

EMC Test Report

Application for Grant of Equipment Authorization

Industry Canada RSS-Gen Issue 4 / RSS 247 Issue 1 FCC Part 15 Subpart C

Model: APINM210

IC CERTIFICATION #: 4675A-APINM210
 FCC ID: Q9DAPINM210

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IC SITE REGISTRATION #: 2845B-4, 2845B-5, 2845B-7

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Testing Cert #0214.26

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REVISION HISTORY

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TABLE OF CONTENTS

| | |
|--|------------|
| REVISION HISTORY | 2 |
| TABLE OF CONTENTS | 3 |
| SCOPE | 4 |
| OBJECTIVE | 4 |
| STATEMENT OF COMPLIANCE | 5 |
| DEVIATIONS FROM THE STANDARDS | 5 |
| TEST RESULTS SUMMARY | 6 |
| DIGITAL TRANSMISSION SYSTEMS (2400 – 2483.5MHZ) | 6 |
| GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS | 6 |
| MEASUREMENT UNCERTAINTIES | 7 |
| EQUIPMENT UNDER TEST (EUT) DETAILS | 8 |
| GENERAL | 8 |
| OTHER EUT DETAILS | 8 |
| ANTENNA SYSTEM | 8 |
| ENCLOSURE | 8 |
| MODIFICATIONS | 8 |
| SUPPORT EQUIPMENT | 8 |
| EUT INTERFACE PORTS | 8 |
| EUT OPERATION | 8 |
| TEST SITE | 9 |
| GENERAL INFORMATION | 9 |
| CONDUCTED EMISSIONS CONSIDERATIONS | 9 |
| RADIATED EMISSIONS CONSIDERATIONS | 9 |
| MEASUREMENT INSTRUMENTATION | 10 |
| RECEIVER SYSTEM | 10 |
| INSTRUMENT CONTROL COMPUTER | 10 |
| LINE IMPEDANCE STABILIZATION NETWORK (LISN) | 10 |
| FILTERS/ATTENUATORS | 11 |
| ANTENNAS | 11 |
| ANTENNA MAST AND EQUIPMENT TURNTABLE | 11 |
| INSTRUMENT CALIBRATION | 11 |
| TEST PROCEDURES | 12 |
| EUT AND CABLE PLACEMENT | 12 |
| CONDUCTED EMISSIONS | 12 |
| RADIATED EMISSIONS | 13 |
| CONDUCTED EMISSIONS FROM ANTENNA PORT | 16 |
| BANDWIDTH MEASUREMENTS | 16 |
| SPECIFICATION LIMITS AND SAMPLE CALCULATIONS | 17 |
| CONDUCTED EMISSIONS SPECIFICATION LIMITS: FCC 15.207; FCC 15.107(A), RSS GEN | 17 |
| GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS | 18 |
| OUTPUT POWER LIMITS – DIGITAL TRANSMISSION SYSTEMS | 18 |
| TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS – FHSS AND DTS SYSTEMS | 18 |
| SAMPLE CALCULATIONS - CONDUCTED EMISSIONS | 18 |
| SAMPLE CALCULATIONS - RADIATED EMISSIONS | 19 |
| SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION | 19 |
| APPENDIX A TEST EQUIPMENT CALIBRATION DATA | 21 |
| APPENDIX B TEST DATA | 24 |
| END OF REPORT | 100 |

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 C

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 DTS Measurement Guidance KDB558074

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.).

Testing was performed only on model APINM210.

STATEMENT OF COMPLIANCE

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

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 C

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

DIGITAL TRANSMISSION SYSTEMS (2400 – 2483.5MHz)

| FCC Rule Part | RSS Rule Part | Description | Measured Value / Comments | Limit / Requirement | Result |
|--------------------|-----------------------|---|--|---|----------|
| 15.247(a) | RSS 247 5.2 | Digital Modulation | Systems use OFDM / DSSS techniques | System must utilize a digital transmission technology | Complies |
| 15.247 (a) (2) | RSS 247 5.2 (1) | 6 dB Bandwidth | 11b: 9.1 MHz 11g: 16.3 MHz n20: 17.6 MHz n40: 36.3 MHz | > 500 kHz | Complies |
| 15.247 (b) (3) | RSS 247 5.4 (4) | Output Power (multipoint systems) | 11b: 27.4dBm (551mW) 11g: 24.9dBm (312mW) n20: 24.4dBm (276mW) n40: 21.1dBm (129mW) EIRP = 0.873 W <small>Note 1</small> | 1 Watt, EIRP limited to 4 Watts. | Complies |
| 15.247(d) | RSS 247 5.2 (2) | Power Spectral Density | 11b: 5.2 dBm/3 kHz 11g: 0.3 dBm/3 kHz n20: -0.2 dBm/3 kHz n40: -5.2 dBm/3 kHz | 8 dBm/3 kHz | Complies |
| 15.247(c) | RSS 247 5.5 | Antenna Port Spurious Emissions 30 MHz – 25 GHz | All emissions >-30 dBc | < -30 dBc <small>Note 2</small> | Complies |
| 15.247(c) / 15.209 | RSS 247 5.5 / RSS-GEN | Radiated Spurious Emissions 30 MHz – 25 GHz | 53.0 dB μ V/m @ 2483.6 MHz (-1.0 dB) | 15.207 in restricted bands, all others <-30 dBc <small>Note 2</small> | Complies |

Note 1: EIRP calculated using maximum (BF) antenna gain for the highest EIRP system.
Note 2: Limit of -30 dBc used because the power was measured using the UNII test procedure (maximum power averaged over a transmission burst).

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

| FCC Rule Part | RSS Rule part | Description | Measured Value / Comments | Limit / Requirement | Result (margin) |
|------------------------------|------------------------|--------------------------|--|---|----------------------|
| 15.203 | - | RF Connector | Antennas are integral to the module | Unique or integral antenna required | Complies |
| 15.207 | RSS GEN Table 3 | AC Conducted Emissions | 35.6 dB μ V @ 0.207 MHz | Refer to page 17 | Complies (- 17.7 dB) |
| 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 |
| - | RSP 100 RSS GEN 6.6 | Occupied Bandwidth | a: 16.9 MHz n20: 18.5 MHz n40: 36.4 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) | dB μ V/m | 25 to 1000 MHz | ± 3.6 dB |
| | | 1000 to 40000 MHz | ± 6.0 dB |
| Conducted Emissions (AC Power) | dB μ V | 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 2400 – 2483.5 MHz band of operation.

The sample was received on November 19, 2015 and tested on November 19, 23, 25 and 30 and December 1, 3, 4, 7, 8, 9, 14, 17, 18 and 23, 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 FCC | Canada | Location |
|-----------|---|---------|---------------------------|
| Chamber 4 | US0027 | 2845B-4 | 41039 Boyce Road |
| Chamber 5 | US0027 | 2845B-5 | Fremont, CA 94538-2435 |
| 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 50 μ H Line Impedance Stabilization Network as the monitoring point. The LISN used also contains a 250 μ H 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.

ANSI C63.10 specifies that the test height above ground for table mounted devices shall be 0.8 meters for below 1 GHz measurements and 1.5 meters for above 1 GHz measurements.

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.

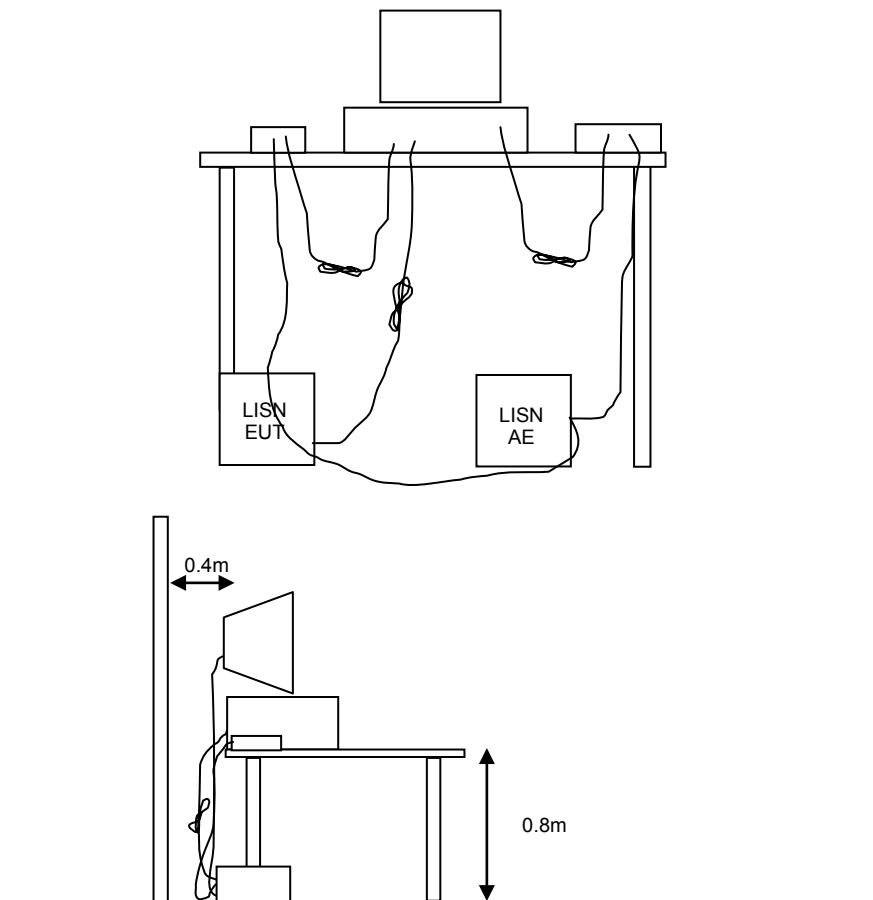


Figure 1 Typical Conducted Emissions Test Configuration

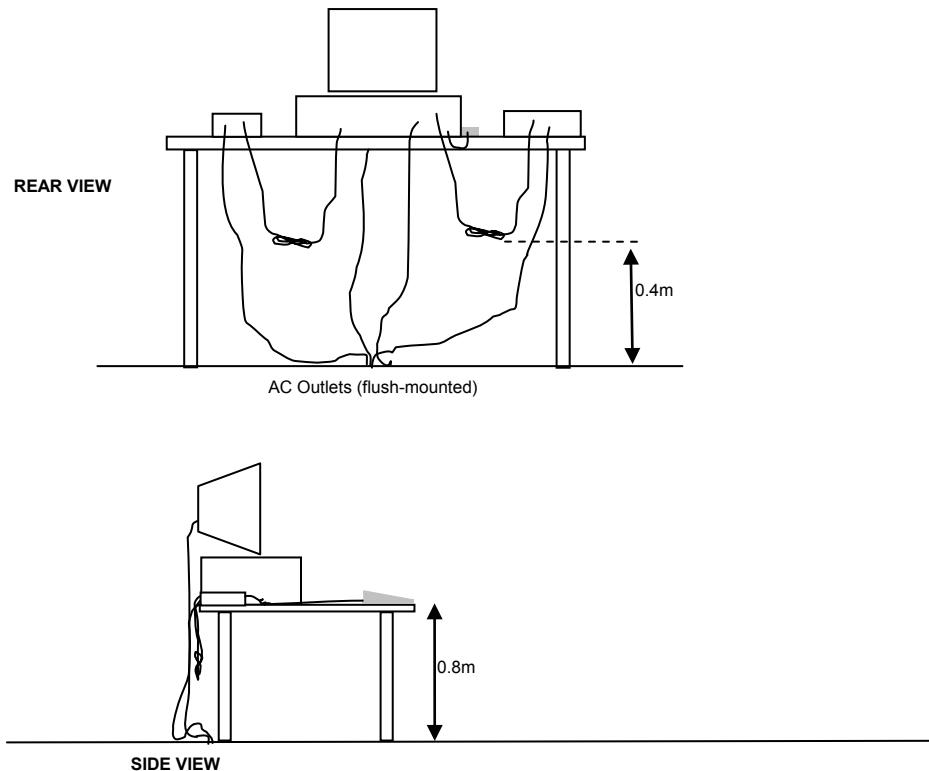
RADIATED EMISSIONS

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.

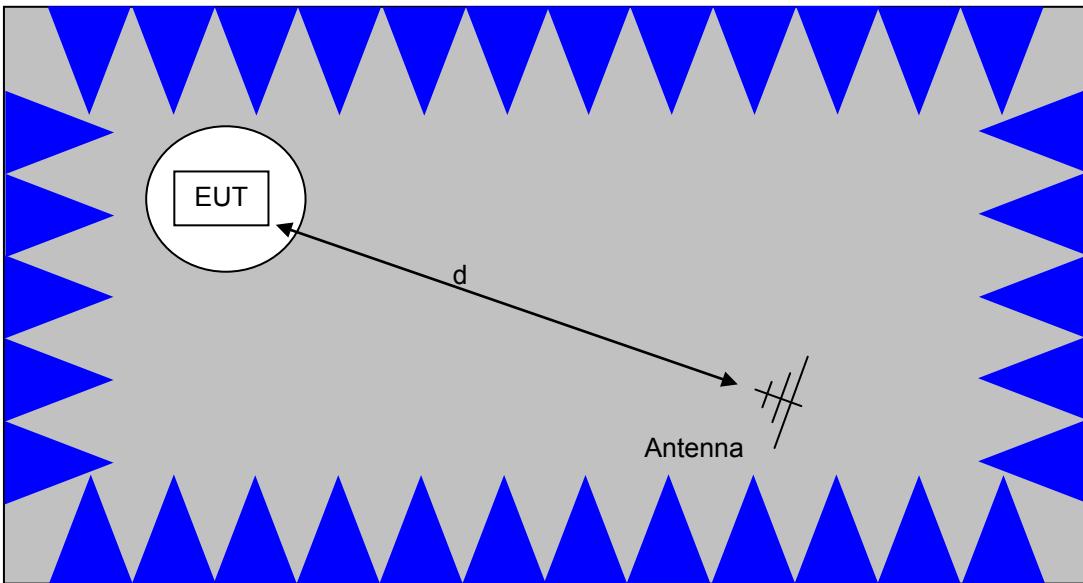
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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 1 meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.

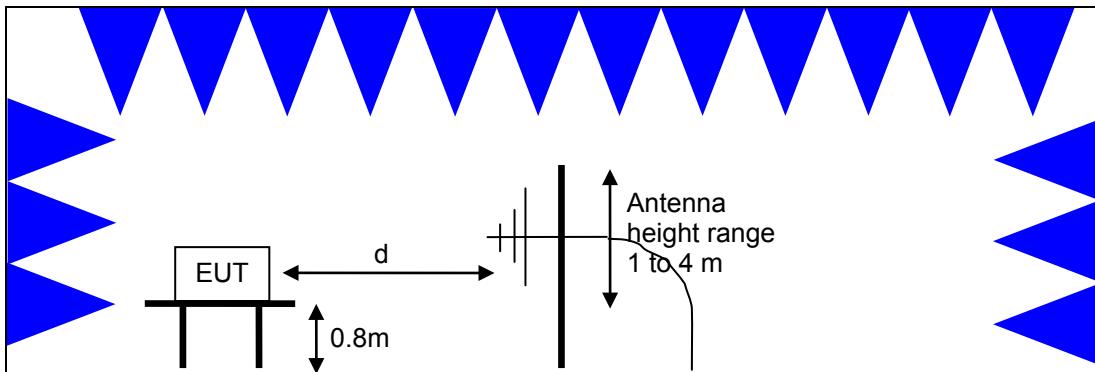


Typical Test Configuration for Radiated Field Strength Measurements



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.

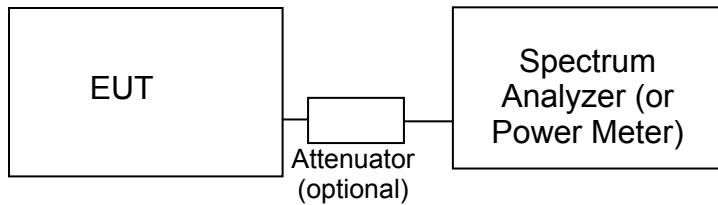
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



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 6 dB, 20 dB, 26 dB 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 (dB μ V). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dB μ V/m). The results are then converted to the linear forms of μ V and μ V/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 (dB μ V) | Quasi Peak Limit (dB μ V) |
|-----------------|---|---|
| 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 bands¹ (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 (μ V/m) | Limit ($\text{dB}\mu\text{V/m}$ @ 3m) |
|-----------------------|------------------------------|--|
| 0.009-0.490 | $2400/F_{\text{KHz}}$ @ 300m | $67.6-20*\log_{10}(F_{\text{KHz}})$ @ 300m |
| 0.490-1.705 | $24000/F_{\text{KHz}}$ @ 30m | $87.6-20*\log_{10}(F_{\text{KHz}})$ @ 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 |

OUTPUT POWER LIMITS – DIGITAL TRANSMISSION SYSTEMS

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 |
|---------------------------|-----------------|------------------------|
| 902 – 928 | 1 Watt (30 dBm) | 8 dBm/3 kHz |
| 2400 – 2483.5 | 1 Watt (30 dBm) | 8 dBm/3 kHz |
| 5725 – 5850 | 1 Watt (30 dBm) | 8 dBm/3 kHz |

The maximum permitted output power is reduced by 1 dB for every dB the antenna gain exceeds 6dBi.

TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS – FHSS and DTS SYSTEMS

The limits for unwanted (spurious) emissions from the transmitter falling in the restricted bands are those specified in the general limits sections of FCC Part 15 and RSS GEN. All other unwanted (spurious) emissions shall be at least 20 dB below the level of the highest in-band signal level (30 dB if the power is measured using the sample detector/power averaging method).

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

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

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 dB μ V

S = Specification Limit in dB μ V

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 30 MHz, is calculated by using the following formula:

$$F_d = 20 * \text{LOG10} (D_m / D_s)$$

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:

$$F_d = 40 * \text{LOG10} (D_m / D_s)$$

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 dB μ V/m

F_d = Distance Factor in dB

R_c = Corrected Reading in dB μ V/m

L_s = Specification Limit in dB μ V/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:

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

where P is the eirp (Watts)

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

Appendix A Test Equipment Calibration Data

| <u>Manufacturer</u> | <u>Description</u> | <u>Model</u> | <u>Asset #</u> | <u>Calibrated</u> | <u>Cal Due</u> |
|--|---|--------------------|----------------|-------------------|----------------|
| 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 | BRM50703-02 | 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 |

| <u>Manufacturer</u> | <u>Description</u> | <u>Model</u> | <u>Asset #</u> | <u>Calibrated</u> | <u>Cal Due</u> |
|--|--|-----------------------|----------------|-------------------|----------------|
| Micro-Tronics | Band Reject Filter, 5725-5875 MHz | BR50705-02 | 1682 | 7/8/2015 | 7/8/2016 |
| Micro-Tronics | Band Reject Filter, 5150-5350 MHz | BR50703-02 | 1729 | 7/8/2015 | 7/8/2016 |
| Micro-Tronics | Band Reject Filter, 5470-5725 MHz | BR50704-02 | 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 | BR50705-02 | 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 | BR50703-02 | 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 | BR50703-02 | 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 |

| <u>Manufacturer</u> | <u>Description</u> | <u>Model</u> | <u>Asset #</u> | <u>Calibrated</u> | <u>Cal Due</u> |
|--|---|--------------------|----------------|---------------------|---------------------|
| 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 Watlow | Fluke Multimeter, True RMS Temp Chamber (w/ F4 watlow Controller) | 175 96A0 | 1447 2171 | 7/23/2015 7/14/2015 | 7/23/2016 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 Micro-Tronics | Antenna, Horn, 1-18 GHz Band Reject Filter, 5470-5725 MHz | 3115 BRC50704-02 | 1561 1730 | 6/27/2014 7/10/2015 | 6/27/2016 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 |



National Technical Systems - Silicon Valley

Project number JD99841
Report Date: January 22, 2016 Reissue Date: February 29, 2016

Appendix B Test Data

T99885 Pages 25 - 99



EMC Test Data

| | | | |
|------------------------|--------------------------|----------------------|-------------------|
| 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: 2/17/2016

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



EMC Test Data

| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | 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 | |
| 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 | |
| | 180 | 16.7 | |
| 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 | |

<<-11ac mode only

<<-11ac mode only

<<-11ac mode only

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



EMC Test Data

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

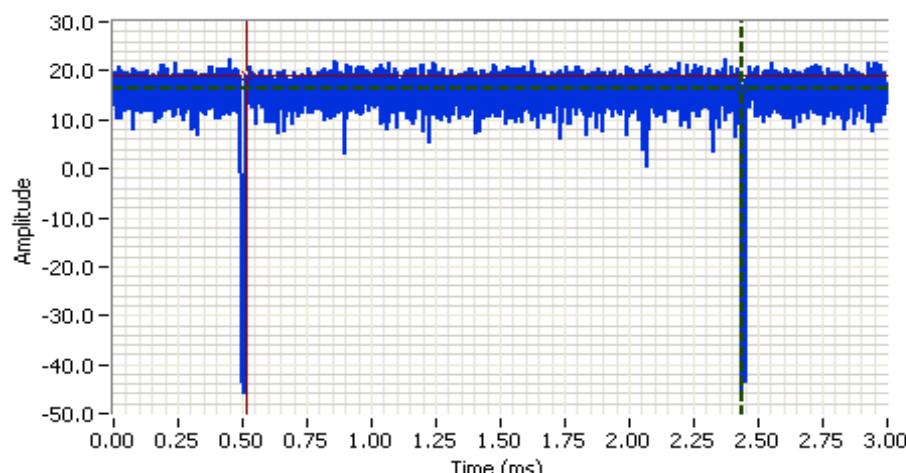
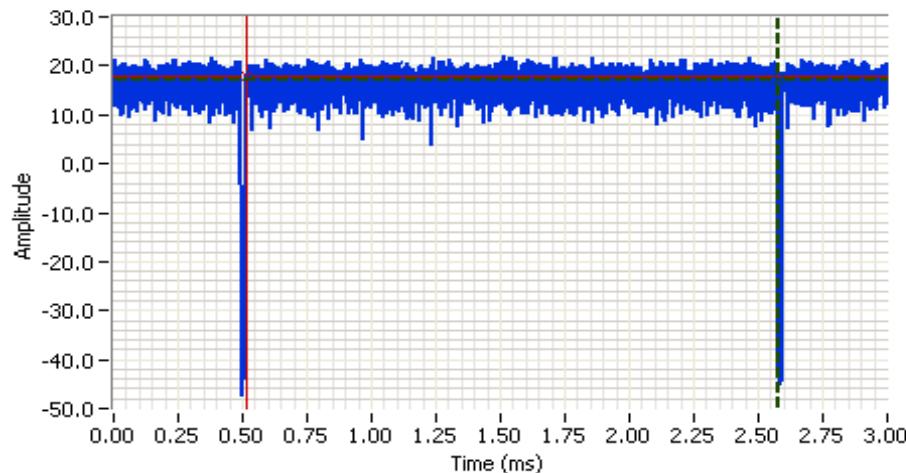
| Mode | Data Rate | Duty Cycle (x) | Constant DC? | T (ms) | Pwr Cor Factor* | Lin Volt Cor Factor** | Min VBW for FS (Hz) |
|------|-----------|----------------|--------------|--------|-----------------|-----------------------|---------------------|
| 11b | 5.5 | 99.4% | Yes | 2.32 | 0 | 0 | 10 |
| 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 - $10 \cdot \log(1/x)$

** Correction factor when using linear voltage average - $20 \cdot \log(1/x)$

T = Minimum transmission duration

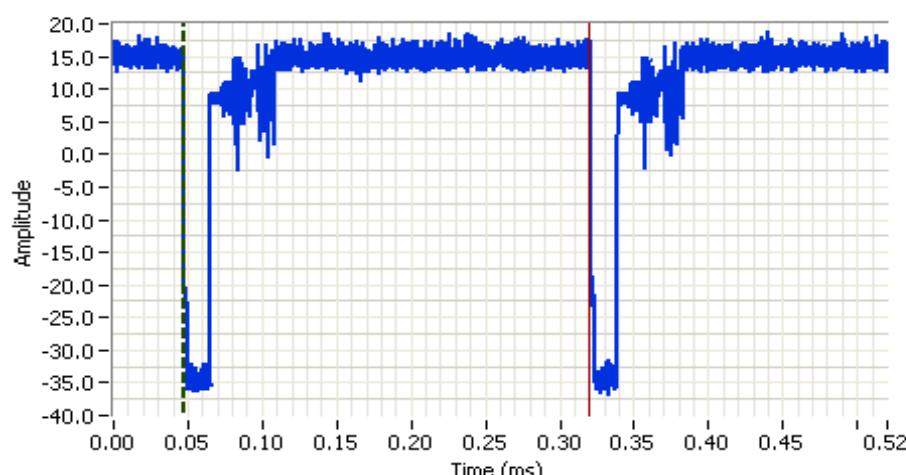
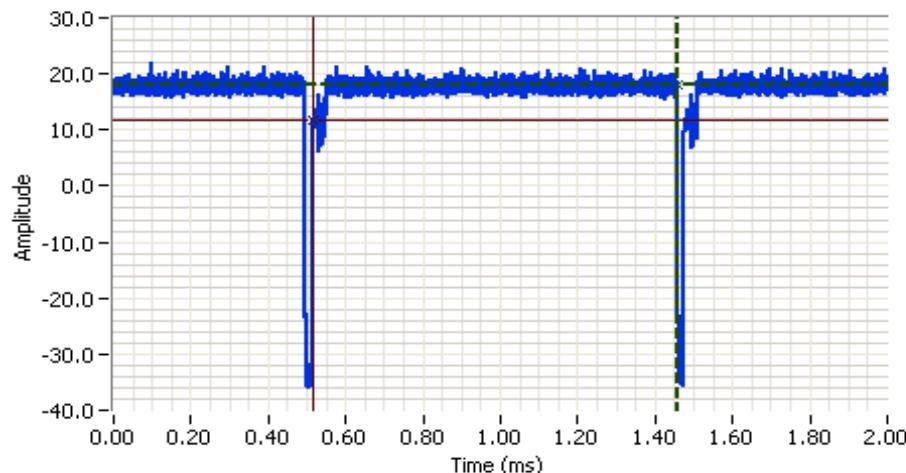
| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |





EMC Test Data

| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | | Class: N/A |





EMC Test Data

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

RSS-247 and FCC 15.247 (DTS) Antenna Port Measurements MIMO and Smart Antenna Systems 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.

