



Test report No:  
 NIE: 52440REM.003

## Test report

FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-15 Edition),  
 Secs. 15.107, 15.109 and Subpart C (10-1-15 Edition) Secs. 15.207  
 &  
 ICES-003 ISSUE 6 (2016)

<b>Identification of item tested</b> .....	Gateway
<b>Trademark</b> .....	Ericsson
<b>Model and/or type reference</b> .....	Gateway 5780
<b>Other identification of the product</b> .....	FCC ID: VV7-IOTGW5780W IC: 287AG-IOTGW5780W
<b>Final HW version</b> .....	R1B
<b>Final SW version</b> .....	R1A
<b>Features</b> .....	LoRaWAN Spec. 1.0.2 class A, B and C GNSS: GLONASS and GPS Tamper proof: Secure Boot by HW Secure Backhaul: IPSEC over Ethernet or 3GPP Auto recovery, Watchdog and heartbeat SNMP/MIB OSS interface Geolocation via RSSI Dynamic network tuning via band scanning
<b>Manufacturer</b> .....	ERICSSON AB Lindholmspiren, 11. S-417 56. Göteborg. Sweden.
<b>Test method requested, standard</b> .....	FCC CFR 47, Part 15, Subpart B (10-1-15 Edition), Secs. 15.107, 15.109 and Subpart C (10-1-15 Edition) Secs. 15.207 & ICES-003 Issue 6 (2016)
<b>Summary</b> .....	IN COMPLIANCE
<b>Approved by (name / position &amp; signature)</b> .....	Rafael López EMC Lab Manager
<b>Date of issue</b> .....	2017-03-02
<b>Report template No.</b> .....	FDT08_18

## Index

Competences and guarantees.....	3
General conditions.....	3
Usage of samples.....	4
Test sample description.....	4
Identification of the client.....	5
Testing period.....	5
Environmental conditions.....	6
Remarks and comments.....	7
Testing verdicts (Legend).....	7
List of equipment used during the test.....	7
Appendix A – Test result.....	8

## Competences and guarantees

AT4 wireless is a testing laboratory accredited by the National Accreditation Body (ENAC -Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

In order to assure the traceability to other national and international laboratories, AT4 wireless has a calibration and maintenance program for its measurement equipment.

AT4 wireless guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at AT4 wireless at the time of performance of the test.

AT4 wireless is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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## General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of AT4 wireless.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of AT4 wireless and the Accreditation Bodies.

## Uncertainty

Uncertainty (factor  $k=2$ ) was calculated according to the AT4 wireless internal document PODT000.

## Usage of samples

Samples under test have been selected by: The Client.

Sample S/01 is composed of the following elements:

Control N°	Description	Model	Serial number	Reception date
52440C/002	Gateway	Gateway 5780	C37170209E	2017-02-08
50459F/005	Surge arrestor device	---	---	2016-11-09
		80010847		
50459F/007	Dual-Band Omni Antenna	(Ericsson number KRE 101 2233/1)	I0J4277665	2016-11-09
50459F/008	Dual-Band Omni Antenna	80010847	I0J4277817	2016-11-10
		GPS-36-N-SA		
50459F/030	GPS Antenna	(Ericsson number KRE 101 2182/1)	---	2016-11-14
50459F/020	Connection cable	---	---	2016-11-09
50459F/038	Jumper cables	---	---	2016-11-15
50459F/039	Jumper cables	---	---	2016-11-15
50459F/044	Ethernet cable (SFTP)	---	---	2016-12-09

Sample S/02 is composed of the following elements:

Control N°	Description	Model	Serial number	Reception date
52440C/002	Gateway	Gateway 5780	C37170209E	2017-02-08
50459F/005	Surge arrestor device	---	---	2016-11-09
50459F/007	Dual-Band Omni Antenna	80010847	I0J4277665	2016-11-09
		736347		
50459F/028	VPOI Omni Antenna	(Ericsson number KRE 101 1399/1)	I0J4204781	2016-11-10
50459F/030	GPS Antenna	GPS-36-N-SA (Ericsson number KRE 101 2182/1)	---	2016-11-14
50459F/016	Connection cable	---	---	2016-11-09
50459F/038	Jumper cables	---	---	2016-11-15
50459F/039	Jumper cables	---	---	2016-11-15
50459F/044	Ethernet cable (SFTP)	---	---	2016-12-09

Auxiliary equipment used with S/01 & S/02: USB cable

## Test sample description

The Gateway 5780 is a communications gateway providing connectivity to low power devices in unlicensed spectrum with an Ethernet or cellular backhaul.

## Identification of the client

ERICSSON AB  
Lindholmspiren 11,  
41756 Göteborg,  
Sweden.

## Testing period

The performed test started on 2017-02-12 and finished on 2017-02-13.  
The tests have been performed at AT4 wireless.

## Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

<b>Temperature</b>	Min. = 15 °C Max. = 35 °C
<b>Relative humidity</b>	Min. = 30 % Max. = 75 %
<b>Air pressure</b>	Min. = 860 mbar Max. = 1060 mbar

In the semianechoic chamber, the following limits were not exceeded during the test.

<b>Temperature</b>	Min. = 15 °C Max. = 35 °C
<b>Relative humidity</b>	Min. = 30 % Max. = 75 %
<b>Air pressure</b>	Min. = 860 mbar Max. = 1060 mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

<b>Temperature</b>	Min. = 15 °C Max. = 35 °C
<b>Relative humidity</b>	Min. = 30 % Max. = 60 %
<b>Air pressure</b>	Min. = 860 mbar Max. = 1060 mbar

## Remarks and comments

The tests have been performed by the technical personnel: Víctor Acedo, Alberto Parada & Antonio Ruiz.

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 30 MHz to 1000 MHz is  $I = \pm 4,9$  dB for quasi-peak measurements,  $I = \pm 4,6$  dB for peak measurements ( $k = 2$ )

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 1000 MHz to 26GHz is  $I = \pm 2,6$  dB for peaks and average measurements ( $k = 2$ )

## Testing verdicts (Legend)

Not applicable .....	N/A
Pass .....	P
Fail .....	F
Not measured .....	N/M

### List of equipment used during the test

CONTROL NUMBER	DESCRIPTION	MANUFACTURER	MODEL	LAST CALIBRATION	NEXT CALIBRATION
2942	EMI TEST Receiver	ROHDE & SCHWARZ	ESU40	2016-06-14	2017-10-09
4578	Bilog Antenna	ETS LINDGREN	3142E	2014-03-17	2017-03-17
4658	Preamplifier	SCHWARZBECK	BBV9743	2016-04-28	2017-04-28
4612	Horn Antenna	SCHWARZBECK	BBHA 9120 D	2016-12-19	2019-12-19
3783	Preamplifier	BONN ELEKTRONIK	BLMA 0118-3A	2016-05-03	2017-05-03
4656	Horn Antenna	SCHWARZBECK	BBHA 9170	2014-03-28	2017-03-28
1975	Preamplifier	MITEQ	JS4-12002600-30-5A	2015-10-06	2017-10-06
4570	Thermohigrometer	HW GROUP	HWg-STE	2016-04-28	2017-04-28
4567	Thermohigrometer	HW GROUP	HWg-STE	2016-04-28	2017-04-28

## Appendix A – Test result



## APPENDIX A CONTENT

DESCRIPTION OF THE OPERATION MODES.....	10
RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE .....	11
CONTINUOUS CONDUCTED EMISSION.....	33

## DESCRIPTION OF THE OPERATION MODES

The operation modes described in this paragraph constitute a functionality of the sample under test for itself. Every operation mode takes a failure criteria for the immunity test that they were applying to it and a monitoring to guarantee performance of the same ones.

