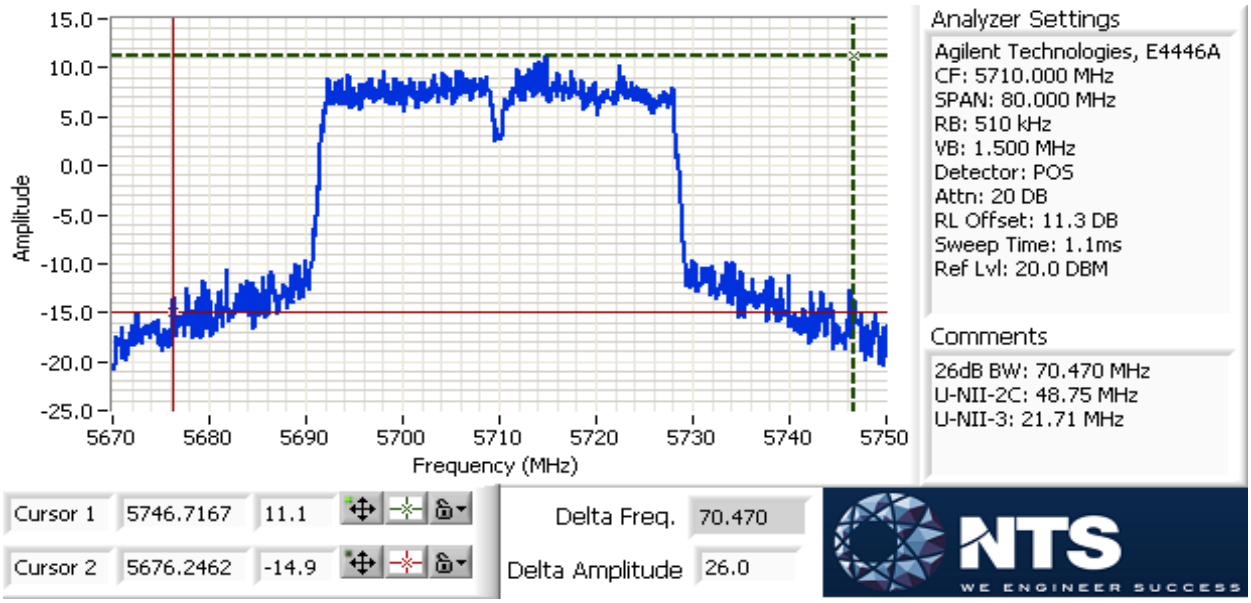


Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A





Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

MIMO Device - 5470-5725 MHz Band - FCC

Max EIRP (mW) Beamforming: 893.8

Mode: ac80 Max EIRP (mW): 302.9

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power[5] mW	Total Power[5] dBm	FCC Limit dBm	Max Power (W)	Result
5530	1	q60	81.8	77.6	14.8	108.7	20.4	24.0	0.235	Pass
	3				14.8					
	4									
	2				13.8					
5610	1	q72	108.2	77.6	18.1	235.1	23.7	24.0		Pass
	3				17.9					
	4									
	2				17.5					
5690	1	q72	93.2	77.6	17.9	216.5	23.4	24.0		Pass
	3				17.5					
	4									
	2				17.0					

Portion within 5725-5850 MHz band (UNII-3)

5690	1	q72		77.6	4.0	8.6	9.3	30.0	0.0086	Pass
	3				3.3					
	4									
	2				3.0					

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

MIMO Device - 5470-5725 MHz Band - Industry Canada

Mode: ac80 Max EIRP (mW): 278.9

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power dBm	Total Power[5] mW	Total Power[5] dBm	IC Limit dBm	Max Power (W)	Result
5530	1	q60	75.7	77.6	14.8	108.7	20.4	24.0	0.217	Pass
	3				14.8					
	4									
	2				13.8					
5690	1	q72	72.6	77.6	17.9	216.5	23.4	24.0		Pass
	3				17.5					
	4									
	2				17.0					
Portion within 5725-5850 MHz band (UNII-3)										
5690	1	q72		77.6	4.0	8.6	9.3	30.0	0.0086	Pass
	3				3.3					
	4									
	2				3.0					

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

5470-5725 PSD - FCC/IC Note: 5610 MHz channel not used for Canada

Mode: ac80

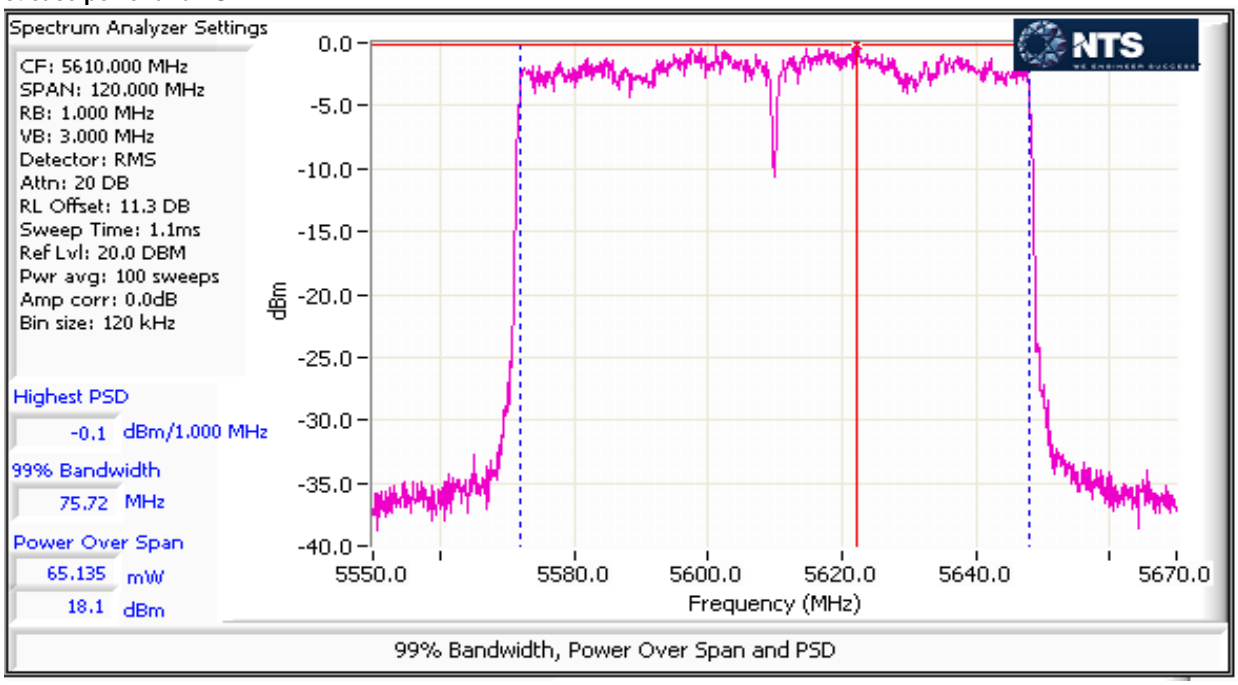
Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD[5] mW/MHz	Total PSD[5] dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5530	1	q60		77.6	-3.4	1.6	2.0	11.0	11.0	Pass
	3				-3.5					
	4									
	2				-4.9					
5610	1	q72		77.6	-0.1	3.5	5.4	11.0	-	Pass
	3				-0.3					
	4									
	2				-1.0					
5690	1	q72		77.6	0.0	3.4	5.3	11.0	11.0	Pass
	3				-0.7					
	4									
	2				-1.2					

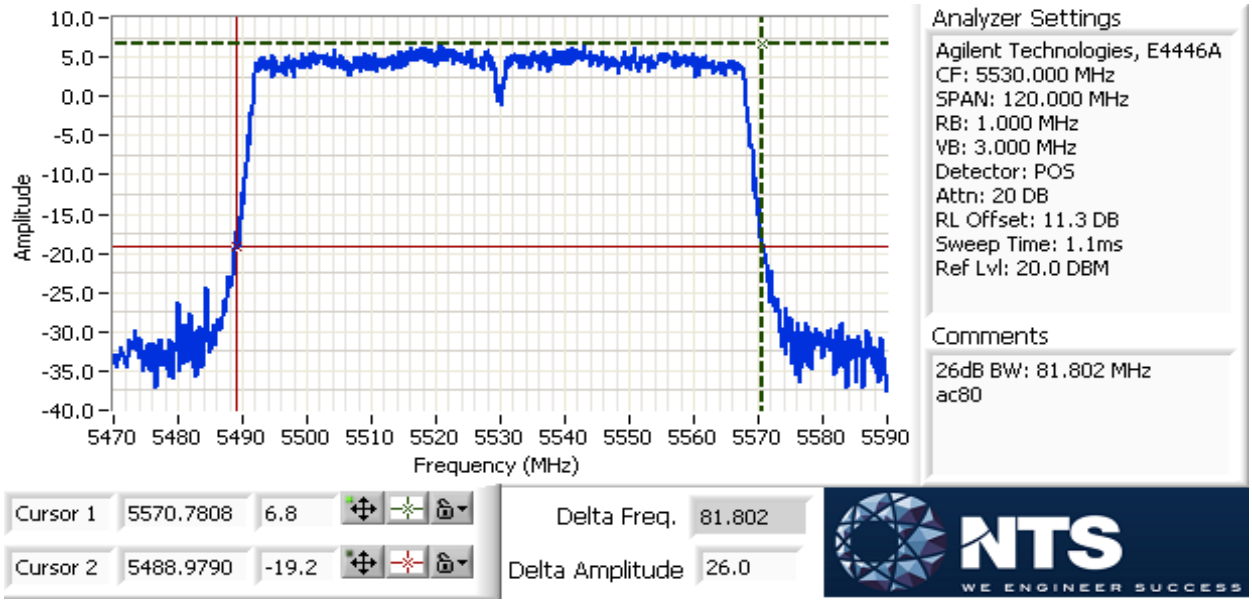
Portion within 5725-5850 MHz band (UNII-3)

5690	1	q72		77.6	-1.4	2.5	4.0	30.0	30.0	Pass
	3				-2.2					
	4									
	2				-1.9					

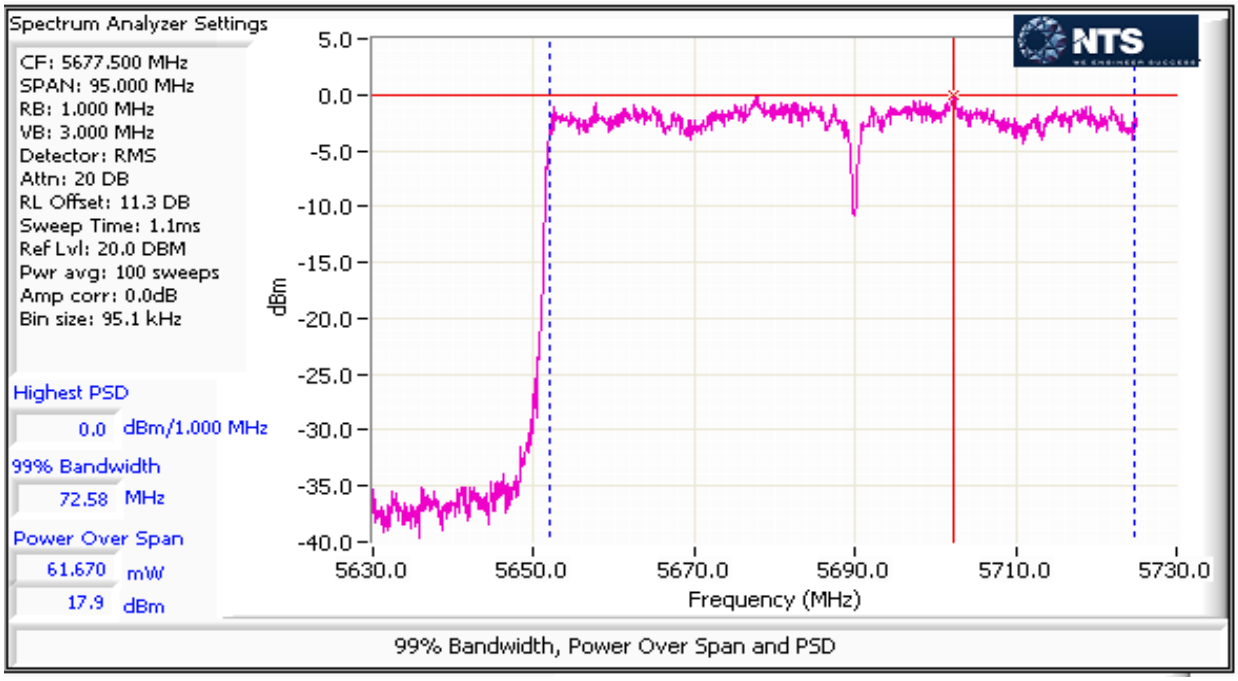
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

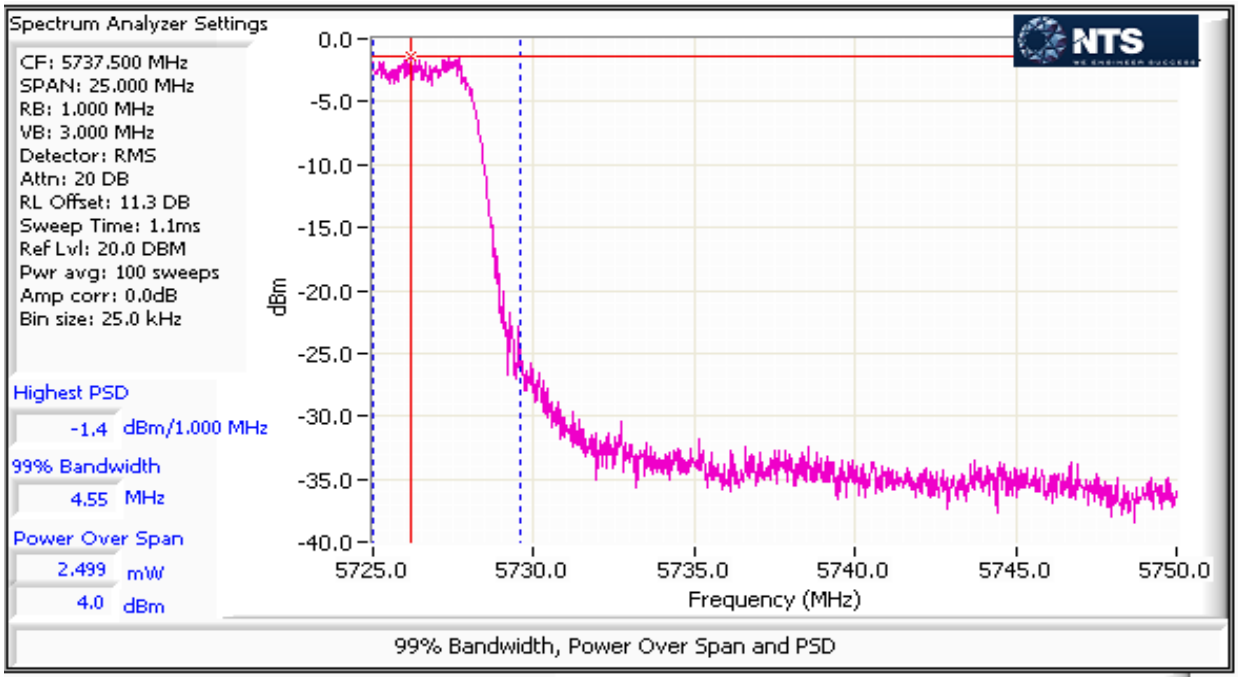
Worst case power and PSD



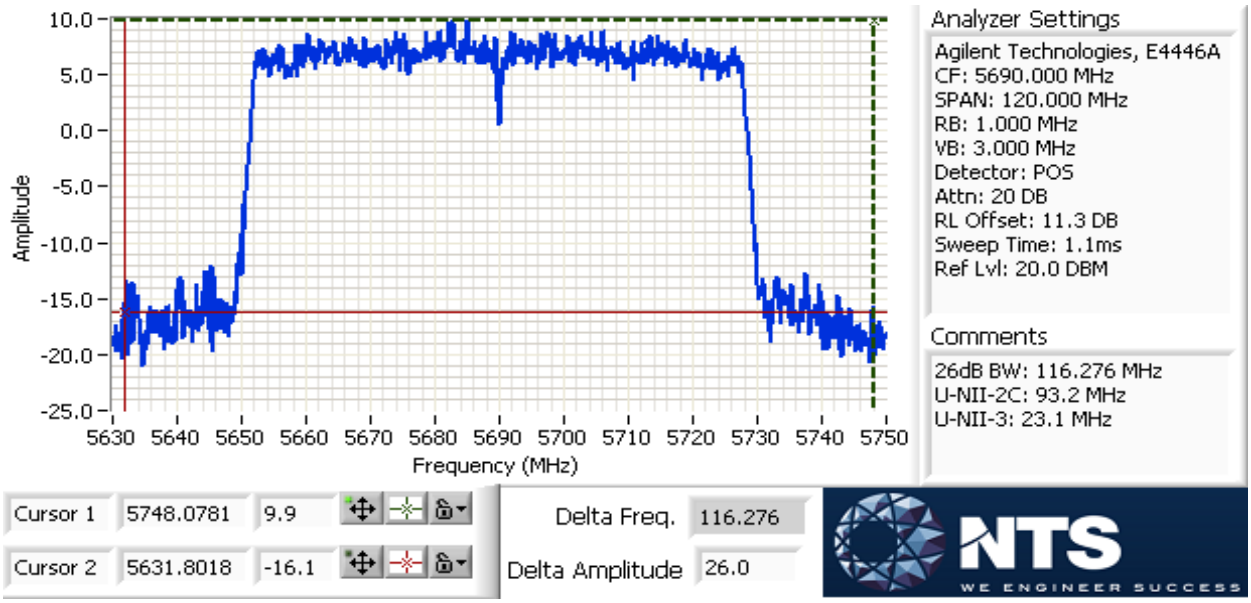


Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A





Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

RSS-247 and FCC 15.407 (UNII) Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.
For radiated emissions testing the measurement antenna was located 3 meters from the EUT, unless otherwise noted.