Date of Test: 11/30/2015

Config. Used: 1

Test Engineer: M. Birgani/R. Varelas

Config Change: None

Test Location: FT Lab #4A

EUT Voltage: 120V/60Hz

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions:

Temperature: 21.6 °C
Rel. Humidity: 35 %



EMC Test Data

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

Summary of Results

| Run # | Pwr setting | Avg Pwr | Test Performed | Limit | Pass / Fail | Result / Margin |
|------------------|-------------|---------|------------------------------|-----------|-------------|--|
| 3Tx Modes | | | | | | |
| 1 | - | - | Output Power | 15.247(b) | Pass | 11b:27.4dBm (551mW) 11g:24.9dBm (312mW) n20:24.4dBm (276mW) n40:21.1dBm (129mW) |
| 2 | - | - | Power spectral Density (PSD) | 15.247(d) | Pass | 11b: 5.2 dBm/3kHz 11g: 0.3 dBm/3kHz n20: -0.2 dBm/3kHz n40: -5.2 dBm/3kHz |
| 3 | - | - | Minimum 6dB Bandwidth | 15.247(a) | Pass | 11b: 9.1 MHz 11g: 16.3 MHz n20: 17.6 MHz n40: 36.3 MHz |
| 3 | - | - | 99% Bandwidth | RSS GEN | Pass | 11b: 16.4 MHz 11g: 17.2 MHz n20: 17.8 MHz n40: 36.4 MHz |
| 4 | - | - | Spurious emissions | 15.247(b) | Pass | All emissions >-30dBc |

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.

Notes

Beamforming is supported for n20/n40. The conducted power is unchanged for non-beamforming and beamforming operation.



EMC Test Data

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

Procedure Comments:

Measurements performed in accordance with FCC KDB 558074

| 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 |

Sample Notes

Sample S/N: Prototype

Driver:

Antenna Gain Information

| Freq | Antenna Gain (dBi) / Chain | | | | BF | MultiChain Legacy | CDD | Sectorized / Xpol | Dir G (PWR) | Dir G (PSD) |
|--------|----------------------------|-----|------|---|----|-------------------|-----|-------------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | | | | | | |
| 2.4GHz | 1.76 | 3.5 | 1.35 | | No | Yes | Yes | No | 0.6 | 5.0 |

Antenna Gain Information (beamforming)

| Freq | Antenna Gain (dBi) / Chain | | | | BF | MultiChain Legacy | CDD | Sectorized / Xpol | Dir G (PWR) | Dir G (PSD) |
|--------|----------------------------|-----|------|---|-----|-------------------|-----|-------------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | | | | | | |
| 2.4GHz | 1.76 | 3.5 | 1.35 | | Yes | Yes | Yes | No | 5.0 | 5.0 |

For devices that support CDD modes

Min # of spatial streams: 1

Max # of spatial streams: 4

| | |
|--------|--|
| 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; Dir G (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 |

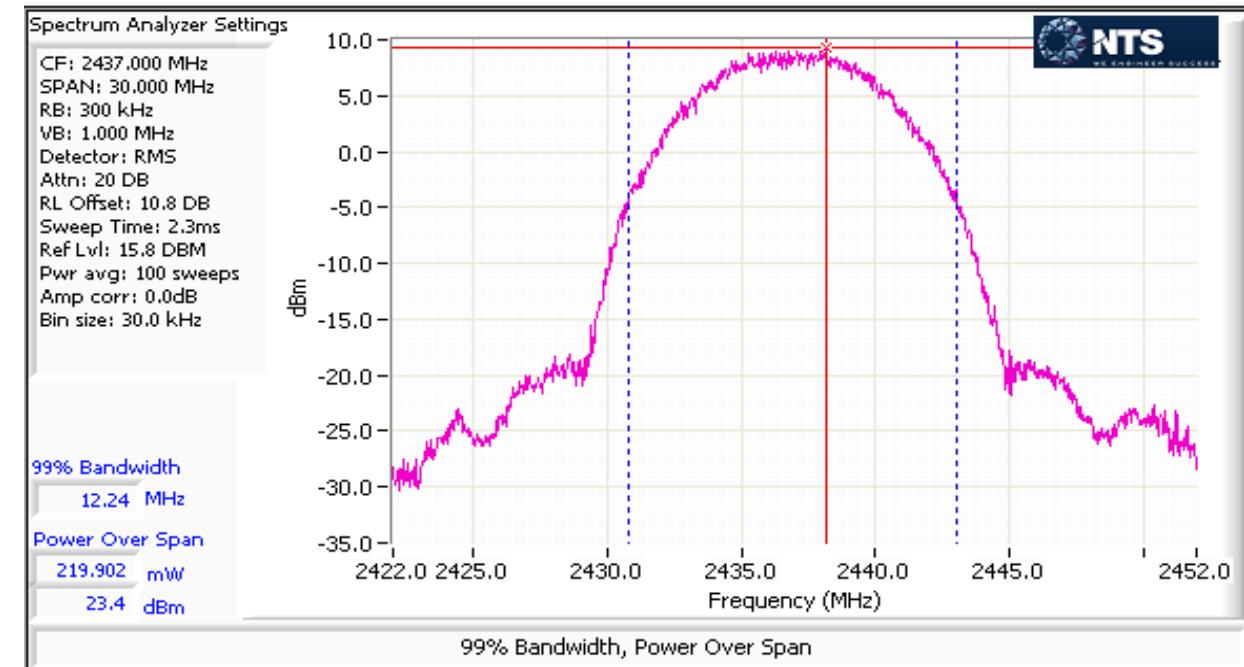


EMC Test Data

| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |

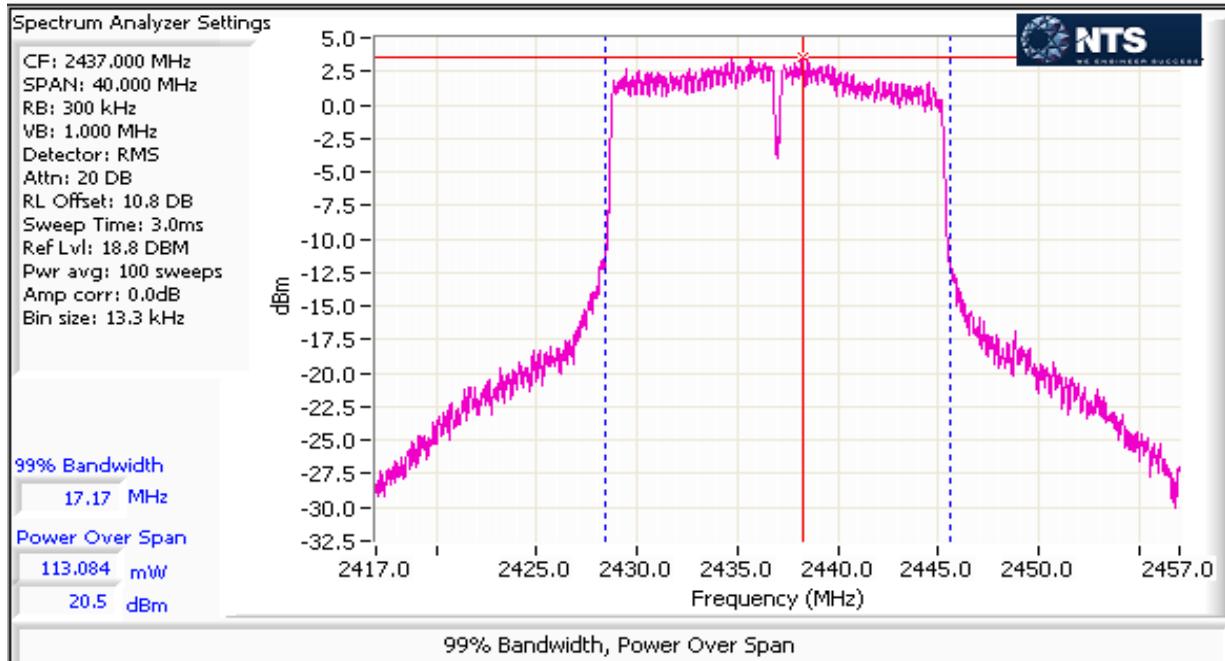
Run #1: Output Power

| Mode: 11b | | | | | | Max EIRP (mW): 632.2 | | | |
|-----------------|-------|------------------|--|--------------|------------------------|----------------------|---------------|---------------|--------|
| Frequency (MHz) | Chain | Software Setting | | Duty Cycle % | Power ¹ dBm | Total Power mW | FCC Limit dBm | Max Power (W) | Result |
| 2412 | 1 | q87 | | 99.4 | 20.6 | 352.9 | 25.5 | 30.0 | |
| | 3 | | | | 20.5 | | | | |
| | 4 | | | | 21.0 | | | | |
| | 2 | | | | 21.0 | | | | |
| 2437 | 1 | q92 | | 99.4 | 21.5 | 550.6 | 27.4 | 30.0 | 0.551 |
| | 3 | | | | 22.8 | | | | |
| | 4 | | | | 23.4 | | | | |
| | 2 | | | | 23.4 | | | | |
| 2462 | 1 | q88 | | 99.4 | 21.3 | 416.9 | 26.2 | 30.0 | |
| | 3 | | | | 20.5 | | | | |
| | 4 | | | | 22.3 | | | | |
| | 2 | | | | 22.3 | | | | |



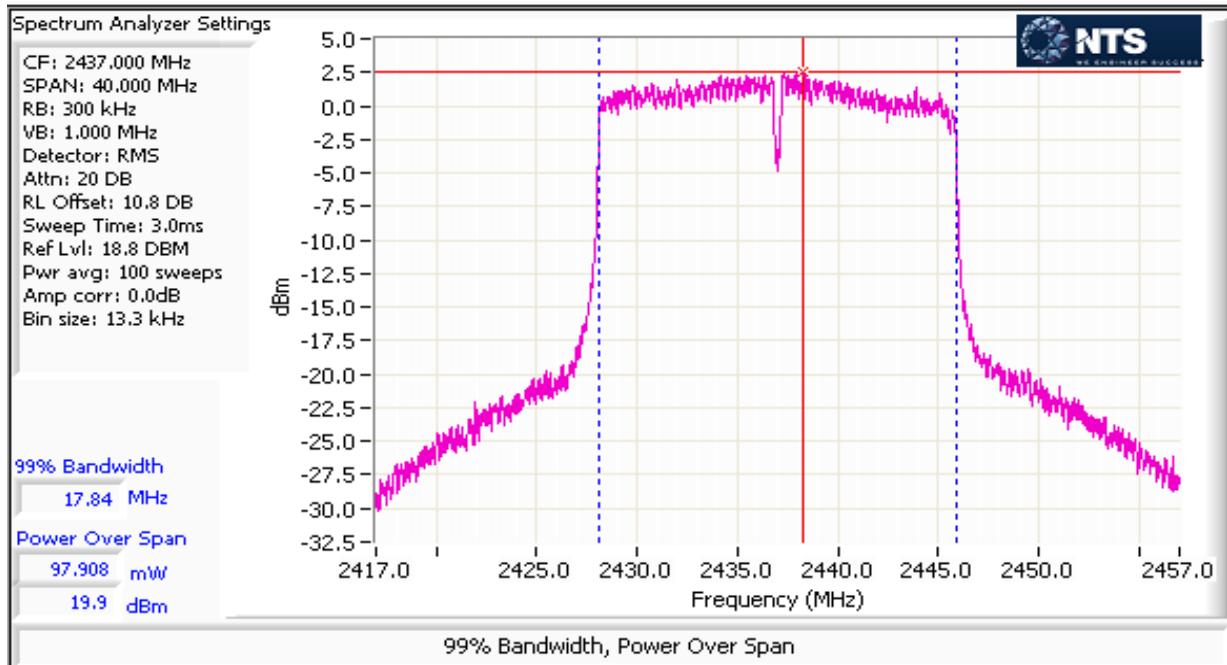
| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |

| Mode: 11g | | | | | | | Max EIRP (mW): 358.6 | | | |
|-----------------|-------|------------------|--|--------------|------------------------|----------------|----------------------|---------------|--------|------|
| Frequency (MHz) | Chain | Software Setting | | Duty Cycle % | Power ¹ dBm | Total Power mW | FCC Limit dBm | Max Power (W) | Result | |
| 2412 | 1 | q73 | | 99.0 | 17.2 | 151.6 | 21.8 | 30.0 | Pass | |
| | 3 | | | | 16.9 | | | | | |
| | 4 | | | | | | | | | |
| | 2 | | | | 17.0 | | | | | |
| 2437 | 1 | q84 | | 99.0 | 20.1 | 312.3 | 24.9 | 30.0 | 0.312 | Pass |
| | 3 | | | | 19.9 | | | | | |
| | 4 | | | | | | | | | |
| | 2 | | | | 20.5 | | | | | |
| 2462 | 1 | q63 | | 99.0 | 14.7 | 78.7 | 19.0 | 30.0 | Pass | |
| | 3 | | | | 13.7 | | | | | |
| | 4 | | | | | | | | | |
| | 2 | | | | 14.1 | | | | | |



| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |

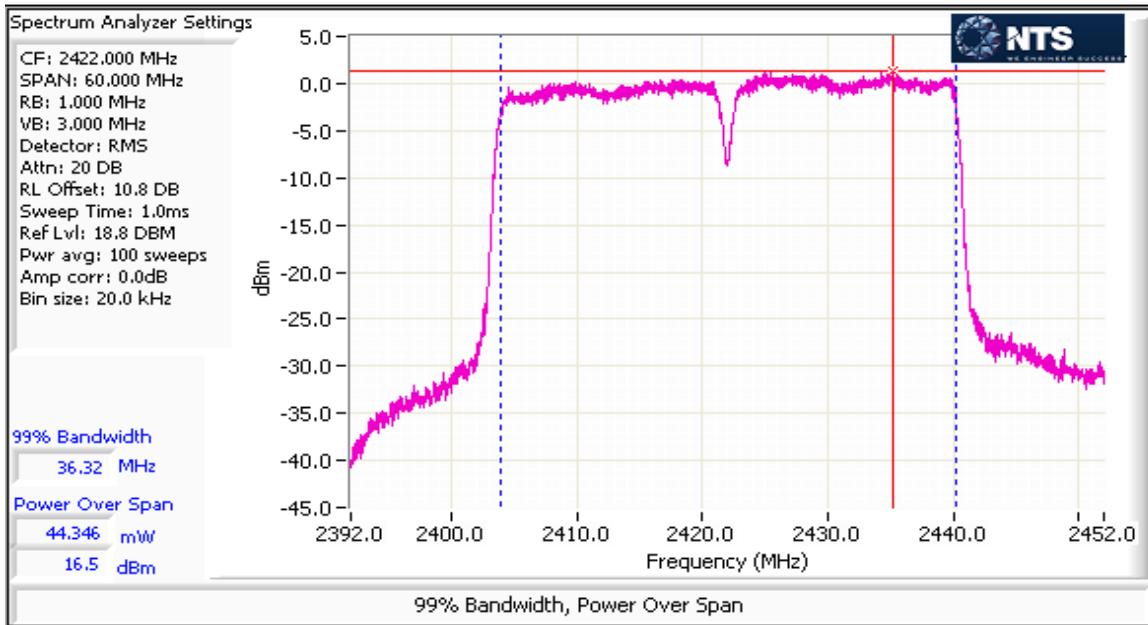
| Mode: n20 | | | | | | Max EIRP (mW): 316.9 | | | |
|-----------------|-------|------------------|--|--------------|------------------------|----------------------|---------------|---------------|------------|
| Frequency (MHz) | Chain | Software Setting | | Duty Cycle % | Power ¹ dBm | Total Power mW | FCC Limit dBm | Max Power (W) | Result |
| 2412 | 1 | q72 | | 99.0 | 17.0 | 145.9 | 21.6 | 30.0 | Pass |
| | 3 | | | | 16.7 | | | | |
| | 4 | | | | 16.9 | | | | |
| | 2 | | | | 16.9 | | | | |
| 2437 | 1 | q82 | | 99.0 | 19.5 | 276.0 | 24.4 | 30.0 | 0.276 Pass |
| | 3 | | | | 19.5 | | | | |
| | 4 | | | | 19.9 | | | | |
| | 2 | | | | 19.9 | | | | |
| 2462 | 1 | q61 | | 99.0 | 14.2 | 70.8 | 18.5 | 30.0 | Pass |
| | 3 | | | | 13.0 | | | | |
| | 4 | | | | 13.9 | | | | |
| | 2 | | | | 13.9 | | | | |



| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |

| Mode: n40 | | | | | | Max EIRP (mW): 148.1 | | | |
|-----------------|-------|------------------|--|--------------|------------------------|----------------------|---------------|---------------|--------|
| Frequency (MHz) | Chain | Software Setting | | Duty Cycle % | Power ¹ dBm | Total Power mW | FCC Limit dBm | Max Power (W) | Result |
| 2422 | 1 | q67 | | 98.0 | 16.3 | 129.0 | 21.1 | 30.0 | Pass |
| | 3 | | | | 16.2 | | | | |
| | 4 | | | | 16.5 | | | | |
| | 2 | | | | 16.5 | | | | |
| 2437 | 1 | q66 | | 98.0 | 15.0 | 91.3 | 19.6 | 30.0 | 0.129 |
| | 3 | | | | 14.7 | | | | |
| | 4 | | | | 14.8 | | | | |
| | 2 | | | | 14.8 | | | | |
| 2452 | 1 | q54 | | 98.0 | 13.1 | 59.6 | 17.8 | 30.0 | Pass |
| | 3 | | | | 12.5 | | | | |
| | 4 | | | | 13.3 | | | | |
| | 2 | | | | 13.3 | | | | |

| | |
|---------|--|
| Note 1: | Duty Cycle \geq 98%. Output power measured using a spectrum analyzer (see plots below) with RBW= 1-5% of OBW and \leq 1 MHz, VB \geq 3* RBW, Span \geq 1.5 of OBW, auto sweep time, RMS detector, power averaging on, and power integration over the OBW, trace average 100 traces (option AVGSA-1 in ANSI C63.10). Spurious limit becomes -30dBc. |
| Note 2: | Power setting - the software power setting used during testing, included for reference only. |





EMC Test Data

| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |

Run #2: Power spectral Density

Mode: 11b

| Power Setting | Frequency (MHz) | PSD (dBm/3kHz) ^{Note 1} | | | | Total | Limit dBm/3kHz | Result |
|---------------|-----------------|----------------------------------|---------|---------|---------|-------|----------------|--------|
| | | Chain 1 | Chain 2 | Chain 3 | Chain 4 | | | |
| q87 | 2412 | -0.6 | -0.9 | -1.9 | | 3.7 | 8.0 | Pass |
| q92 | 2437 | -0.2 | 1.0 | 0.4 | | 5.2 | 8.0 | Pass |
| q88 | 2462 | 0.4 | 0.1 | -2.2 | | 4.3 | 8.0 | Pass |

Mode: 11g

| Power Setting | Frequency (MHz) | PSD (dBm/3kHz) ^{Note 1} | | | | Total | Limit dBm/3kHz | Result |
|---------------|-----------------|----------------------------------|---------|---------|---------|-------|----------------|--------|
| | | Chain 1 | Chain 2 | Chain 3 | Chain 4 | | | |
| q73 | 2412 | -7.8 | -7.3 | -7.6 | | -2.8 | 8.0 | Pass |
| q84 | 2437 | -5.1 | -3.9 | -4.5 | | 0.3 | 8.0 | Pass |
| q63 | 2462 | -9.7 | -10.1 | -10.6 | | -5.3 | 8.0 | Pass |

Mode: n20

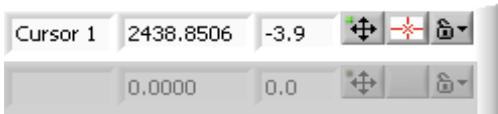
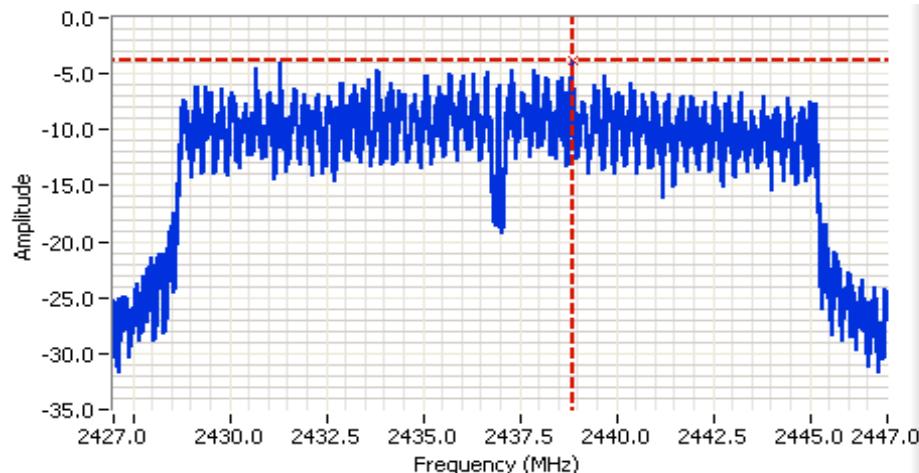
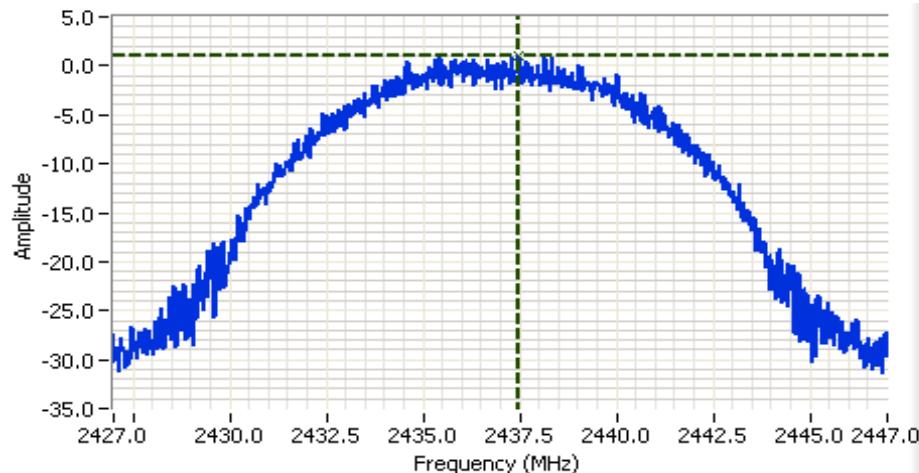
| Power Setting | Frequency (MHz) | PSD (dBm/3kHz) ^{Note 1} | | | | Total | Limit dBm/3kHz | Result |
|---------------|-----------------|----------------------------------|---------|---------|---------|-------|----------------|--------|
| | | Chain 1 | Chain 2 | Chain 3 | Chain 4 | | | |
| q72 | 2412 | -7.7 | -7.8 | -7.2 | | -2.8 | 8.0 | Pass |
| q82 | 2437 | -5.2 | -4.6 | -5.2 | | -0.2 | 8.0 | Pass |
| q61 | 2462 | -10.4 | -10.9 | -11.9 | | -6.3 | 8.0 | Pass |

Mode: n40

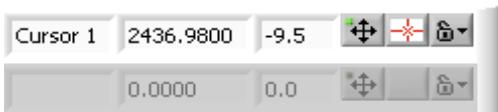
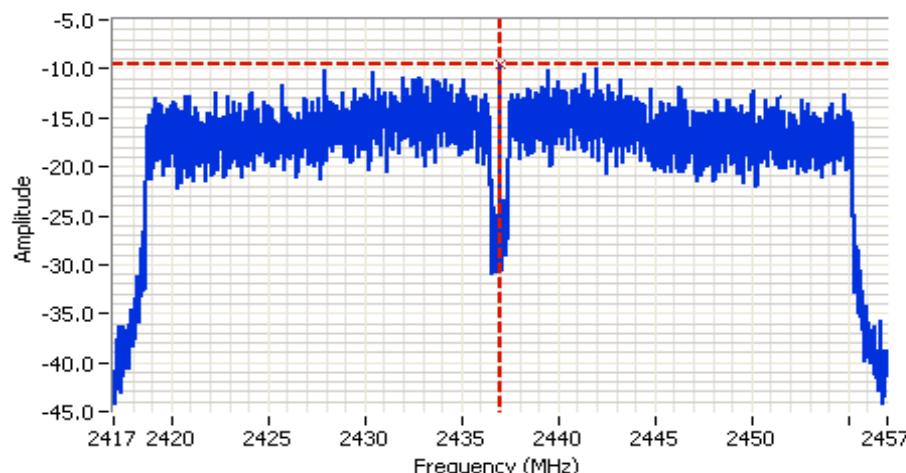
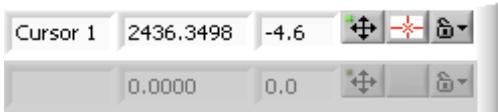
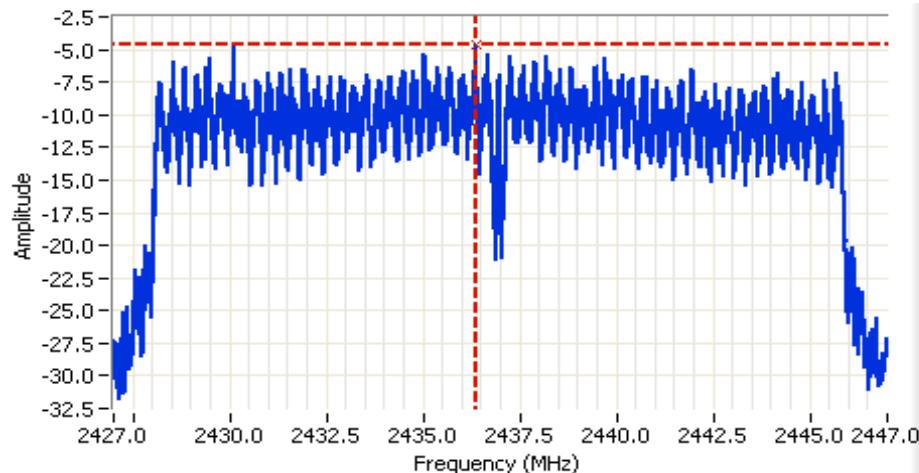
| Power Setting | Frequency (MHz) | PSD (dBm/3kHz) ^{Note 1} | | | | Total | Limit dBm/3kHz | Result |
|---------------|-----------------|----------------------------------|---------|---------|---------|-------|----------------|--------|
| | | Chain 1 | Chain 2 | Chain 3 | Chain 4 | | | |
| q67 | 2422 | -11.9 | -11.6 | -10.9 | | -6.7 | 8.0 | Pass |
| q72 | 2437 | -10.6 | -9.5 | -9.9 | | -5.2 | 8.0 | Pass |
| q54 | 2452 | -14.2 | -14.1 | -15.2 | | -9.7 | 8.0 | Pass |