The operation modes used by the samples to which the present report refers, are shown in the following table:

OPERATION MODE	DESCRIPTION
OM#01	EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port. Power supply: 36Vdc.
OM#02	EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port Power supply via POE: 50Vdc.
OM#03	EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout USB port. Power supply: 36Vdc by an auxiliary AC/DC power adapter (110 Vac) (Manufacturer: Ericson; Model: PSU AC10)
OM#04	EUT ON. Lora Tx mode. Cellular communications Tx mode. GNSS Rx mode Data transmission with an auxiliary laptop throughout USB port. Power supply: 36Vdc by an auxiliary AC/DC power adapter (110 Vac) (Manufacturer: Ericson; Model: PSU AC10)

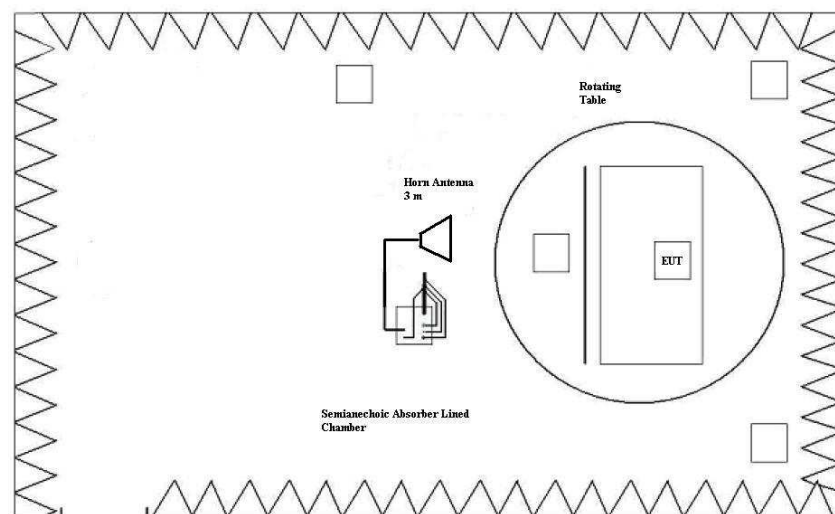
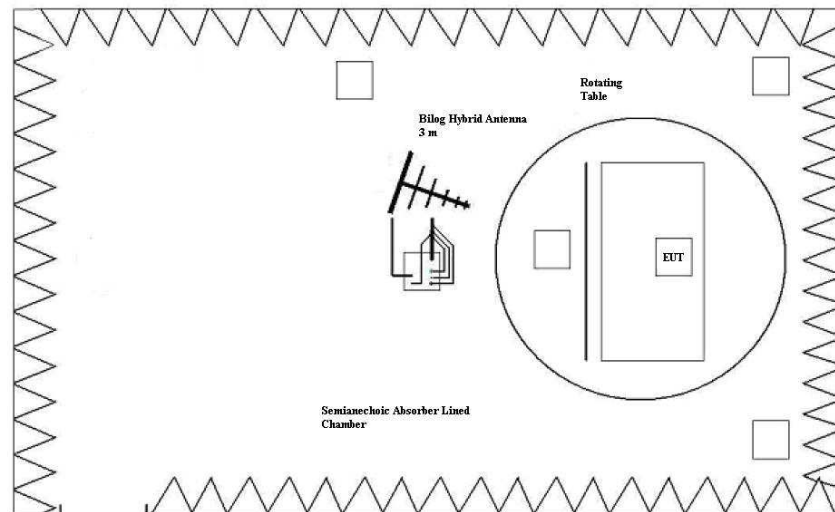
## RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE

<b>LIMITS:</b>	Product standard:	FCC CFR 47, Part 15, Subpart B (10-1-15 Edition), Secs. 15.107, 15.109 and Subpart C (10-1-15 Edition) Secs. 15.207 & ICES-003 Issue 6 (2016)
	Test standard:	FCC CFR 47, Part 15, Subpart B (10-1-15 Edition), Secs. 15.107, 15.109 and Subpart C (10-1-15 Edition) Secs. 15.207 & ICES-003 Issue 6 (2016)

### Limits of interference Class B

The applied limit for radiated emissions, 3 m distance, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-01-15 Edition), Secs. 15.107, 15.109 and Subpart C (10-1-15 Edition) Secs. 15.207 & ICES-003 Issue 6 (2016) in the frequency range 30 MHz to 26 GHz for class B equipments.

Frequency range (MHz)	QP Limit for 3 m ( $\mu\text{V}/\text{m}$ )	QP Limit for 10 m ( $\text{dB}\mu\text{V}/\text{m}$ )
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46
Above 960	500	54



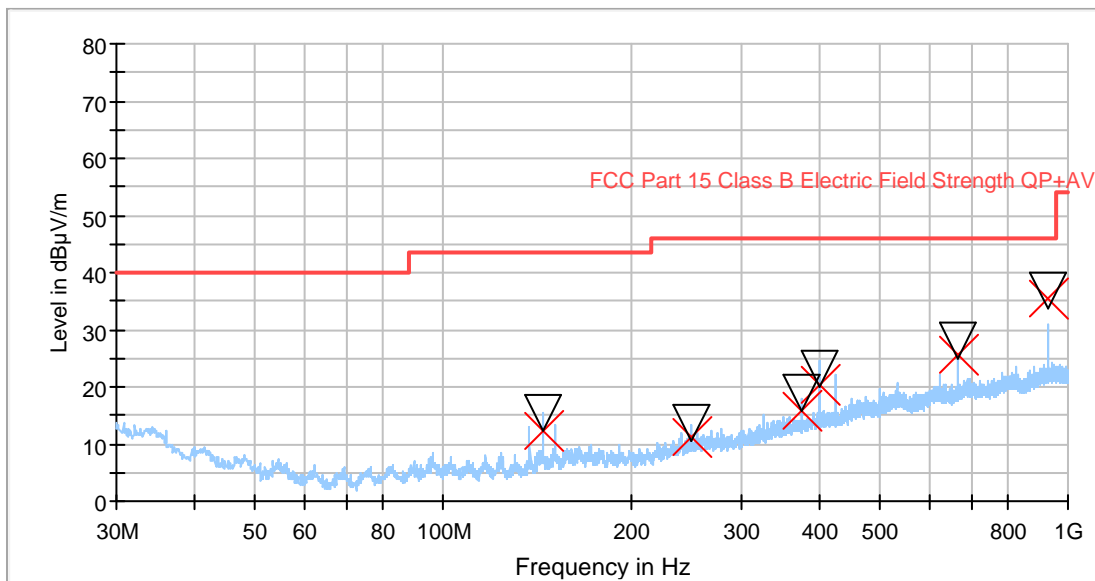
<b>TESTED SAMPLES:</b>	S/01 & S/02
<b>TESTED OPERATION MODES:</b>	OM#01 & OM#02
<b>TEST RESULTS:</b>	CRmmnnRRPP: CR, Radiation Condition; mm: Sample number; nn: Operation mode; RR: Range; PP: Polarization.

CRmmnnRRPP	Description	Result
CR0101LR	Range: 30 MHz - 1000 MHz.	P
CR0101HR1_PH	Range: 1 GHz - 18 GHz. Horizontal Polarization.	P
CR0101HR1_PV	Range: 1 GHz - 18 GHz. Vertical Polarization.	P
CR0101HR2_PH	Range: 18 GHz - 26 GHz. Horizontal Polarization.	P
CR0101HR2_PV	Range: 18 GHz - 26 GHz. Vertical Polarization.	P
CR0102LR	Range: 30 MHz - 1000 MHz.	P
CR0102HR1_PH	Range: 1 GHz - 18 GHz. Horizontal Polarization.	P
CR0102HR1_PV	Range: 1 GHz - 18 GHz. Vertical Polarization.	P
CR0102HR2_PH	Range: 18 GHz - 26 GHz. Horizontal Polarization.	P
CR0102HR2_PV	Range: 18 GHz - 26 GHz. Vertical Polarization.	P
CR0201LR	Range: 30 MHz - 1000 MHz.	P
CR0201HR1_PH	Range: 1 GHz - 18 GHz. Horizontal Polarization.	P
CR0201HR1_PV	Range: 1 GHz - 18 GHz. Vertical Polarization.	P
CR0201HR2_PH	Range: 18 GHz - 26 GHz. Horizontal Polarization.	P
CR0201HR2_PV	Range: 18 GHz - 26 GHz. Vertical Polarization.	P
CR0202LR	Range: 30 MHz - 1000 MHz.	P
CR0202HR1_PH	Range: 1 GHz - 18 GHz. Horizontal Polarization.	P
CR0202HR1_PV	Range: 1 GHz - 18 GHz. Vertical Polarization.	P
CR0202HR2_PH	Range: 18 GHz - 26 GHz. Horizontal Polarization.	P
CR0202HR2_PV	Range: 18 GHz - 26 GHz. Vertical Polarization.	P