Ambient Conditions:

Temperature: 22.1 °C
Rel. Humidity: 36 %

Summary of Results

Run #	Mode	Channel	Target Power	Passing Power Setting	Test Performed	Limit	Result / Margin
Scans on "center" channel in all four OFDM modes to determine the worst case mode.							
3	a	60 - 5300MHz	-	q76	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	50.4 dBµV/m @ 5413.6 MHz (-3.6 dB)
	n20	60 - 5300MHz	-	q76	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	51.8 dBµV/m @ 5415.5 MHz (-2.2 dB)
	n40	54 - 5270MHz	-	q76	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	48.5 dBµV/m @ 5415.6 MHz (-5.5 dB)
	ac80	58 - 5290MHz	-	q72	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	51.4 dBµV/m @ 5445.2 MHz (-2.6 dB)
Measurements on low and high channels in worst-case OFDM mode.							
4	n20	52 - 5260MHz	-	q76	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	47.7 dBµV/m @ 5038.4 MHz (-6.3 dB)
	n20	64 - 5320MHz	-	q65	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	67.0 dBµV/m @ 5485.3 MHz (-1.3 dB)

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Summary of Results

Run #	Mode	Channel	Target Power	Passing Power Setting	Test Performed	Limit	Result / Margin
Scans on "center" channel in all four OFDM modes to determine the worst case mode.							
5	a	116 - 5580MHz	-	q76	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	51.3 dBµV/m @ 5116.0 MHz (-2.7 dB)
	n20	116 - 5580MHz	-	q76	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	50.3 dBµV/m @ 5122.7 MHz (-3.7 dB)
	n40	110 - 5550MHz	-	q76	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	51.4 dBµV/m @ 5087.5 MHz (-2.6 dB)
	ac80	106 - 5530MHz	-	q76	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	64.1 dBµV/m @ 5309.8 MHz (-4.2 dB)
Measurements on low and high channels in worst-case OFDM mode.							
6	n40	102 - 5510MHz	-	q58	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	53.0 dBµV/m @ 5352.8 MHz (-1.0 dB)
6	n40	142 - 5710MHz	-	q76	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	66.0 dBµV/m @ 5833.8 MHz (-2.3 dB)

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033
Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time
Unless otherwise stated/noted, emission has duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold 50 traces. (method VB of KDB 789033)

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6	99.0%	Yes	2.06	0	0	10
n20	MCS0	99.0%	Yes	1.92	0	0	10
n40	MCS0	98.0%	Yes	0.94	0	0	10
ac80	VHT0	77.6%	Yes	0.21	1.1	2.2	4739

Sample Notes

Sample S/N: prototype
Driver: -
Antenna: Internal

Measurement Specific Notes:

Note 1:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative.
Note 3:	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz, peak detector, linear averaging, auto sweep,max hold 50*1/DC traces (method VB of KDB 789033)

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #3, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5250-5350 MHz Band

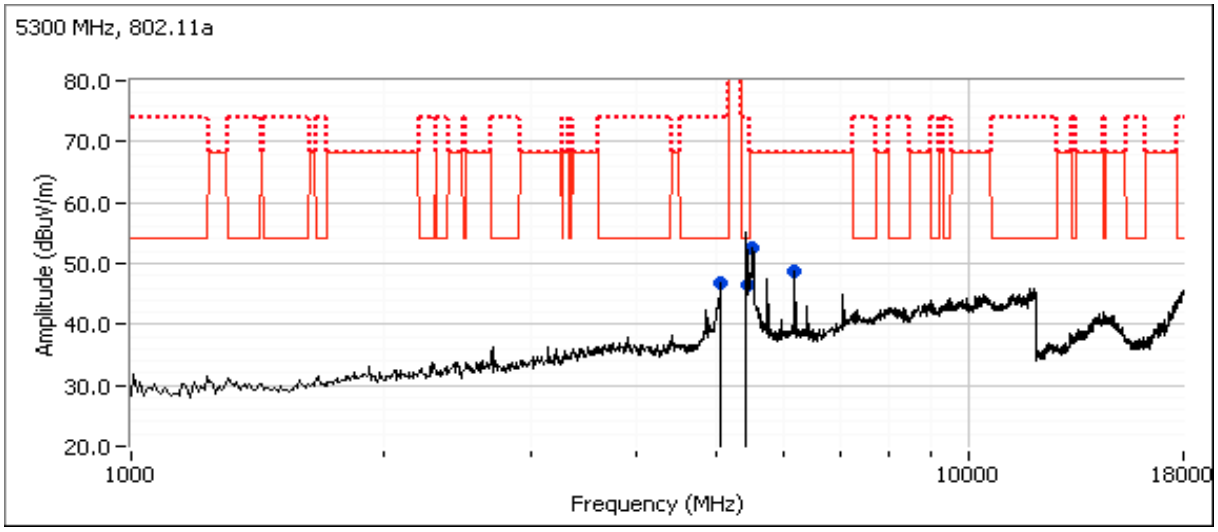
Date of Test: 12/3/2015 0:00 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: None
Test Location: FT Chamber #7 EUT Voltage: 120V/60Hz

Run #3a: Center Channel

Channel: 60 Mode: a
Tx Chain: 3Tx Data Rate: 6

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5413.550	50.4	H	54.0	-3.6	AVG	247	1.8	RB 1 MHz;VB 10 Hz;Peak
5413.250	61.7	H	74.0	-12.3	PK	247	1.8	RB 1 MHz;VB 3 MHz;Peak
6183.310	48.2	H	68.3	-20.1	AVG	272	1.8	RB 1 MHz;VB 10 Hz;Peak
6183.370	53.0	H	68.3	-15.3	PK	272	1.8	RB 1 MHz;VB 3 MHz;Peak
5522.490	62.5	H	68.3	-5.8	PK	247	1.6	RB 1 MHz;VB 3 MHz;Peak
5043.150	43.8	H	54.0	-10.2	AVG	230	1.7	RB 1 MHz;VB 10 Hz;Peak
5041.940	55.6	H	74.0	-18.4	PK	230	1.7	RB 1 MHz;VB 3 MHz;Peak

Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).



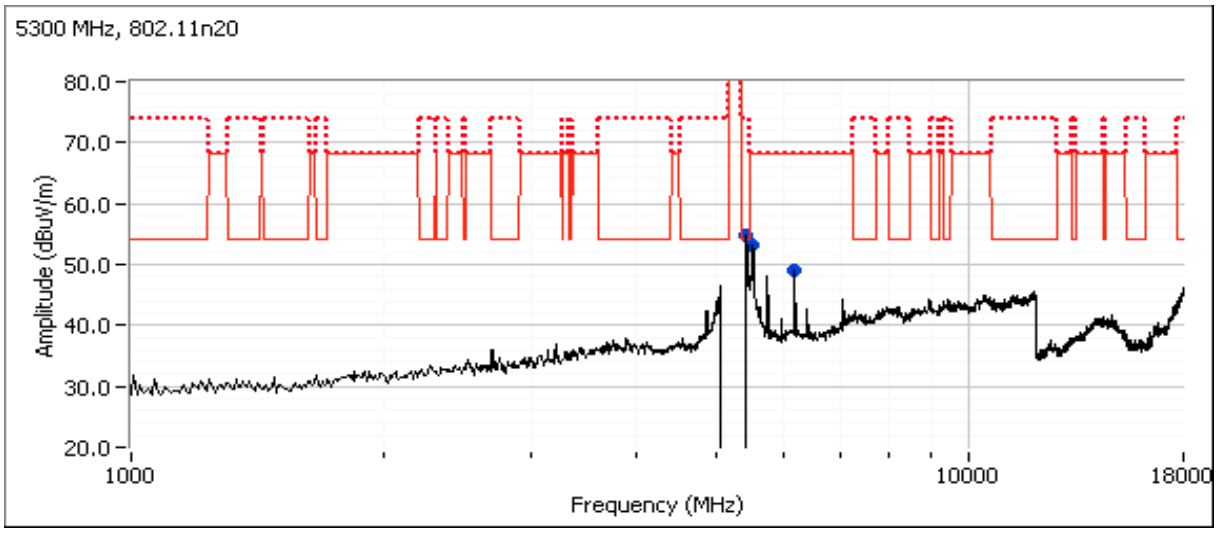
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #3b: Center Channel

Channel: 60 Mode: 11n20
Tx Chain: 3Tx Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5415.500	51.8	H	54.0	-2.2	AVG	243	2.0	RB 1 MHz;VB 10 Hz;Peak
5415.070	62.5	H	74.0	-11.5	PK	243	2.0	RB 1 MHz;VB 3 MHz;Peak
5523.520	59.6	H	68.3	-8.7	PK	268	1.6	RB 1 MHz;VB 3 MHz;Peak
6183.330	52.6	H	68.3	-15.7	PK	262	2.0	RB 1 MHz;VB 3 MHz;Peak

Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).



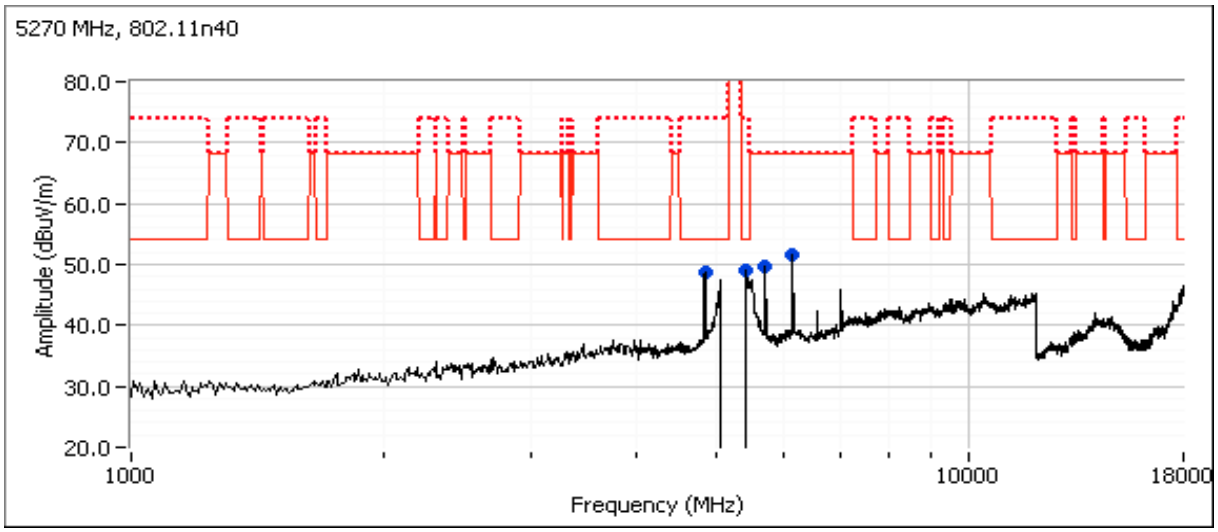
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #3c: Center Channel

Channel: 54 Mode: 11n40
Tx Chain: 3Tx Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5415.580	48.5	H	54.0	-5.5	AVG	224	1.7	RB 1 MHz;VB 10 Hz;Peak
5414.460	59.4	H	74.0	-14.6	PK	224	1.7	RB 1 MHz;VB 3 MHz;Peak
6148.570	53.8	H	68.3	-14.5	PK	254	2.0	RB 1 MHz;VB 3 MHz;Peak
5709.210	53.1	V	68.3	-15.2	PK	291	1.9	RB 1 MHz;VB 3 MHz;Peak
4830.730	47.3	H	54.0	-6.7	AVG	251	1.9	RB 1 MHz;VB 10 Hz;Peak
4830.710	52.7	H	74.0	-21.3	PK	251	1.9	RB 1 MHz;VB 3 MHz;Peak

Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).



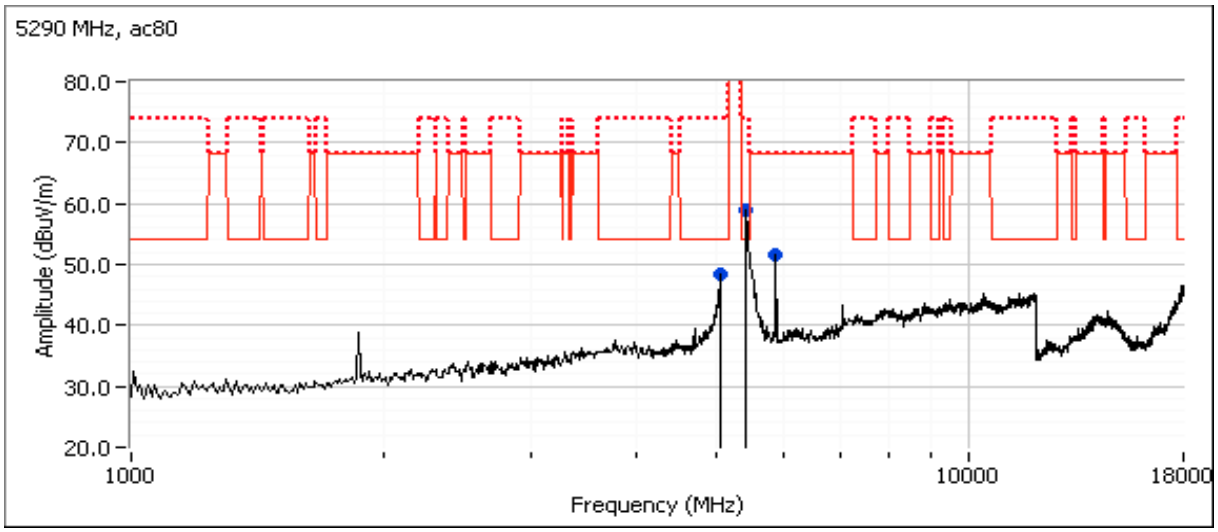
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #3d: Center Channel

Channel: 58 Mode: ac80
Tx Chain: 3Tx Data Rate: VHT0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5445.170	51.4	H	54.0	-2.6	Avg	223	1.9	RB 1 MHz;VB 10 kHz;Peak, note 3
5445.580	62.5	H	74.0	-11.5	PK	223	1.9	RB 1 MHz;VB 3 MHz;Peak
5877.770	50.9	V	68.3	-17.4	AVG	294	1.8	RB 1 MHz;VB 10 kHz;Peak, note 3
5877.680	55.1	V	68.3	-13.2	PK	294	1.8	RB 1 MHz;VB 3 MHz;Peak
5037.220	43.2	V	54.0	-10.8	AVG	247	2.0	RB 1 MHz;VB 10 kHz;Peak, note 3
5037.440	55.9	V	74.0	-18.1	PK	247	2.0	RB 1 MHz;VB 3 MHz;Peak

Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #4: Radiated Spurious Emissions, 1,000 - 40000 MHz. Operating Mode: Worse case from Run #3

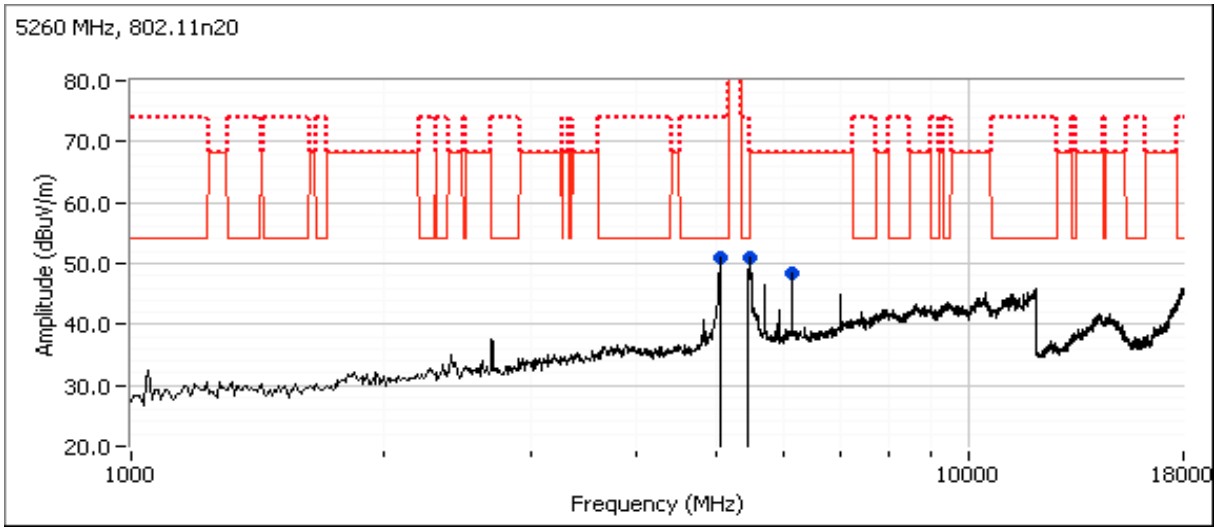
Date of Test: 12/8/2015 0:00 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: None
Test Location: FT Chamber #4 EUT Voltage: 120V/60Hz

Run #4a: Low Channel

Channel: 52 Mode: n20
Tx Chain: 3Tx Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5038.400	47.7	V	54.0	-6.3	AVG	223	1.4	RB 1 MHz;VB 10 Hz;Peak
5038.600	57.7	V	74.0	-16.3	PK	223	1.4	RB 1 MHz;VB 3 MHz;Peak
5485.290	59.7	H	68.3	-8.6	PK	226	1.7	RB 1 MHz;VB 3 MHz;Peak
6136.700	52.5	H	68.3	-15.8	PK	242	1.8	RB 1 MHz;VB 3 MHz;Peak

Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range



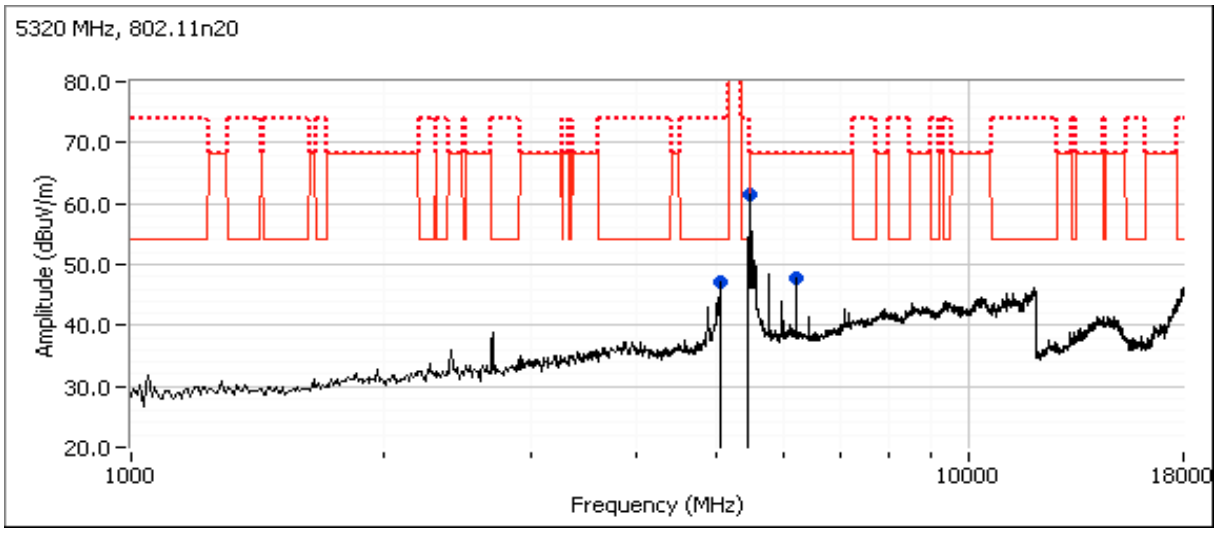
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #4b: High Channel