Note 1: Test performed per method PKSPD, in KDB 558074. Power spectral density measured using: $3\text{kHz} \leq \text{RBW} \leq 100\text{kHz}$, $\text{VBW}=3*\text{RBW}$, peak detector, span = $1.5*\text{DTS BW}$, auto sweep time, max hold.

| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |



| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |





EMC Test Data

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

Run #3: Signal Bandwidth

Mode:

11b

| Power Setting | Frequency (MHz) | Bandwidth (MHz) | | RBW Setting (MHz) | |
|---------------|-----------------|-----------------|------|-------------------|--------|
| | | 6dB | 99% | 6dB | 99% |
| q87 | 2412 | 9.1 | 14.3 | 100kHz | 300kHz |
| q92 | 2437 | 9.1 | 12.2 | 100kHz | 300kHz |
| q88 | 2462 | 10.1 | 16.4 | 100kHz | 300kHz |

Mode:

11g

| Power Setting | Frequency (MHz) | Bandwidth (MHz) | | RBW Setting (MHz) | |
|---------------|-----------------|-----------------|------|-------------------|--------|
| | | 6dB | 99% | 6dB | 99% |
| q73 | 2412 | 16.3 | 16.5 | 100kHz | 300kHz |
| q84 | 2437 | 16.4 | 17.2 | 100kHz | 300kHz |
| q63 | 2462 | 16.4 | 16.5 | 100kHz | 300kHz |

Mode:

n20

| Power Setting | Frequency (MHz) | Bandwidth (MHz) | | RBW Setting (MHz) | |
|---------------|-----------------|-----------------|------|-------------------|--------|
| | | 6dB | 99% | 6dB | 99% |
| q72 | 2412 | 17.6 | 17.7 | 100kHz | 300kHz |
| q82 | 2437 | 17.6 | 17.8 | 100kHz | 300kHz |
| q61 | 2462 | 17.6 | 17.7 | 100kHz | 300kHz |

Mode:

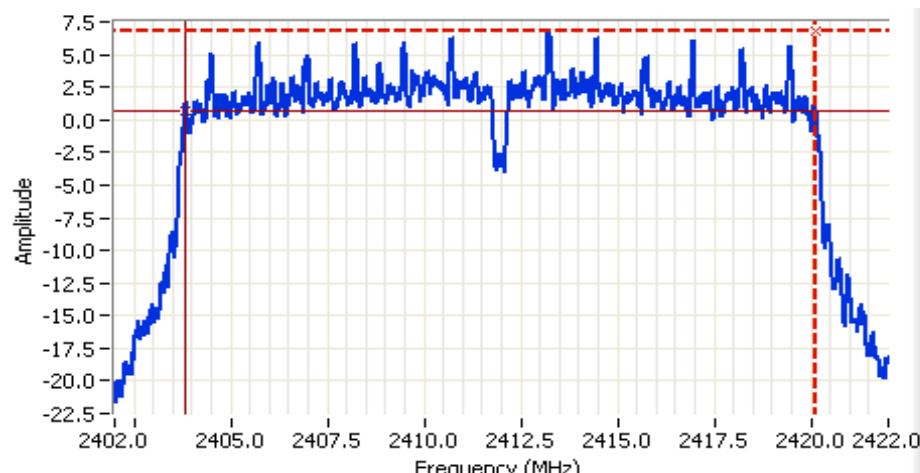
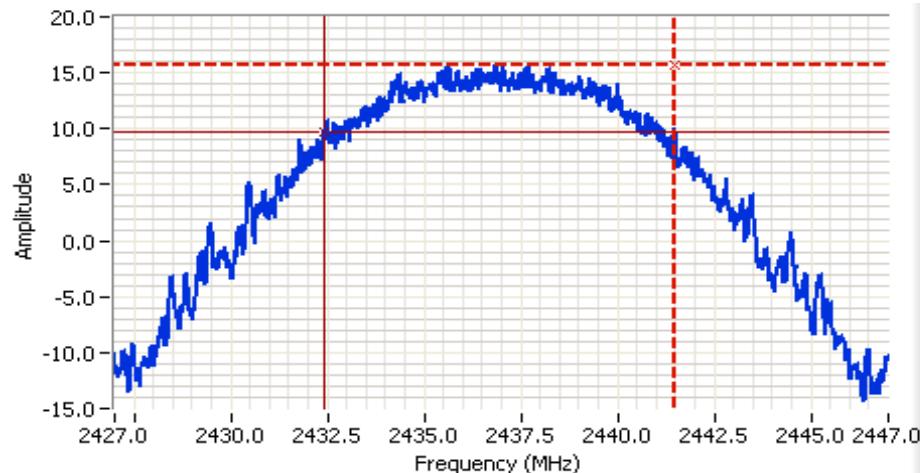
n40

| Power Setting | Frequency (MHz) | Bandwidth (MHz) | | RBW Setting (MHz) | |
|---------------|-----------------|-----------------|------|-------------------|------|
| | | 6dB | 99% | 6dB | 99% |
| q67 | 2422 | 36.3 | 36.3 | 100kHz | 1MHz |
| q72 | 2437 | 36.3 | 36.3 | 100kHz | 1MHz |
| q54 | 2452 | 36.4 | 36.4 | 100kHz | 1MHz |

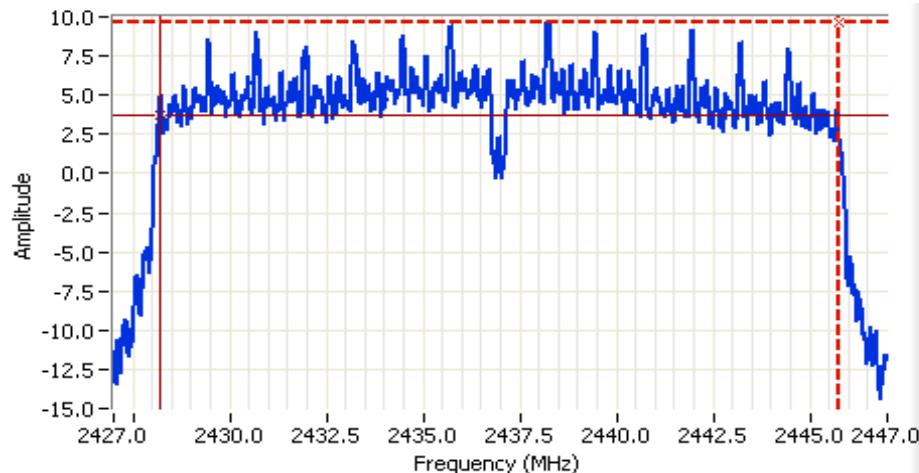
Note 1: DTS BW: RBW=100kHz, VBW \geq 3*RBW, peak detector, max hold, auto sweep time, Span 2-5 times measured BW.
 99% BW: RBW=1-5% of 99%BW, VBW \geq 3*RBW, peak detector, max hold, auto sweep time. Span 1.5-5 times OBW.

Note 2: Measurements performed on chain 2

| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |

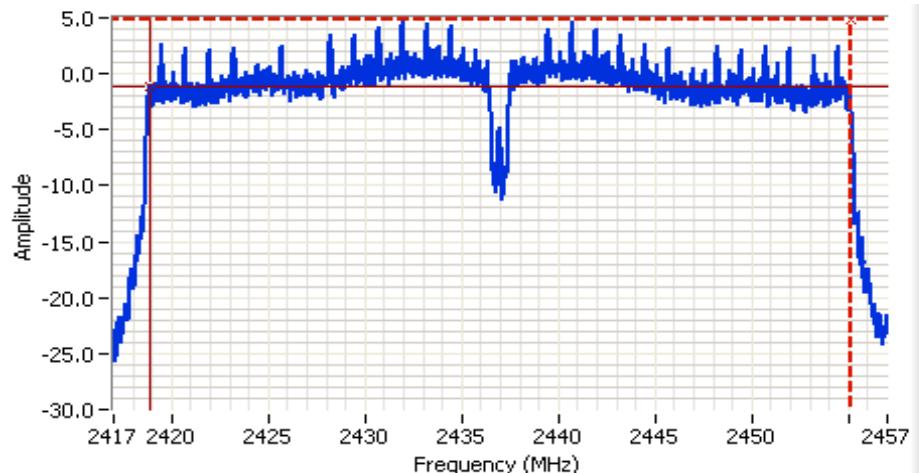


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |



Cursor 1 2445.7329 9.7  Delta Freq. 17.553

Cursor 2 2428.1804 3.7  Delta Amplitude 6.0



Cursor 1 2455.1194 4.8  Delta Freq. 36.279

Cursor 2 2418.8406 -1.2  Delta Amplitude 6.0





EMC Test Data

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

Run #4a: Out of Band Spurious Emissions

| Power Setting Per Chain | | | | Mode | Frequency (MHz) | Reference (dBm) | Limit | Result |
|-------------------------|-----|-----|----|------|-----------------|-----------------|-------|--------|
| #1 | #2 | #3 | #4 | | | | | |
| q87 | q87 | q87 | | b | 2412 | 15.1 | -14.9 | Pass |
| q92 | q92 | q92 | | | 2437 | 15.1 | -14.9 | Pass |
| q88 | q88 | q88 | | | 2462 | 15.1 | -14.9 | Pass |
| q73 | q73 | q73 | | g | 2412 | 10.6 | -19.4 | Pass |
| q84 | q84 | q84 | | | 2437 | 10.6 | -19.4 | Pass |
| q63 | q63 | q63 | | | 2462 | 10.6 | -19.4 | Pass |
| q72 | q72 | q72 | | n20 | 2412 | 10.1 | -19.9 | Pass |
| q82 | q82 | q82 | | | 2437 | 10.1 | -19.9 | Pass |
| q61 | q61 | q61 | | | 2462 | 10.1 | -19.9 | Pass |
| q67 | q67 | q67 | | n40 | 2422 | 5.1 | -24.9 | Pass |
| q72 | q72 | q72 | | | 2437 | 5.1 | -24.9 | Pass |
| q54 | q54 | q54 | | | 2452 | 5.1 | -24.9 | Pass |

Note 1: Measurements performed RBW=100kHz, VBW=300kHz, peak detector, max hold.

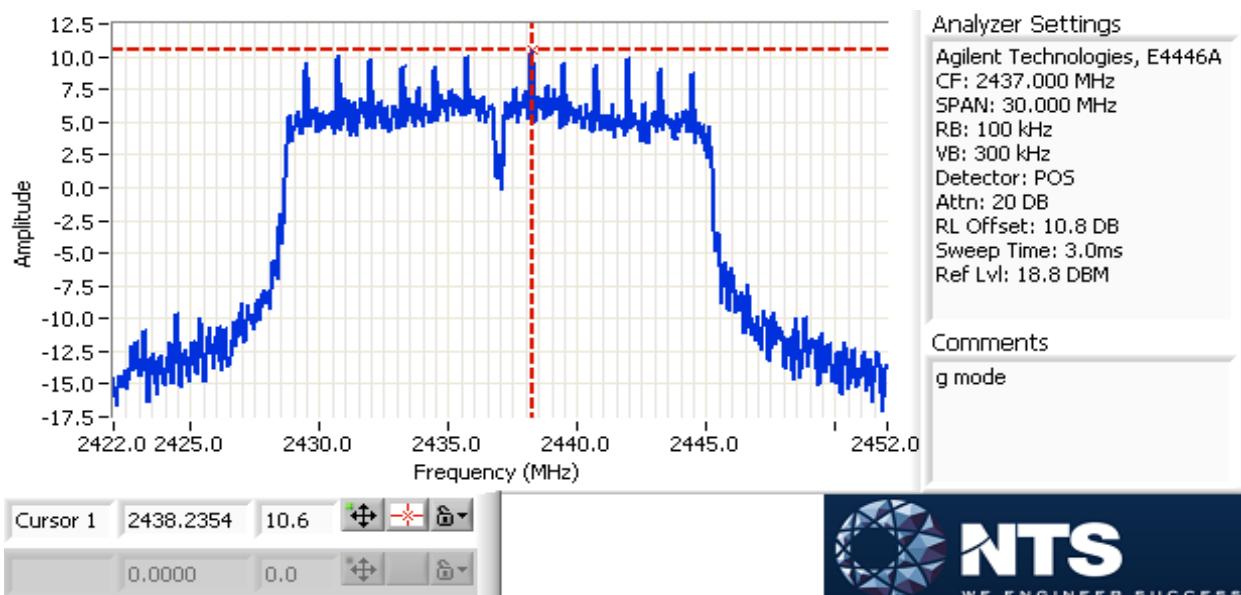
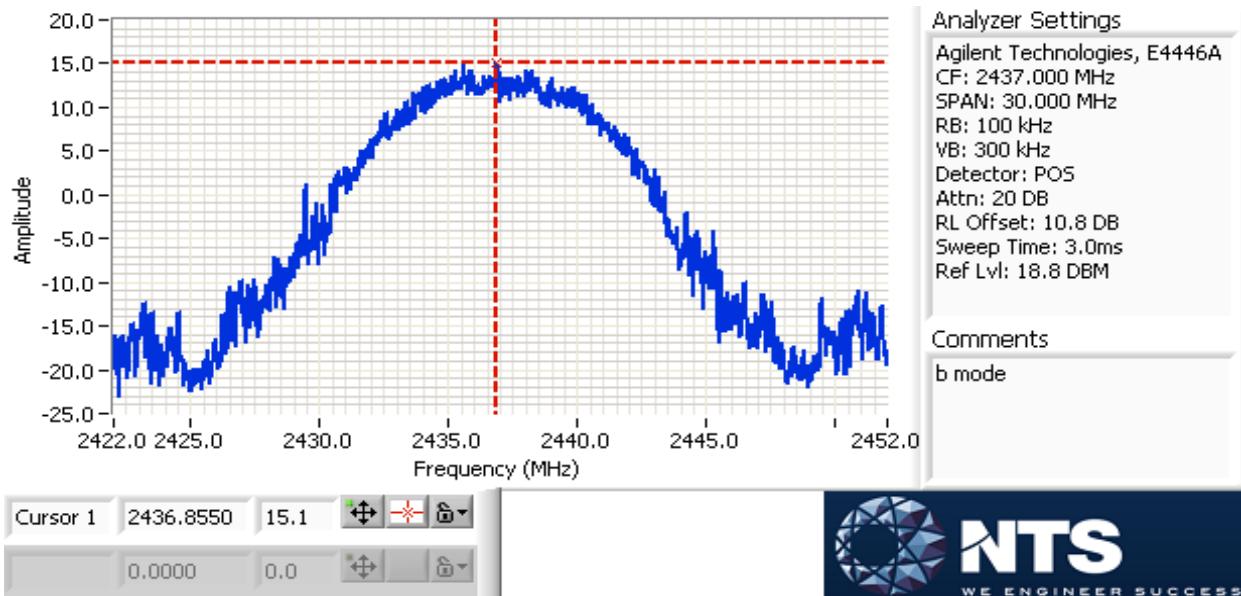
Note 2: Measured on each chain individually.

Note 3: All wide scan measurements performed at target power setting.

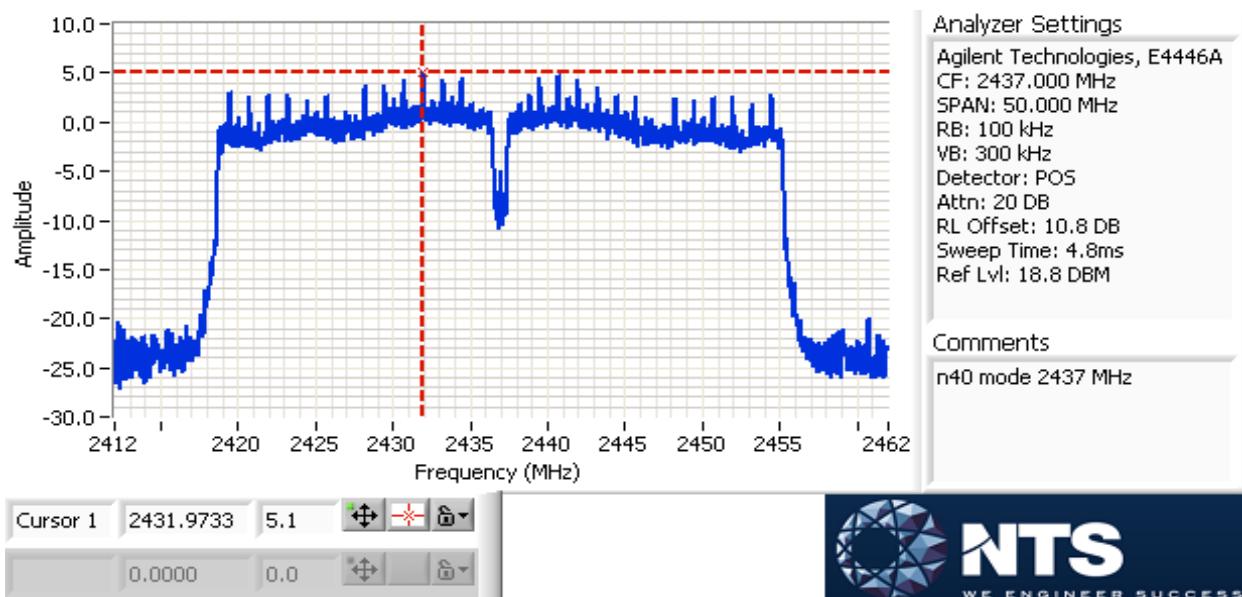
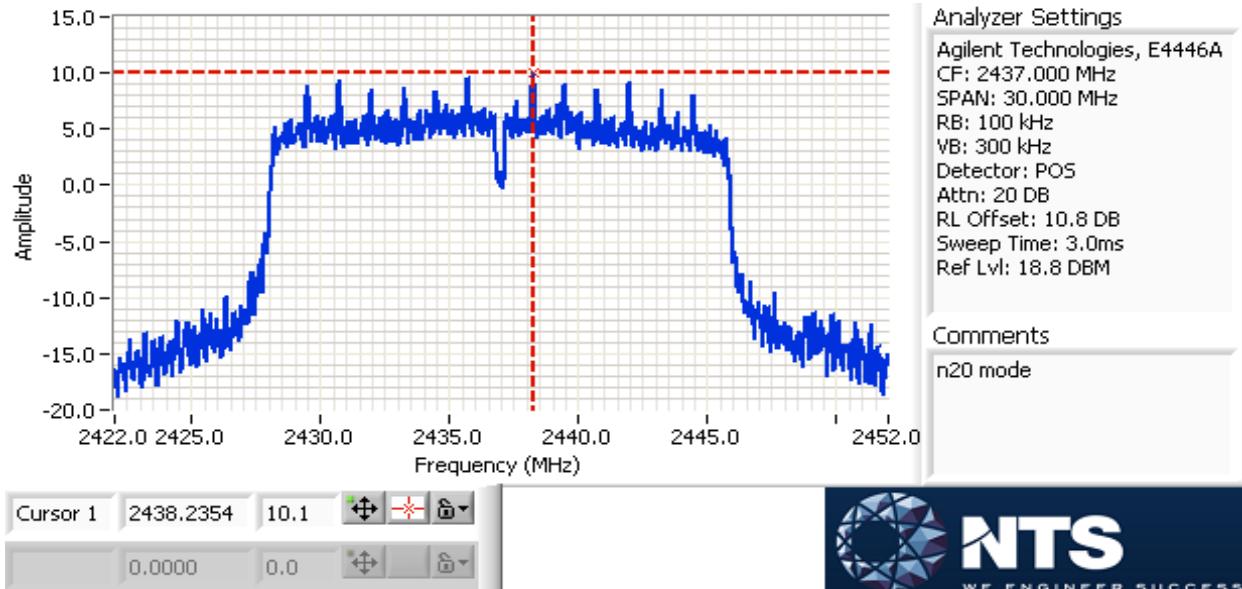
Note 4": Limit based on -30dBc.

Measurement performed at the fundamental for each mode at the maximum power setting for the middle channel. The maximum value observed was used as the reference level for the -30dBc limit line on the plots.

| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |



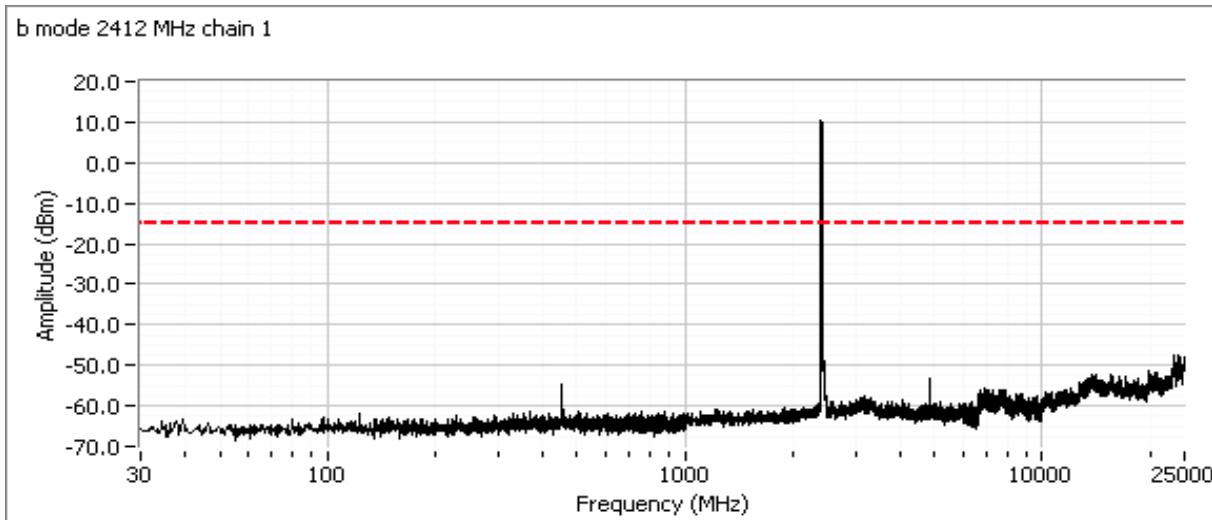
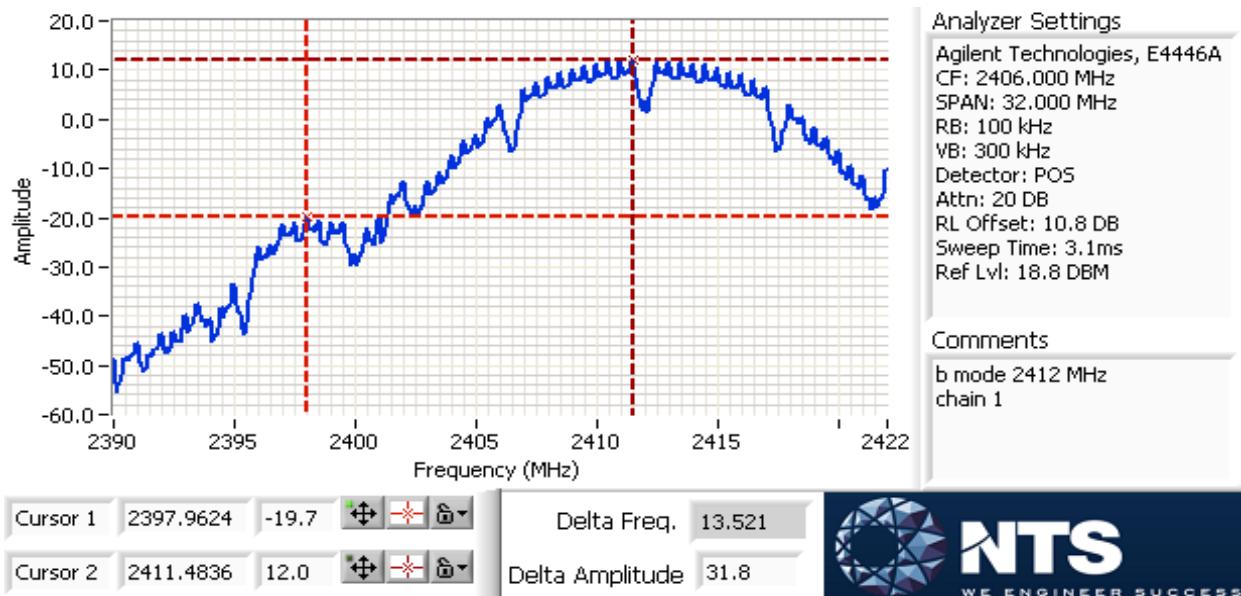
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|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |



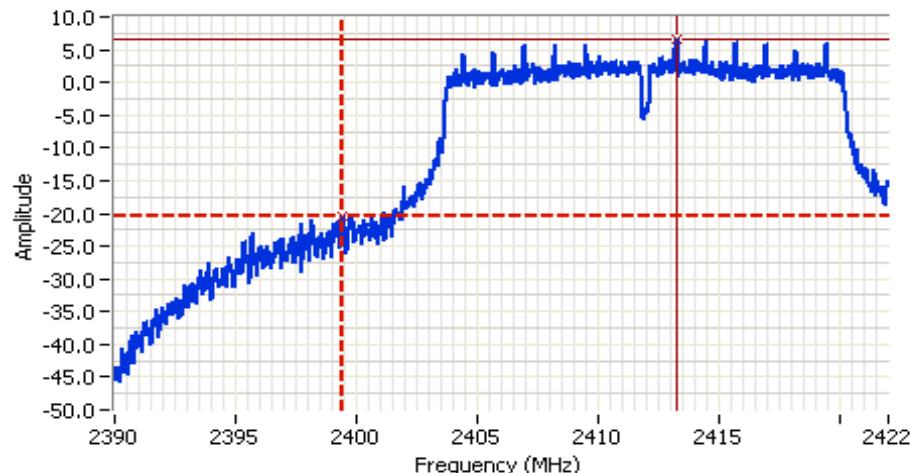
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|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |

Plots for low channel

Additional plot showing compliance with -30dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.