**Radiated Emission. CR0101LR**

Project: 52440REM.003  
 Company: ERICSSON AB  
 Sample: S/01  
 Operation mode: OM#01  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port. Power supply: 36Vdc

Full Spectrum



- Peak Scan
- FCC Part 15 Class B Electric Field Strength QP+AV
- × QuasiPeak
- ▽ MaxPeak

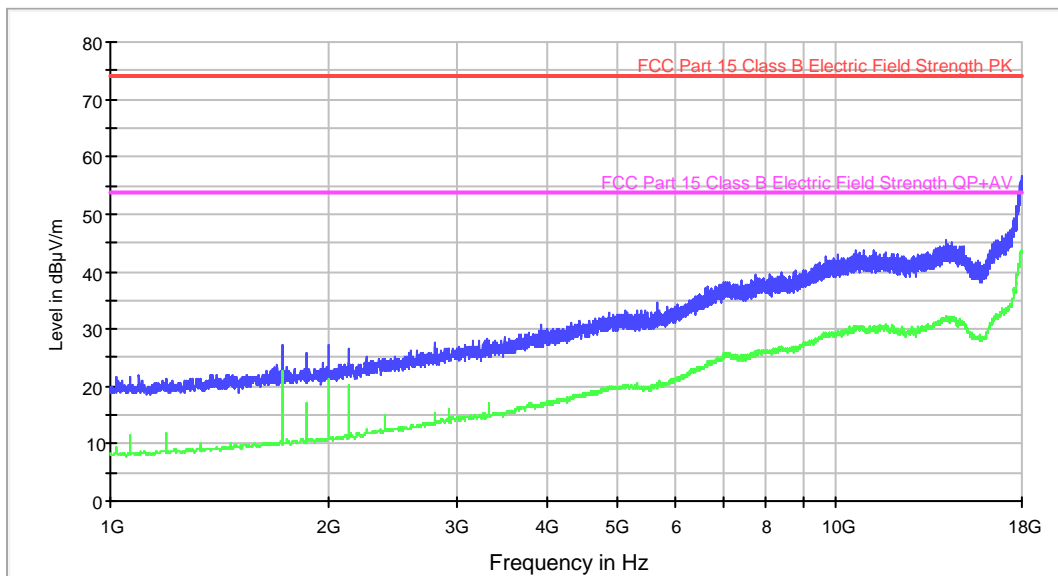
**Maximizations**

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Height (cm)	Pol	Azimuth (deg)
144.309091	12.34	15.30	135.0	V	1.0
250.012987	11.15	13.54	135.0	V	339.0
375.071429	15.87	19.06	135.0	V	339.0
399.025974	20.48	23.07	147.0	V	157.0
665.012987	25.53	27.96	147.0	H	58.0
931.019481	35.34	36.87	135.0	V	339.0

**Radiated Emission. CR0101HR1\_PH**

Project: 52440REM.003  
 Company: ERICSSON AB  
 Sample: S/01  
 Operation mode: OM#01  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port. Power supply: 36Vdc. Horizontal Polarization

**ER EMI FCC 15 Class B (1-18GHz)**



— Peak Scan  
 — Average Scan  
 — FCC Part 15 Class B Electric Field Strength PK  
 — FCC Part 15 Class B Electric Field Strength QP+AV

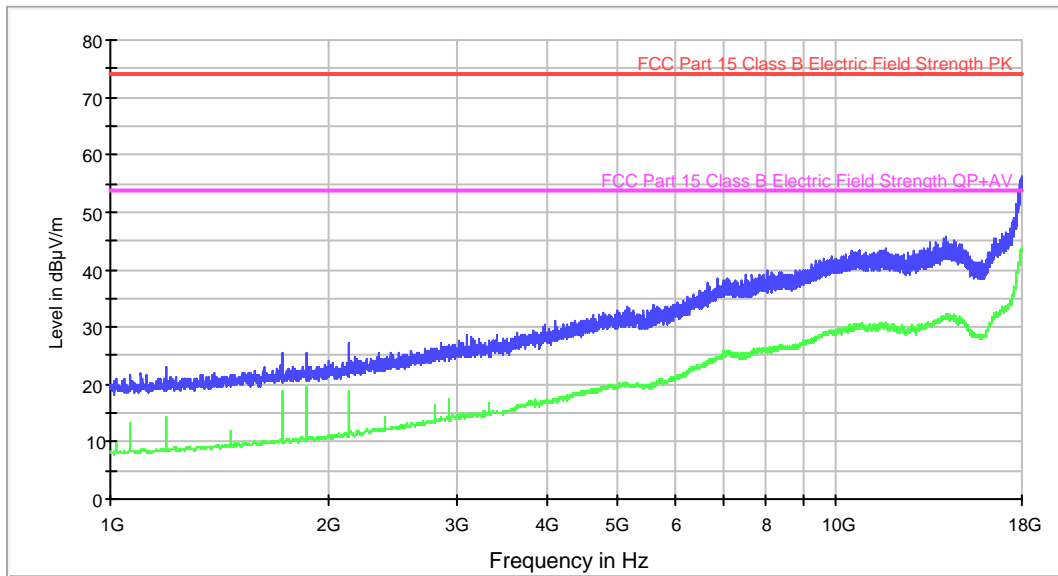
**Subrange Maxima**

Frequency (MHz)	MaxPeak-ClearWrite (dBµV/m)	Average-ClearWrite (dBµV/m)
1537.000000	22.1	9.9
1995.000000	27.3	21.3
3924.000000	30.9	17.0
6645.000000	37.5	24.1
10656.000000	43.6	30.3
17996.000000	56.7	43.7

## Radiated Emission. CR0101HR1\_PV

Project: 52440REM.003  
 Company: ERICSSON AB  
 Sample: S/01  
 Operation mode: OM#01  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port. Power supply: 36Vdc. Vertical Polarization

### ER EMI FCC 15 Class B (1-18GHz)



— Peak Scan  
 — Average Scan  
 — FCC Part 15 Class B Electric Field Strength PK  
 — FCC Part 15 Class B Electric Field Strength QP+AV

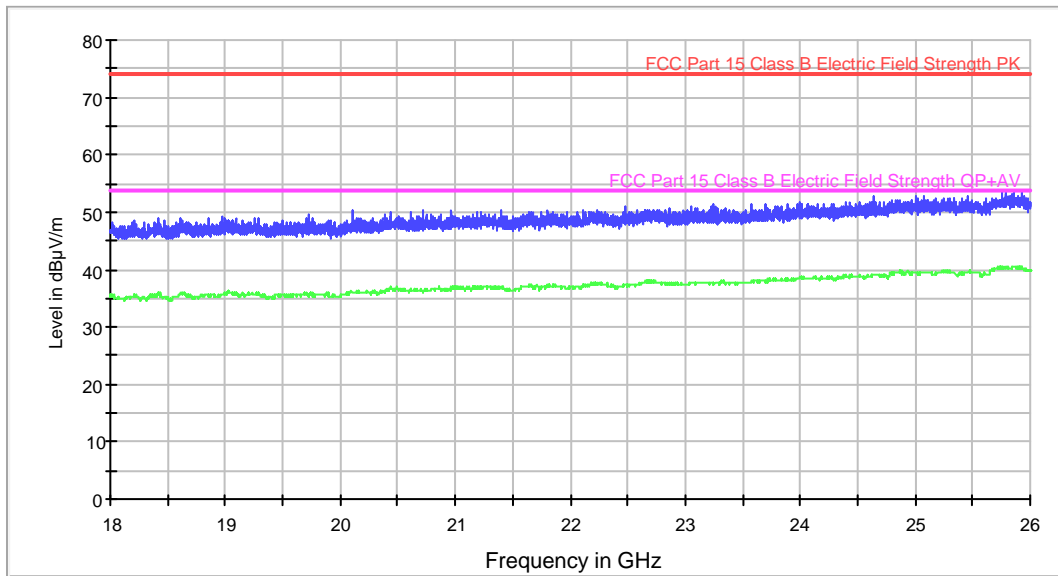
### Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV/m)	Average-ClearWrite (dBµV/m)
1197.000000	23.0	14.4
2128.000000	27.1	19.0
4092.000000	31.2	17.3
6846.000000	38.3	24.7
10758.000000	43.4	30.1
17963.000000	56.3	43.5