Channel: 64 Mode: n20
Tx Chain: 3Tx Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5485.290	67.0	H	68.3	-1.3	PK	233	1.7	RB 1 MHz;VB 3 MHz;Peak
6206.670	52.4	H	68.3	-15.9	PK	244	1.9	RB 1 MHz;VB 3 MHz;Peak
5046.940	44.1	H	54.0	-9.9	AVG	239	1.8	RB 1 MHz;VB 10 Hz;Peak
5048.260	55.5	H	74.0	-18.5	PK	239	1.8	RB 1 MHz;VB 3 MHz;Peak

Note: Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #5, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5470-5725 MHz Band

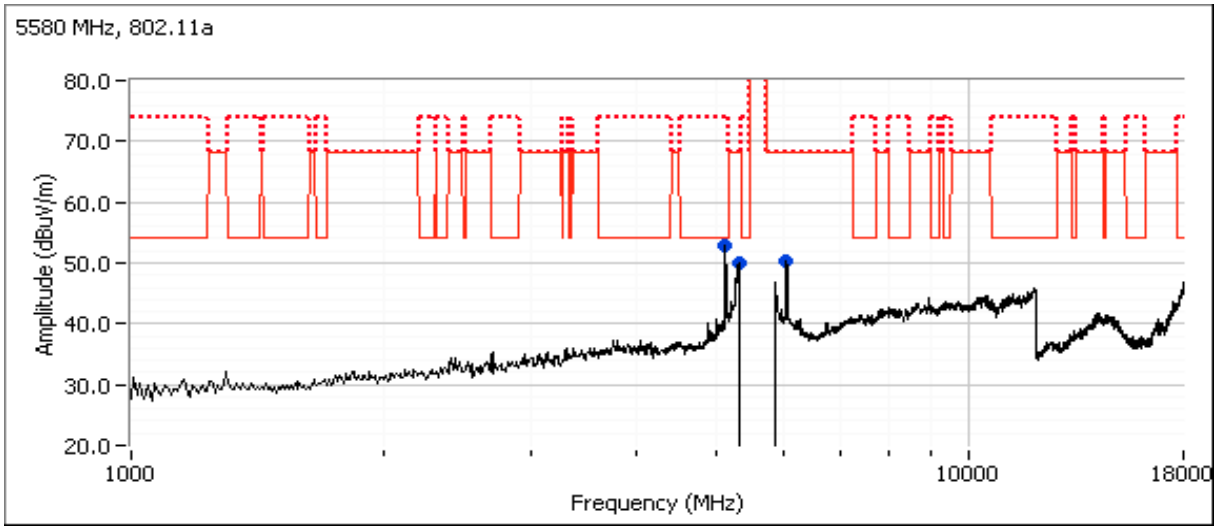
Date of Test: 12/4/2015 0:00 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: None
Test Location: FT Chamber #7 EUT Voltage: 120V/60Hz

Run #5a: Center Channel

Channel: 116 Mode: a
Tx Chain: 3Tx Data Rate: 6

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5115.970	51.3	H	54.0	-2.7	AVG	229	2.0	RB 1 MHz;VB 10 Hz;Peak
5116.250	61.1	H	74.0	-12.9	PK	229	2.0	RB 1 MHz;VB 3 MHz;Peak
6043.860	59.1	V	68.3	-9.2	PK	284	2.0	RB 1 MHz;VB 3 MHz;Peak
5301.640	59.8	H	68.3	-8.5	PK	239	1.6	RB 1 MHz;VB 3 MHz;Peak

Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).



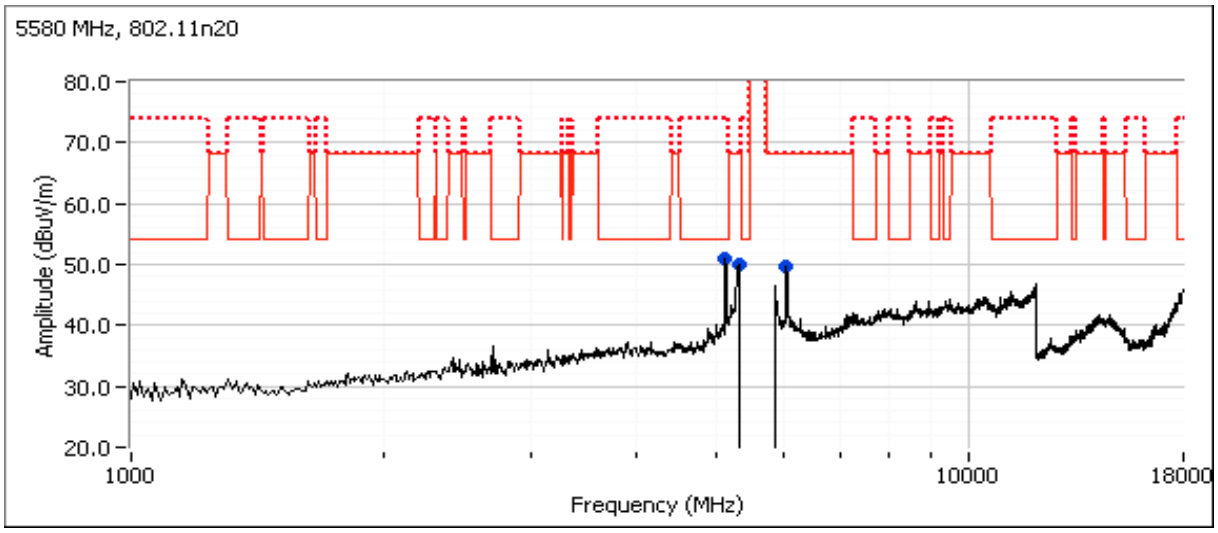
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #5b: Center Channel

Channel: 116 Mode: 11n20
Tx Chain: 3Tx Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5122.730	50.3	H	54.0	-3.7	AVG	242	2.0	RB 1 MHz;VB 10 Hz;Peak
5121.870	59.2	H	74.0	-14.8	PK	242	2.0	RB 1 MHz;VB 3 MHz;Peak
6044.750	58.7	V	68.3	-9.6	PK	277	2.0	RB 1 MHz;VB 3 MHz;Peak
5299.350	58.8	H	68.3	-9.5	PK	241	1.4	RB 1 MHz;VB 3 MHz;Peak

Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).



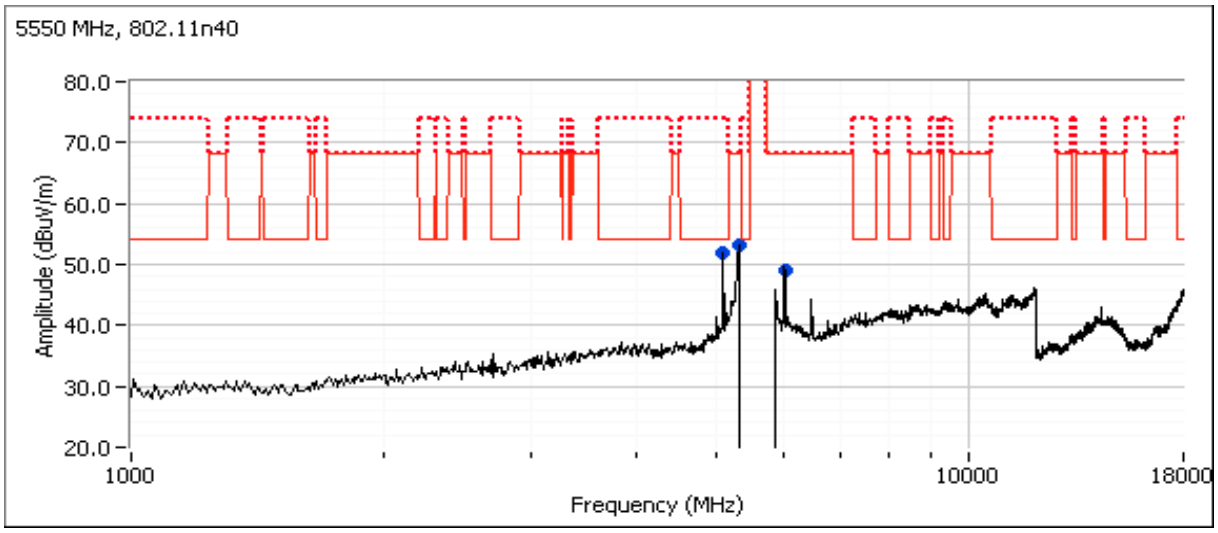
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #5c: Center Channel

Channel: 110 Mode: 11n40
Tx Chain: 3Tx Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5087.460	51.4	H	54.0	-2.6	AVG	240	1.9	RB 1 MHz;VB 10 Hz;Peak
5087.530	55.4	H	74.0	-18.6	PK	240	1.9	RB 1 MHz;VB 3 MHz;Peak
6039.940	49.2	V	68.3	-19.1	PK	295	2.0	RB 1 MHz;VB 3 MHz;Peak
5305.400	61.1	H	68.3	-7.2	PK	249	1.5	RB 1 MHz;VB 3 MHz;Peak

Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).



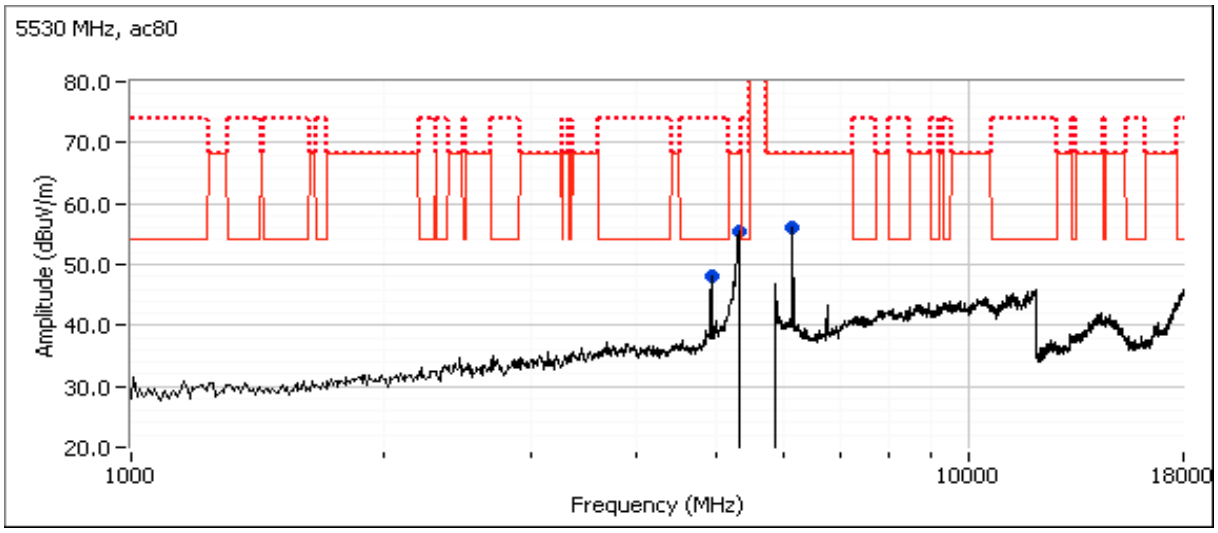
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #5d: Center Channel

Channel: 106 Mode: ac80
Tx Chain: 3Tx Data Rate: VHT0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5309.830	64.1	H	68.3	-4.2	PK	252	1.5	RB 1 MHz;VB 3 MHz;Peak
6144.510	59.0	V	68.3	-9.3	PK	281	1.5	RB 1 MHz;VB 3 MHz;Peak
4915.550	47.1	V	54.0	-6.9	AVG	243	1.6	RB 1 MHz;VB 10 kHz;Peak, note 3
4915.550	51.9	V	74.0	-22.1	PK	243	1.6	RB 1 MHz;VB 3 MHz;Peak

Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #6: Radiated Spurious Emissions, 1,000 - 40000 MHz. Operating Mode: Worse case from Run #5

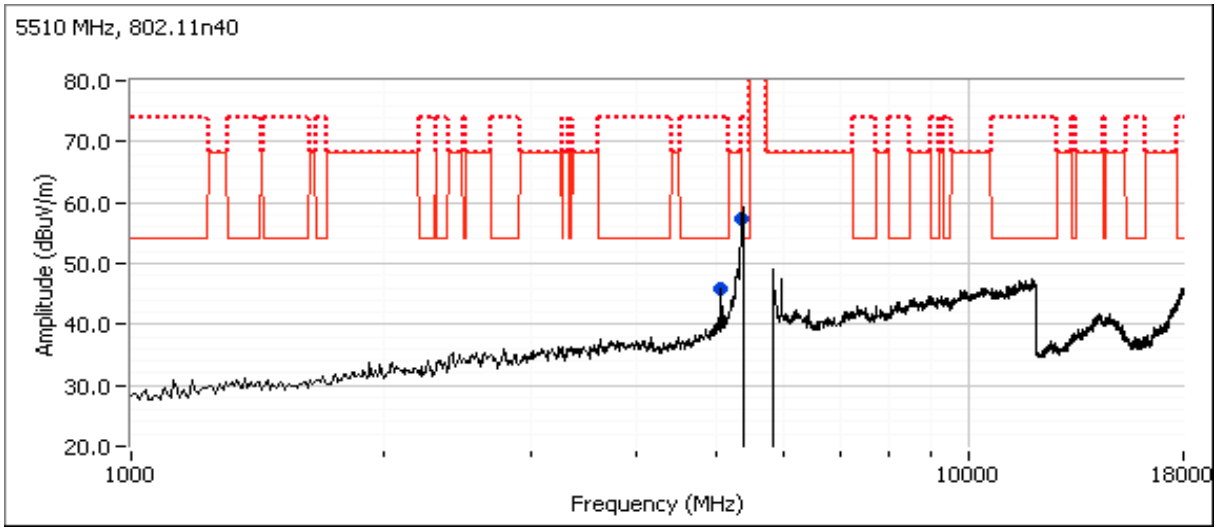
Date of Test: 12/7/2015 0:00 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: None
Test Location: FT Chamber #7 EUT Voltage: 120V/60Hz

Run #6a: Low Channel

Channel: 102 Mode: 11n40
Tx Chain: 3Tx Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5352.760	53.0	H	54.0	-1.0	AVG	208	2.0	RB 1 MHz;VB 10 Hz;Peak
5352.530	61.9	H	74.0	-12.1	PK	208	2.0	RB 1 MHz;VB 3 MHz;Peak
5050.820	44.3	V	54.0	-9.7	AVG	242	1.6	RB 1 MHz;VB 10 Hz;Peak
5050.740	49.5	V	74.0	-24.5	PK	242	1.6	RB 1 MHz;VB 3 MHz;Peak

Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range



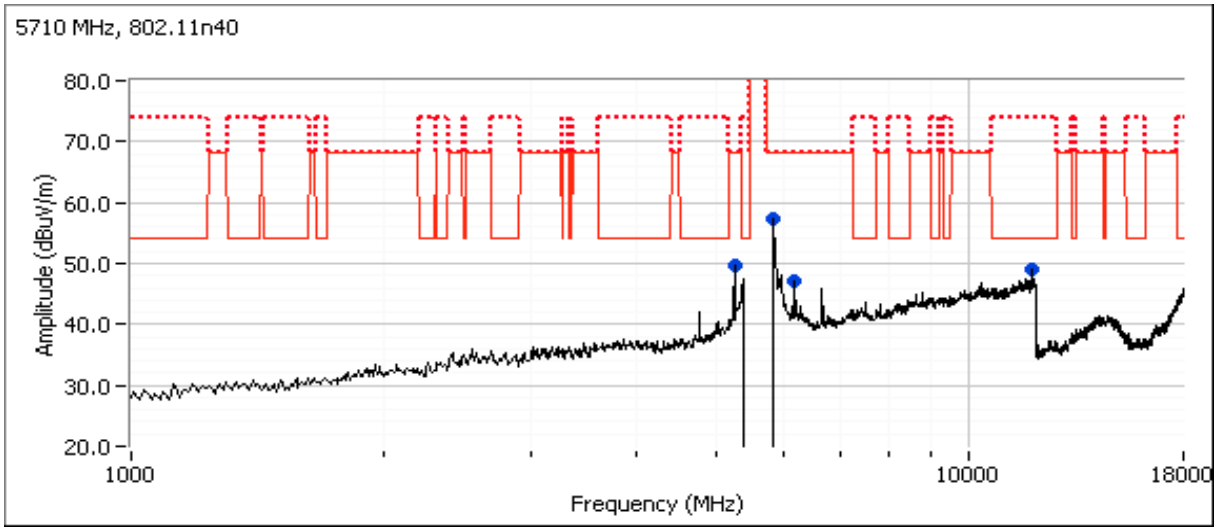
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #6b: High Channel

Channel: 142 Mode: 11n40
Tx Chain: 3Tx Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5833.830	66.0	V	68.3	-2.3	PK	284	1.9	RB 1 MHz;VB 3 MHz;Peak
5246.410	48.9	H	68.3	-19.4	PK	201	1.8	RB 1 MHz;VB 3 MHz;Peak
6185.800	52.0	V	68.3	-16.3	PK	253	1.3	RB 1 MHz;VB 3 MHz;Peak
11847.400	43.6	V	54.0	-10.4	AVG	315	1.0	RB 1 MHz;VB 10 Hz;Peak
11843.830	55.3	V	74.0	-18.7	PK	315	1.0	RB 1 MHz;VB 3 MHz;Peak

Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

RSS-247 and FCC 15.407 (UNII) Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.
For radiated emissions testing the measurement antenna was located 3 meters from the EUT, unless otherwise noted.