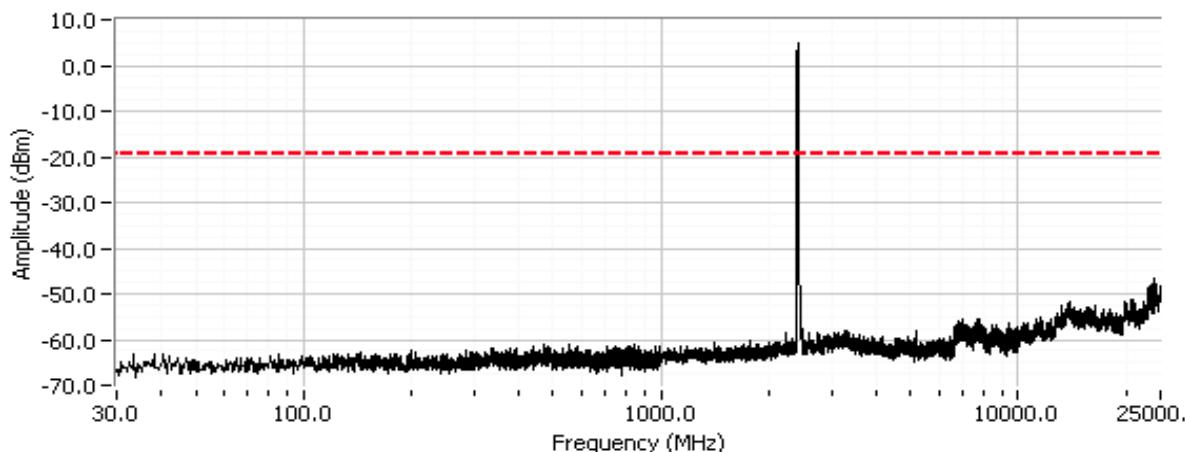
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|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |


Analyzer Settings

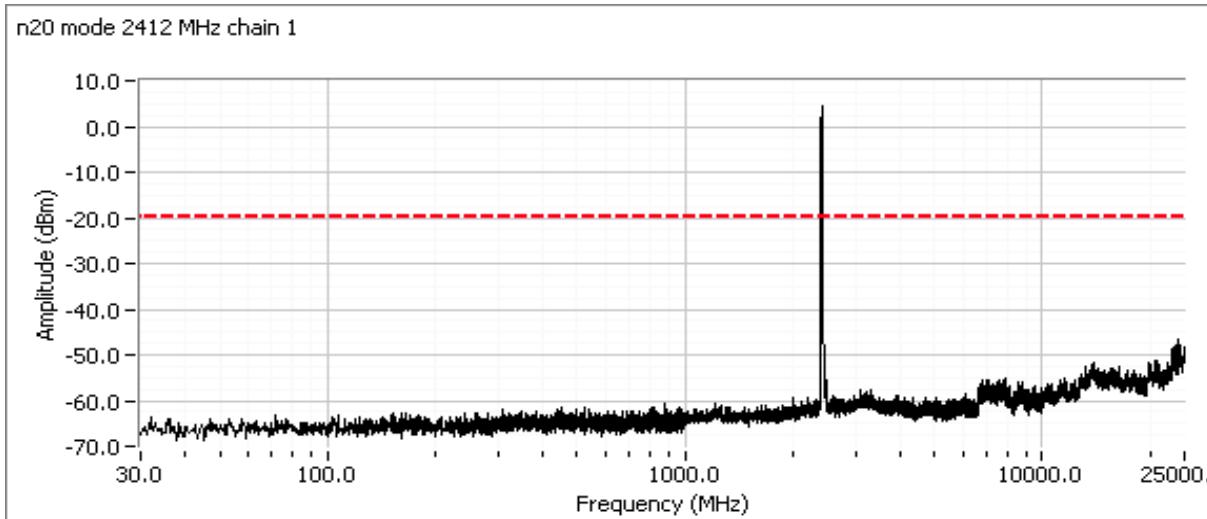
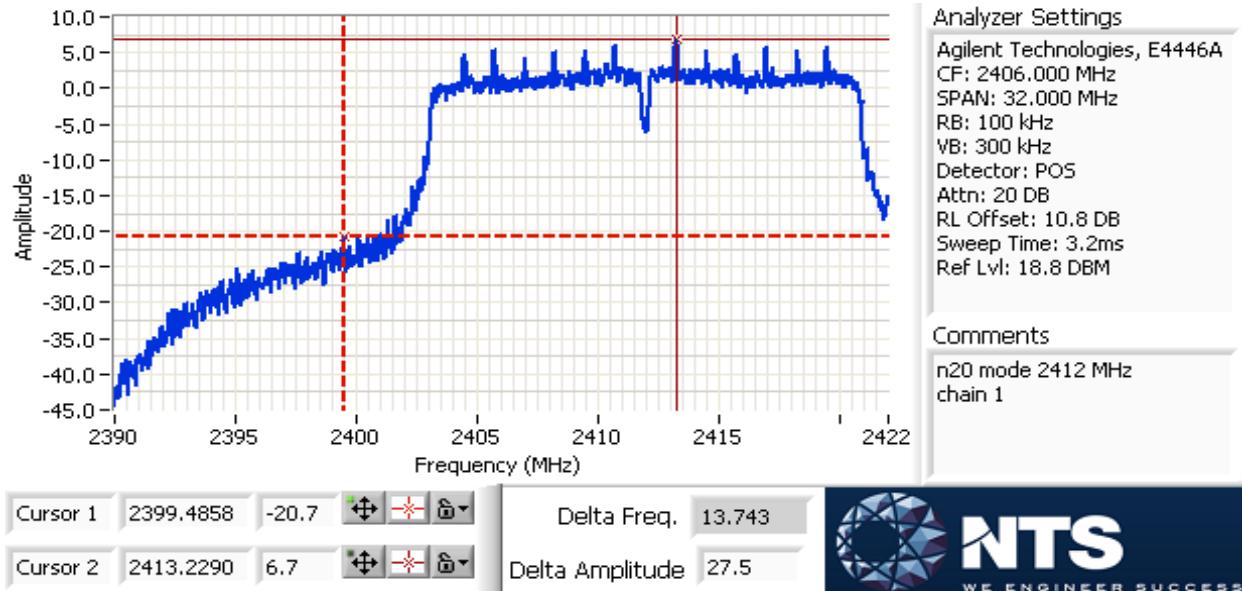
Agilent Technologies, E4446A
CF: 2406.000 MHz
SPAN: 32.000 MHz
RB: 100 kHz
VB: 300 kHz
Detector: POS
Attn: 20 dB
RL Offset: 10.8 dB
Sweep Time: 3.2ms
Ref Lvl: 18.8 dBm

Comments

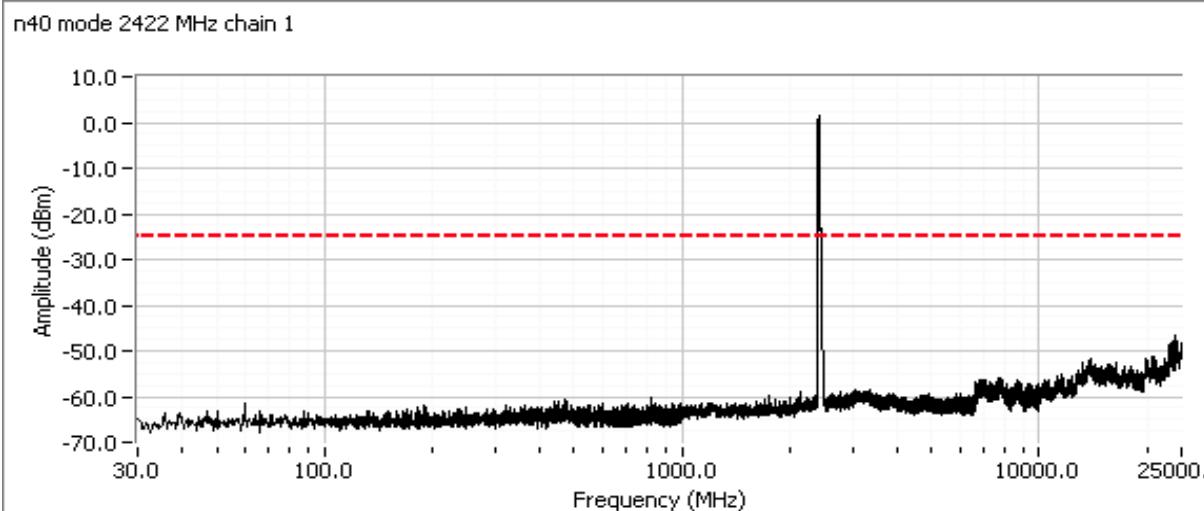
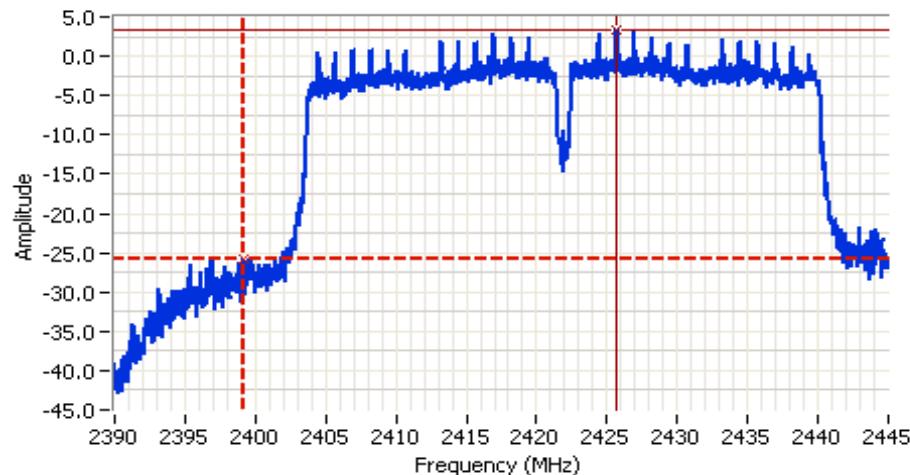
g mode 2412 MHz
chain 1


g mode 2412 MHz chain 1


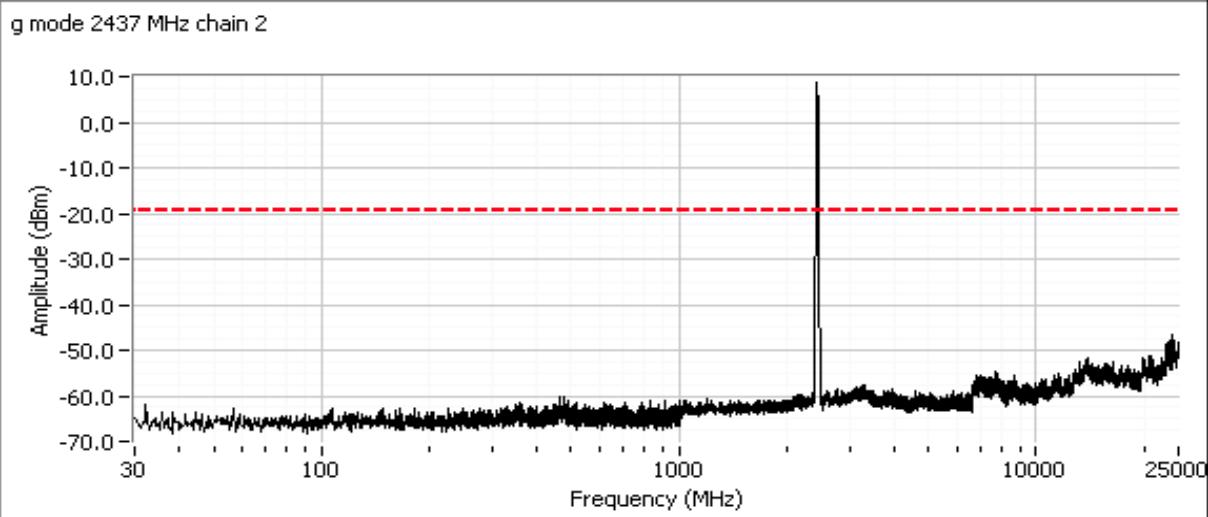
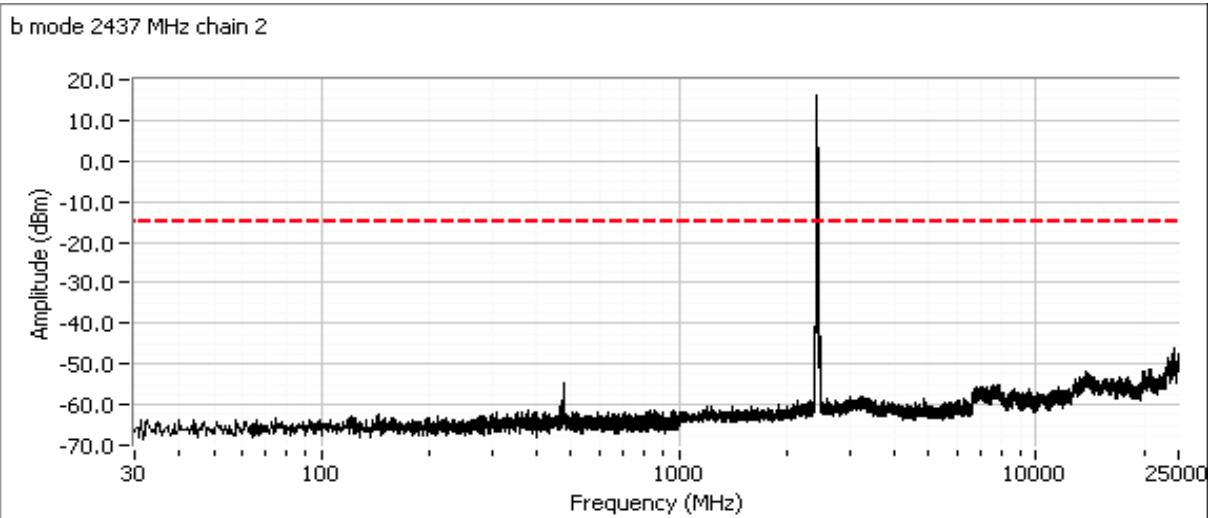
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|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |



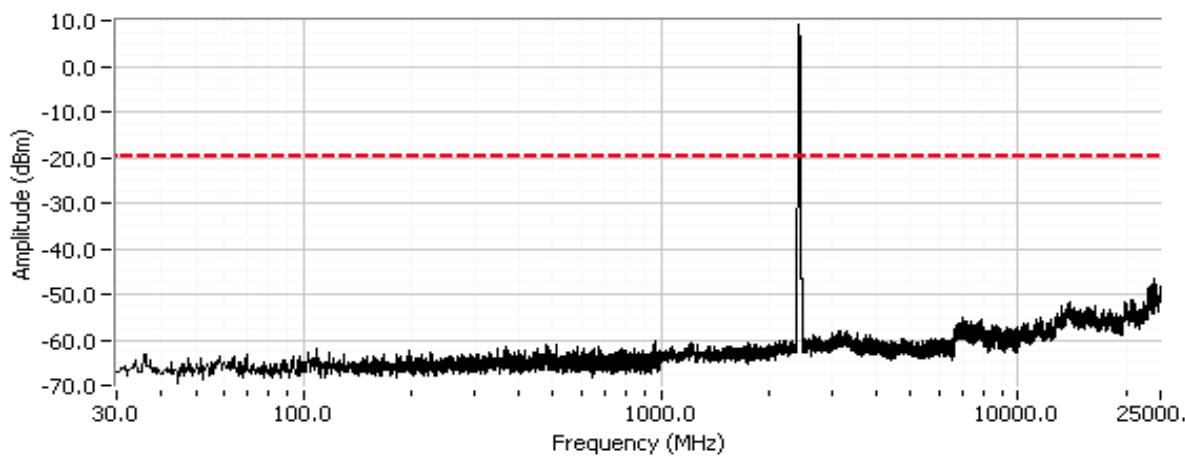
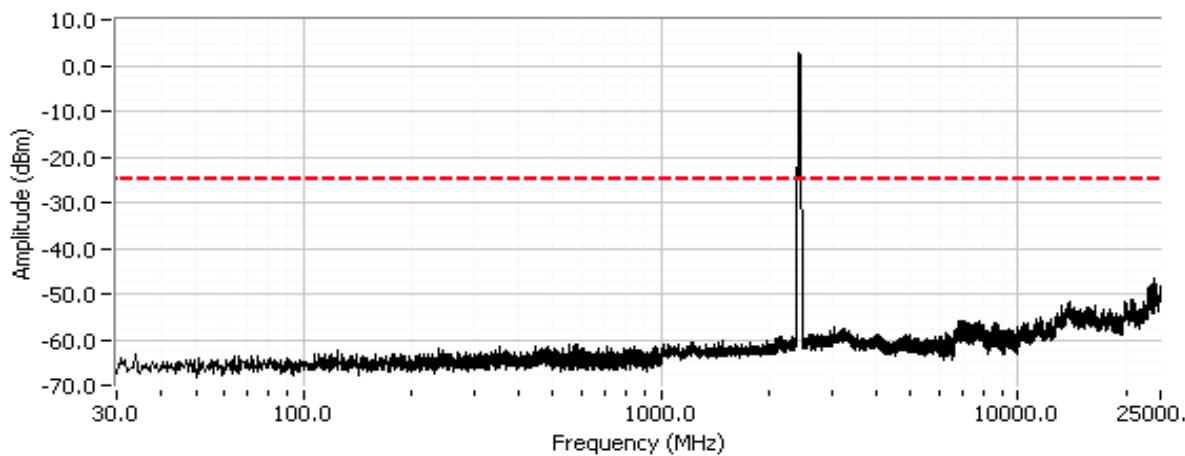
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|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |



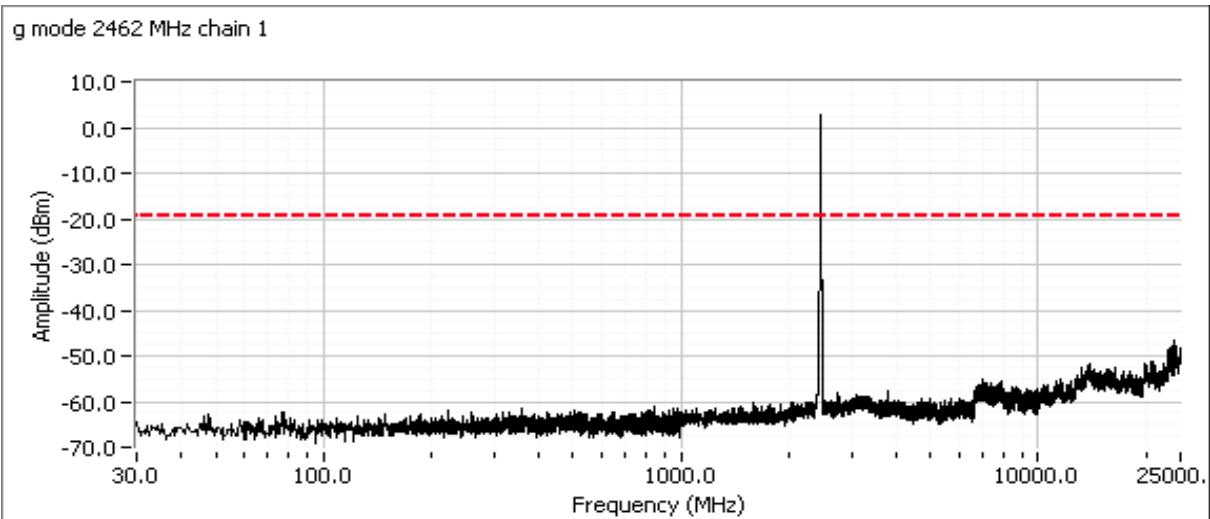
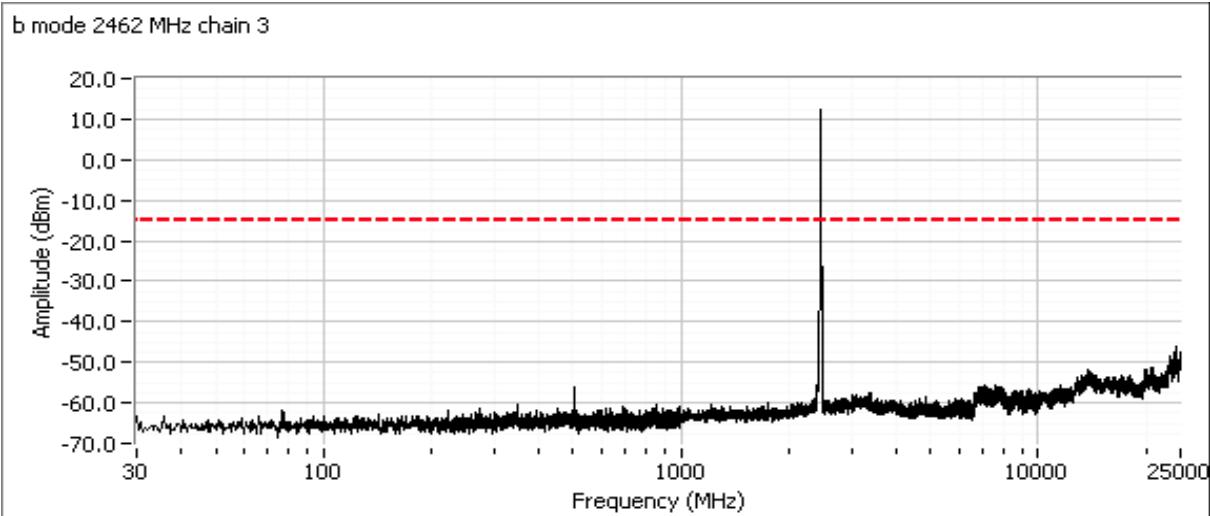
| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Plots for center channel


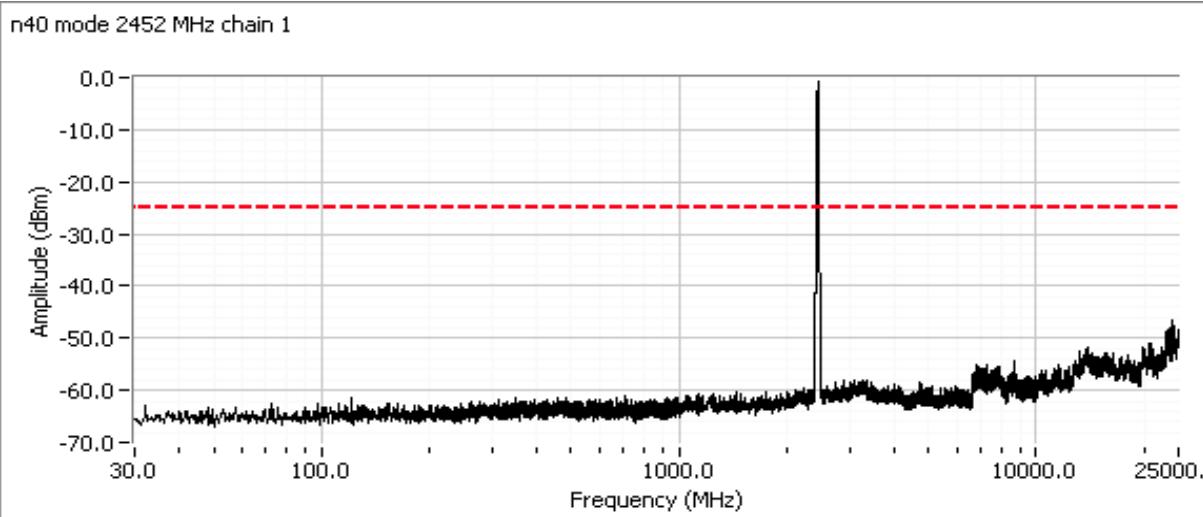
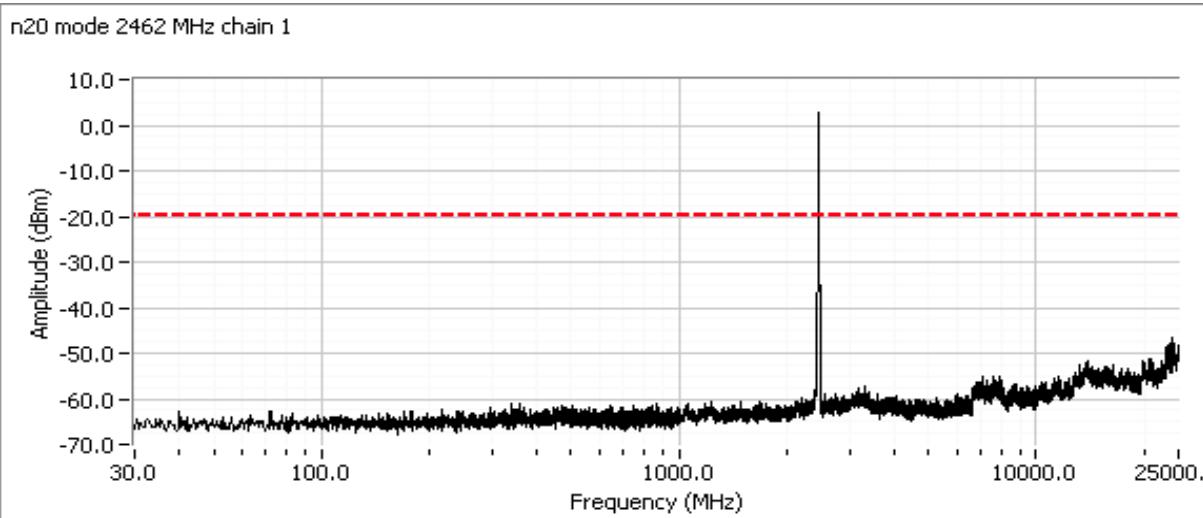
| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

n20 mode 2437 MHz chain 2

n40 mode 2437 MHz chain 2


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

Plots for high channel


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





EMC Test Data

| | | | |
|-----------|--------------------------|----------------------|-------------------|
| 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 °C
Rel. Humidity: 33 %