## Radiated Emission. CR0101HR2\_PH

Project: 52440REM.003  
Company: ERICSSON AB  
Sample: S/01  
Operation mode: OM#01  
Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port. Power supply: 36Vdc. Horizontal Polarization

### ER EMI FCC 15 Class B(18-26GHz)



— MaxPeak Scan  
— FCC Part 15 Class B Electric Field Strength PK  
— Average Scan  
— FCC Part 15 Class B Electric Field Strength QP+AV

### Subrange Maxima

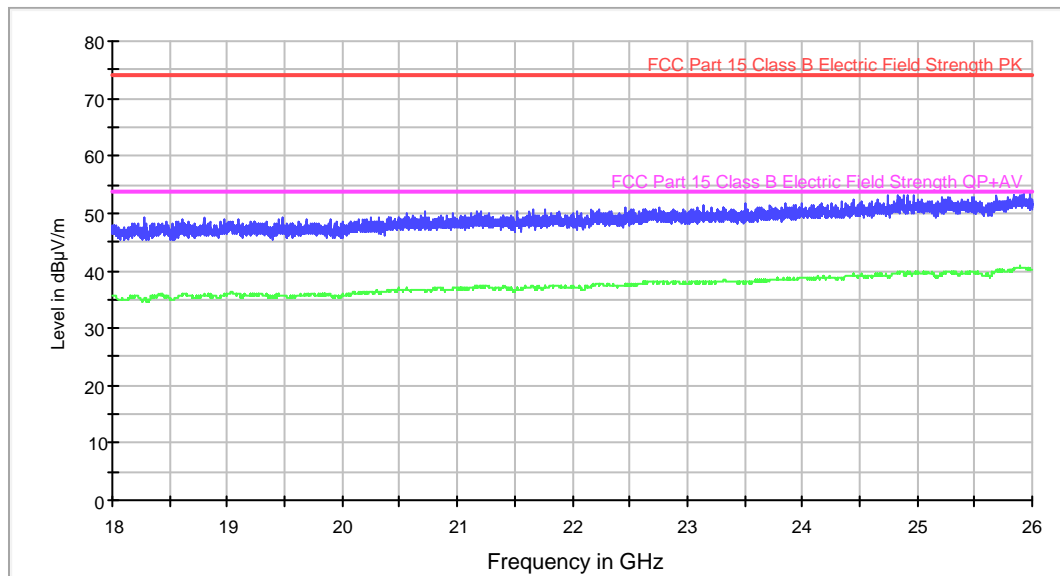
Frequency (MHz)	MaxPeak-ClearWrite (dBµV/m)	Average-ClearWrite (dBµV/m)
18968.000000	49.3	35.7
20104.000000	50.2	36.1
20971.000000	50.3	36.8
22479.000000	51.0	37.4
23989.000000	51.7	38.5
25867.000000	53.5	40.4



## Radiated Emission. CR0101HR2\_PV

Project: 52440REM.003  
 Company: ERICSSON AB  
 Sample: S/01  
 Operation mode: OM#01  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port. Power supply: 36Vdc. Vertical Polarization

### ER EMI FCC 15 Class B(18-26GHz)



— Peak Scan  
 — Average Scan  
 — FCC Part 15 Class B Electric Field Strength PK  
 — FCC Part 15 Class B Electric Field Strength QP+AV

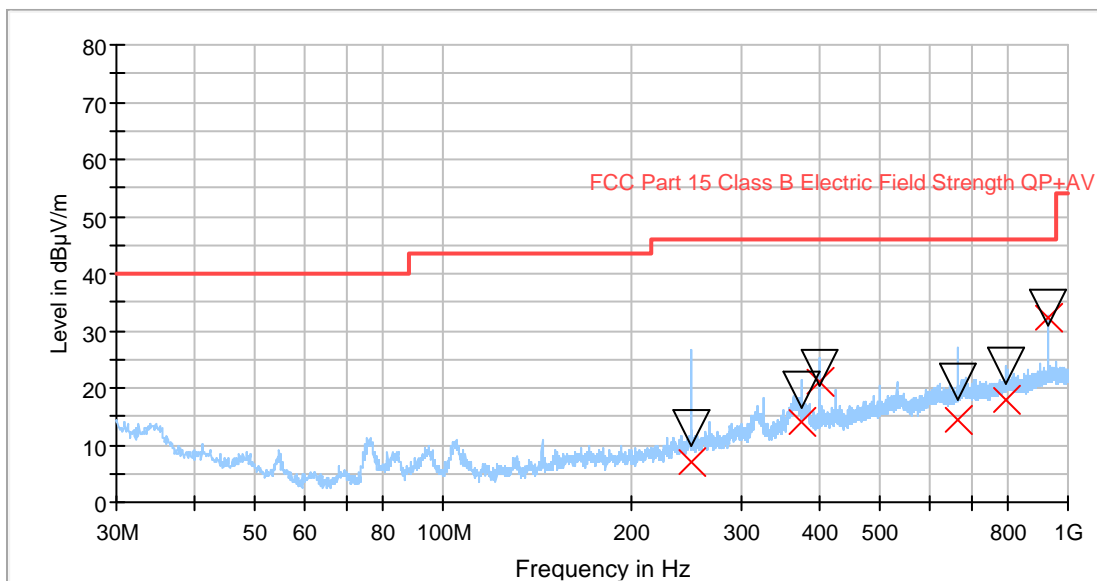
### Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV/m)	Average-ClearWrite (dBµV/m)
18281.000000	49.3	35.2
20311.000000	49.3	36.2
21170.000000	50.4	37.1
22763.000000	51.0	38.0
24445.000000	52.5	39.3
25978.000000	53.6	40.2

## Radiated Emission. CR0102LR

Project: 52440Brem003  
 Company: ERICSSON AB  
 Sample: S/01  
 Operation mode: OM#02  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port Power supply via POE: 50Vdc.

Full Spectrum



- Preview Result 1-PK+
- FCC Part 15 Class B Electric Field Strength QP+AV
- X QuasiPeak-QPK
- ▽ MaxPeak-PK+

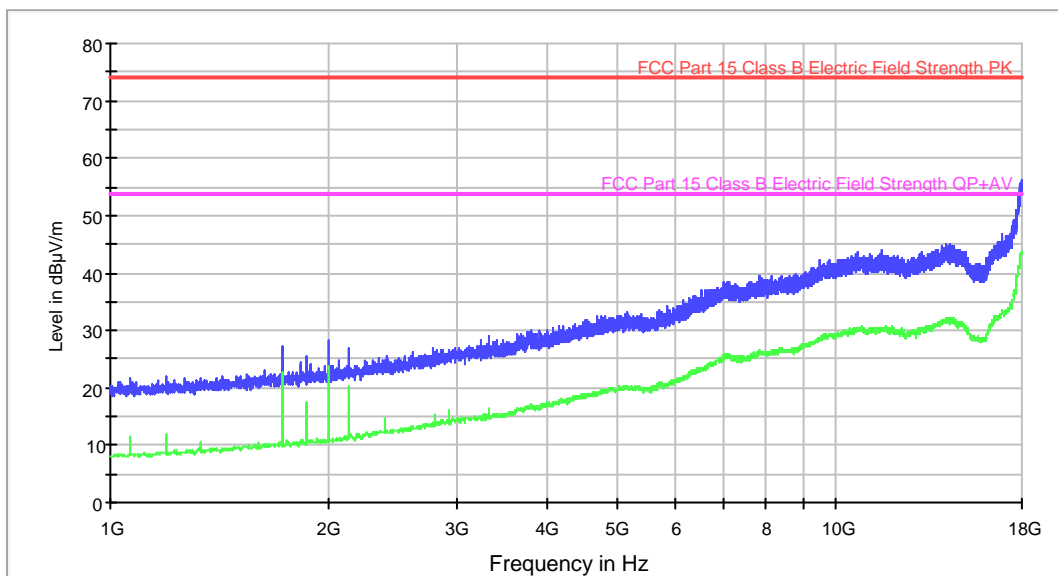
## Maximizations

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Height (cm)	Pol	Azimuth (deg)
250.012987	7.06	13.12	119.0	V	126.0
375.071429	14.13	19.73	131.0	V	228.0
399.019481	21.10	23.57	142.0	V	229.0
665.012987	14.53	20.99	270.0	H	176.0
798.032468	17.76	23.71	224.0	V	194.0
931.025974	32.41	34.14	148.0	V	1.0