Ambient Conditions:

Temperature: 21.6 °C
Rel. Humidity: 35 %

Summary of Results

Run #	Mode	Channel	Target Power	Passing Power Setting	Test Performed	Limit	Result / Margin
20MHz Bandwith Modes							
2 UNII-2A	a	64 - 5320MHz	-	q72	Restricted Band Edge at 5350 MHz	15.209	52.7 dBµV/m @ 5350.0 MHz (-1.3 dB)
3 UNII-2C		100 - 5500MHz	-	q73	Restricted Band Edge at 5460 MHz	15.209	48.5 dBµV/m @ 5418.6 MHz (-5.5 dB)
		100 - 5500MHz		q73	Band Edge 5460 - 5470 MHz	15E	52.8 dBµV/m @ 5469.8 MHz (-1.2 dB)
		140 - 5700MHz		q66	Band Edge 5725MHz	15E	72.8 dBµV/m @ 5727.1 MHz (-1.2 dB)
6 UNII-2A	n20	64 - 5320MHz	-	q71	Restricted Band Edge at 5350 MHz	15.209	52.9 dBµV/m @ 5350.1 MHz (-1.1 dB)
7 UNII-2C		100 - 5500MHz	-	q71	Restricted Band Edge at 5460 MHz	15.209	46.7 dBµV/m @ 5424.7 MHz (-7.3 dB)
		100 - 5500MHz		q71	Band Edge 5460 - 5470 MHz	15E	52.9 dBµV/m @ 5469.9 MHz (-1.1 dB)
		140 - 5700MHz		q62	Band Edge 5725MHz	15E	72.3 dBµV/m @ 5734.3 MHz (-1.7 dB)
		136 - 5680MHz		q72	Band Edge 5725MHz	15E	67.2 dBµV/m @ 5726.0 MHz (-1.1 dB)

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Summary of Results

Run #	Mode	Channel	Target Power	Passing Power Setting	Test Performed	Limit	Result / Margin
40MHz Bandwith Modes							
10 UNII-2A	n40	62 - 5310MHz	-	q62	Restricted Band Edge at 5350 MHz	15.209	52.5 dBµV/m @ 5350.1 MHz (-1.5 dB)
		54 - 5270MHz		q78	Restricted Band Edge at 5350 MHz	15.209	52.9 dBµV/m @ 5351.8 MHz (-1.1 dB)
11 UNII-2C		102 - 5510MHz	-	q60	Restricted Band Edge at 5460 MHz	15.209	47.2 dBµV/m @ 5459.9 MHz (-6.8 dB)
		102 - 5510MHz		q60	Band Edge 5460 - 5470 MHz	15E	72.8 dBµV/m @ 5469.8 MHz (-1.2 dB)
		110 - 5550MHz		q76	Restricted Band Edge at 5460 MHz	15.209	51.1 dBµV/m @ 5455.9 MHz (-2.9 dB)
		110 - 5550MHz		q76	Band Edge 5460 - 5470 MHz	15E	52.4 dBµV/m @ 5465.8 MHz (-1.6 dB)
		134 - 5670MHz		q66	Band Edge 5725MHz	15E	52.9 dBµV/m @ 5732.2 MHz (-1.1 dB)
80MHz Bandwith Modes							
14 UNII-2A	ac80	58 - 5290MHz	-	q61	Restricted Band Edge at 5350 MHz	15.209	53.0 dBµV/m @ 5357.5 MHz (-1.0 dB)
15 UNII-2C		106 - 5530MHz	-	q60	Restricted Band Edge at 5460 MHz	15.209	53.0 dBµV/m @ 5457.9 MHz (-1.0 dB)
		106 - 5530MHz			Band Edge 5460 - 5470 MHz	15E	65.9 dBµV/m @ 5468.0 MHz (-2.4 dB)
		122 - 5610MHz	-	q76	Restricted Band Edge at 5460 MHz	15.209	52.6 dBµV/m @ 5458.0MHz (-1.4 dB)
		122 - 5610MHz			Band Edge 5460 - 5470 MHz	15E	67.0 dBµV/m @ 5464.6 MHz (-1.3 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033
Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time
Unless otherwise stated/noted, emission has duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold 50 traces. (method VB of KDB 789033)

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6	99.0%	Yes	2.06	0	0	10
n20	MCS0	99.0%	Yes	1.92	0	0	10
n40	MCS0	98.0%	Yes	0.94	0	0	10
ac80	VHT0	77.6%	Yes	0.21	1.1	2.2	4739

Sample Notes

Sample S/N: prototype
Driver: -
Antenna: Internal

Measurement Specific Notes:

Note 1:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative.
Note 3:	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz, peak detector, linear averaging, auto sweep,max hold 50*1/DC traces (method VB of KDB 789033)
Note 5:	Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final measurements.

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #2: Radiated Bandedge Measurements, 5250-5350MHz

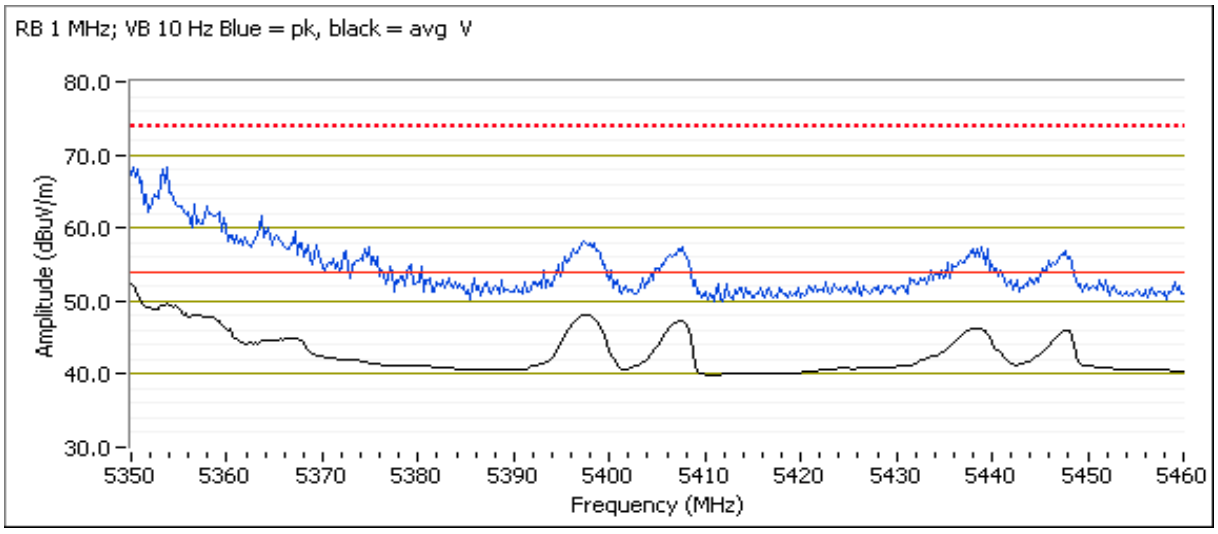
Date of Test: 11/23/2015 0:00
Test Engineer: Rafael Varelas
Test Location: FT Chamber #7

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

Channel: 64 - 5320MHz
Tx Chain: 3Tx
Mode: a
Data Rate: 6

5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.000	52.7	V	54.0	-1.3	AVG	250	1.8	POS; RB 1 MHz; VB: 10 Hz
5350.480	69.1	V	74.0	-4.9	PK	250	1.8	POS; RB 1 MHz; VB: 3 MHz
5350.080	52.4	H	54.0	-1.6	AVG	292	2.0	POS; RB 1 MHz; VB: 10 Hz
5353.610	68.6	H	74.0	-5.4	PK	292	2.0	POS; RB 1 MHz; VB: 3 MHz



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #3: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 11/23/2015 0:00
Test Engineer: Rafael Varelas
Test Location: FT Chamber #7

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

Channel: 100 - 5500MHz
Tx Chain: 3Tx
Mode: a
Data Rate: 6

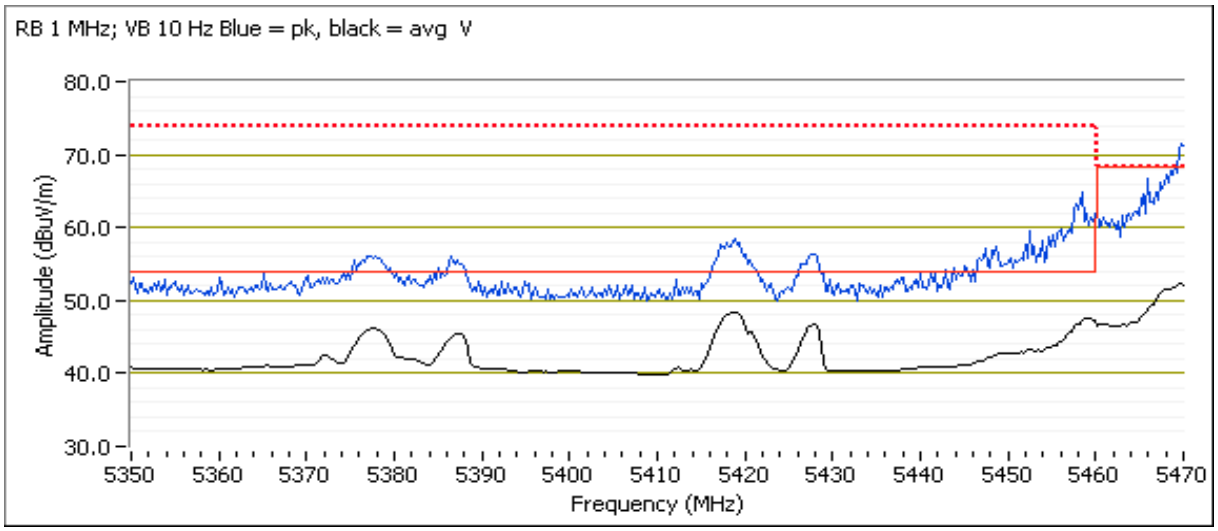
5460 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5418.640	48.5	V	54.0	-5.5	AVG	261	2.5	POS; RB 1 MHz; VB: 10 Hz
5418.190	58.5	V	74.0	-15.5	PK	261	2.5	POS; RB 1 MHz; VB: 3 MHz
5459.280	47.5	V	54.0	-6.5	AVG	261	2.5	POS; RB 1 MHz; VB: 10 Hz
5458.800	64.1	V	74.0	-9.9	PK	261	2.5	POS; RB 1 MHz; VB: 3 MHz
5458.840	47.5	H	54.0	-6.5	AVG	302	1.6	POS; RB 1 MHz; VB: 10 Hz
5457.720	65.0	H	74.0	-9.0	PK	302	1.6	POS; RB 1 MHz; VB: 3 MHz
5420.480	47.1	H	54.0	-6.9	AVG	302	1.6	POS; RB 1 MHz; VB: 10 Hz
5427.000	56.5	H	74.0	-17.5	PK	302	1.6	POS; RB 1 MHz; VB: 3 MHz

5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5469.800	52.8	V	54.0	-1.2	AVG	261	2.5	POS; RB 1 MHz; VB: 10 Hz, note 1
5469.820	71.7	V	74.0	-2.3	PK	261	2.5	POS; RB 1 MHz; VB: 3 MHz, note 1
5469.540	52.7	H	54.0	-1.3	AVG	302	1.6	POS; RB 1 MHz; VB: 10 Hz, note 1
5468.860	71.2	H	74.0	-2.8	PK	302	1.6	POS; RB 1 MHz; VB: 3 MHz, note 1

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

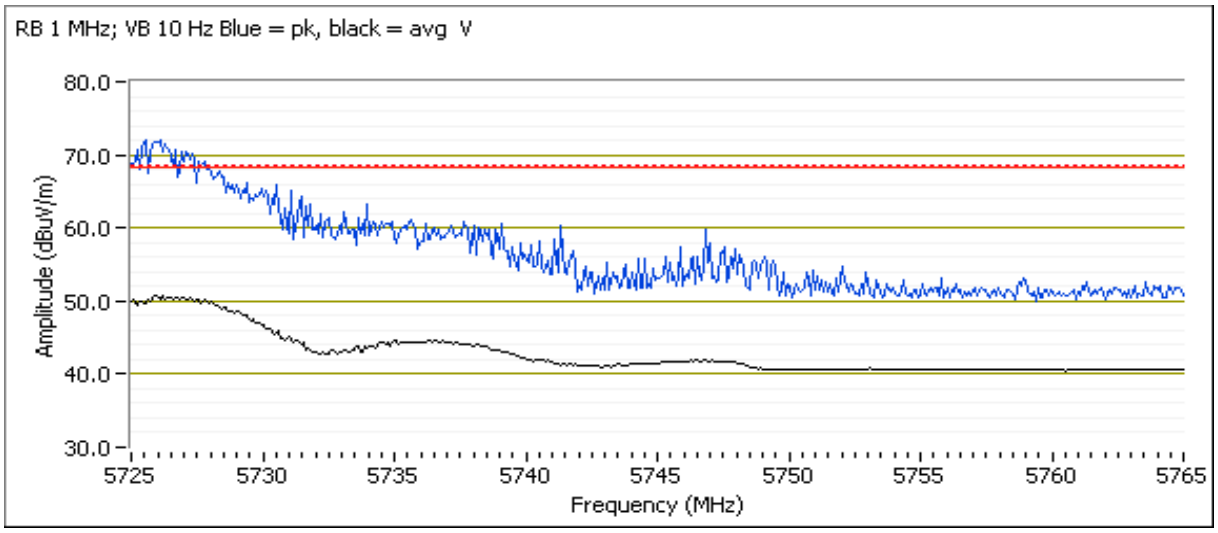


Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Channel: 140 - 5700MHz
Tx Chain: 3Tx
Mode: a
Data Rate:

5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5726.520	52.2	V	54.0	-1.8	AVG	228	2.3	POS; RB 1 MHz; VB: 10 Hz, note 1
5727.080	72.8	V	74.0	-1.2	PK	228	2.3	POS; RB 1 MHz; VB: 3 MHz, note 1
5728.050	51.8	H	54.0	-2.2	AVG	294	1.6	POS; RB 1 MHz; VB: 10 Hz, note 1
5728.690	72.2	H	74.0	-1.8	PK	294	1.6	POS; RB 1 MHz; VB: 3 MHz, note 1



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #6: Radiated Bandedge Measurements, 5250-5350MHz

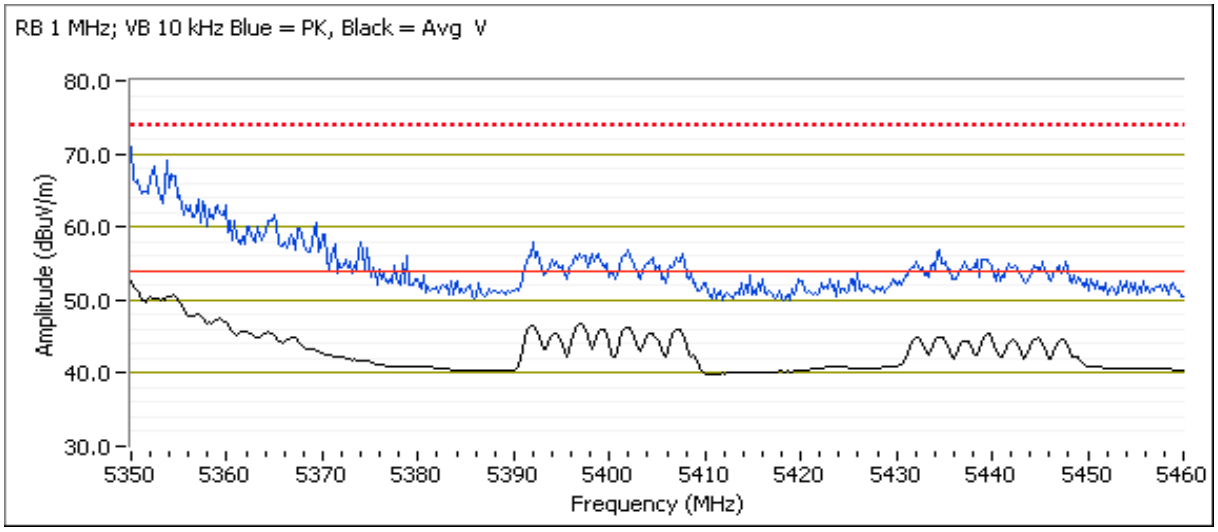
Date of Test: 11/23/2015 0:00
Test Engineer: Rafael Varelas
Test Location: FT Chamber #7

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

Channel: 64 - 5320MHz
Tx Chain: 3Tx
Mode: n20
Data Rate: MCS0

5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.080	52.9	V	54.0	-1.1	AVG	243	2.0	POS; RB 1 MHz; VB: 10 Hz
5354.090	72.5	V	74.0	-1.5	PK	243	2.0	POS; RB 1 MHz; VB: 3 MHz
5350.080	52.7	H	54.0	-1.3	AVG	292	1.5	POS; RB 1 MHz; VB: 10 Hz
5354.330	72.6	H	74.0	-1.4	PK	292	1.5	POS; RB 1 MHz; VB: 3 MHz



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #7: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 11/23/2015 0:00
Test Engineer: Rafael Varelas
Test Location: FT Chamber #7

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

Channel: 100 - 5500MHz
Tx Chain: 3Tx
Mode: n20
Data Rate: MCS0

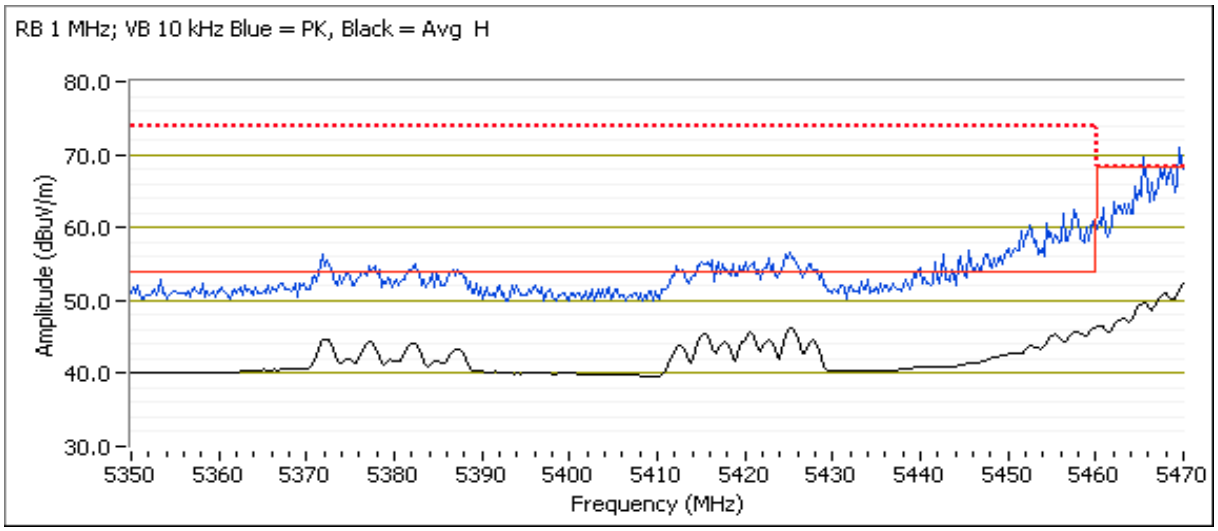
5460 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5424.730	46.7	H	54.0	-7.3	AVG	298	1.3	POS; RB 1 MHz; VB: 10 Hz
5454.870	63.9	H	74.0	-10.1	PK	298	1.3	POS; RB 1 MHz; VB: 3 MHz
5459.920	46.4	V	54.0	-7.6	AVG	268	2.3	POS; RB 1 MHz; VB: 10 Hz
5459.840	63.5	V	74.0	-10.5	PK	268	2.3	POS; RB 1 MHz; VB: 3 MHz