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 | 1 - 2412MHz | - | q92 | Restricted Band Edge (2390 MHz) | FCC Part 15.209 / 15.247(d) | 38.3 dB μ V/m @ 2390.0 MHz (-15.7 dB) | |
| | | 11 - 2462MHz | | q88 | Restricted Band Edge (2483.5 MHz) | | 51.7 dB μ V/m @ 2483.6 MHz (-2.3 dB) | |
| 2 | g | 1 - 2412MHz | - | q79 | Restricted Band Edge (2390 MHz) | | 52.5 dB μ V/m @ 2390.0 MHz (-1.5 dB) | |
| | | 2 - 2417MHz | | q84 | | | 52.4 dB μ V/m @ 2389.8 MHz (-1.6 dB) | |
| | | 11 - 2462MHz | | q63 | Restricted Band Edge (2483.5 MHz) | | 52.6 dB μ V/m @ 2483.5 MHz (-1.4 dB) | |
| | | 10 - 2457MHz | | q77 | | | 52.6 dB μ V/m @ 2483.5 MHz (-1.4 dB) | |
| | | 9 - 2452MHz | | q78 | | | 52.4 dB μ V/m @ 2483.6 MHz (-1.6 dB) | |
| | | 8 - 2447MHz | | q83 | | | 53.0 dB μ V/m @ 2483.6 MHz (-1.0 dB) | |



EMC Test Data

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

| Run # | Mode | Channel | Target Power | Passing Power Setting | Test Performed | Limit | Result / Margin | |
|-------|------|--------------|--------------|-----------------------|-----------------------------------|-----------------------------|--|--|
| 3 | n20 | 1 - 2412MHz | - | q72 | Restricted Band Edge (2390 MHz) | FCC Part 15.209 / 15.247(d) | 52.5 dB μ V/m @ 2390.0 MHz (-1.5 dB) | |
| | | 2 - 2417MHz | | q82 | | | 52.5 dB μ V/m @ 2390.0 MHz (-1.5 dB) | |
| | | 11 - 2462MHz | | q61 | | | 52.7 dB μ V/m @ 2484.6 MHz (-1.3 dB) | |
| | | 10 - 2457MHz | | q70 | Restricted Band Edge (2483.5 MHz) | | 53.0 dB μ V/m @ 2484.8 MHz (-1.0 dB) | |
| | | 9 - 2452MHz | | q76 | | | 52.8 dB μ V/m @ 2485.1 MHz (-1.2 dB) | |
| | | 8 - 2447MHz | | q81 | | | 52.7 dB μ V/m @ 2484.9 MHz (-1.3 dB) | |
| | | 3 - 2422MHz | | q67 | | | 52.9 dB μ V/m @ 2390.0 MHz (-1.1 dB) | |
| 4 | n40 | 4 - 2427MHz | - | q67 | Restricted Band Edge (2390 MHz) | FCC Part 15.209 / 15.247(d) | 52.6 dB μ V/m @ 2390.0 MHz (-1.4 dB) | |
| | n40 | 5 - 2432MHz | | q72 | | | 52.5 dB μ V/m @ 2389.9 MHz (-1.5 dB) | |
| | n40 | 6 - 2437MHz | | q66 | | | 45.7 dB μ V/m @ 2390.0 MHz (-8.3 dB) | |
| | n40 | 6 - 2437MHz | | q66 | Restricted Band Edge (2483.5 MHz) | | 52.5 dB μ V/m @ 2484.7 MHz (-1.5 dB) | |
| | n40 | 9 - 2452MHz | | q54 | | | 52.8 dB μ V/m @ 2485.0 MHz (-1.2 dB) | |
| | n40 | 8 - 2447MHz | | q56 | | | 72.4 dB μ V/m @ 2484.0 MHz (-1.6 dB) | |
| | n40 | 7 - 2442MHz | | q60 | | | 72.9 dB μ V/m @ 2486.0 MHz (-1.1 dB) | |



EMC Test Data

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

Sample Notes

Sample S/N: prototype

Driver: -

Antenna: Internal

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 a duty cycle $\geq 98\%$ and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold.

| 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 |

Measurement Specific Notes:

| | |
|---------|---|
| Note 8: | 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 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |

Run #1: Radiated Bandedge Measurements

Date of Test: 11/19/2015 0:00

Config. Used: 1

Test Engineer: Rafael Varelas

Config Change: None

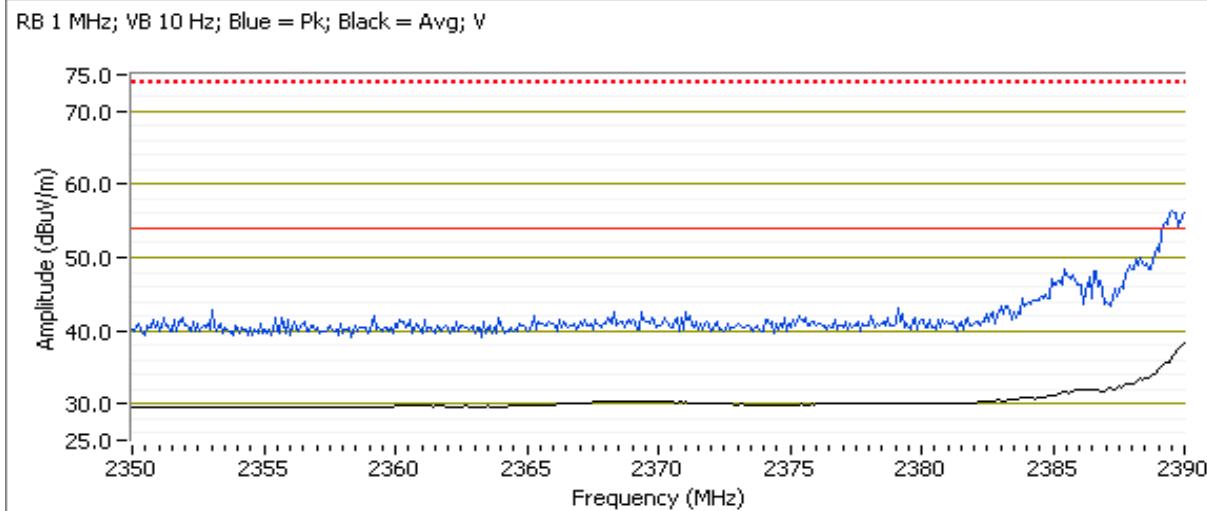
Test Location: FT Chamber #7

EUT Voltage: 120V/60Hz

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

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 2390.000 | 38.3 | V | 54.0 | -15.7 | AVG | 317 | 1.0 |
| 2390.000 | 56.4 | V | 74.0 | -17.6 | PK | 317 | 1.0 |
| 2390.000 | 37.8 | H | 54.0 | -16.2 | AVG | 161 | 1.0 |
| 2388.400 | 48.0 | H | 74.0 | -26.0 | PK | 161 | 1.0 |





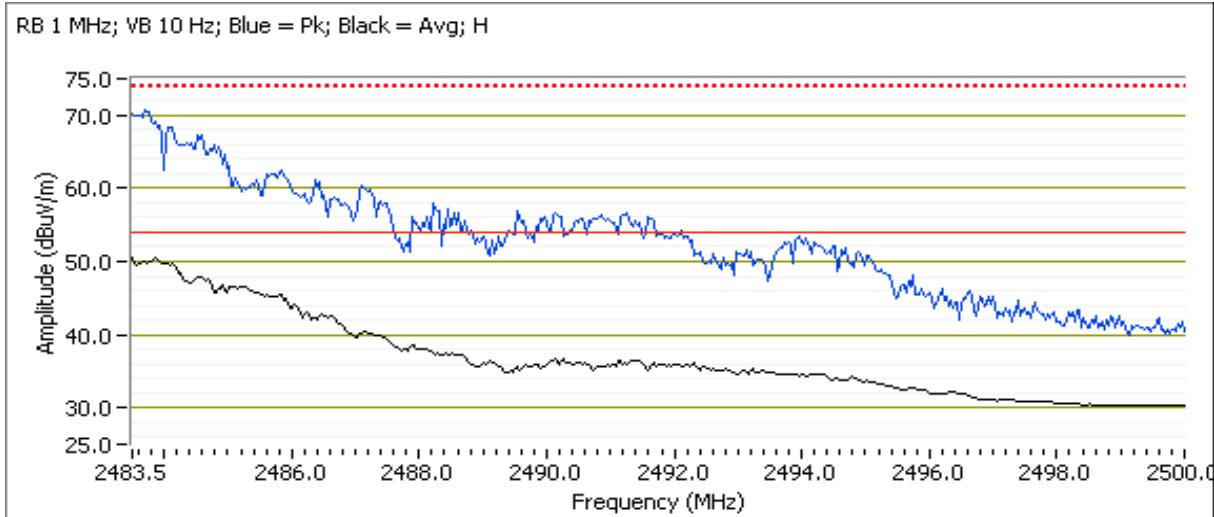
EMC Test Data

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

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

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 2483.600 | 51.7 | H | 54.0 | -2.3 | AVG | 219 | 1.8 |
| 2483.570 | 71.3 | H | 74.0 | -2.7 | PK | 219 | 1.8 |
| 2483.530 | 51.4 | V | 54.0 | -2.6 | AVG | 274 | 1.9 |
| 2487.770 | 70.1 | V | 74.0 | -3.9 | PK | 274 | 1.9 |



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

Run #2: Radiated Bandedge Measurements

Date of Test: 11/19/2015 0:00

Config. Used: 1

Test Engineer: Rafael Varelas

Config Change: None

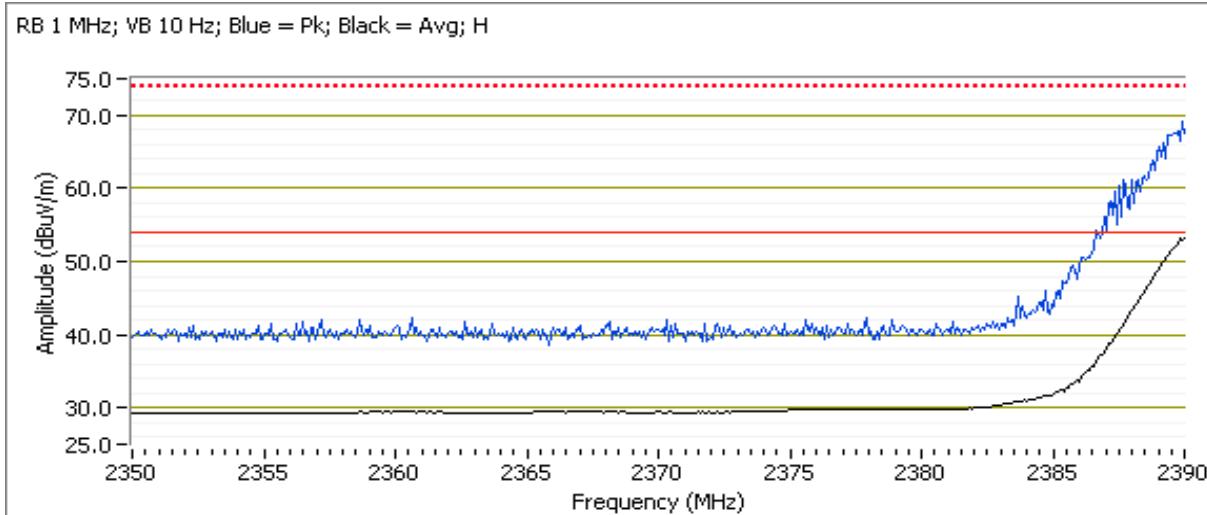
Test Location: FT Chamber #7

EUT Voltage: 120/60Hz

 Channel: 1
 Tx Chain: 3Tx Mode: g
 Data Rate: 6

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 2390.000 | 52.5 | H | 54.0 | -1.5 | AVG | 174 | 1.0 |
| 2390.000 | 67.6 | H | 74.0 | -6.4 | PK | 174 | 1.0 |
| 2390.000 | 52.1 | V | 54.0 | -1.9 | AVG | 55 | 1.0 |
| 2389.600 | 64.9 | V | 74.0 | -9.1 | PK | 55 | 1.0 |

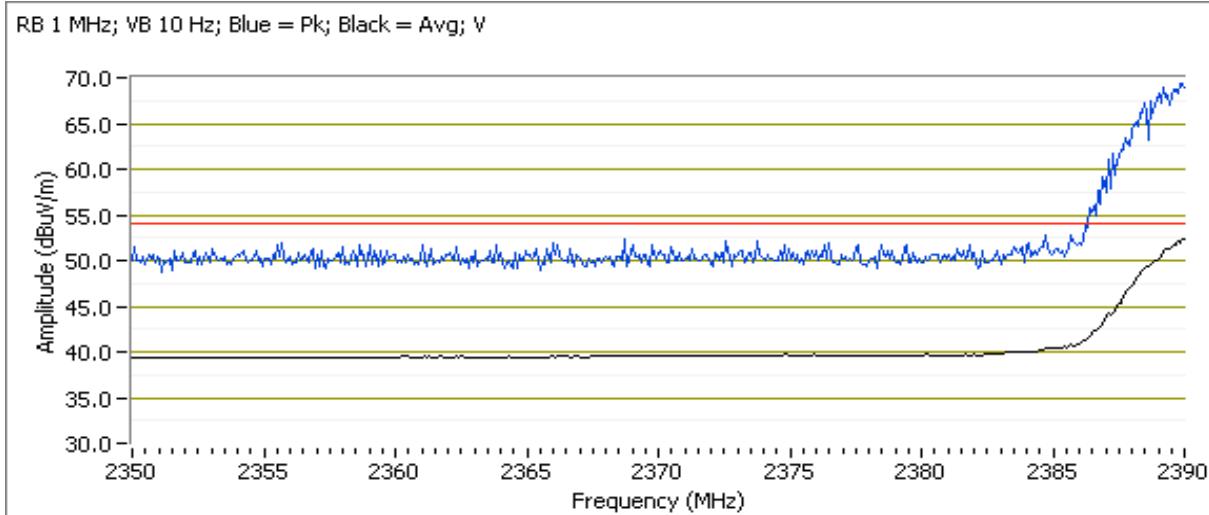


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Channel: 2 Mode: g
Tx Chain: 3Tx Data Rate: 6

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|--------|-----------|---------|--------|--------------------------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2389.760 | 52.4 | V | 54.0 | -1.6 | AVG | 279 | 2.5 | POS; RB 1 MHz; VB: 10 Hz |
| 2389.440 | 68.8 | V | 74.0 | -5.2 | PK | 279 | 2.5 | POS; RB 1 MHz; VB: 3 MHz |
| 2390.000 | 49.2 | H | 54.0 | -4.8 | AVG | 125 | 1.0 | POS; RB 1 MHz; VB: 10 Hz |
| 2389.840 | 63.5 | H | 74.0 | -10.5 | PK | 125 | 1.0 | POS; RB 1 MHz; VB: 3 MHz |

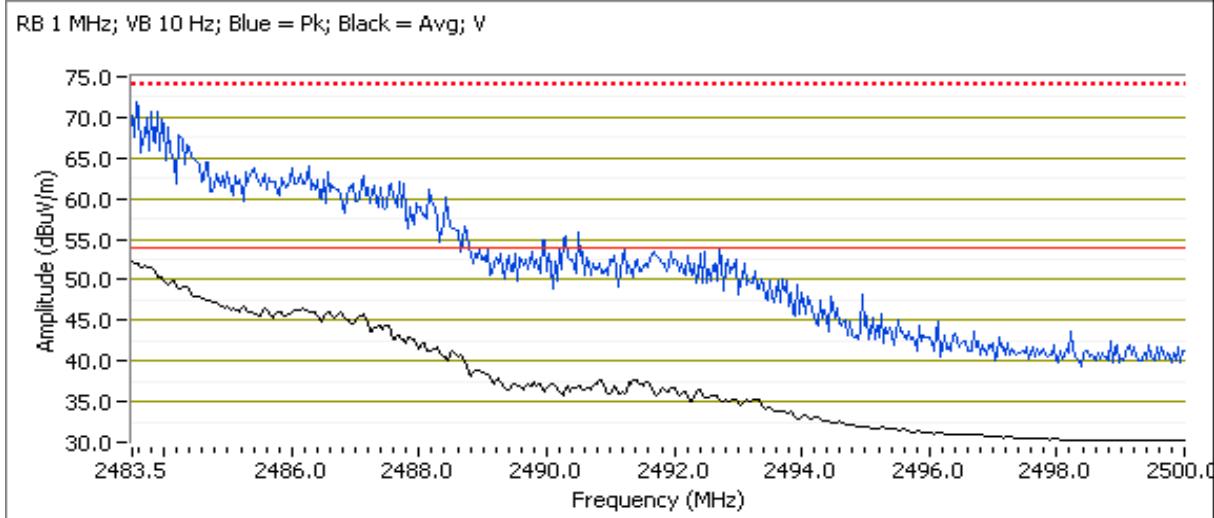


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Channel: 11 Mode: g
Tx Chain: 3Tx Data Rate: 6

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 2483.500 | 52.6 | V | 54.0 | -1.4 | AVG | 288 | 2.0 |
| 2483.800 | 70.8 | V | 74.0 | -3.2 | PK | 288 | 2.0 |
| 2483.830 | 51.7 | H | 54.0 | -2.3 | AVG | 277 | 1.4 |
| 2483.570 | 68.2 | H | 74.0 | -5.8 | PK | 277 | 1.4 |

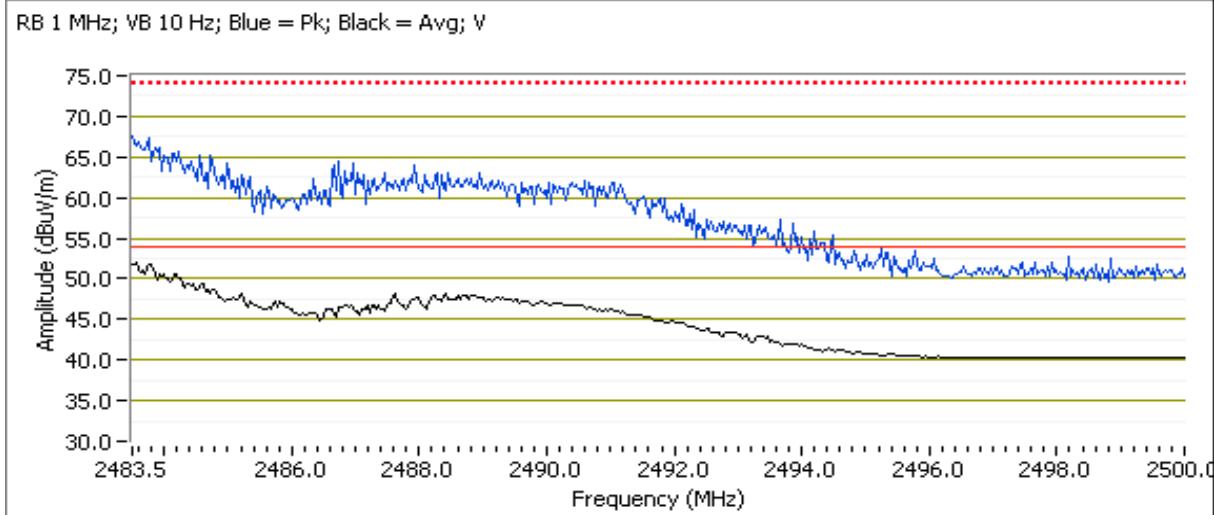


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Channel: 10 Mode: 9
Tx Chain: 3Tx Data Rate: 6

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|--------|-----------|---------|--------|--------------------------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2483.500 | 52.6 | V | 54.0 | -1.4 | AVG | 251 | 1.6 | POS; RB 1 MHz; VB: 10 Hz |
| 2483.730 | 69.3 | V | 74.0 | -4.7 | PK | 251 | 1.6 | POS; RB 1 MHz; VB: 3 MHz |
| 2483.600 | 51.9 | H | 54.0 | -2.1 | AVG | 210 | 1.0 | POS; RB 1 MHz; VB: 10 Hz |
| 2483.670 | 65.8 | H | 74.0 | -8.2 | PK | 210 | 1.0 | POS; RB 1 MHz; VB: 3 MHz |

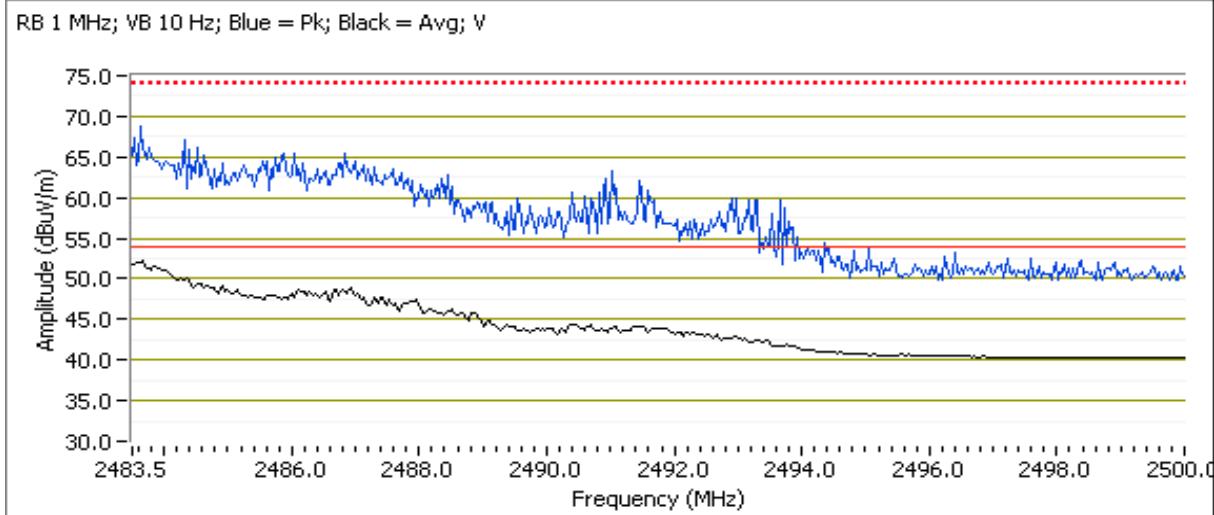


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Channel: 9
 Tx Chain: 3Tx Mode: 9
 Data Rate: 6

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|--------|-----------|---------|--------|--------------------------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2483.570 | 52.4 | V | 54.0 | -1.6 | AVG | 288 | 2.0 | POS; RB 1 MHz; VB: 10 Hz |
| 2483.800 | 68.3 | V | 74.0 | -5.7 | PK | 288 | 2.0 | POS; RB 1 MHz; VB: 3 MHz |
| 2484.290 | 52.1 | H | 54.0 | -1.9 | AVG | 278 | 1.6 | POS; RB 1 MHz; VB: 10 Hz |
| 2483.500 | 66.7 | H | 74.0 | -7.3 | PK | 278 | 1.6 | POS; RB 1 MHz; VB: 3 MHz |

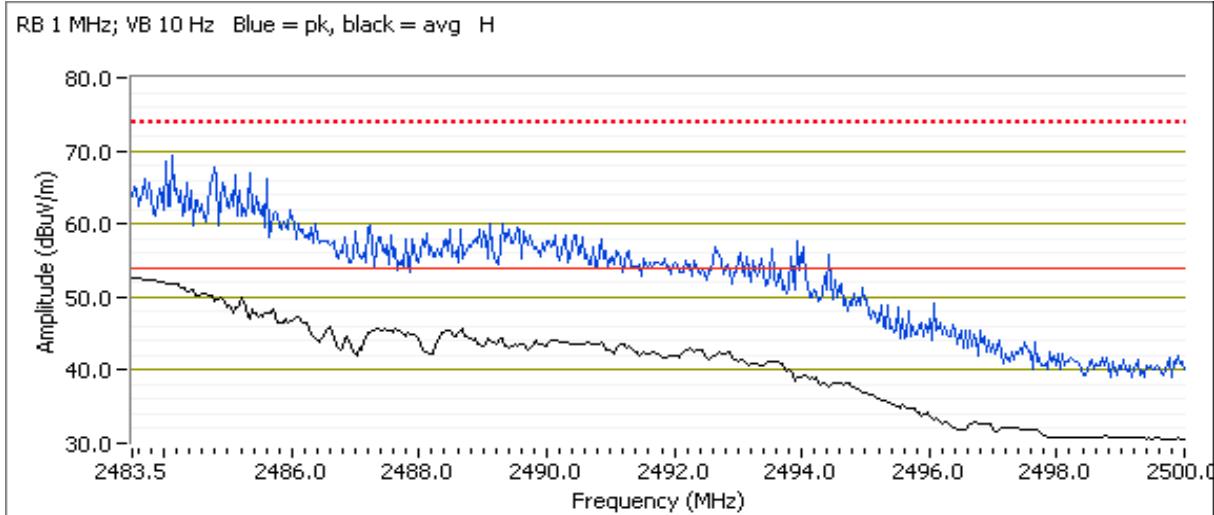


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Channel: 8 Mode: 9
Tx Chain: 3Tx Data Rate: 6