## Radiated Emission. CR0102HR1\_PH

Project: 52440REM.003  
 Company: ERICSSON AB  
 Sample: S/01  
 Operation mode: OM#02  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port Power supply via POE: 50Vdc. Horizontal Polarization

### ER EMI FCC 15 Class B (1-18GHz)



— Peak Scan  
 — Average  
 — FCC Part 15 Class B Electric Field Strength PK  
 — FCC Part 15 Class B Electric Field Strength QP+AV

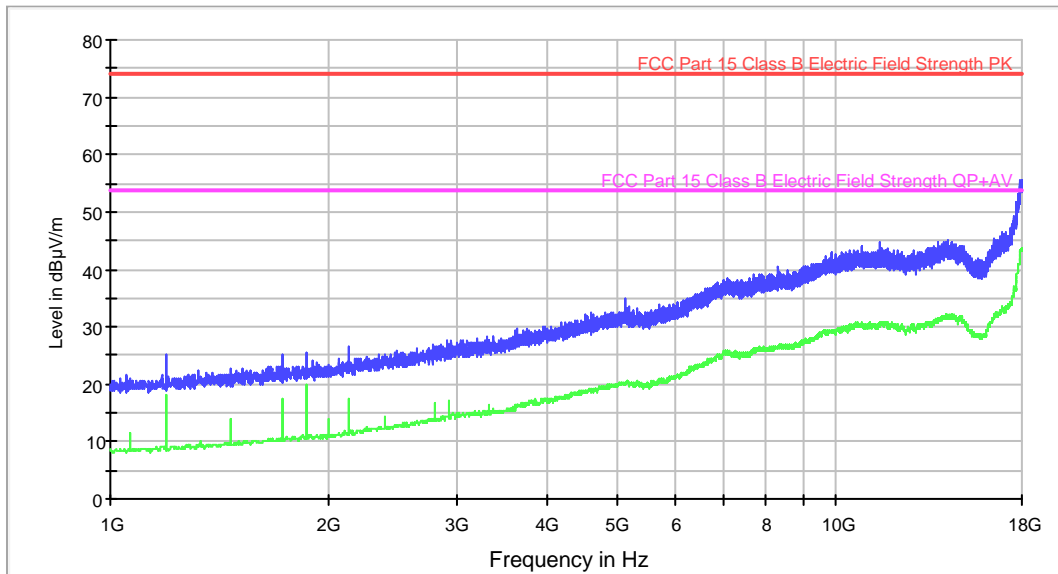
### Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV/m)	Average-ClearWrite (dBµV/m)
1545.000000	22.3	9.6
1995.000000	28.4	23.9
4141.000000	30.8	17.3
6850.000000	37.5	25.0
10701.000000	43.5	30.1
17973.000000	56.4	43.5

**Radiated Emission. CR0102HR1\_PV**

Project: 52440REM.003  
 Company: ERICSSON AB  
 Sample: S/01  
 Operation mode: OM#02  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port Power supply via POE: 50Vdc). Vertical Polarization

**ER EMI FCC 15 Class B (1-18GHz)**



— Peak Scan  
 — Average Scan  
 — FCC Part 15 Class B Electric Field Strength PK  
 — FCC Part 15 Class B Electric Field Strength QP+AV

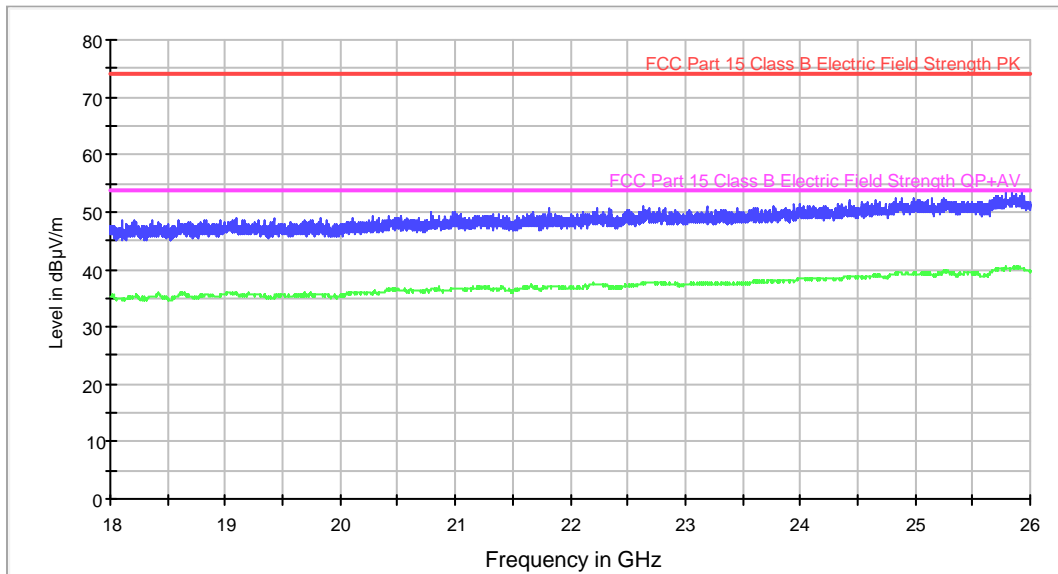
**Subrange Maxima**

Frequency (MHz)	MaxPeak-ClearWrite (dBµV/m)	Average-ClearWrite (dBµV/m)
1197.000000	25.0	18.2
2128.000000	26.4	17.4
4235.000000	30.9	17.8
6855.000000	37.8	25.0
10838.000000	44.1	30.3
17952.000000	55.6	43.5

## Radiated Emission. CR0102HR2\_PH

Project: 52440REM.003  
 Company: ERICSSON AB  
 Sample: S/01  
 Operation mode: OM#02  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port Power supply via POE: 50Vdc Horizontal Polarization

### ER EMI FCC 15 Class B(18-26GHz)



— Peak Scan  
 — Average Scan  
 — FCC Part 15 Class B Electric Field Strength PK  
 — FCC Part 15 Class B Electric Field Strength QP+AV