5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5469.920	52.9	H	54.0	-1.1	AVG	298	1.3	POS; RB 1 MHz; VB: 10 Hz, note 1
5467.310	70.9	H	74.0	-3.1	PK	298	1.3	POS; RB 1 MHz; VB: 3 MHz, note 1
5469.980	52.4	V	54.0	-1.6	AVG	268	2.3	POS; RB 1 MHz; VB: 10 Hz, note 1
5469.220	71.0	V	74.0	-3.0	PK	268	2.3	POS; RB 1 MHz; VB: 3 MHz, note 1

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

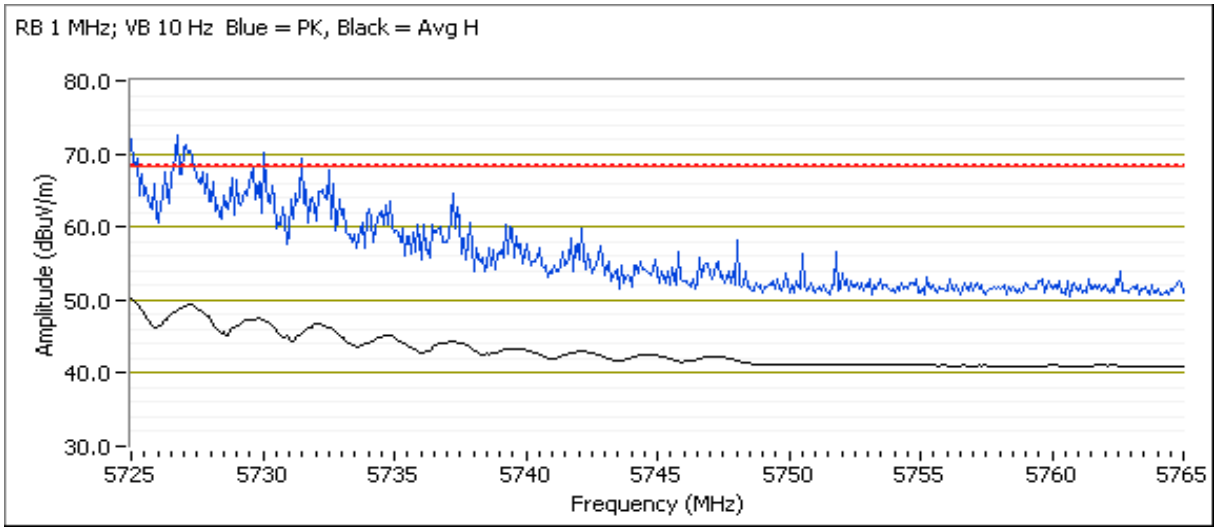
Date of Test: 11/24/2015 0:00
Test Engineer: Rafael Varelas
Test Location: FT Chamber #7

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

Channel: 140 - 5700MHz
Tx Chain: 3Tx
Mode: n20
Data Rate: MCS0

5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5734.300	72.3	H	74.0	-1.7	PK	276	1.8	POS; RB 1 MHz; VB: 10 Hz, note 1
5725.000	50.1	H	54.0	-3.9	AVG	276	1.8	POS; RB 1 MHz; VB: 3 MHz, note 1
5725.000	49.1	V	54.0	-4.9	AVG	250	1.6	POS; RB 1 MHz; VB: 10 Hz, note 1
5727.080	70.0	V	74.0	-4.0	PK	250	1.6	POS; RB 1 MHz; VB: 3 MHz, note 1

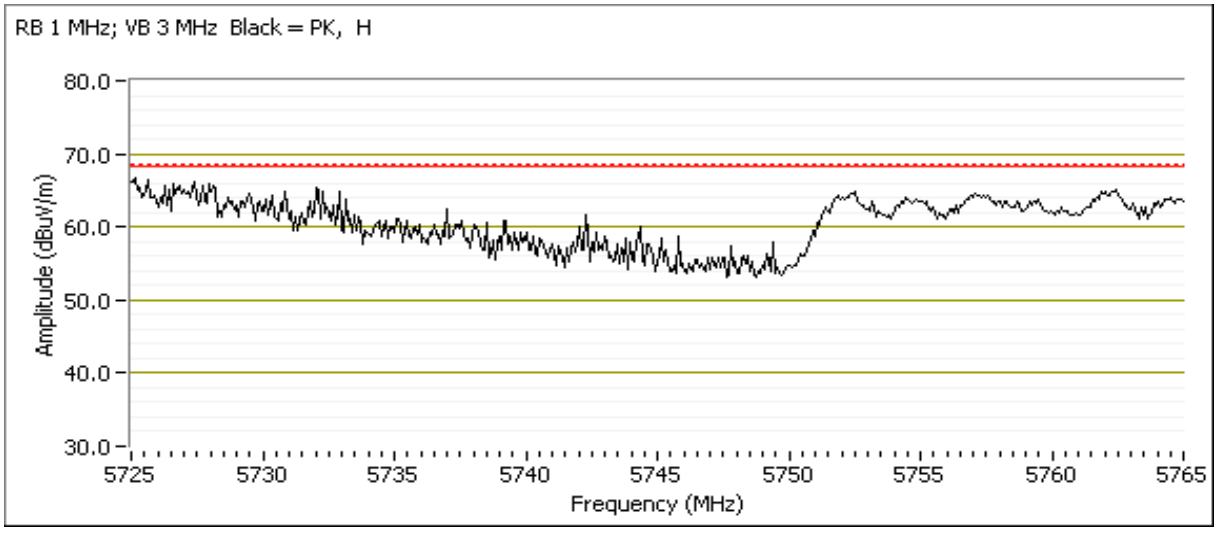


Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Channel: 136 - 5680MHz
Tx Chain: 3Tx
Mode: n20
Data Rate: MCSO

5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5725.990	67.2	H	68.3	-1.1	PK	281	1.5	POS; RB 1 MHz; VB: 3 MHz
5725.000	65.7	V	68.3	-2.6	PK	250	1.7	POS; RB 1 MHz; VB: 3 MHz



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #10: Radiated Bandedge Measurements, 5250-5350MHz

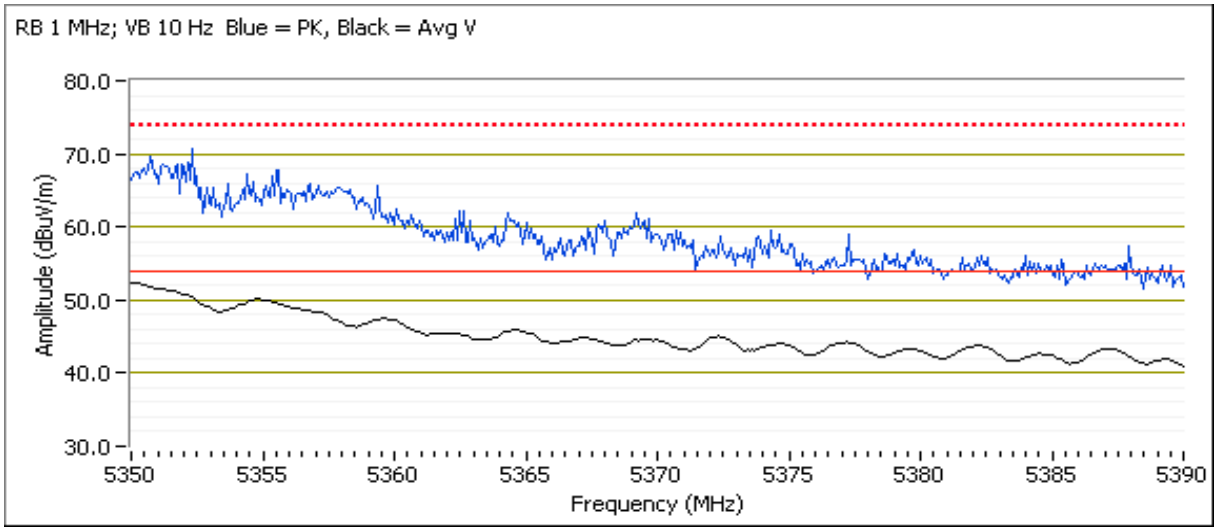
Date of Test: 11/24/2015 0:00
Test Engineer: Rafael Varelas
Test Location: FT Chamber #7

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

Channel: 62 - 5310MHz
Tx Chain: 3Tx
Mode: n40
Data Rate: MCS0

5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.080	52.5	V	54.0	-1.5	AVG	244	2.5	POS; RB 1 MHz; VB: 10 Hz
5350.640	72.0	V	74.0	-2.0	PK	244	2.5	POS; RB 1 MHz; VB: 3 MHz
5350.000	52.0	H	54.0	-2.0	AVG	288	1.8	POS; RB 1 MHz; VB: 10 Hz
5350.560	72.1	H	74.0	-1.9	PK	288	1.8	POS; RB 1 MHz; VB: 3 MHz

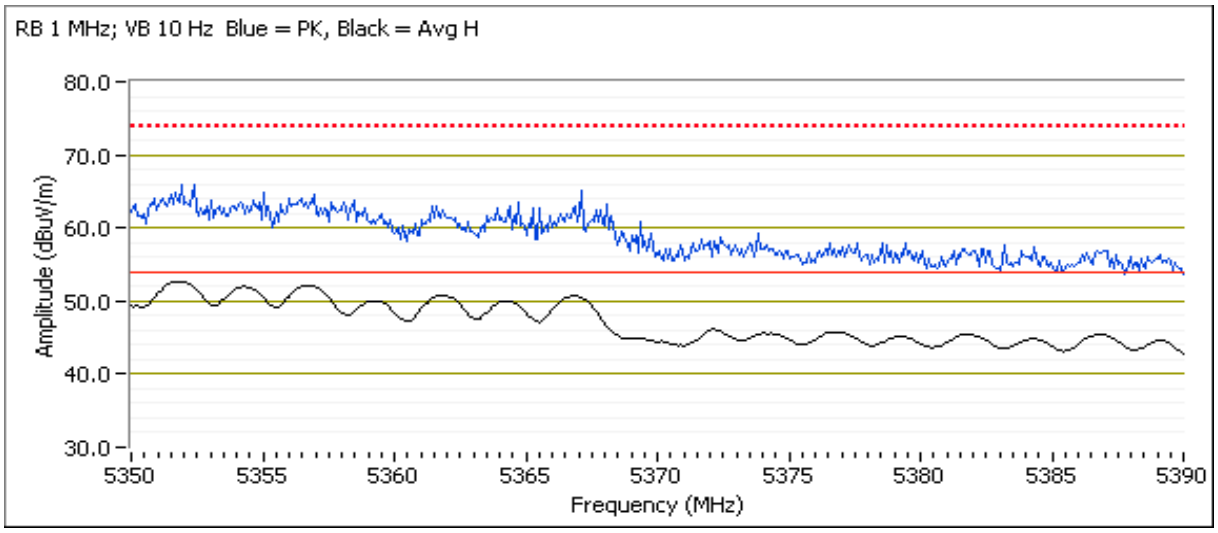


Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Channel: 54 - 5270MHz
Tx Chain: 3Tx
Mode: n40
Data Rate: MCS0

5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5351.840	52.9	H	54.0	-1.1	AVG	270	1.8	POS; RB 1 MHz; VB: 10 Hz
5352.320	65.9	H	74.0	-8.1	PK	270	1.8	POS; RB 1 MHz; VB: 3 MHz
5351.840	52.2	V	54.0	-1.8	AVG	214	1.7	POS; RB 1 MHz; VB: 10 Hz
5356.650	64.6	V	74.0	-9.4	PK	214	1.7	POS; RB 1 MHz; VB: 3 MHz



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #11: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 11/24/2015 0:00
Test Engineer: Rafael Varelas
Test Location: FT Chamber #7

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

Channel: 102 - 5510MHz
Tx Chain: 3Tx
Mode: n40
Data Rate: MCS0

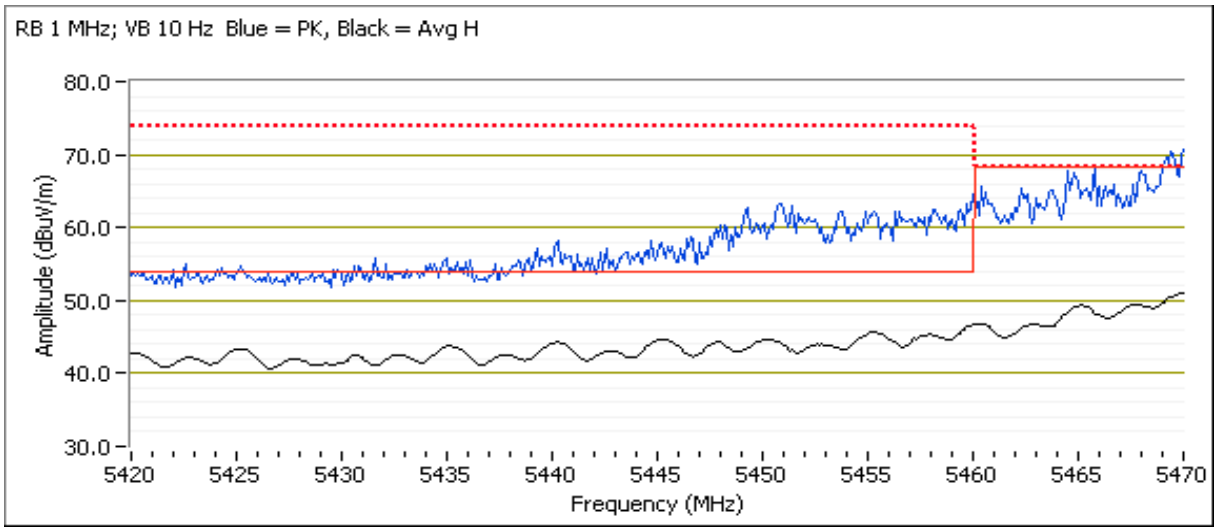
5460 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5459.920	47.2	H	54.0	-6.8	AVG	296	1.2	POS; RB 1 MHz; VB: 10 Hz
5459.600	64.9	H	74.0	-9.1	PK	296	1.2	POS; RB 1 MHz; VB: 3 MHz
5460.000	46.7	V	54.0	-7.3	AVG	276	2.1	POS; RB 1 MHz; VB: 10 Hz
5452.380	63.4	V	74.0	-10.6	PK	276	2.1	POS; RB 1 MHz; VB: 3 MHz

5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5469.840	72.8	H	74.0	-1.2	PK	296	1.2	POS; RB 1 MHz; VB: 3 MHz, note 1
5469.900	51.3	H	54.0	-2.7	AVG	296	1.2	POS; RB 1 MHz; VB: 10 Hz, note 1
5470.000	51.1	V	54.0	-2.9	AVG	276	2.1	POS; RB 1 MHz; VB: 3 MHz, note 1
5469.080	72.3	V	74.0	-1.7	PK	276	2.1	POS; RB 1 MHz; VB: 10 Hz, note 1

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

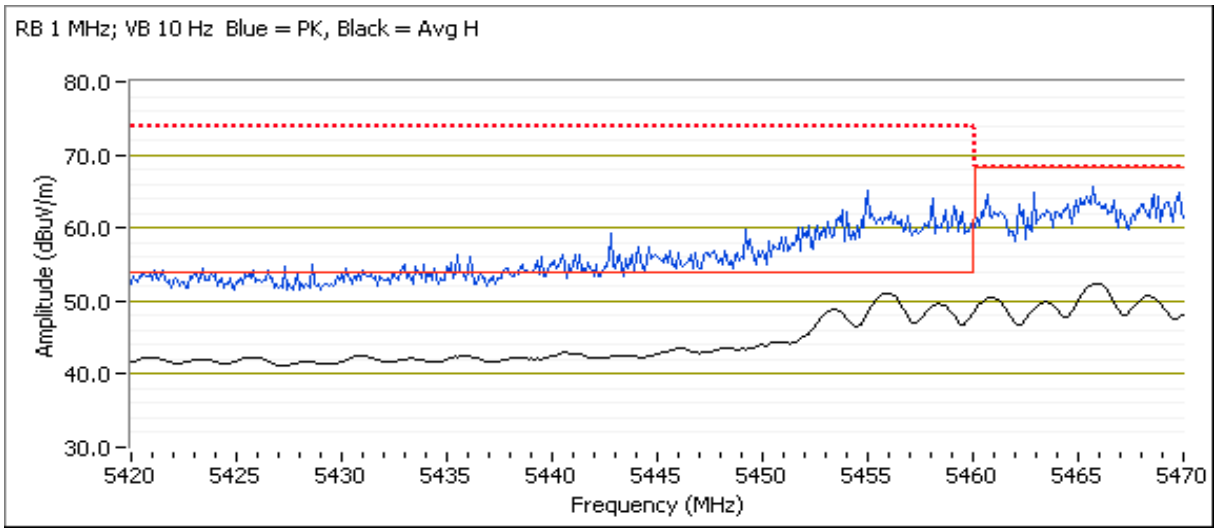
Channel: 110 - 5550MHz
Tx Chain: 3Tx
Mode: n40
Data Rate: MCS0

5460 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5455.910	51.1	H	54.0	-2.9	AVG	236	1.0	POS; RB 1 MHz; VB: 10 Hz
5459.520	63.7	H	74.0	-10.3	PK	236	1.0	POS; RB 1 MHz; VB: 3 MHz
5459.920	50.1	V	54.0	-3.9	AVG	258	2.1	POS; RB 1 MHz; VB: 10 Hz
5457.920	63.2	V	74.0	-10.8	PK	258	2.1	POS; RB 1 MHz; VB: 3 MHz

5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5465.790	52.4	H	54.0	-1.6	AVG	236	1.0	POS; RB 1 MHz; VB: 3 MHz, note 1
5466.270	68.1	H	74.0	-5.9	PK	236	1.0	POS; RB 1 MHz; VB: 10 Hz, note 1
5465.190	52.0	V	54.0	-2.0	AVG	258	2.1	POS; RB 1 MHz; VB: 3 MHz, note 1
5464.510	67.6	V	74.0	-6.4	PK	258	2.1	POS; RB 1 MHz; VB: 10 Hz, note 1