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|--------|-----------|---------|--------|--------------------------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2483.630 | 52.4 | V | 54.0 | -1.6 | AVG | 274 | 1.51 | POS; RB 1 MHz; VB: 10 Hz |
| 2483.670 | 70.6 | V | 74.0 | -3.4 | PK | 274 | 1.51 | POS; RB 1 MHz; VB: 3 MHz |
| 2483.570 | 53.0 | H | 54.0 | -1.0 | AVG | 299 | 1.68 | POS; RB 1 MHz; VB: 10 Hz |
| 2483.670 | 68.5 | H | 74.0 | -5.5 | PK | 299 | 1.68 | POS; RB 1 MHz; VB: 3 MHz |



| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |

Run #3: Radiated Bandedge Measurements

Date of Test: 11/23/2015 0:00

Config. Used: 1

Test Engineer: John Caizzi

Config Change: none

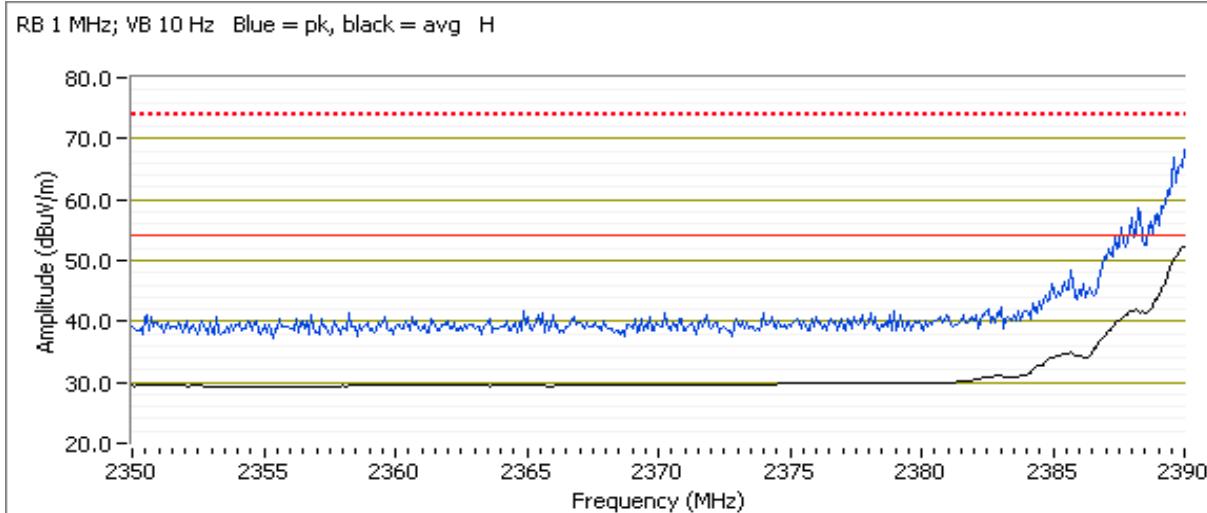
Test Location: Chamber 7

EUT Voltage: 120V / 60Hz

 Channel: 1
 Tx Chain: 3Tx Mode: n20
 Data Rate: MCS0

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 2390.000 | 52.6 | V | 54.0 | -1.4 | AVG | 94 | 1.21 |
| 2390.000 | 66.1 | V | 74.0 | -7.9 | PK | 94 | 1.21 |
| 2390.000 | 52.5 | H | 54.0 | -1.5 | AVG | 318 | 1.75 |
| 2389.920 | 70.7 | H | 74.0 | -3.3 | PK | 318 | 1.75 |

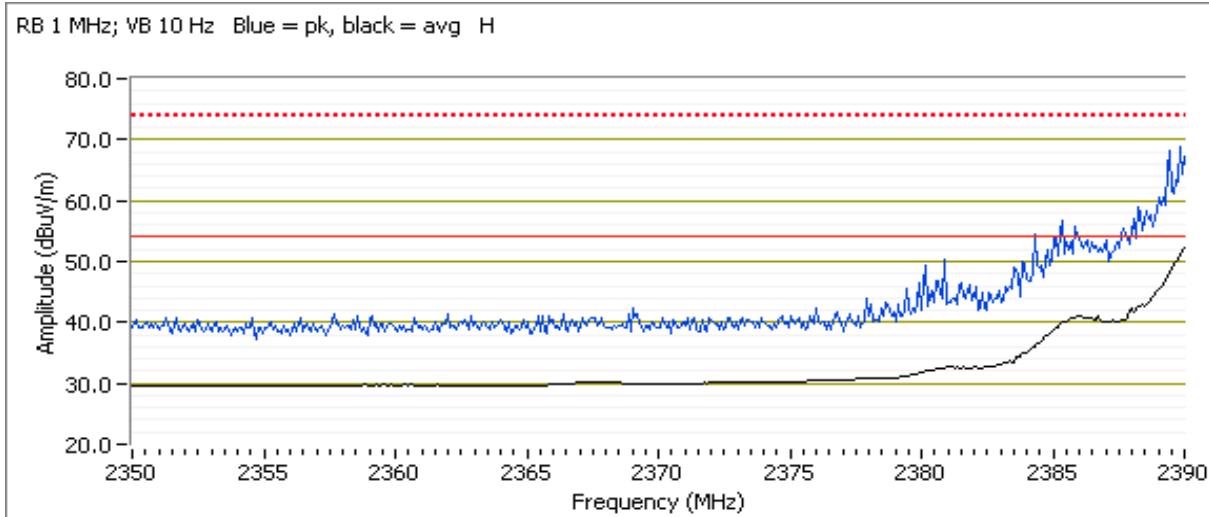


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Channel: 2 Mode: n20
Tx Chain: 3Tx Data Rate: MCS0

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 2390.000 | 52.5 | H | 54.0 | -1.5 | AVG | 103 | 1.54 |
| 2390.000 | 68.5 | H | 74.0 | -5.5 | PK | 103 | 1.54 |
| 2390.000 | 46.8 | V | 54.0 | -7.2 | AVG | 267 | 1.57 |
| 2389.920 | 62.8 | V | 74.0 | -11.2 | PK | 267 | 1.57 |

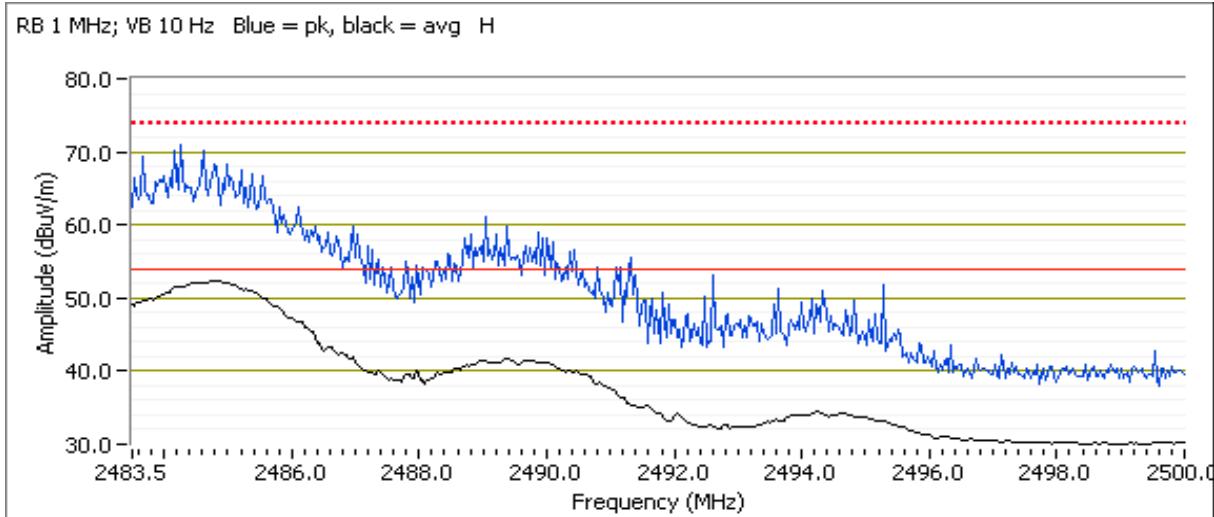


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

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

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 2484.590 | 52.7 | H | 54.0 | -1.3 | AVG | 101 | 1.25 |
| 2484.620 | 71.5 | H | 74.0 | -2.5 | PK | 101 | 1.25 |
| 2484.990 | 50.7 | V | 54.0 | -3.3 | AVG | 94 | 1.18 |
| 2484.860 | 67.9 | V | 74.0 | -6.1 | PK | 94 | 1.18 |

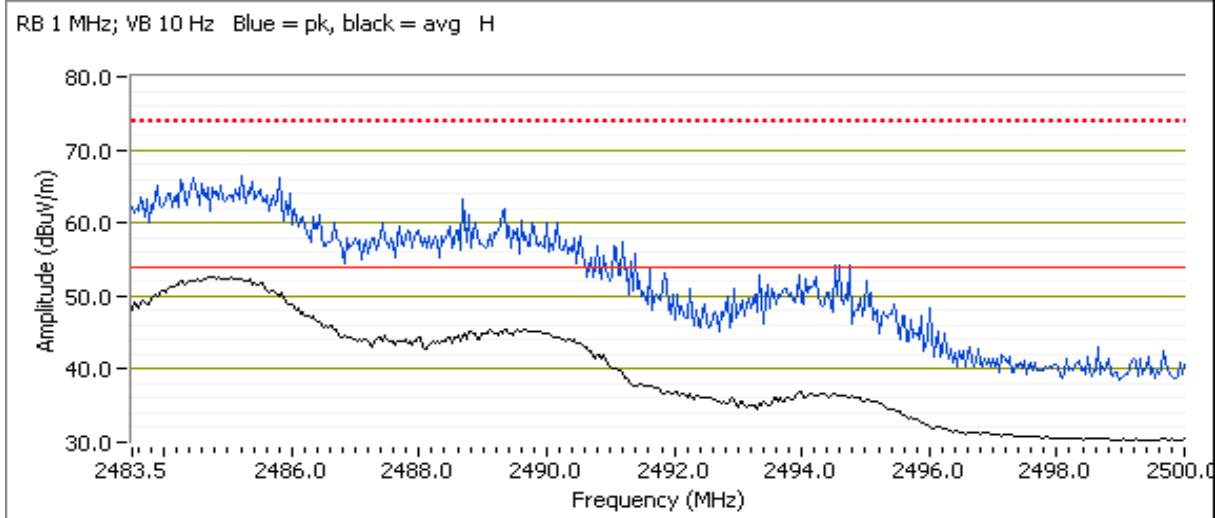


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Channel: 10 Mode: n20
 Tx Chain: 3Tx Data Rate: MCS0

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 2484.790 | 53.0 | H | 54.0 | -1.0 | AVG | 104 | 1.10 |
| 2484.560 | 67.3 | H | 74.0 | -6.7 | PK | 104 | 1.10 |
| 2485.290 | 51.1 | V | 54.0 | -2.9 | AVG | 93 | 1.16 |
| 2484.490 | 66.2 | V | 74.0 | -7.8 | PK | 93 | 1.16 |

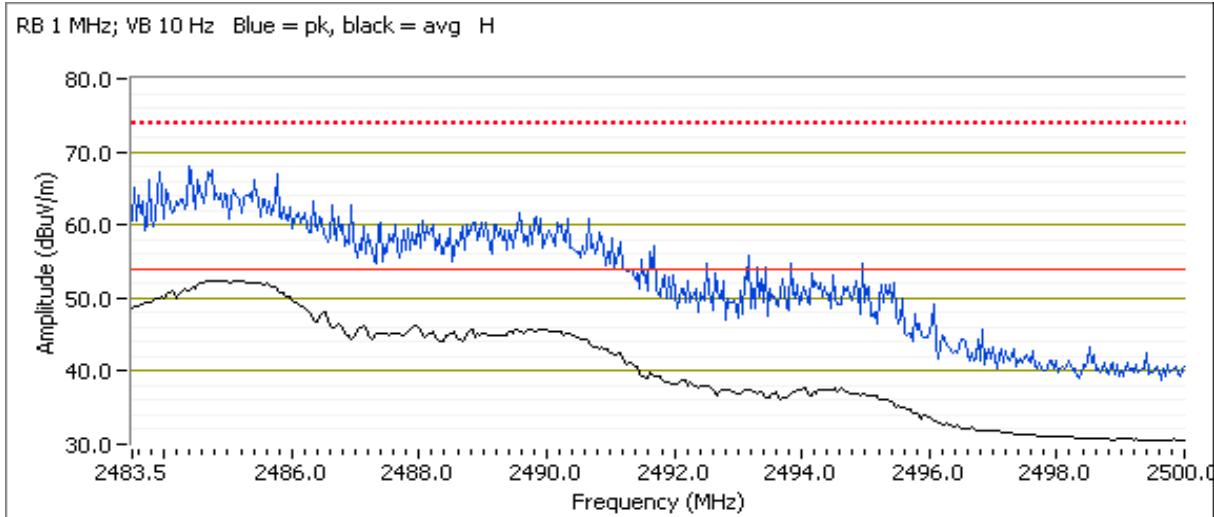


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Channel: 9 Mode: n20
Tx Chain: 3Tx Data Rate: MCS0

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 2485.050 | 52.8 | H | 54.0 | -1.2 | AVG | 104 | 1.10 |
| 2485.150 | 70.0 | H | 74.0 | -4.0 | PK | 104 | 1.10 |
| 2483.500 | 50.0 | V | 54.0 | -4.0 | AVG | 271 | 1.58 |
| 2483.570 | 66.9 | V | 74.0 | -7.1 | PK | 271 | 1.58 |

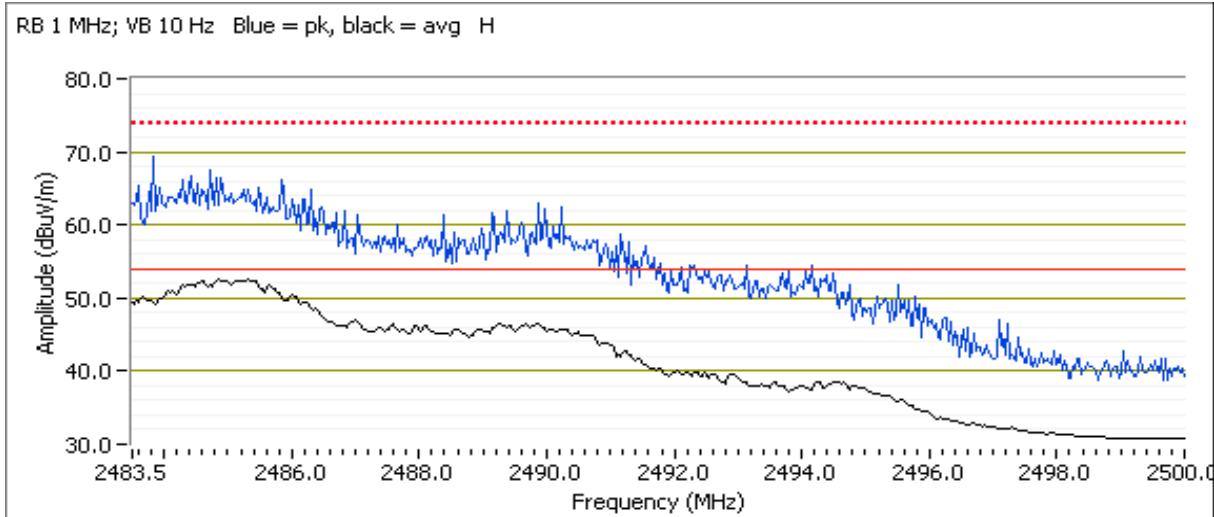


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Channel: 8 Mode: n20
Tx Chain: 3Tx Data Rate: MCS0

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 2484.890 | 52.7 | H | 54.0 | -1.3 | AVG | 104 | 1.08 |
| 2485.250 | 69.5 | H | 74.0 | -4.5 | PK | 104 | 1.08 |
| 2483.630 | 50.8 | V | 54.0 | -3.2 | AVG | 271 | 1.44 |
| 2484.330 | 70.8 | V | 74.0 | -3.2 | PK | 271 | 1.44 |



| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |

Run #4: Radiated Bandedge Measurements

Date of Test: 11/23/2015 0:00

Config. Used: 1

Test Engineer: John Caizzi

Config Change: none

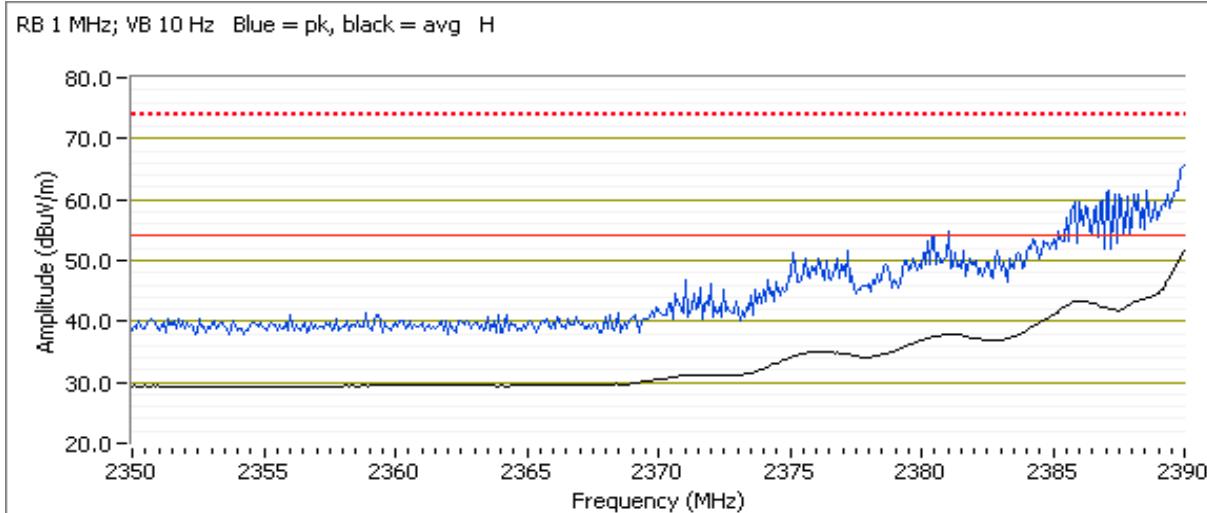
Test Location: Chamber 7

EUT Voltage: 120V / 60Hz

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

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 2390.000 | 52.9 | H | 54.0 | -1.1 | AVG | 108 | 1.71 |
| 2390.000 | 67.4 | H | 74.0 | -6.6 | PK | 108 | 1.71 |
| 2390.000 | 49.0 | V | 54.0 | -5.0 | AVG | 160 | 1.12 |
| 2389.280 | 66.1 | V | 74.0 | -7.9 | PK | 160 | 1.12 |

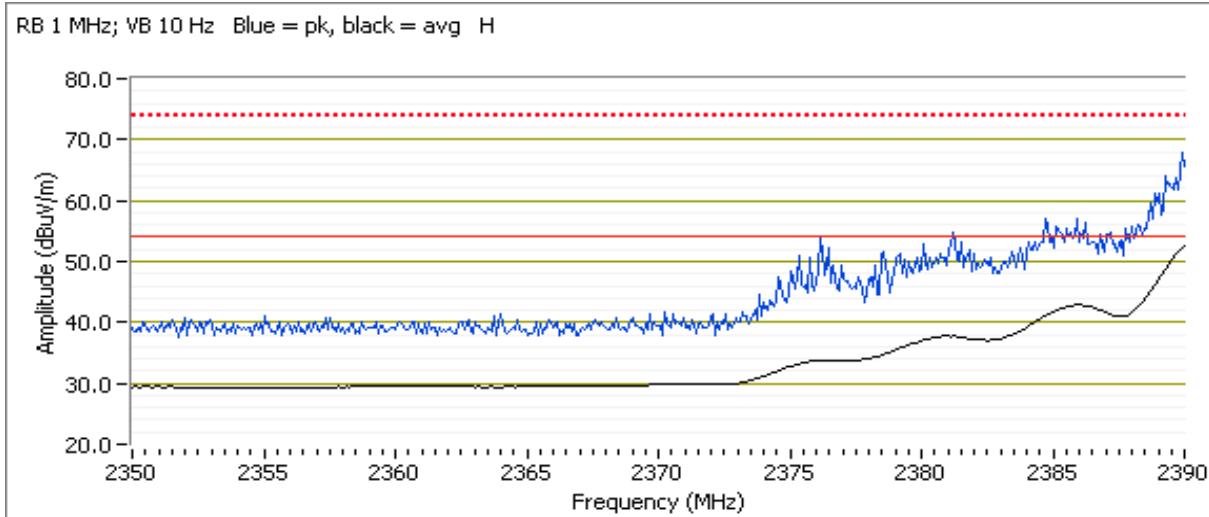


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Channel: 4 Mode: n40
Tx Chain: 3Tx Data Rate: MCS0

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 2390.000 | 52.6 | H | 54.0 | -1.4 | AVG | 100 | 1.13 |
| 2389.680 | 67.5 | H | 74.0 | -6.5 | PK | 100 | 1.13 |
| 2390.000 | 47.9 | V | 54.0 | -6.1 | AVG | 96 | 1.21 |
| 2390.000 | 64.3 | V | 74.0 | -9.7 | PK | 96 | 1.21 |

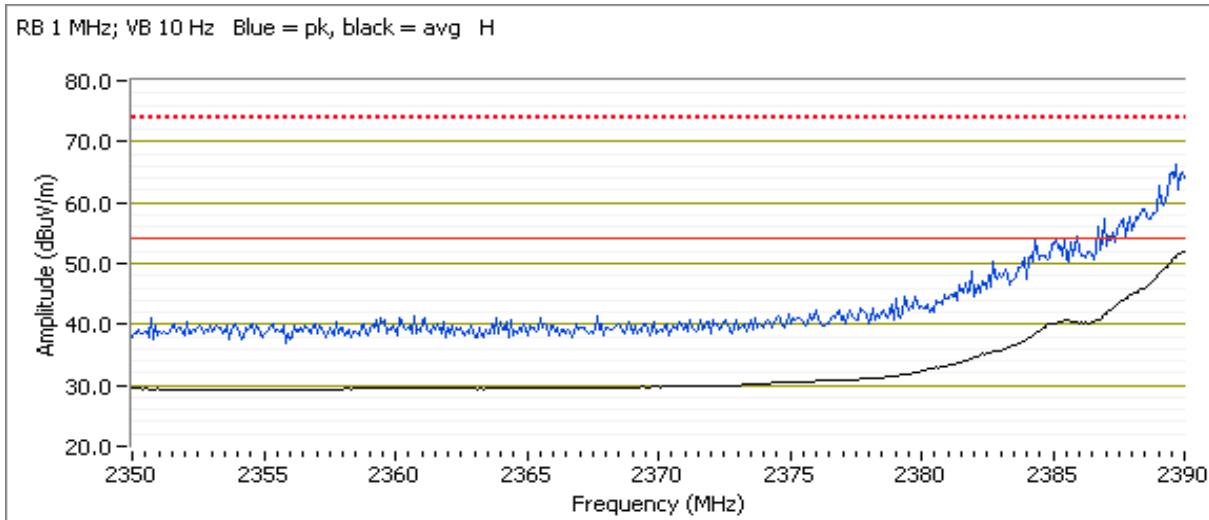


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Channel: 5 Mode: n40
Tx Chain: 3Tx Data Rate: MCS0

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 2389.920 | 52.5 | H | 54.0 | -1.5 | AVG | 83 | 1.91 |
| 2389.680 | 66.9 | H | 74.0 | -7.1 | PK | 83 | 1.91 |



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

Date of Test: 11/23/2015 0:00

Config. Used: 1

Test Engineer: Rafael Varelas

Config Change: none

Test Location: Chamber 7

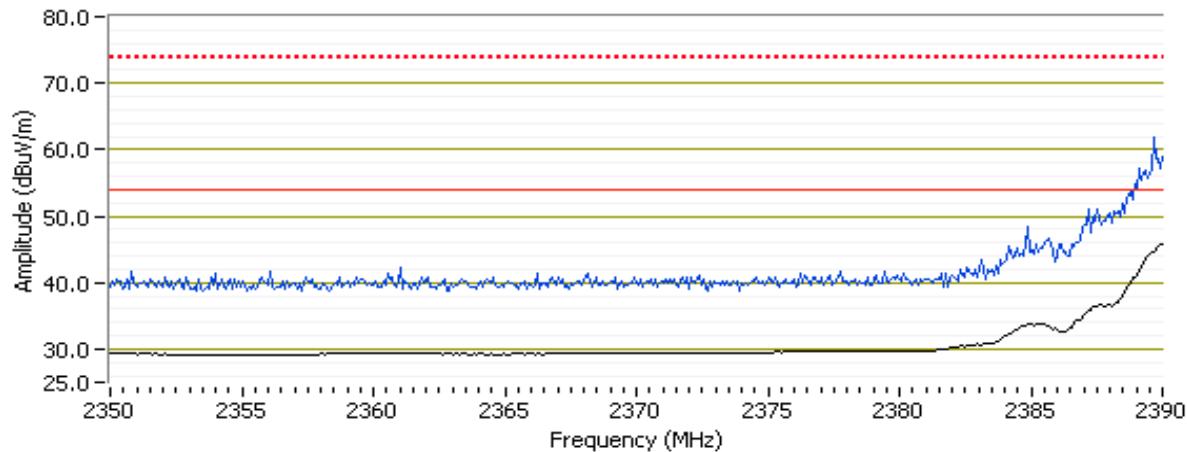
EUT Voltage: 120V / 60Hz

 Channel: 6 Mode: n40
 Tx Chain: 3Tx Data Rate: MCS0

2390 MHz - Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|--------|-----------|---------|--------|--------------------------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2390.000 | 45.7 | H | 54.0 | -8.3 | AVG | 139 | 1.0 | POS; RB 1 MHz; VB: 10 Hz |
| 2389.600 | 60.3 | H | 74.0 | -13.7 | PK | 139 | 1.0 | POS; RB 1 MHz; VB: 3 MHz |
| 2390.000 | 43.1 | V | 54.0 | -10.9 | AVG | 93 | 1.2 | POS; RB 1 MHz; VB: 10 Hz |
| 2390.000 | 55.8 | V | 74.0 | -18.2 | PK | 93 | 1.2 | POS; RB 1 MHz; VB: 3 MHz |