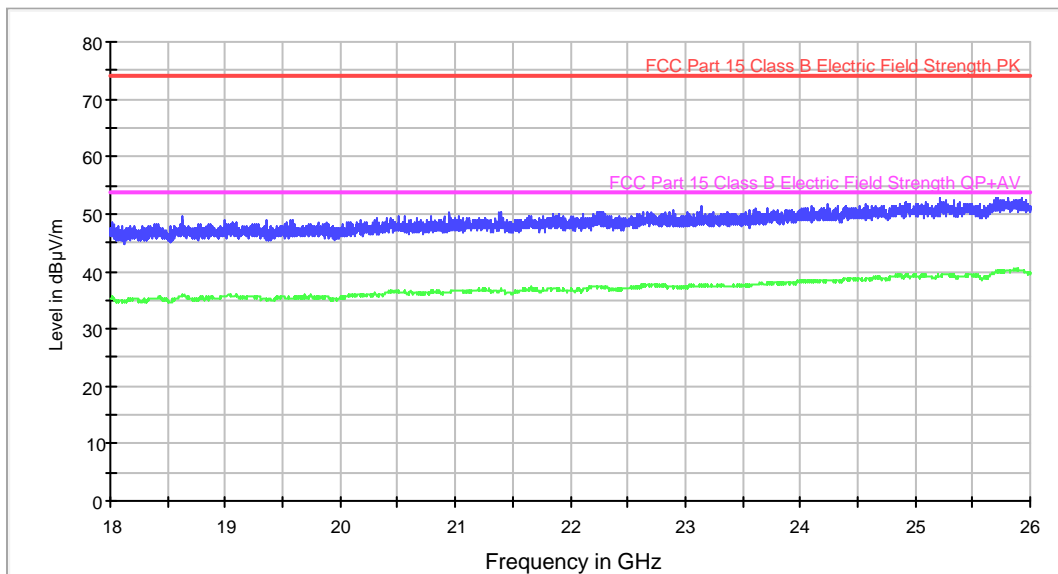
### Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV/m)	Average-ClearWrite (dBµV/m)
19097.000000	48.8	35.8
20283.000000	49.3	36.0
20790.000000	49.9	36.6
22638.000000	51.1	37.6
24433.000000	52.1	38.7
25932.000000	53.5	40.1

## Radiated Emission. CR0102HR2\_PV

Project: 52440REM.003  
 Company: ERICSSON AB  
 Sample: S/01  
 Operation mode: OM#02  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port Power supply via POE: 50Vdc. Vertical Polarization.

### ER EMI FCC 15 Class B(18-26GHz)



— Peak Scan  
 — Average Scan  
 — FCC Part 15 Class B Electric Field Strength PK  
 — FCC Part 15 Class B Electric Field Strength QP+AV

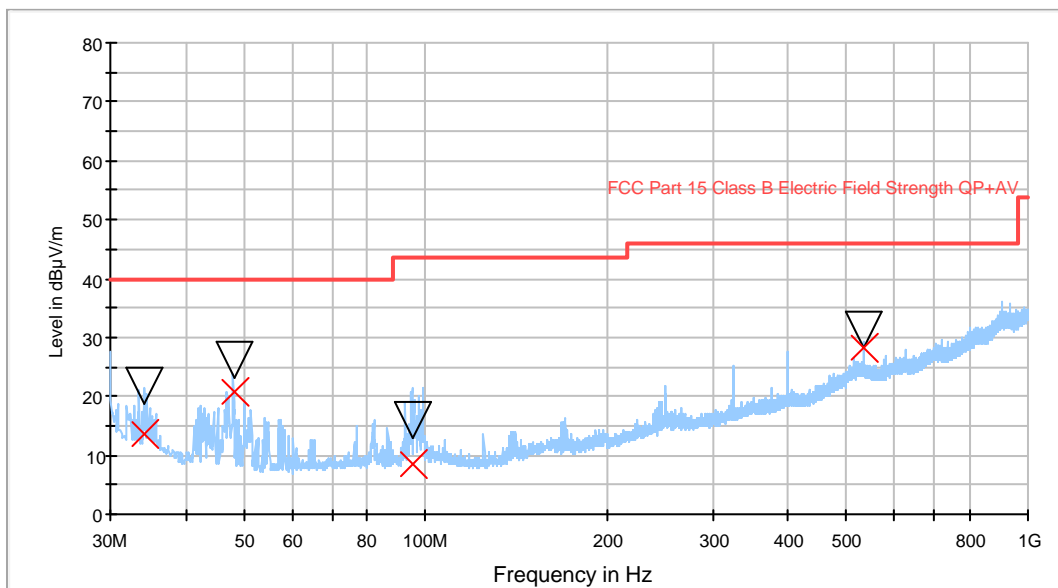
### Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV/m)	Average-ClearWrite (dBµV/m)
18625.000000	49.6	35.7
20323.000000	49.1	35.7
21393.000000	50.4	36.7
22898.000000	50.6	37.3
24241.000000	51.5	38.4
25708.000000	52.9	40.0

## Radiated Emission. CR0201LR

Project: 50459REM.003  
 Company: ERICSSON AB  
 Sample: S/02  
 Operation mode: OM#01  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port. Power supply: 36Vdc

## FCC class B



— FCC Part 15 Class B Electric Field Strength QP+AV  
 ▽ MaxPeak  
 — Peak Preview  
 × QuasiPeak

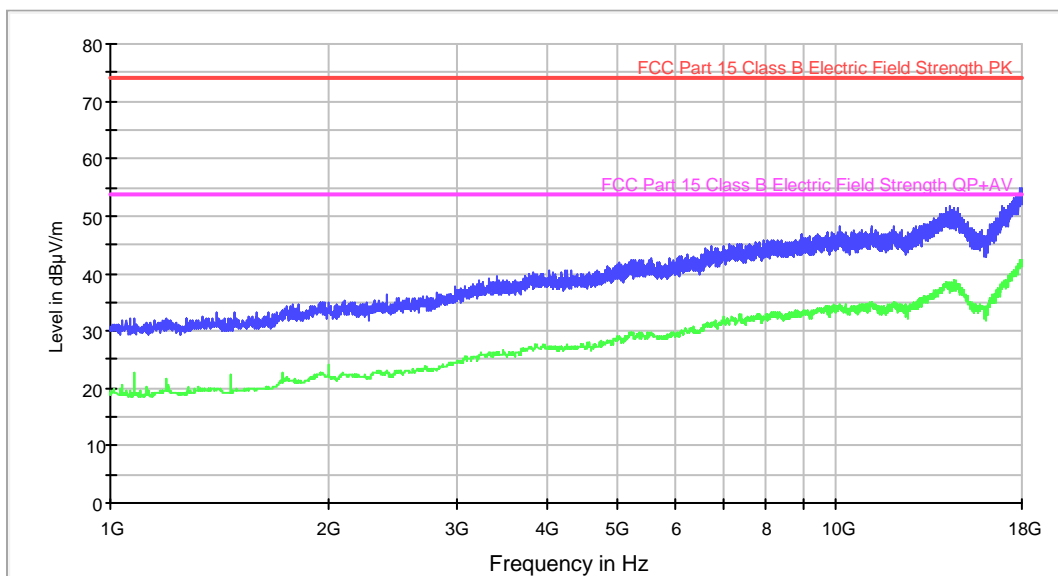
## Maximizations

Frequency (MHz)	MaxPeak (dBµV/m)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)
34.078557	21.9	13.6	120.0	V	101.0
48.205411	26.3	20.9	101.0	V	253.0
95.211423	16.0	8.5	110.0	V	86.0
531.992986	31.4	28.2	133.0	H	342.0

## Radiated Emission. CR0201HR1\_PH

Project: 52440REM.003  
 Company: ERICSSON AB  
 Sample: S/02  
 Operation mode: OM#01  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port. Power supply: 36Vdc. Horizontal Polarization.