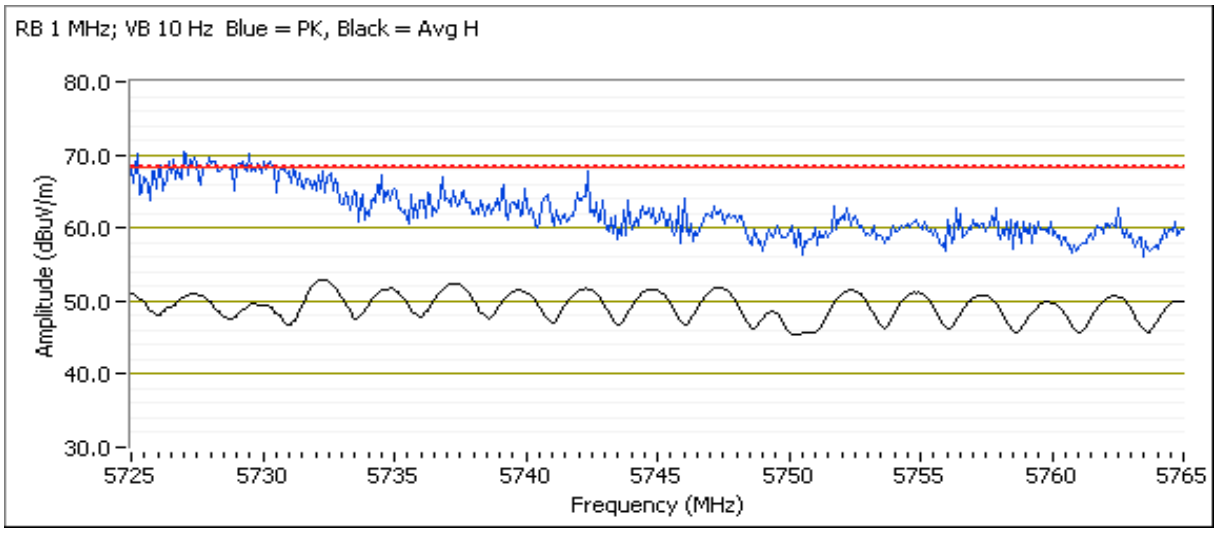


Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Channel: 134 - 5670MHz
Tx Chain: 3Tx
Mode: n40
Data Rate: MCS0

5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5732.210	52.9	H	54.0	-1.1	AVG	284	1.6	POS; RB 1 MHz; VB: 3 MHz, note 1
5730.050	70.4	H	74.0	-3.6	PK	284	1.6	POS; RB 1 MHz; VB: 10 Hz, note 1
5732.540	51.3	V	54.0	-2.7	AVG	252	1.6	POS; RB 1 MHz; VB: 3 MHz, note 1
5731.090	67.5	V	74.0	-6.5	PK	252	1.6	POS; RB 1 MHz; VB: 10 Hz, note 1



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #14: Radiated Bandedge Measurements, 5250-5350MHz

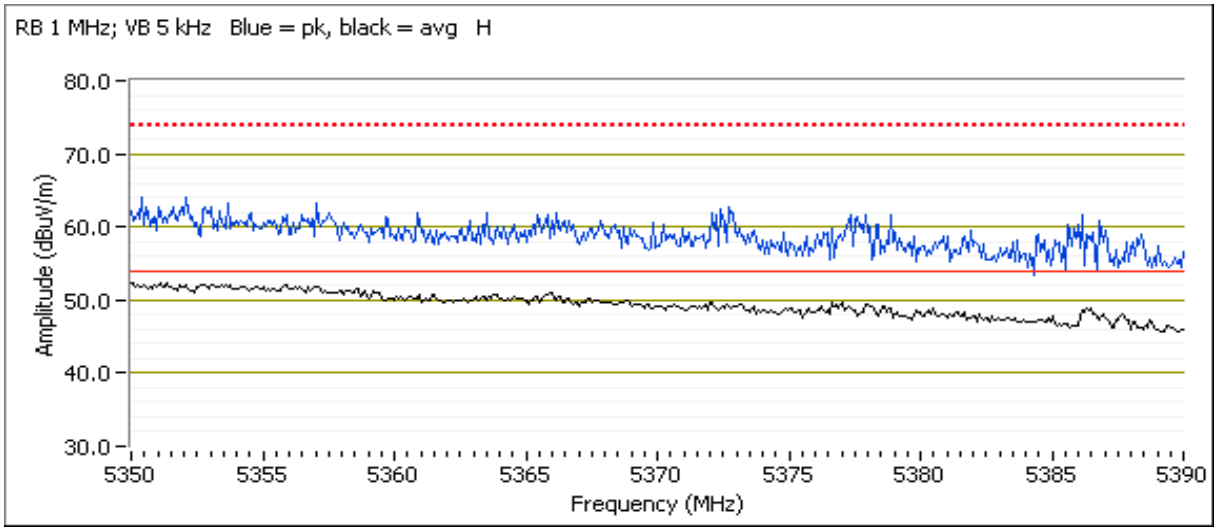
Date of Test: 11/25/2015 0:00
Test Engineer: John Caizzi
Test Location: FT Chamber #7

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

Channel: 58 - 5290MHz
Tx Chain: 3Tx
Mode: ac80
Data Rate: VHT0

5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.480	53.0	V	54.0	-1.0	Avg	232	2.25	RB 1 MHz; VB: 5 kHz. Note 3
5351.360	65.9	V	74.0	-8.1	PK	232	2.25	POS; RB 1 MHz; VB: 3 MHz
5357.540	53.0	H	54.0	**-1.0**	Avg	288	1.77	RB 1 MHz; VB: 5 kHz. Note 3
5354.650	64.5	H	74.0	-9.5	PK	288	1.77	POS; RB 1 MHz; VB: 3 MHz



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #15: Radiated Bandedge Measurements, 5470-5725MHz

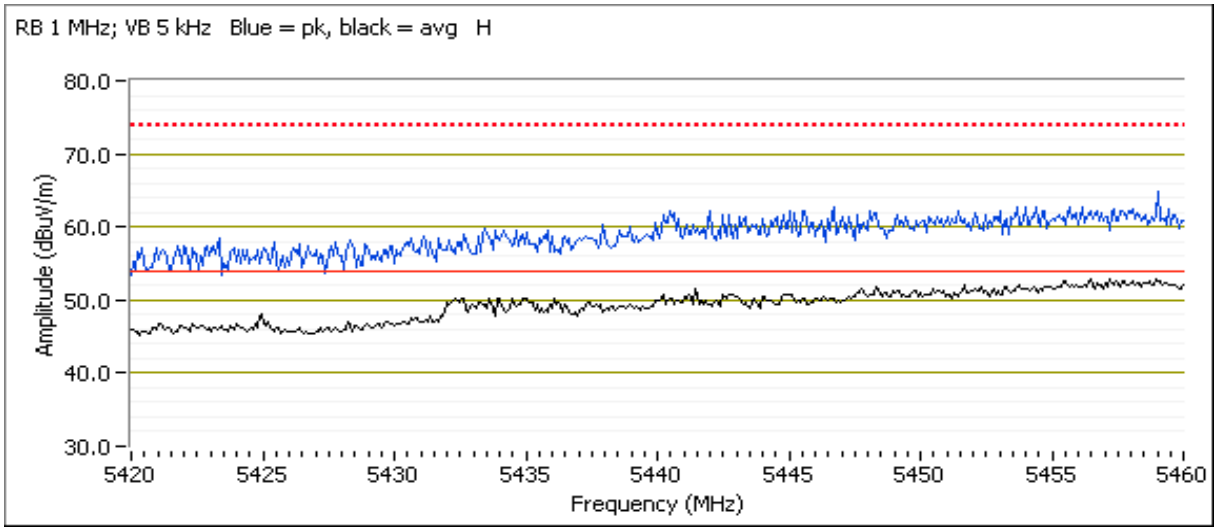
Date of Test: 11/25/2015 0:00
Test Engineer: John Caizzi
Test Location: FT Chamber #7

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

Channel: 106 - 5530MHz
Tx Chain: 3Tx
Mode: ac80
Data Rate: VHT0

5460 MHz Band Edge Signal Radiated Field Strength

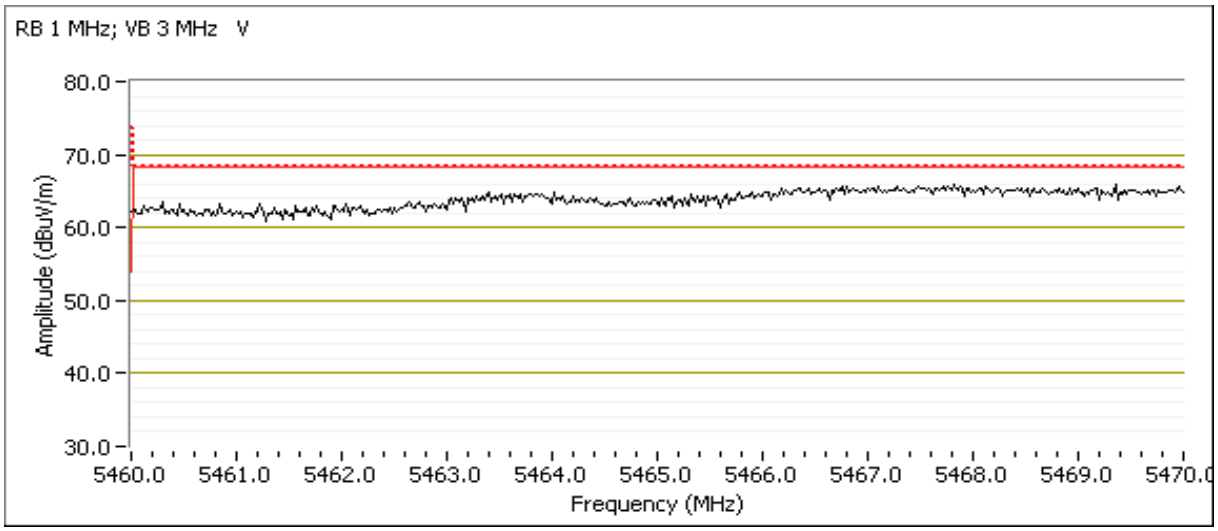
Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5457.920	53.0	H	54.0	**-1.0**	Avg	239	1.43	RB 1 MHz; VB: 5 kHz. Note 3
5454.150	64.5	H	74.0	-9.5	PK	239	1.43	POS; RB 1 MHz; VB: 3 MHz
5457.190	52.2	V	54.0	-1.8	Avg	289	2.45	RB 1 MHz; VB: 5 kHz. Note 3
5456.870	63.7	V	74.0	-10.3	PK	289	2.45	POS; RB 1 MHz; VB: 3 MHz



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5467.980	65.9	V	68.3	**-2.4**	PK	298	2.13	POS; RB 1 MHz; VB: 3 MHz
5469.340	65.9	H	68.3	-2.4	PK	247	1.52	POS; RB 1 MHz; VB: 3 MHz

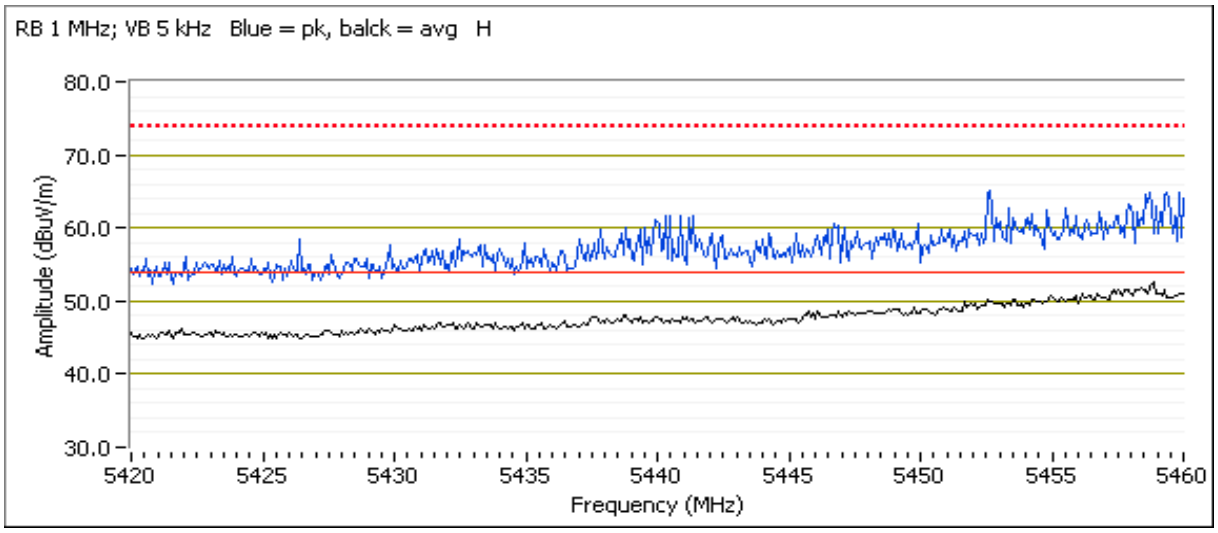


Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Channel: 122 - 5610MHz
Tx Chain: 3Tx
Mode: ac80
Data Rate: VHT0

5460 MHz Band Edge Signal Radiated Field Strength

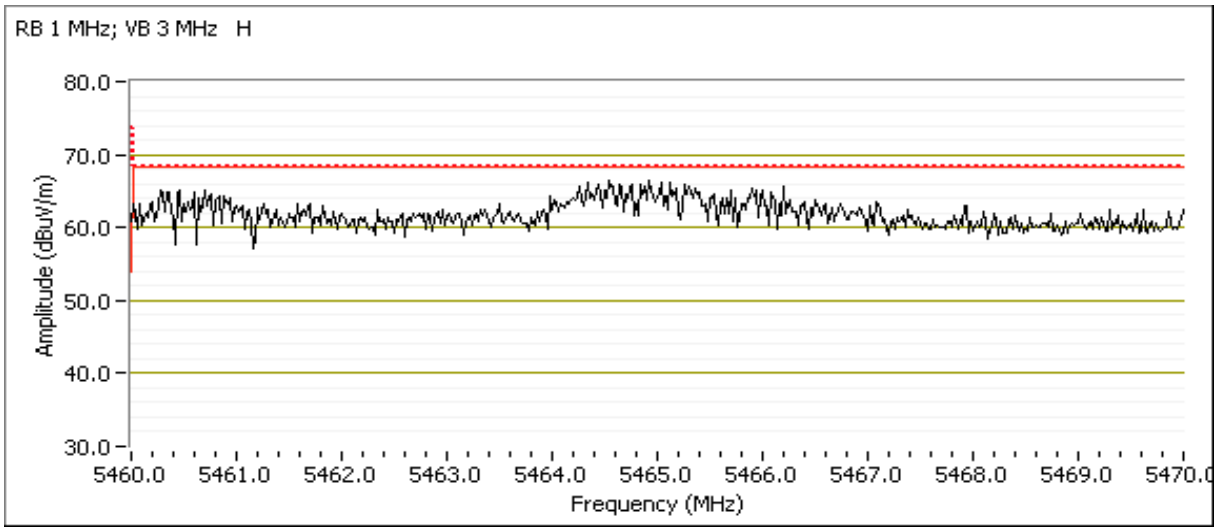
Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5458.960	52.2	V	54.0	-1.8	Avg	248	2.38	RB 1 MHz; VB: 5 kHz. Note 3
5452.380	64.5	V	74.0	-9.5	PK	248	2.38	POS; RB 1 MHz; VB: 3 MHz
5458.000	52.6	H	54.0	**-1.4**	Avg	287	1.57	RB 1 MHz; VB: 5 kHz. Note 3
5452.790	65.6	H	74.0	-8.4	PK	287	1.57	POS; RB 1 MHz; VB: 3 MHz



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5464.650	67.0	H	68.3	**-1.3**	PK	241	1.55	POS; RB 1 MHz; VB: 3 MHz
5464.670	66.1	V	68.3	-2.2	PK	277	2.43	POS; RB 1 MHz; VB: 3 MHz



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

RSS-247 and FCC 15.247 (DTS) Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT, unless otherwise noted.

Ambient Conditions:

Temperature: 22.4 °C
Rel. Humidity: 37 %

Summary of Results - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Target Power	Passing Power Setting	Test Performed	Limit	Result / Margin
1	b	6 - 2437MHz	23	q92	Radiated Emissions, 30 - 1000 MHz	FCC Part 15.209 / 15.247(c)	31.0 dBµV/m @ 46.56 MHz (-9.0 dB)
2	a	157 - 5785MHz	23	q92	Radiated Emissions, 30 - 1000 MHz	FCC Part 15.209 / 15.247(c)	29.9 dBµV/m @ 40.05 MHz (-10.1 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Notes

Sample S/N: prototype
Driver: -
Antenna: Internal

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Procedure Comments:

Measurements performed in accordance with FCC KDB 558074
Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time
Unless otherwise stated/noted, emission has duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold.
2.4GHz band reject filter used

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11b	5.5	99.4%	Yes	2.32	0	0	10
11a	6	99.0%	Yes	2.06	0	0	10

Measurement Specific Notes:

Note 1:	Emission in non-restricted band, but limit of 15.209 used.
Note 2:	Emission in non-restricted band, the limit was set 30dB below the level of the fundamental and measured in 100kHz.
Note 3:	Emission has a duty cycle ≥ 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100 traces
Note 4:	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz, peak detector, linear averaging, auto sweep, trace average 100 traces, measurement corrected by Linear voltage correction factor
Note 5:	Emission has constatnt duty cycle < 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100 traces, measurement corrected by Pwr correction factor
Note 6:	Emission has non constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW> 1/T, peak detector, linear average mode, sweep time auto, max hold. Max hold for 50*(1/DC) traces
Note 7:	Emission has non constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW> 1/T, RMS detector, sweep time auto, max hold. Max hold for 50*(1/DC) traces

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #1: Radiated Spurious Emissions, 30 - 1000 MHz. Operating Mode: 802.11b

Date of Test: 12/09/15 Test Location: FT Chamber #5

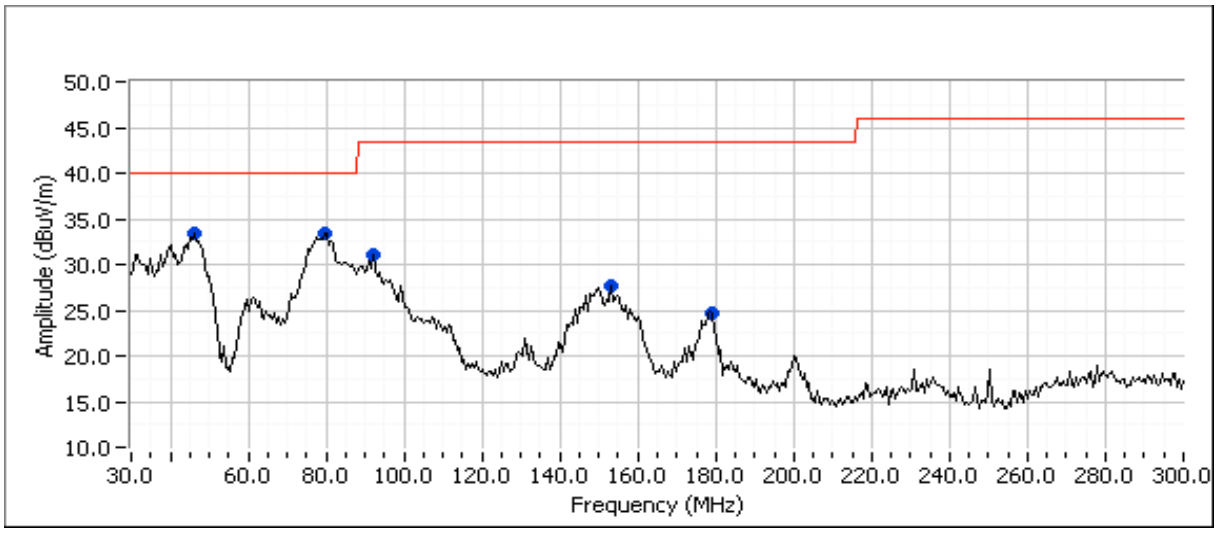
Test Engineer: Rafael Varelas EUT Voltage: 120V/60Hz