RB 1 MHz; VB 10 Hz Blue = pk, black = avg H

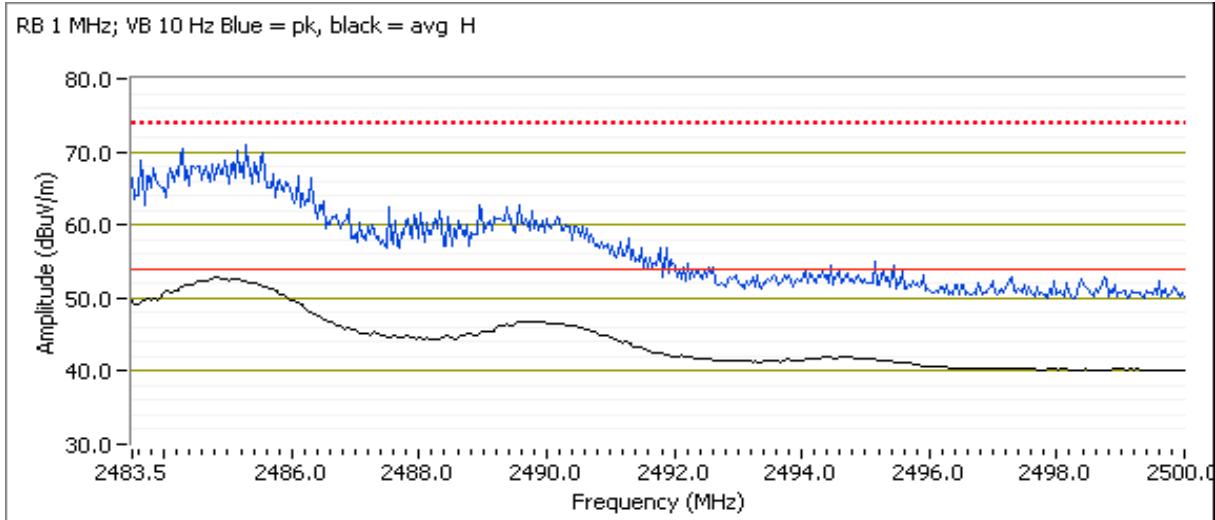


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Channel: 6 Mode: n40
 Tx Chain: 3Tx Data Rate: MCS0

2483.5 MHz - Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 2484.660 | 52.5 | H | 54.0 | -1.5 | AVG | 104 | 1.1 |
| 2484.190 | 71.6 | H | 74.0 | -2.4 | PK | 104 | 1.1 |
| 2483.600 | 50.9 | V | 54.0 | -3.1 | AVG | 282 | 1.0 |
| 2483.530 | 69.2 | V | 74.0 | -4.8 | PK | 282 | 1.0 |

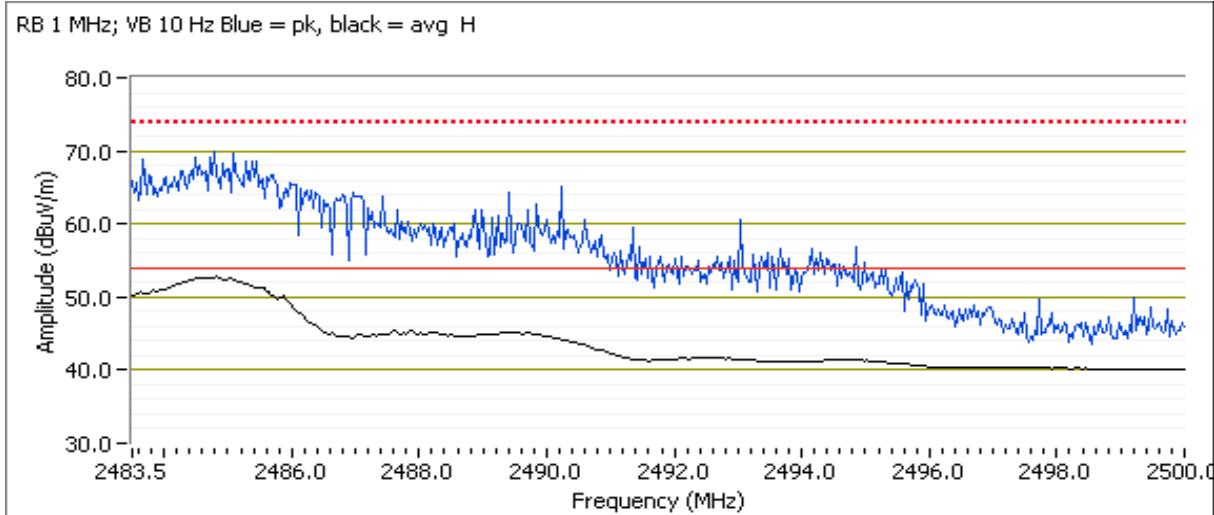


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Channel: 9 Mode: n40
 Tx Chain: 3Tx Data Rate: MCS0

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 2484.990 | 52.8 | H | 54.0 | -1.2 | AVG | 111 | 1.1 |
| 2485.850 | 70.2 | H | 74.0 | -3.8 | PK | 111 | 1.1 |
| 2483.500 | 49.8 | V | 54.0 | -4.2 | AVG | 280 | 1.6 |
| 2483.960 | 67.2 | V | 74.0 | -6.8 | PK | 280 | 1.6 |

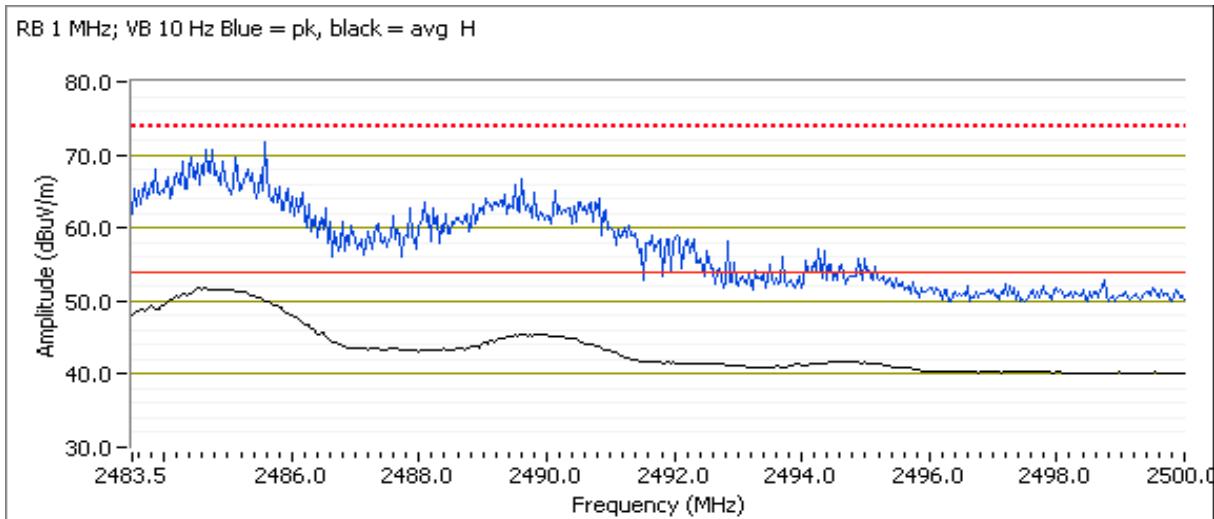


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Channel: 8 Mode: n40
 Tx Chain: 3Tx Data Rate: MCS0

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|--------|-----------|---------|--------|--------------------------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 2484.000 | 72.4 | H | 74.0 | -1.6 | PK | 106 | 1.3 | POS; RB 1 MHz; VB: 3 MHz |
| 2484.860 | 51.2 | H | 54.0 | -2.8 | AVG | 106 | 1.3 | POS; RB 1 MHz; VB: 10 Hz |
| 2483.500 | 49.6 | V | 54.0 | -4.4 | AVG | 282 | 1.0 | POS; RB 1 MHz; VB: 10 Hz |
| 2483.600 | 69.7 | V | 74.0 | -4.3 | PK | 282 | 1.0 | POS; RB 1 MHz; VB: 3 MHz |

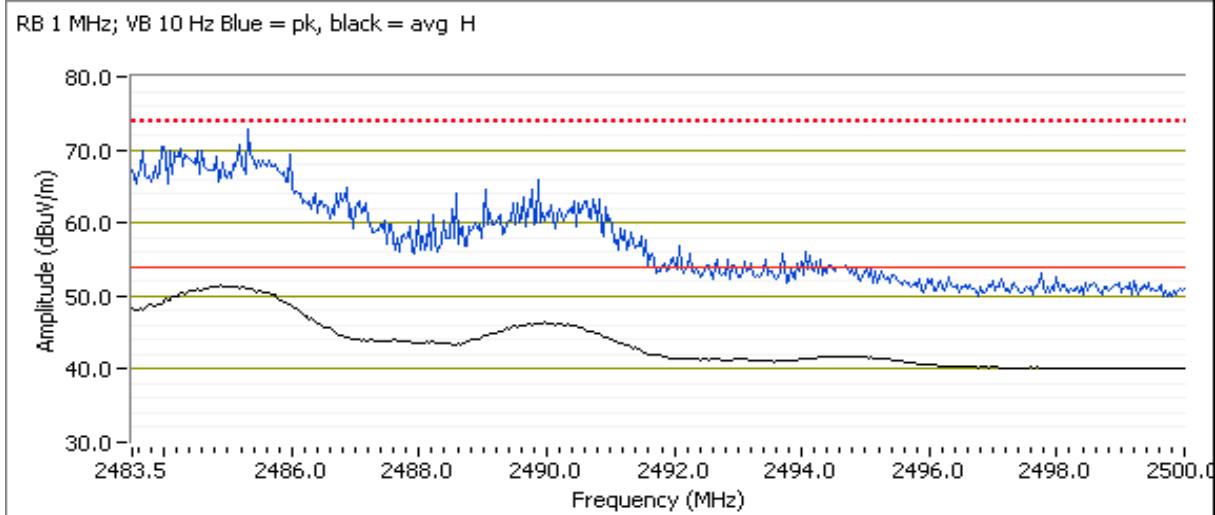


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Channel: 7 Mode: n40
 Tx Chain: 3Tx Data Rate: MCS0

Band Edge Signal Field Strength - Direct measurement of field strength

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 2485.950 | 72.9 | H | 74.0 | -1.1 | PK | 106 | 1.3 |
| 2485.320 | 51.2 | H | 54.0 | -2.8 | AVG | 106 | 1.3 |
| 2483.670 | 49.5 | V | 54.0 | -4.5 | AVG | 282 | 1.0 |
| 2483.500 | 71.1 | V | 74.0 | -2.9 | PK | 282 | 1.0 |





EMC Test Data

| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | 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: 21.8 °C
Rel. Humidity: 35 %

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 | 1 - 2412MHz | - | q92 | Radiated Emissions, 1 - 25 GHz | FCC Part 15.209 / 15.247(d) | 42.9 dB μ V/m @ 4818.9 MHz (-11.1 dB) |
| | b | 6 - 2437MHz | - | q92 | Radiated Emissions, 1 - 25 GHz | FCC Part 15.209 / 15.247(d) | 38.6 dB μ V/m @ 4868.6 MHz (-15.4 dB) |
| | b | 11 - 2462MHz | - | q92 | Radiated Emissions, 1 - 25 GHz | FCC Part 15.209 / 15.247(d) | 42.6 dB μ V/m @ 7378.4 MHz (-11.4 dB) |

Scans on center channel in all three OFDM modes to determine the worst case mode.

| | | | | | | | |
|---|-----|-------------|---|-----|--------------------------------|-----------------------------|---|
| 2 | g | 6 - 2437MHz | - | q92 | Radiated Emissions, 1 - 25 GHz | FCC Part 15.209 / 15.247(d) | 35.3 dB μ V/m @ 4868.2 MHz (-18.7 dB) |
| | n20 | 6 - 2437MHz | - | q92 | Radiated Emissions, 1 - 25 GHz | FCC Part 15.209 / 15.247(d) | 35.3 dB μ V/m @ 4875.3 MHz (-18.7 dB) |
| | n40 | 6 - 2437MHz | - | q92 | Radiated Emissions, 1 - 25 GHz | FCC Part 15.209 / 15.247(d) | 34.5 dB μ V/m @ 4875.4 MHz (-19.5 dB) |

Measurements on low and high channels in worst-case OFDM mode.

| | | | | | | | |
|---|---|--------------|---|-----|--------------------------------|-----------------------------|---|
| 3 | g | 1 - 2412MHz | - | q92 | Radiated Emissions, 1 - 25 GHz | FCC Part 15.209 / 15.247(d) | 40.5 dB μ V/m @ 4820.2 MHz (-13.5 dB) |
| | g | 11 - 2462MHz | - | q92 | Radiated Emissions, 1 - 25 GHz | FCC Part 15.209 / 15.247(d) | 40.1 dB μ V/m @ 7385.8 MHz (-13.9 dB) |



EMC Test Data

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

Sample Notes

Sample S/N: prototype

Driver: -

Antenna: Internal



EMC Test Data

| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | 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 $\geq 98\%$ and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold.

2.4GHz band reject filter used

Tabular measurements represent the worse case measurement for both measurement antenna polarities

| 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 |

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 $\geq 98\%$, 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 constant 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 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |

Run #1: Radiated Spurious Emissions, 1,000 - 25000 MHz. Operating Mode: 802.11b

Date of Test: 11/25/2015 0:00

Config. Used: 1

Test Engineer: Rafael Varelas

Config Change: None

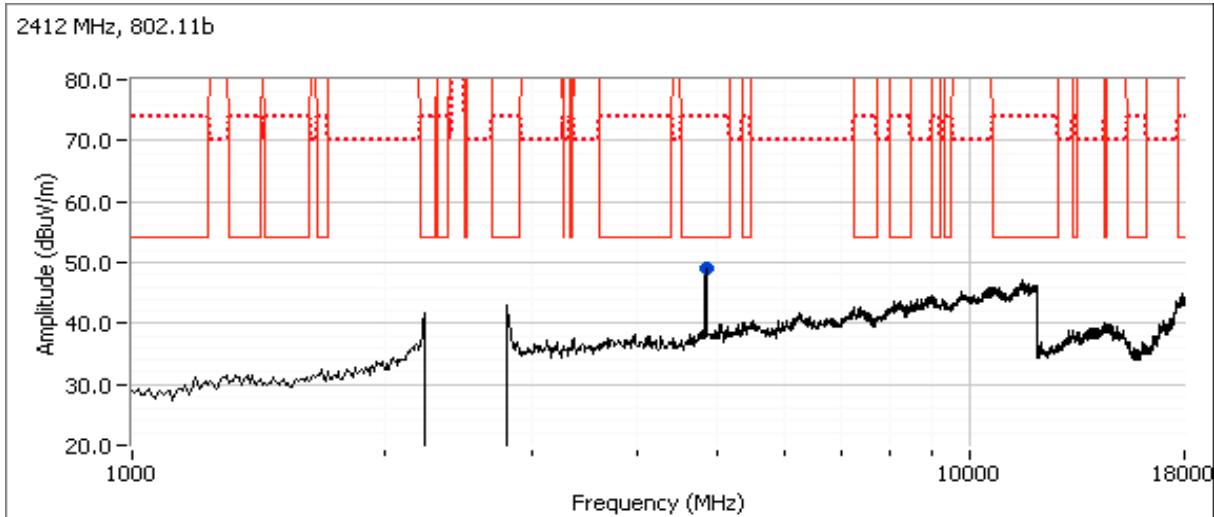
Test Location: FT Chamber #7

EUT Voltage: 120V/60Hz

Run #1a: Low Channel

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

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 4818.850 | 42.9 | V | 54.0 | -11.1 | AVG | 101 | 1.6 |
| 4823.870 | 50.3 | V | 74.0 | -23.7 | PK | 101 | 1.6 |



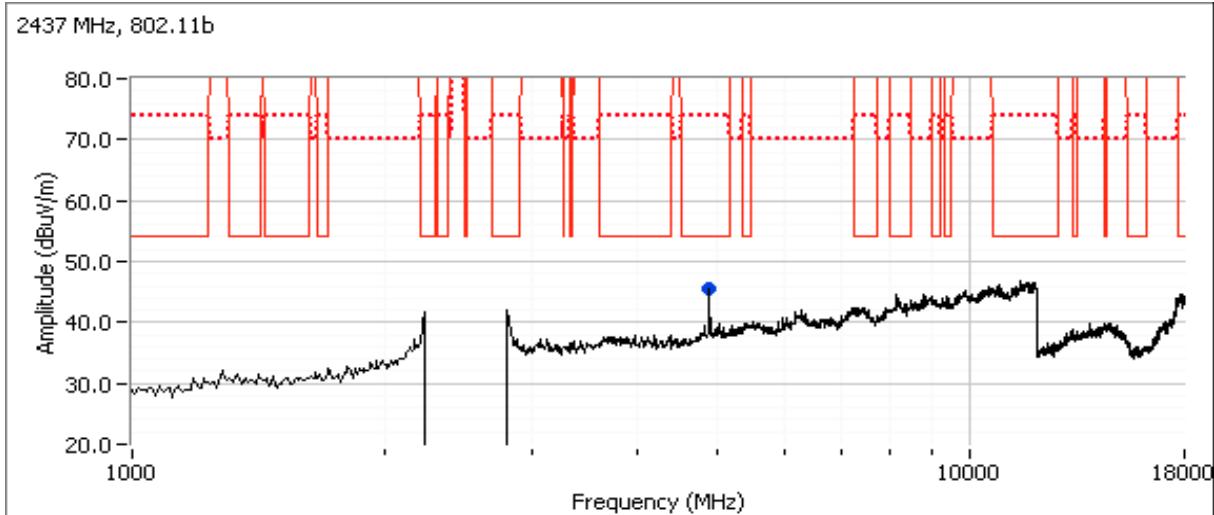
| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

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 | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 4868.600 | 38.6 | V | 54.0 | -15.4 | AVG | 106 | 1.7 |
| 4874.110 | 49.1 | V | 74.0 | -24.9 | PK | 106 | 1.7 |

| | |
|-------|--|
| Note: | Scans made between 18 - 25 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 |
|-------|--|

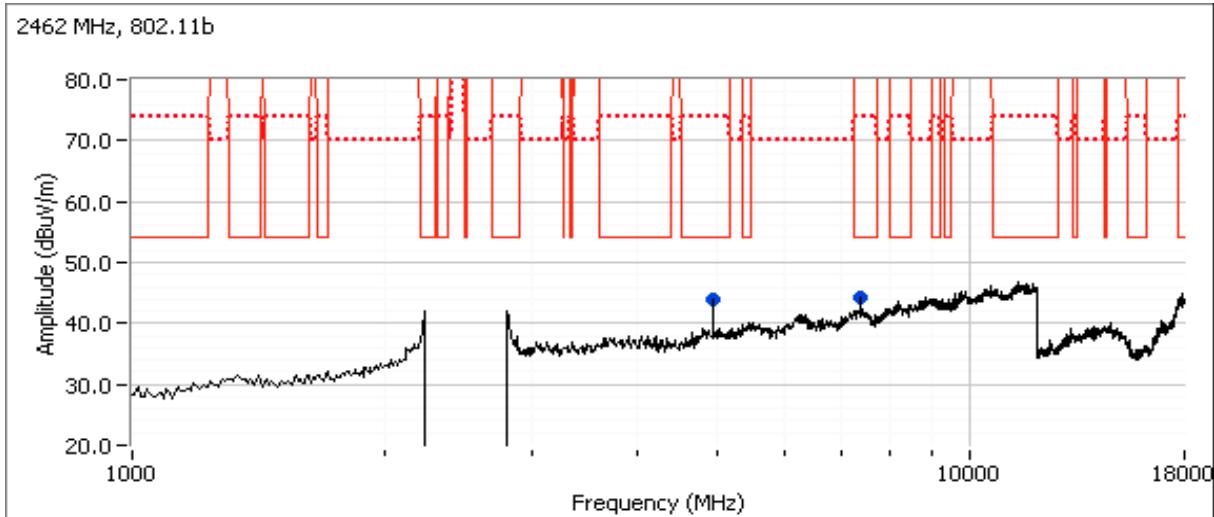


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Run #1c: High Channel

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

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|--------|-----------|---------|--------|------------------------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 7378.390 | 42.6 | V | 54.0 | -11.4 | AVG | 105 | 1.0 | RB 1 MHz;VB 10 Hz;Peak |
| 7377.690 | 52.3 | V | 74.0 | -21.7 | PK | 105 | 1.0 | RB 1 MHz;VB 3 MHz;Peak |
| 4929.340 | 37.6 | H | 54.0 | -16.4 | AVG | 129 | 1.0 | RB 1 MHz;VB 10 Hz;Peak |
| 4923.840 | 46.8 | H | 74.0 | -27.2 | PK | 129 | 1.0 | RB 1 MHz;VB 3 MHz;Peak |



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

Run #2: Radiated Spurious Emissions, 1,000 - 25000 MHz. Operating Mode: OFDM

Date of Test: 11/25/2015 0:00

Config. Used: 1

Test Engineer: Rafael Varelas

Config Change: None

Test Location: FT Chamber #7

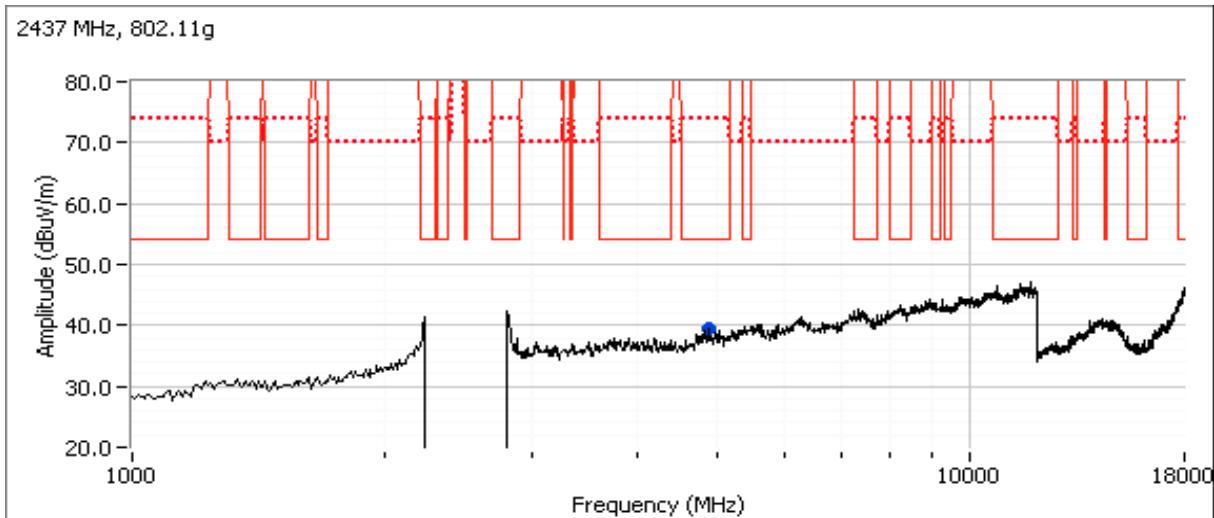
EUT Voltage: 120V/60Hz

Run #2a: Center Channel

 Channel: 6 Mode: g
 Tx Chain: 3Tx Data Rate: 6

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 4868.190 | 35.3 | H | 54.0 | -18.7 | AVG | 50 | 1.8 |
| 4868.760 | 46.0 | H | 74.0 | -28.0 | PK | 50 | 1.8 |

Note: Scans made between 18 - 25 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



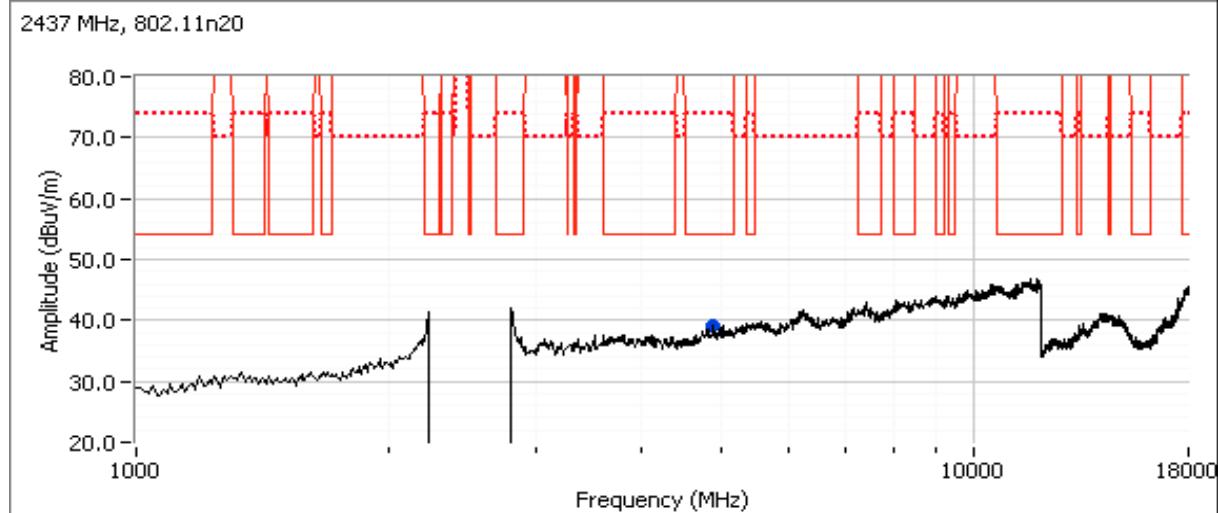
| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Run #2b: Center Channel

Channel: 6 Mode: n20
Tx Chain: 3Tx Data Rate: MCS0

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 4875.260 | 35.3 | V | 54.0 | -18.7 | AVG | 64 | 1.5 |
| 4875.100 | 47.1 | V | 74.0 | -26.9 | PK | 64 | 1.5 |