### FCC 1-18GHz class B



— MaxPeak-ClearWrite-PK+      — Average-ClearWrite-AVG  
— FCC Part 15 Class B Electric Field Strength PK      — FCC Part 15 Class B Electric Field Strength QP+AV

### Subrange Maxima

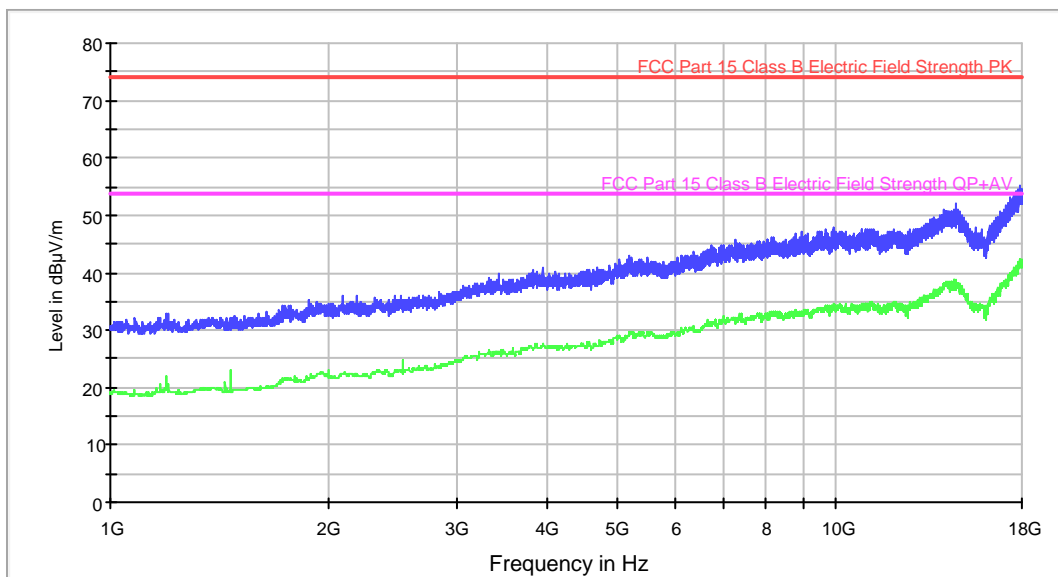
Frequency (MHz)	MaxPeak-ClearWrite (dBµV/m)	Average-ClearWrite (dBµV/m)
1403.000000	33.3	20.0
2407.000000	36.2	22.8
4232.000000	40.4	27.1
6741.000000	44.6	31.2
10076.000000	48.1	34.6
17979.000000	55.0	42.0



## Radiated Emission. CR0201HR1\_PV

Project: 52440REM.003  
 Company: ERICSSON AB  
 Sample: S/02  
 Operation mode: OM#01  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port. Power supply: 36Vdc. Vertical Polarization.

### FCC 1-18GHz class B



— MaxPeak-ClearWrite-PK+      — Average-ClearWrite-AVG  
— FCC Part 15 Class B Electric Field Strength PK      — FCC Part 15 Class B Electric Field Strength QP+AV

### Subrange Maxima

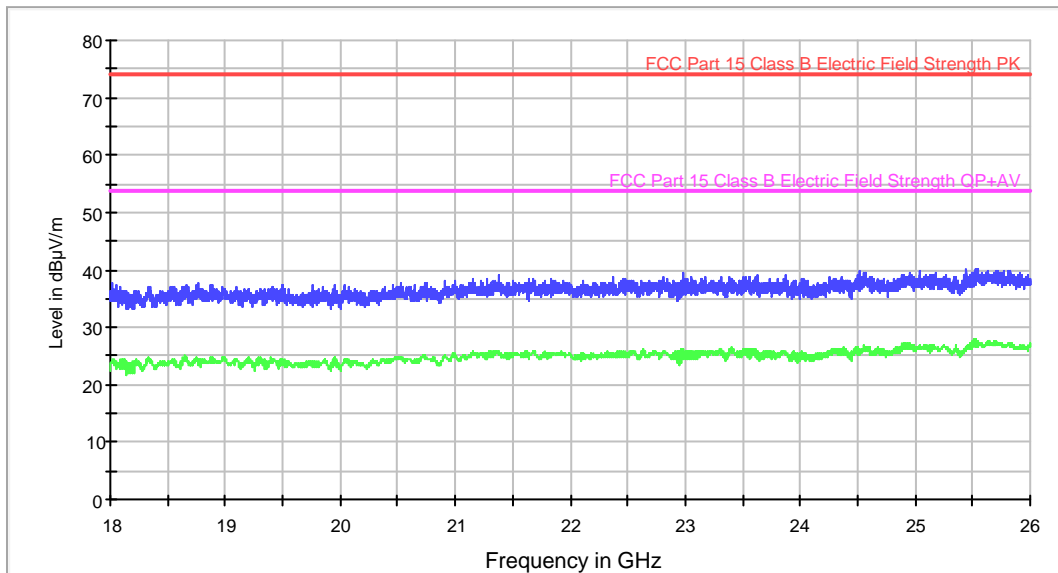
Frequency (MHz)	MaxPeak-ClearWrite (dBµV/m)	Average-ClearWrite (dBµV/m)
1200.000000	32.8	20.7
2509.000000	36.0	22.9
3932.000000	40.9	27.2
6714.000000	44.7	30.9
9897.000000	47.8	34.7
17869.000000	55.2	41.7



## Radiated Emission. CR0201HR2\_PV

Project: 50459REM.003  
 Company: ERICSSON AB  
 Sample: S/02  
 Operation mode: OM#01  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port. Power supply: 36Vdc. Horizontal Polarization.

### FCC 18-26GHz class B



— Peak Scan  
 — Average Scan  
 — FCC Part 15 Class B Electric Field Strength PK  
 — FCC Part 15 Class B Electric Field Strength QP+AV

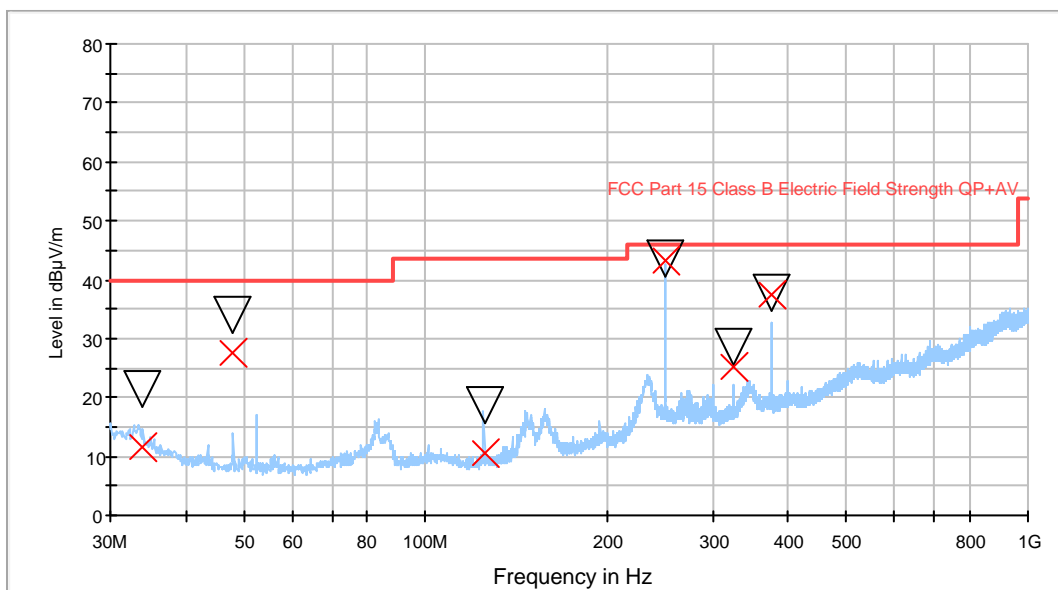
### Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV/m)	Average-ClearWrite (dBµV/m)
18765.000000	37.7	24.5
20044.000000	37.5	24.3
21379.000000	39.0	25.7
22990.000000	39.6	26.1
23867.000000	39.0	25.8
25528.000000	40.2	27.6

## Radiated Emission. CR0202LR

Project: 52440REM.003  
 Company: ERICSSON AB  
 Sample: S/02  
 Operation mode: OM#02  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port Power supply via POE: 50Vdc.