Run #1b: Center Channel

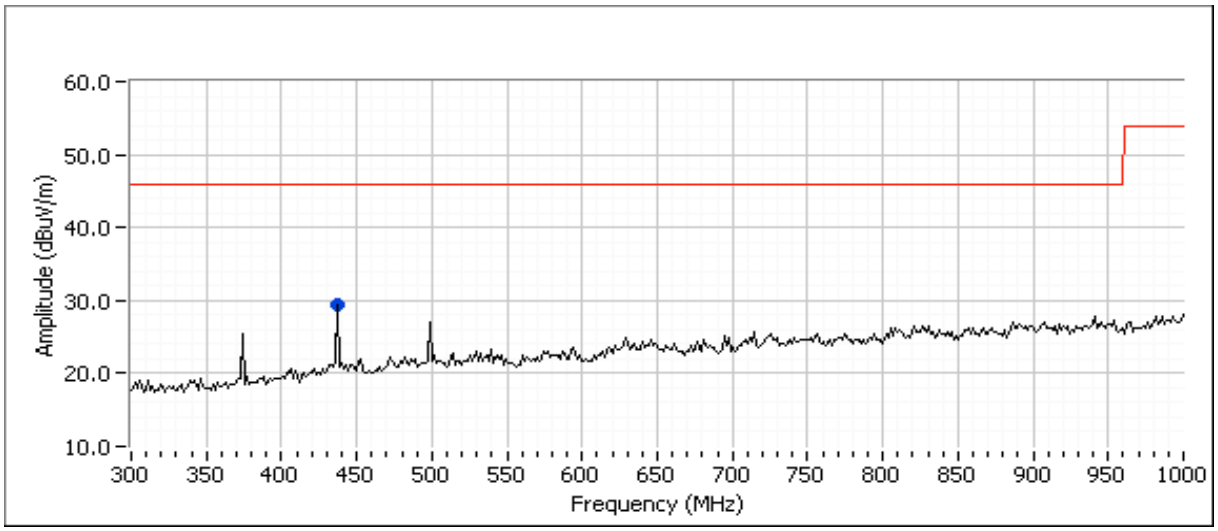
Channel: 6 Mode: b

Tx Chain: 3Tx Data Rate: 5.5

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
46.560	**31.0**	V	40.0	**-9.0**	QP	0	1.0	QP (1.00s)
78.303	30.2	V	40.0	-9.8	QP	189	1.1	QP (1.00s)
91.123	29.1	V	43.5	-14.4	QP	308	1.0	QP (1.00s)
437.500	29.5	V	46.0	-16.5	QP	360	1.0	QP (1.00s)
153.201	24.3	V	43.5	-19.2	QP	179	1.0	QP (1.00s)
178.827	21.0	V	43.5	-22.5	QP	224	1.0	QP (1.00s)



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #2: Radiated Spurious Emissions, 30-1000MHz. Operating Mode: 802.11a

Date of Test: 12/09/15 Test Location: FT Chamber #5

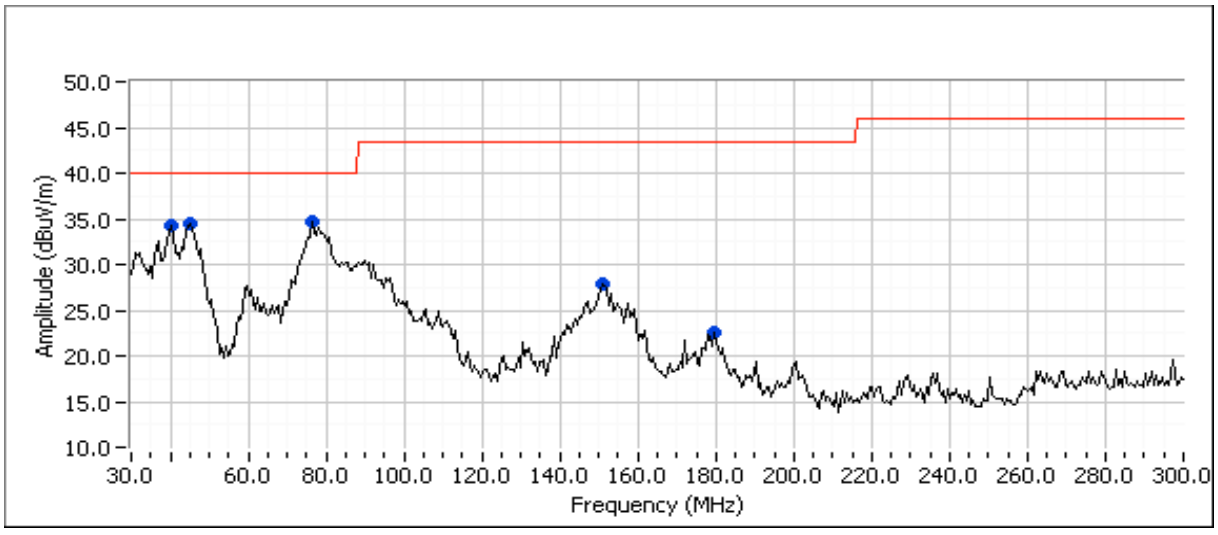
Test Engineer: Rafael Varelas EUT Voltage: 120V/60Hz

Run #2a: Center Channel

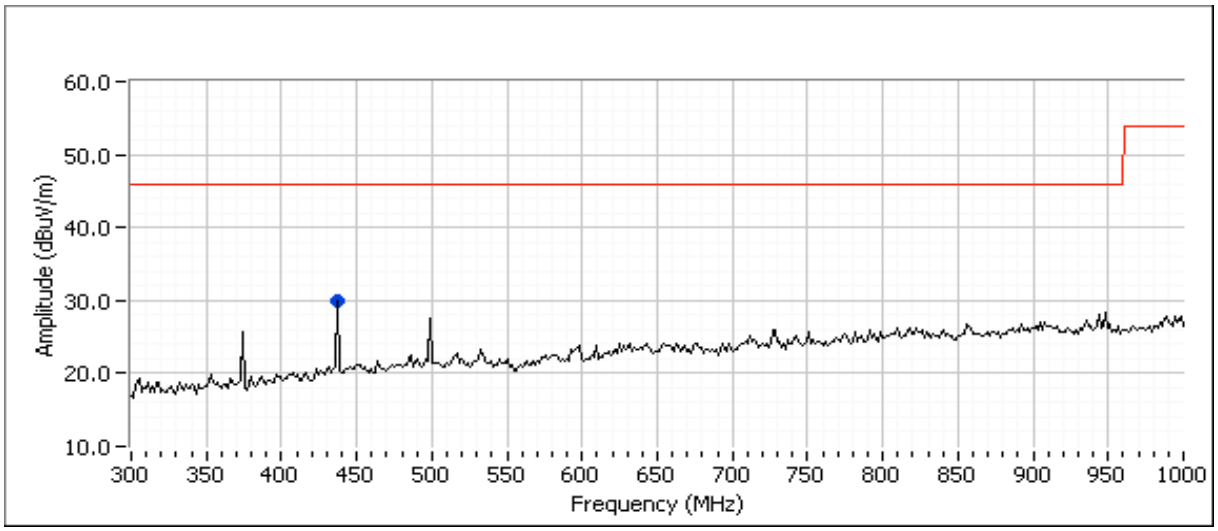
Channel: 157 Mode: a

Tx Chain: 3Tx Data Rate: 6

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
40.050	**29.9**	V	40.0	**-10.1**	QP	353	1.0	QP (1.00s)
44.413	29.3	V	40.0	-10.7	QP	15	1.0	QP (1.00s)
75.764	28.9	V	40.0	-11.1	QP	267	1.0	QP (1.00s)
437.500	29.2	V	46.0	-16.8	QP	326	1.0	QP (1.00s)
150.757	24.3	V	43.5	-19.2	QP	145	1.0	QP (1.00s)
179.232	21.3	V	43.5	-22.2	QP	202	1.0	QP (1.00s)



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A



Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

RSS-247 and FCC 15.247 (DTS) Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT, unless otherwise noted.

Ambient Conditions:

Temperature: 22.4 °C
Rel. Humidity: 36 %

Summary of Results - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin
1	b	2412MHz	q92	q92	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c) / 15.407	50.0 dBµV/m @ 4818.7 MHz (-4.0 dB)
	a	5180MHz	q74	q74			
	b	2462MHz	q92	q92	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c) / 15.407	67.1 dBµV/m @ 5480.7 MHz (-1.2 dB)
	a	5320MHz	q72	q60			
	b	2437MHz	q92	q92	Radiated Emissions, 1 - 40 GHz	FCC Part 15.209 / 15.247(c) / 15.407	66.2 dBµV/m @ 5266.3 MHz (-2.1 dB)
	a	5500MHz	q73	q73			

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Notes

Sample S/N: prototype
Driver: -
Antenna: Internal

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Procedure Comments:

Measurements performed in accordance with FCC KDB 558074
Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time
Unless otherwise stated/noted, emission has duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold.
2.4GHz and 5GHz band reject filters were used

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11b	5.5	99.4%	Yes	2.32	0	0	10
11a	6	99.0%	Yes	2.06	0	0	10

Measurement Specific Notes:

Note 1:	Emission in non-restricted band, but limit of 15.209 used.
Note 2:	Emission in non-restricted band, the limit was set 30dB below the level of the fundamental and measured in 100kHz.
Note 3:	Emission has a duty cycle ≥ 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100 traces

Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

Run #1: Radiated Spurious Emissions, 1,000 - 40000 MHz

Date of Test: 12/23/2015 Config. Used: 1
Test Engineer: Deniz Demirci Config Change: None
Test Location: FT Chamber #5 EUT Voltage: 120V/60Hz

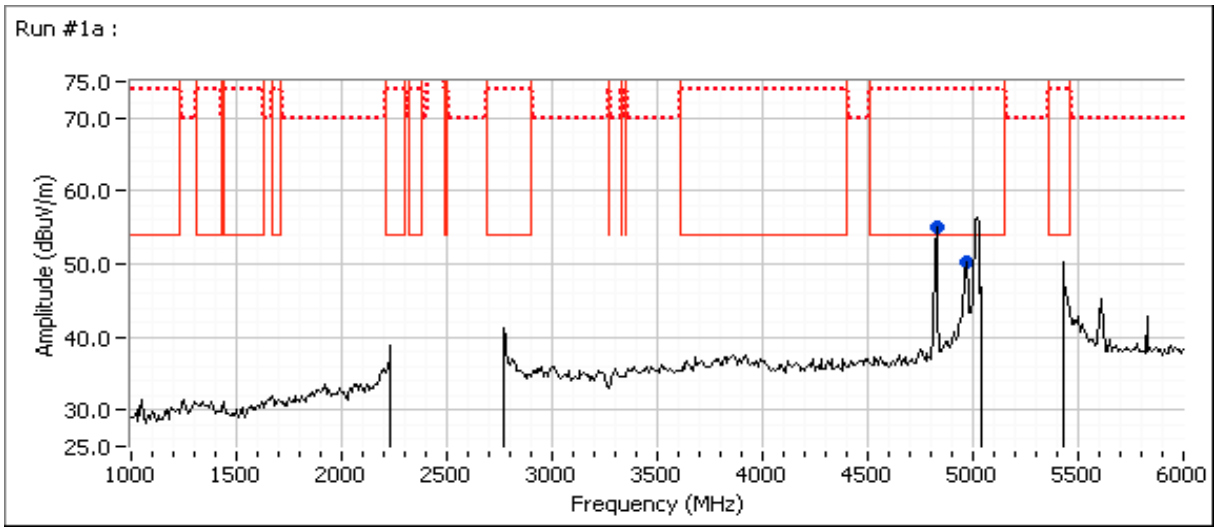
Run #1a:

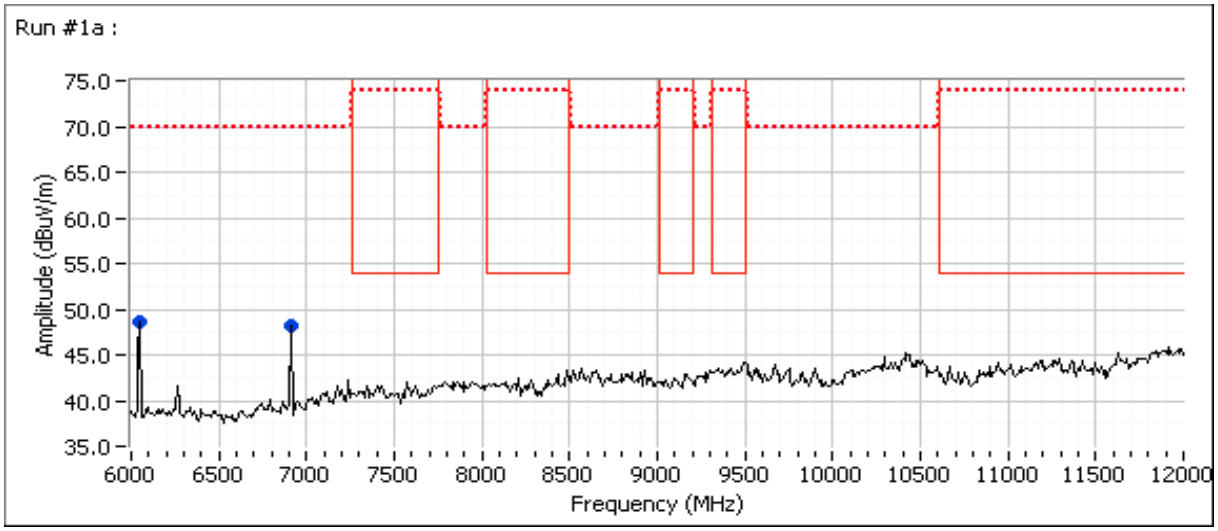
Channel: 1 Mode: b
Tx Chain: 3Tx Data Rate: 5.5

Channel: 36 Mode: a
Tx Chain: 3Tx Data Rate: 6

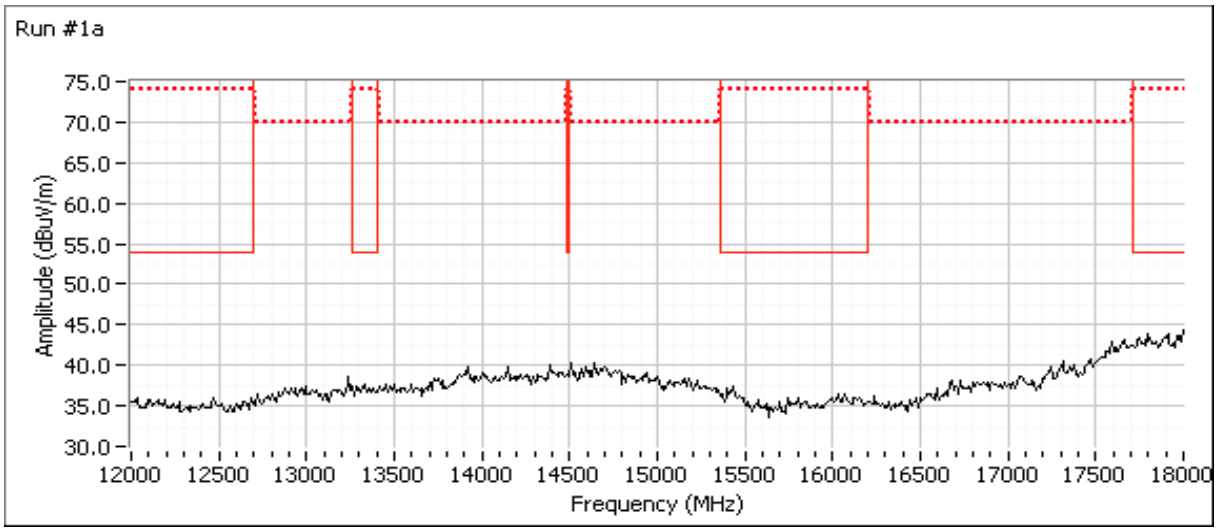
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4818.700	50.0	V	54.0	-4.0	AVG	33	2.0	RB 1 MHz;VB 10 Hz;Peak
4818.510	56.2	V	74.0	-17.8	PK	33	2.0	RB 1 MHz;VB 3 MHz;Peak
4960.870	48.7	H	54.0	-5.3	AVG	224	1.6	RB 1 MHz;VB 10 Hz;Peak
4971.000	59.4	H	74.0	-14.6	PK	224	1.6	RB 1 MHz;VB 3 MHz;Peak
6043.330	53.6	H	68.3	-14.7	PK	240	1.8	RB 1 MHz;VB 3 MHz;Peak
6906.790	53.6	H	68.3	-14.7	PK	253	1.4	RB 1 MHz;VB 3 MHz;Peak

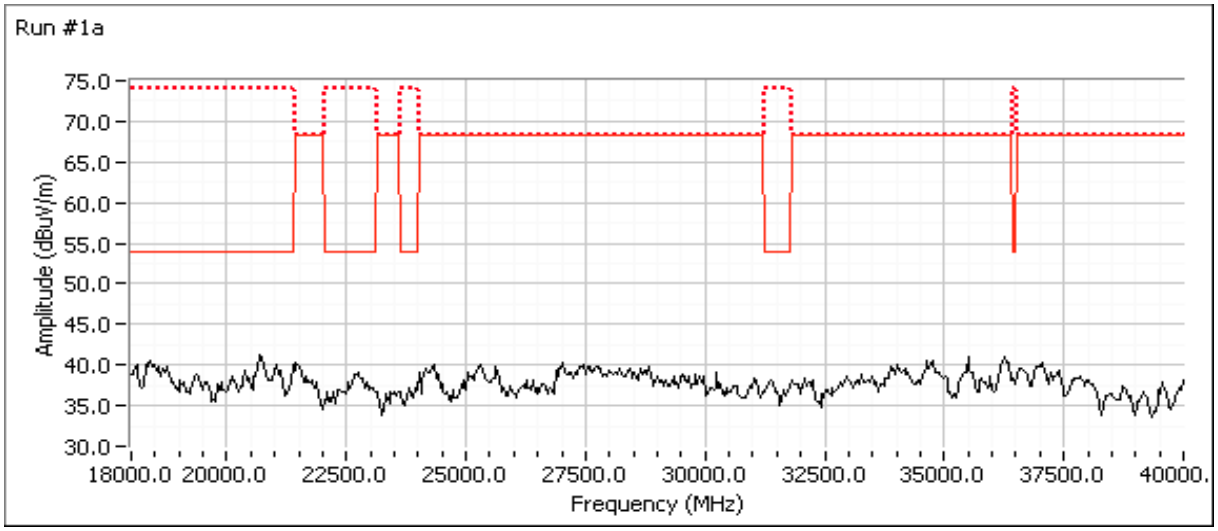
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A





Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A





Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

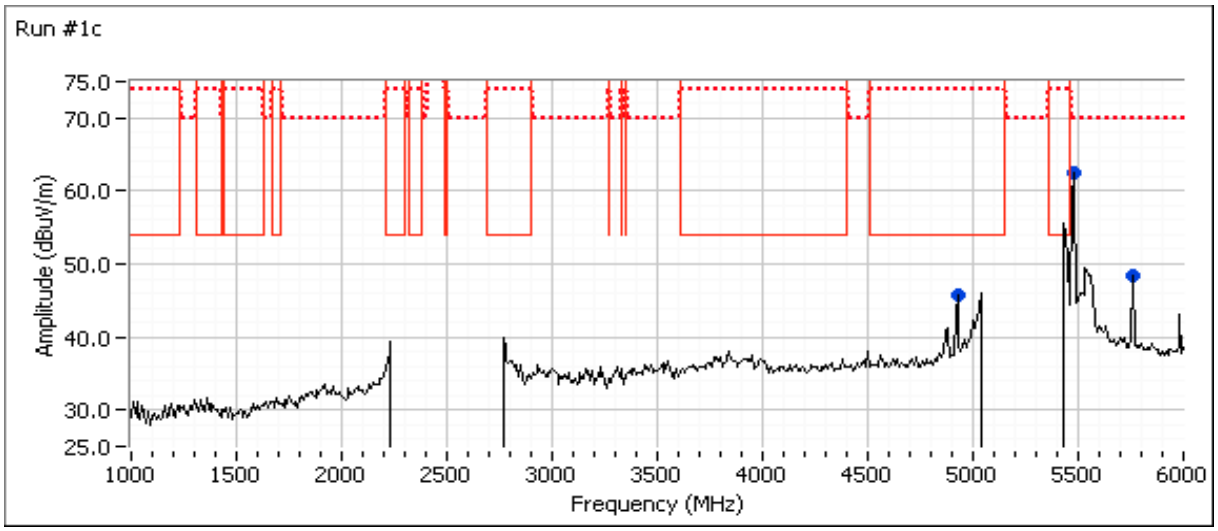
Run #1c:

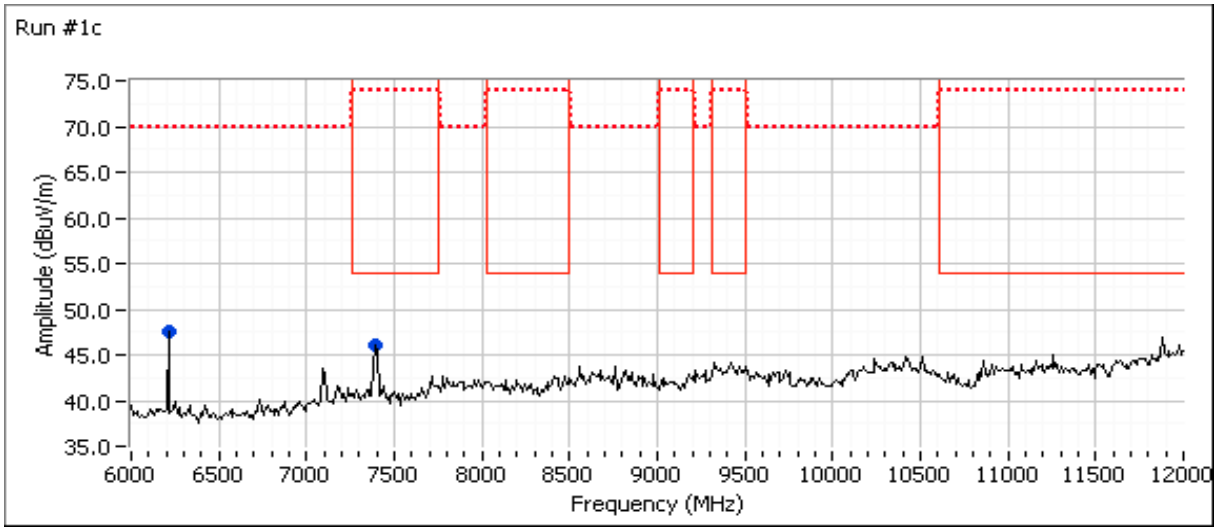
Channel: 11 Mode: b
Tx Chain: 3Tx Data Rate: 5.5

Channel: 64 Mode: a
Tx Chain: 3Tx Data Rate: 6

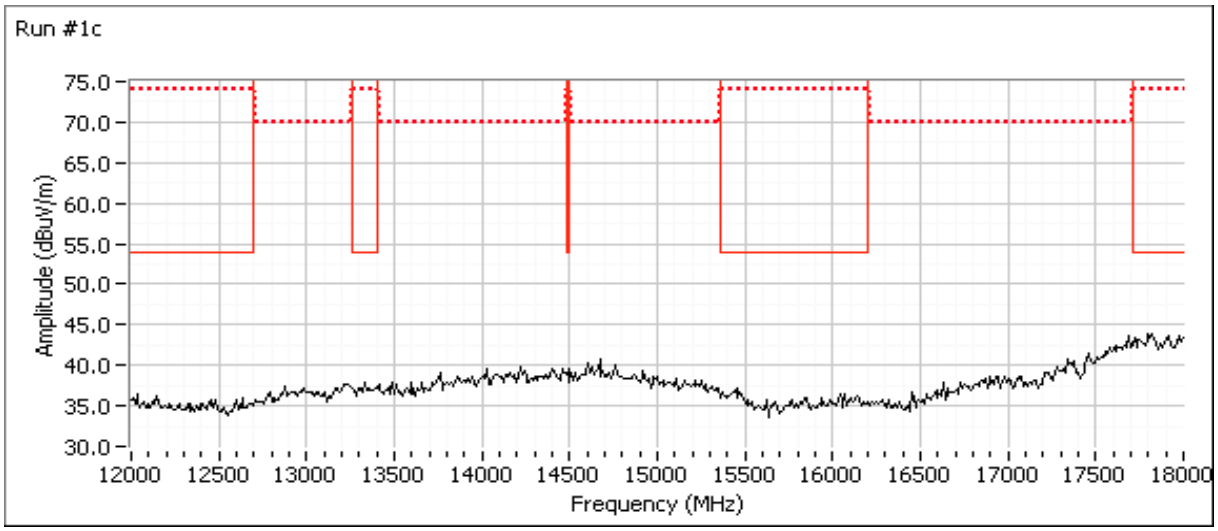
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4929.300	42.3	H	54.0	-11.7	AVG	117	1.4	RB 1 MHz;VB 10 Hz;Peak
4924.170	51.8	H	74.0	-22.2	PK	117	1.4	RB 1 MHz;VB 3 MHz;Peak
5763.550	52.5	H	68.3	-15.8	PK	215	1.9	RB 1 MHz;VB 3 MHz;Peak
5480.700	67.1	H	68.3	-1.2	PK	226	1.6	RB 1 MHz;VB 3 MHz;Peak
6206.600	53.1	H	68.3	-15.2	PK	236	1.9	RB 1 MHz;VB 3 MHz;Peak
7393.520	44.2	V	54.0	-9.8	AVG	61	1.0	RB 1 MHz;VB 10 Hz;Peak
7393.570	53.7	V	74.0	-20.3	PK	61	1.0	RB 1 MHz;VB 3 MHz;Peak

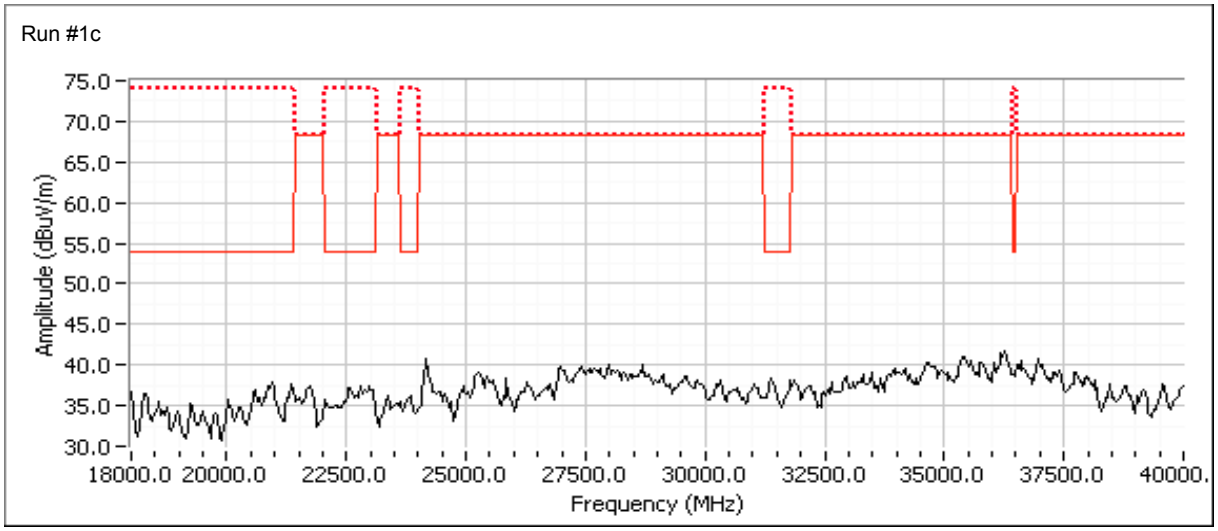
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A





Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A





Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A

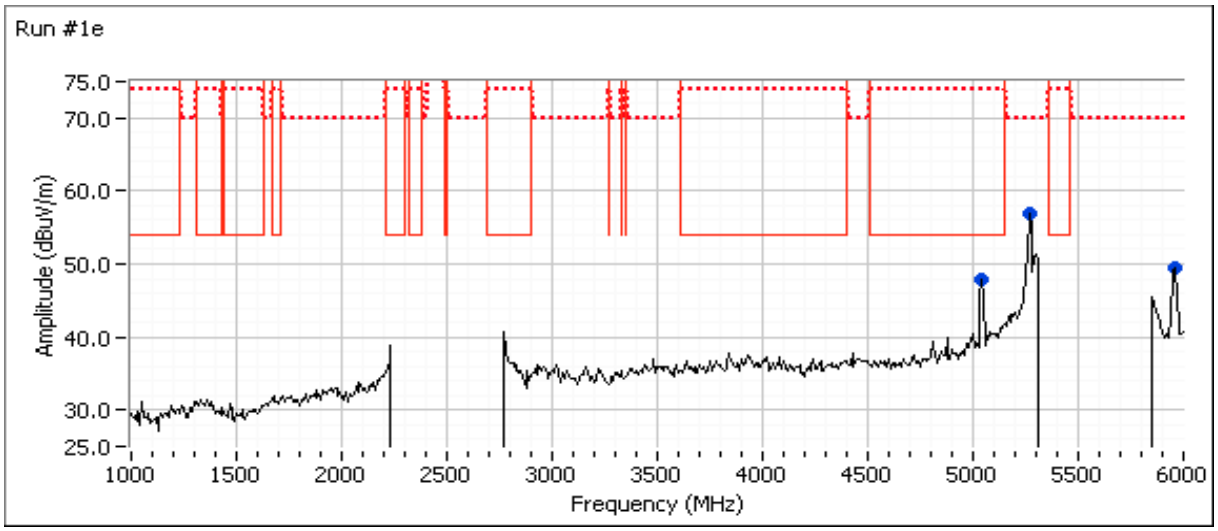
Run #1e:

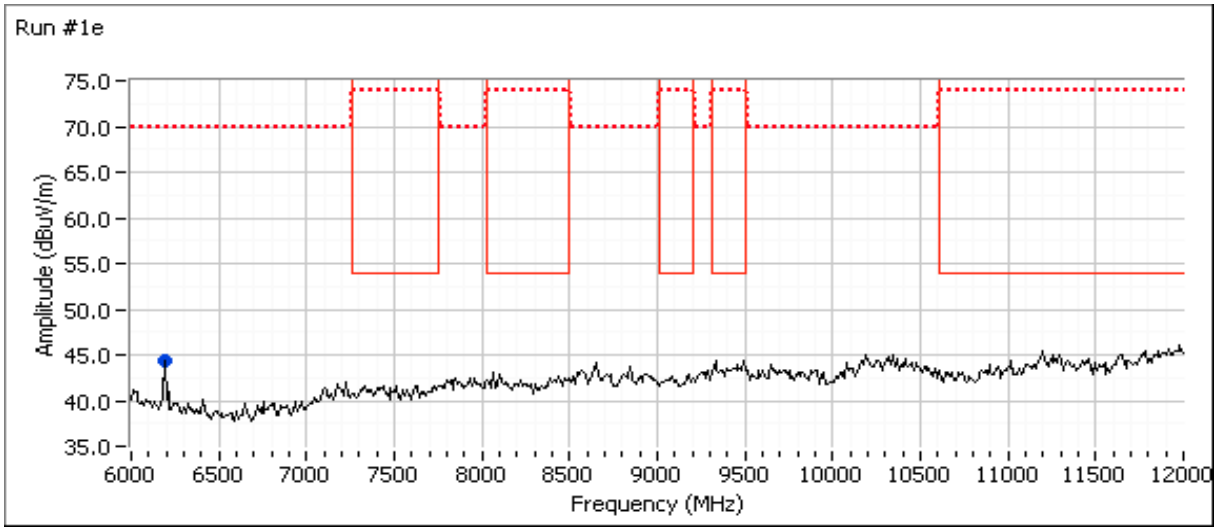
Channel: 6 Mode: b
Tx Chain: 3Tx Data Rate: 5.5

Channel: 100 Mode: a
Tx Chain: 3Tx Data Rate: 6

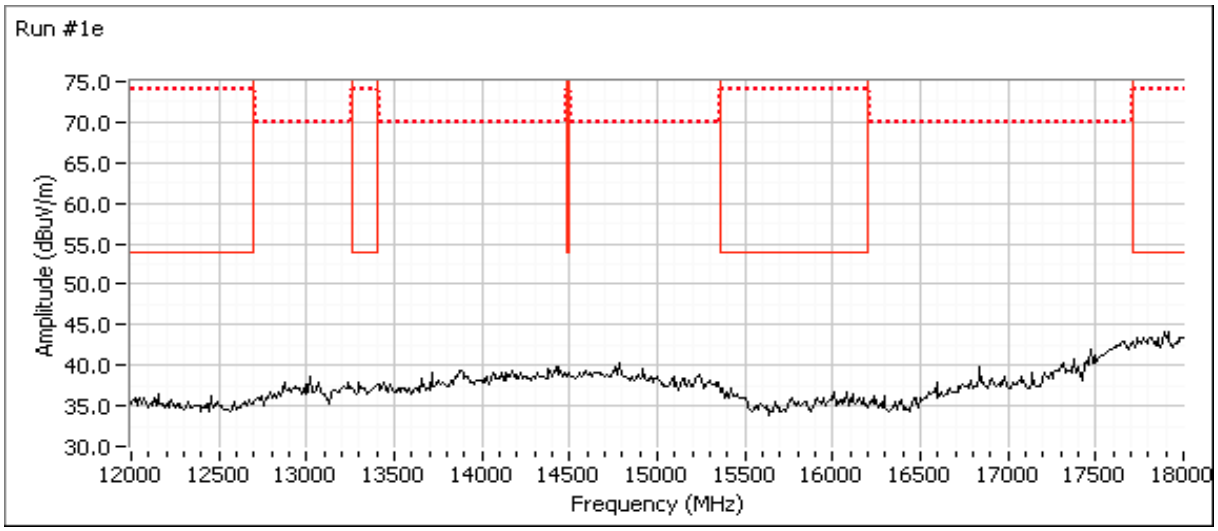
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5266.330	**66.2**	H	68.3	**-2.1**	PK	228	1.5	RB 1 MHz;VB 3 MHz;Peak
5042.370	48.1	H	54.0	-5.9	AVG	213	1.9	RB 1 MHz;VB 10 Hz;Peak
5960.520	56.7	H	68.3	-11.6	PK	202	1.8	RB 1 MHz;VB 3 MHz;Peak
5041.510	59.2	H	74.0	-14.8	PK	213	1.9	RB 1 MHz;VB 3 MHz;Peak
6187.230	52.2	V	68.3	-16.1	PK	269	1.8	RB 1 MHz;VB 3 MHz;Peak

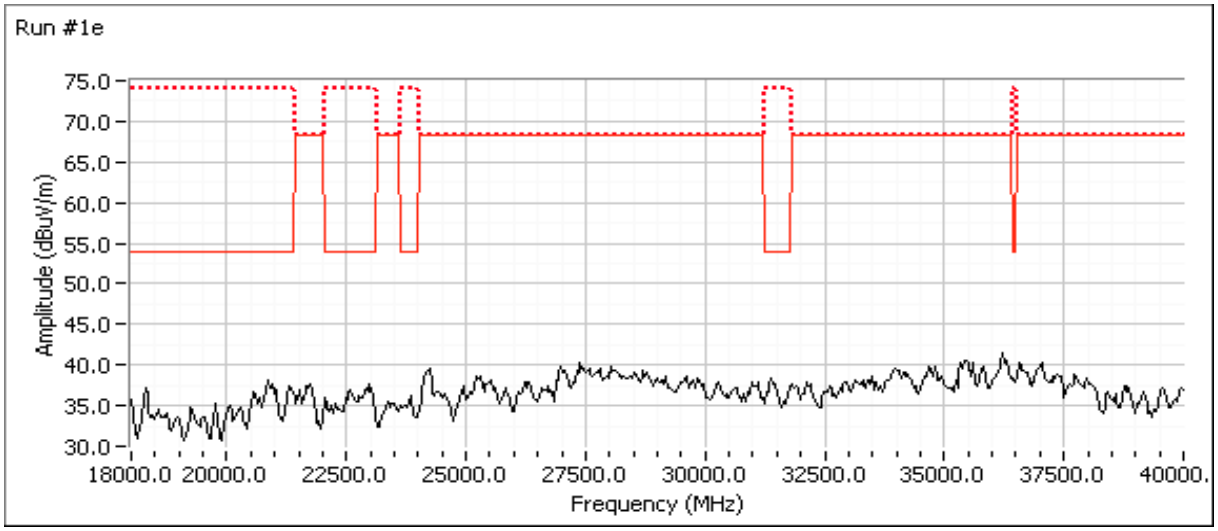
Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A





Client:	Ericsson Canada	Job Number:	JD99841
Model:	APINM210	T-Log Number:	T99885
		Project Manager:	Christine Krebill
Contact:	Nancy Langford	Project Coordinator:	-
Standard:	FCC 15.247/15.E, RSS-247	Class:	N/A





End of Report

This page is intentionally blank and
marks the last page of this test report.