Note: Scans made between 18 - 25 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



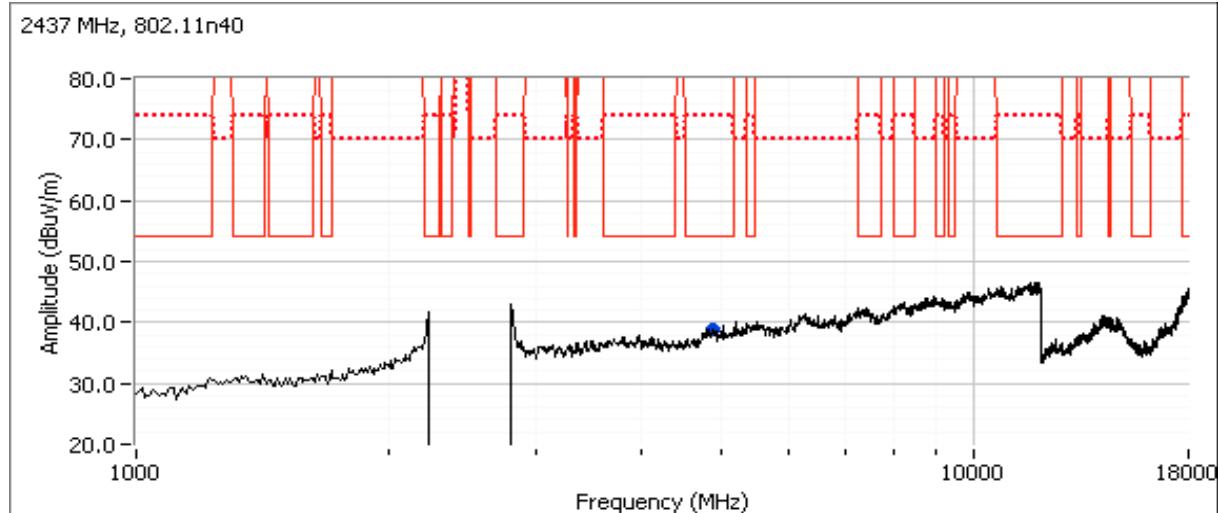
| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Run #2c: Center Channel

Channel: 6 Mode: n40
 Tx Chain: 3Tx Data Rate: MCS0

| Frequency | Level | Pol | 15.209 / 15.247 | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|----------|-----------|---------|----------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters |
| 4875.370 | 34.5 | V | 54.0 | -19.5 | AVG | 54 | 1.6 |
| 4879.100 | 46.2 | V | 74.0 | -27.8 | PK | 54 | 1.6 |

Note: Scans made between 18 - 25 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: | T9985 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | Class: | N/A |

Run #3: Radiated Spurious Emissions, 1,000 - 25000 MHz. Operating Mode: Worse case from Run #2

Date of Test: 12/3/2015 0:00

Config. Used: 1

Test Engineer: Rafael Varelas

Config Change: None

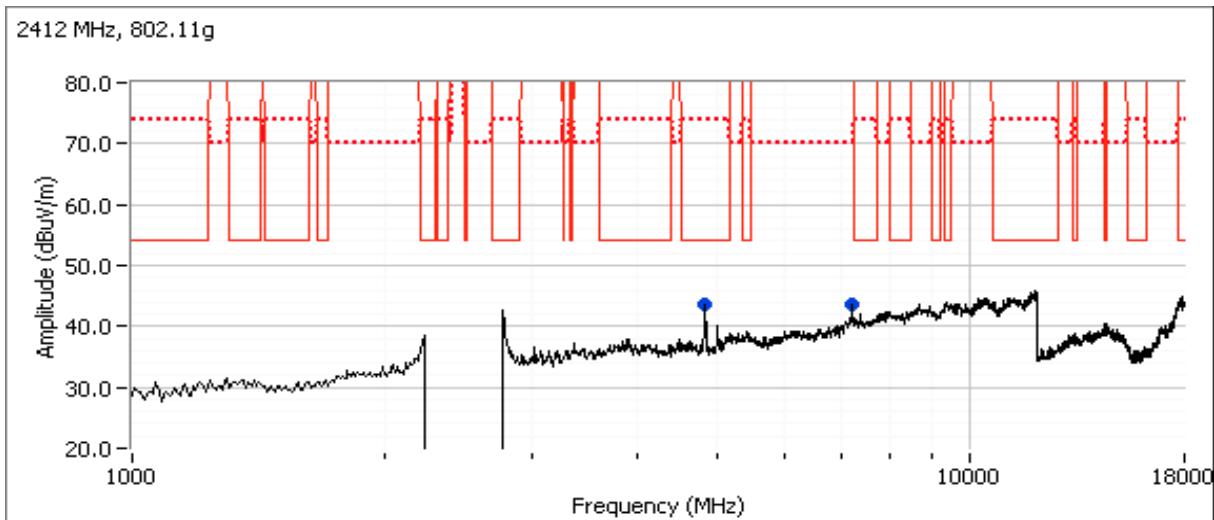
Test Location: FT Chamber #7

EUT Voltage: 120V/60Hz

Run #3a: Low Channel

Channel: 1 Mode: 9
Tx Chain: 3Tx Data Rate: 6

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|--------|-----------|---------|--------|------------------------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 4820.210 | 40.5 | H | 54.0 | -13.5 | AVG | 73 | 1.1 | RB 1 MHz;VB 10 Hz;Peak |
| 4820.390 | 51.8 | H | 74.0 | -22.2 | PK | 73 | 1.1 | RB 1 MHz;VB 3 MHz;Peak |
| 7242.750 | 40.3 | V | 54.0 | -13.7 | AVG | 291 | 1.0 | RB 1 MHz;VB 10 Hz;Peak |
| 7243.410 | 51.5 | V | 74.0 | -22.5 | PK | 291 | 1.0 | RB 1 MHz;VB 3 MHz;Peak |

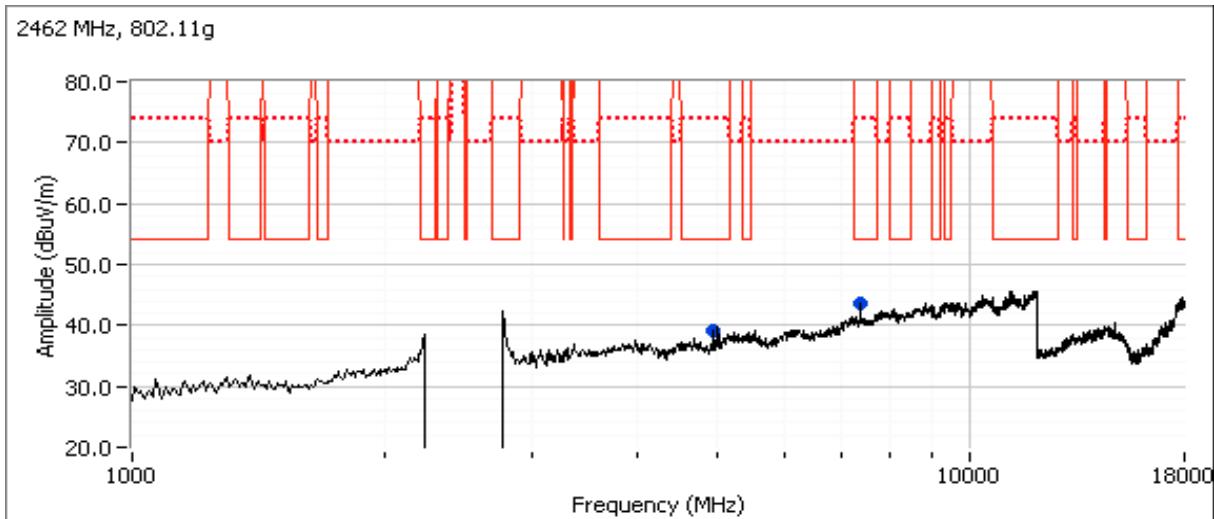


| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247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

Run #3b: High Channel

Channel: 11 Mode: g
 Tx Chain: 3Tx Data Rate: 6

| Frequency | Level | Pol | 15.209 / 15.247 | | Detector | Azimuth | Height | Comments |
|-----------|--------------|-----|-----------------|--------|-----------|---------|--------|------------------------|
| MHz | dB μ V/m | v/h | Limit | Margin | Pk/QP/Avg | degrees | meters | |
| 7385.800 | 40.1 | V | 54.0 | -13.9 | AVG | 122 | 1.1 | RB 1 MHz;VB 10 Hz;Peak |
| 7383.550 | 51.2 | V | 74.0 | -22.8 | PK | 122 | 1.1 | RB 1 MHz;VB 3 MHz;Peak |
| 4922.990 | 35.4 | V | 54.0 | -18.6 | AVG | 54 | 1.9 | RB 1 MHz;VB 10 Hz;Peak |
| 4922.990 | 46.8 | V | 74.0 | -27.2 | PK | 54 | 1.9 | RB 1 MHz;VB 3 MHz;Peak |





EMC Test Data

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



EMC Test Data

| | | | |
|-----------|--------------------------|----------------------|-------------------|
| Client: | Ericsson Canada | Job Number: | JD99841 |
| Model: | APINM210 | T-Log Number: | T99885 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | 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 $\geq 98\%$ 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 $\geq 98\%$, 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 constant 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 |
| Contact: | Nancy Langford | Project Manager: | Christine Krebill |
| Standard: | FCC 15.247/15.E, RSS-247 | Project Coordinator: | - |
| | | 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

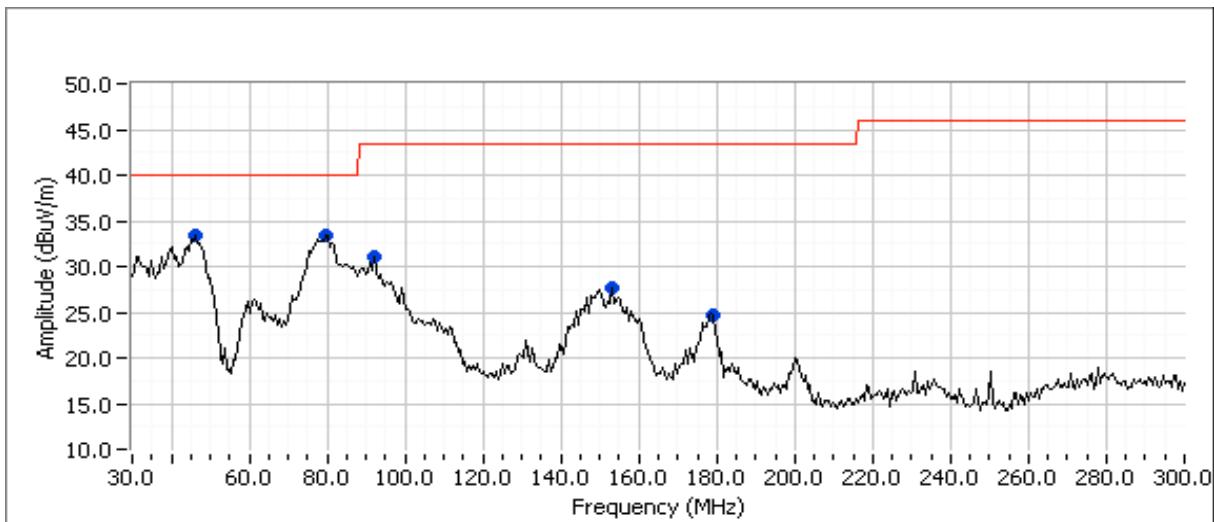
Test Engineer: Rafael Varelas

EUT Voltage: 120V/60Hz

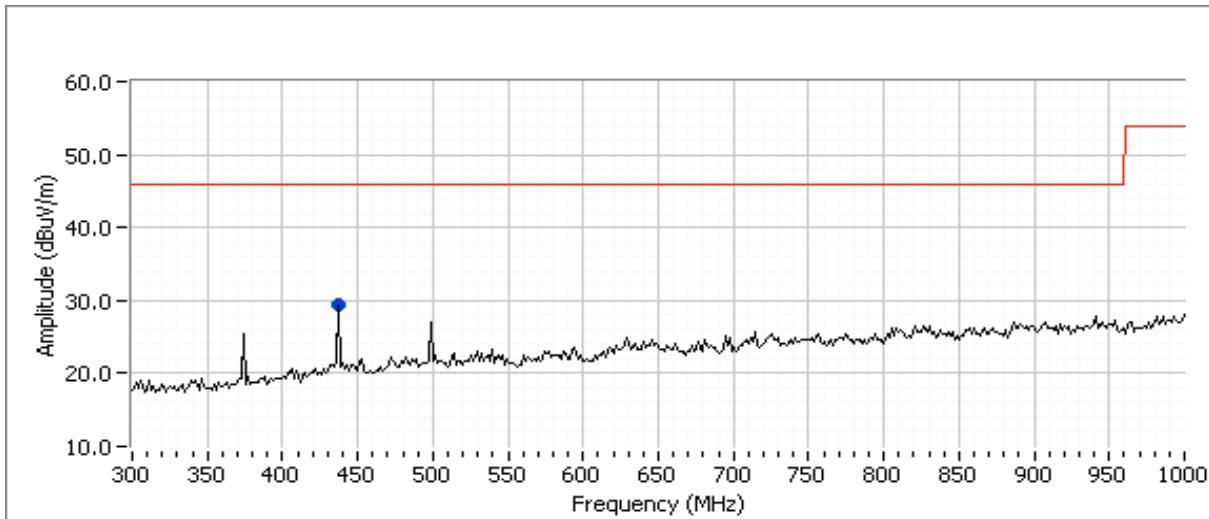
Run #1b: Center Channel

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

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



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



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

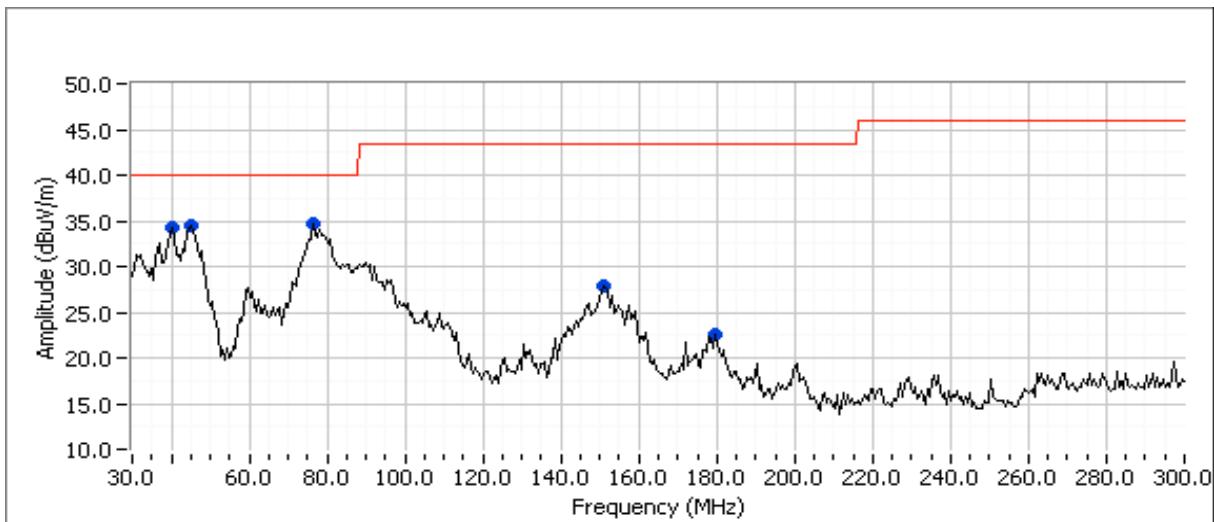
Test Engineer: Rafael Varelas

EUT Voltage: 120V/60Hz

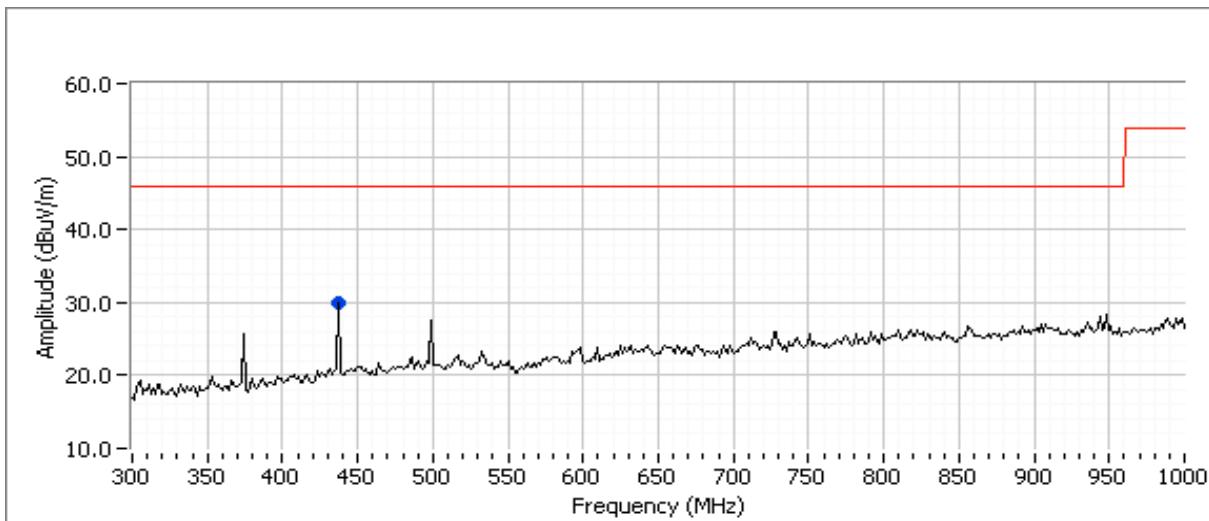
Run #2a: Center Channel

 Channel: 157 Mode: a
 Tx Chain: 3Tx Data Rate: 6

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



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





EMC Test Data

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

Conducted Emissions

(NTS Silicon Valley, Fremont Facility, Semi-Anechoic Chamber)

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.

Date of Test: 12/9/2015 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: None
Test Location: FT Chamber #5 EUT Voltage: 120V/60Hz

General Test Configuration

For tabletop equipment, the EUT was located on a wooden table inside the semi-anechoic chamber, 40 cm from a vertical coupling plane and 80cm from the LISN. Remote support equipment was located outside of the semi-anechoic chamber. Any cables running to remote support equipment were routed through metal conduit and when possible passed through a ferrite clamp upon exiting the chamber.

Ambient Conditions: Temperature: 22.4 °C
Rel. Humidity: 37 %

Summary of Results

| Run # | Test Performed | Limit | Result | Margin |
|-------|-------------------------|------------|--------|---|
| 1 | CE, AC Power, 120V/60Hz | FCC 15.207 | Pass | 35.6 dB μ V @ 0.207 MHz (-17.7 dB) |

Modifications Made During Testing

No modifications were made to the EUT during testing

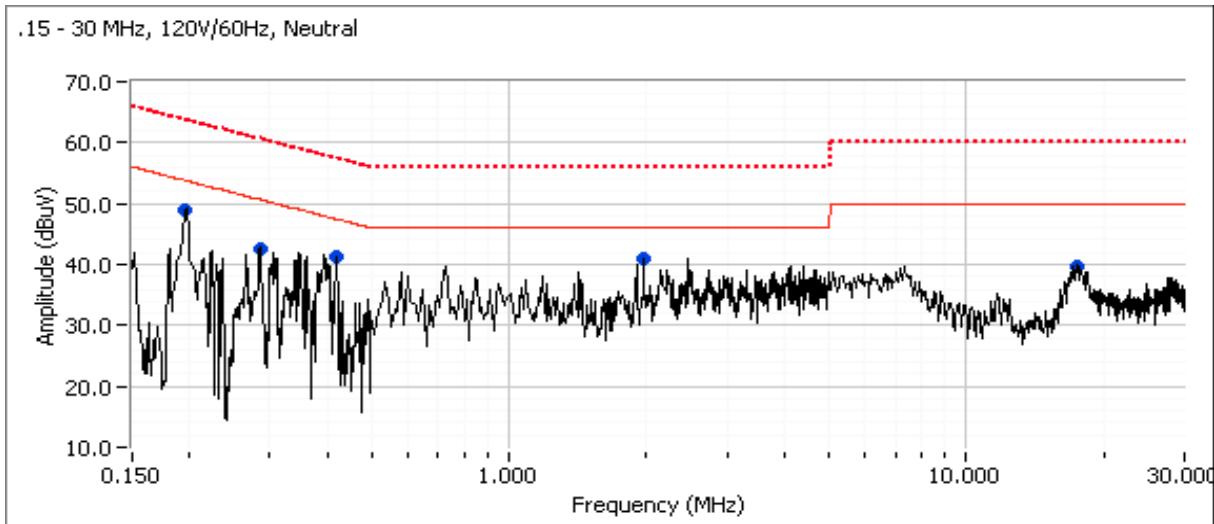
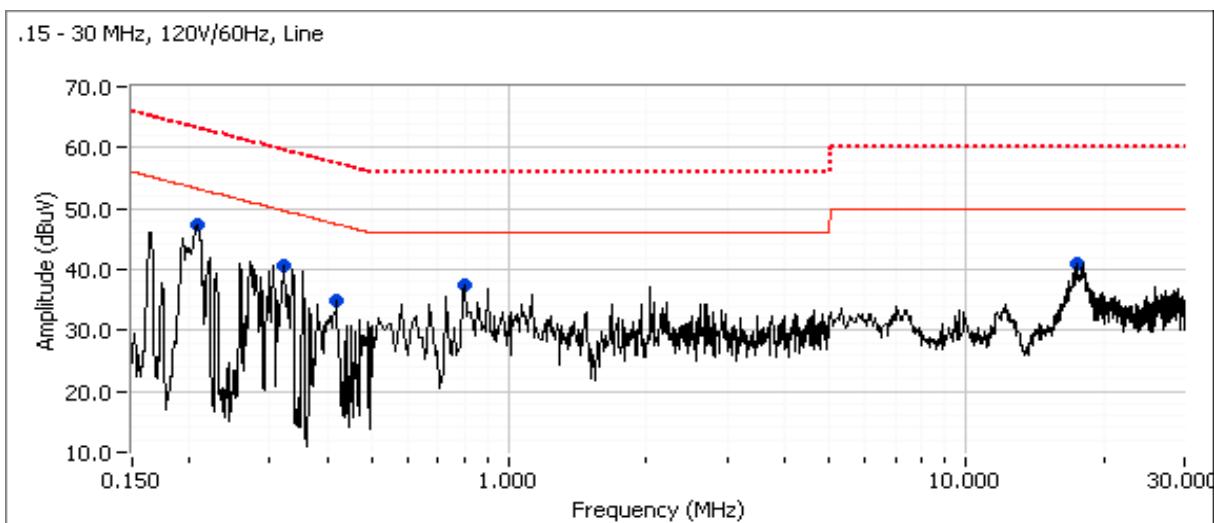
Deviations From The Standard

No deviations were made from the requirements of the standard.

EUT Operating Condition: EUT configured to continuous transmission on channel 6, mode/modulation: b, data rate: 5.5Mb

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

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz





EMC Test Data

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

Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

| Frequency MHz | Level dB μ V | AC Line | FCC 15.207 | | Detector QP/Ave | Comments |
|------------------|---------------------|------------|------------|-------|--------------------|----------|
| 0.207 | 47.3 | Line 1 | 53.3 | -6.0 | Peak | |
| 0.321 | 40.6 | Line 1 | 49.7 | -9.1 | Peak | |
| 0.420 | 35.0 | Line 1 | 47.4 | -12.4 | Peak | |
| 0.795 | 37.3 | Line 1 | 46.0 | -8.7 | Peak | |
| 17.453 | 40.9 | Line 1 | 50.0 | -9.1 | Peak | |
| 0.198 | 49.0 | Neutral | 53.8 | -4.8 | Peak | |
| 0.287 | 42.7 | Neutral | 50.6 | -7.9 | Peak | |
| 0.420 | 41.2 | Neutral | 47.4 | -6.2 | Peak | |
| 1.961 | 41.1 | Neutral | 46.0 | -4.9 | Peak | |
| 17.552 | 39.7 | Neutral | 50.0 | -10.3 | Peak | |

Final quasi-peak and average readings

| Frequency MHz | Level dB μ V | AC Line | FCC 15.207 | | Detector QP/Ave | Comments |
|------------------|---------------------|------------|------------|-------|--------------------|-------------|
| 0.207 | 35.6 | Line 1 | 53.3 | -17.7 | AVG | AVG (0.10s) |
| 0.207 | 43.8 | Line 1 | 63.3 | -19.5 | QP | QP (1.00s) |
| 0.321 | 25.4 | Line 1 | 49.7 | -24.3 | AVG | AVG (0.10s) |
| 0.321 | 36.8 | Line 1 | 59.7 | -22.9 | QP | QP (1.00s) |
| 0.795 | 18.3 | Line 1 | 46.0 | -27.7 | AVG | AVG (0.10s) |
| 0.795 | 32.5 | Line 1 | 56.0 | -23.5 | QP | QP (1.00s) |
| 0.198 | 34.7 | Neutral | 53.7 | -19.0 | AVG | AVG (0.10s) |
| 0.198 | 45.2 | Neutral | 63.7 | -18.5 | QP | QP (1.00s) |
| 0.287 | 21.4 | Neutral | 50.6 | -29.2 | AVG | AVG (0.10s) |
| 0.287 | 39.6 | Neutral | 60.6 | -21.0 | QP | QP (1.00s) |
| 0.420 | 27.3 | Neutral | 47.4 | -20.1 | AVG | AVG (0.10s) |
| 0.420 | 38.8 | Neutral | 57.4 | -18.6 | QP | QP (1.00s) |
| 1.961 | 25.3 | Neutral | 46.0 | -20.7 | AVG | AVG (0.10s) |
| 1.961 | 35.5 | Neutral | 56.0 | -20.5 | QP | QP (1.00s) |



End of Report

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