### FCC class B



— FCC Part 15 Class B Electric Field Strength QP+AV  
— Preview Result 1-PK+ QuasiPeak  
▽ MaxPeak × QuasiPeak

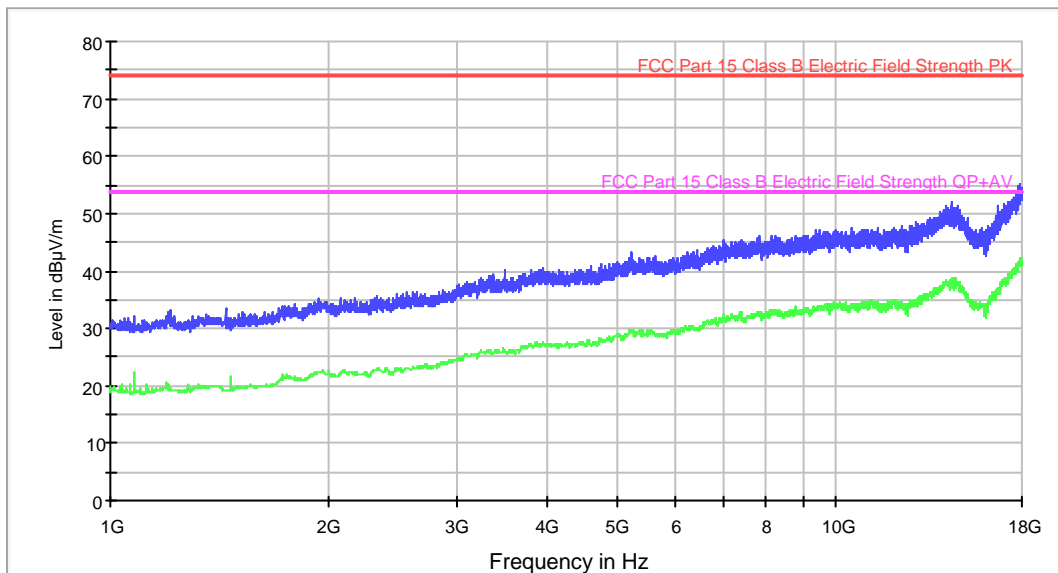
### Maximizations

Frequency (MHz)	MaxPeak (dBµV/m)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)
33.834269	21.5	11.7	185.0	V	61.0
47.974950	33.9	27.5	98.0	V	292.0
125.194389	18.8	10.5	110.0	V	57.0
249.996994	43.6	43.2	149.0	V	124.0
325.023046	28.5	25.3	128.0	V	343.0
375.029058	37.9	37.3	149.0	V	1.0

**Radiated Emission. CR0202HR1\_PH**

Project: 52440REM.003  
 Company: ERICSSON AB  
 Sample: S/02  
 Operation mode: OM#02  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port Power supply via POE: 50Vdc. Horizontal Polarization

**FCC 1-18GHz class B**



— MaxPeak-ClearWrite-PK+      — Average-ClearWrite-AVG  
— FCC Part 15 Class B Electric Field Strength PK      — FCC Part 15 Class B Electric Field Strength QP+AV

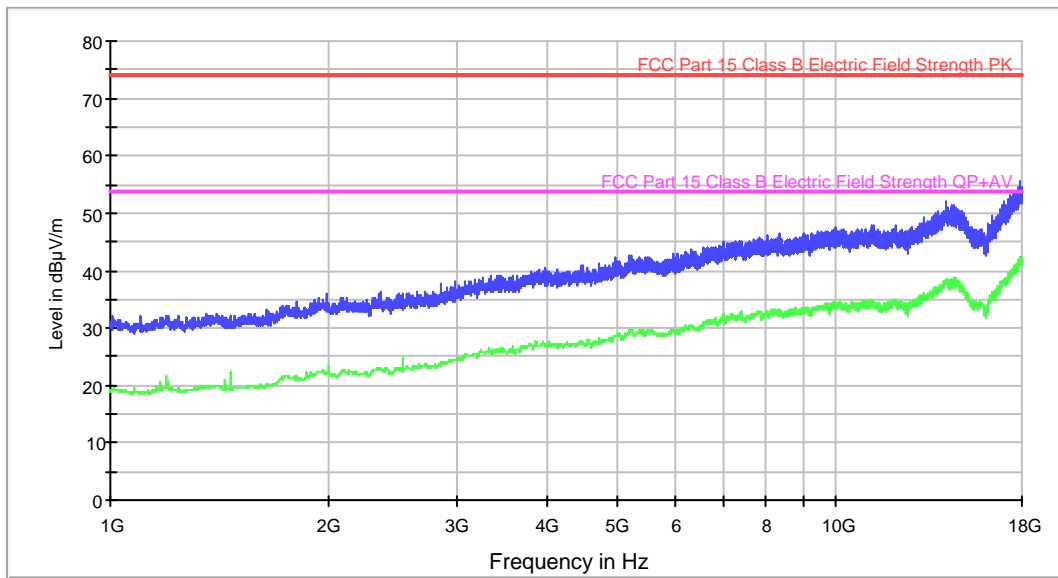
**Subrange Maxima**

Frequency (MHz)	MaxPeak-ClearWrite (dBµV/m)	Average-ClearWrite (dBµV/m)
1441.000000	33.5	19.3
2613.000000	36.3	23.3
3952.000000	40.5	27.5
6753.000000	44.3	31.5
10514.000000	47.6	34.4
17899.000000	55.0	41.7

**Radiated Emission. CR0202HR1\_PV**

Project: 52440REM.003  
 Company: ERICSSON AB  
 Sample: S/02  
 Operation mode: OM#02  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port Power supply via POE: 50Vdc). Vertical Polarization

**FCC 1-18GHz class B**



— MaxPeak-ClearWrite-PK+      — Average-ClearWrite-AVG  
— FCC Part 15 Class B Electric Field Strength PK      — FCC Part 15 Class B Electric Field Strength QP+AV

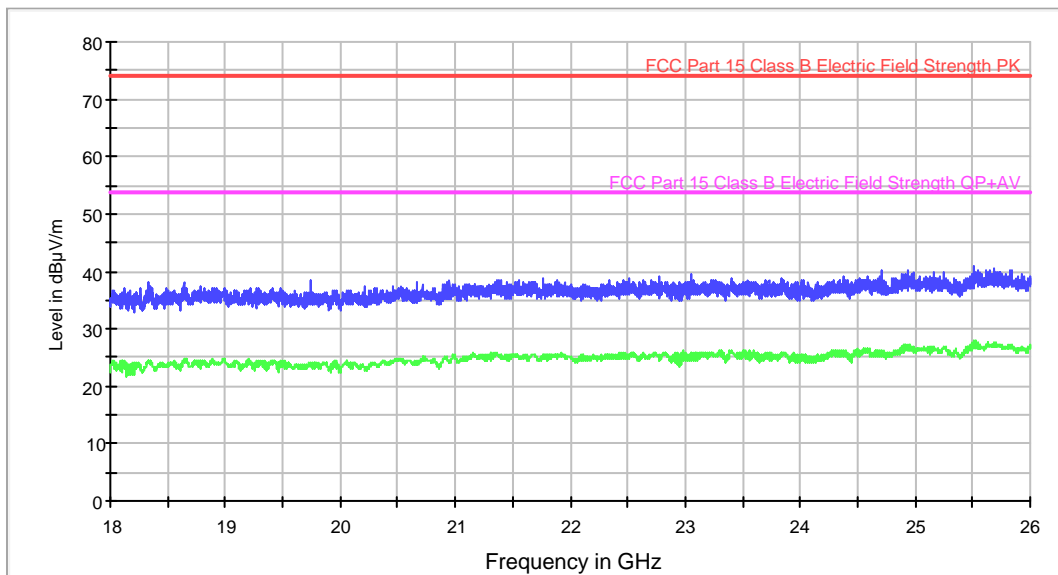
**Subrange Maxima**

Frequency (MHz)	MaxPeak-ClearWrite (dBµV/m)	Average-ClearWrite (dBµV/m)
1402.000000	32.6	19.9
2351.000000	36.4	22.8
3981.000000	40.4	27.0
6711.000000	44.2	31.0
9984.000000	47.4	34.3
17933.000000	55.5	41.7

## Radiated Emission. CR0202HR2\_PH

Project: 50459REM.003  
 Company: ERICSSON AB  
 Sample: S/02  
 Operation mode: OM#02  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port Power supply via POE: 50Vdc Horizontal Polarization

### FCC 18-26GHz class B



— Peak Scan  
 — Average Scan  
 — FCC Part 15 Class B Electric Field Strength PK  
 — FCC Part 15 Class B Electric Field Strength QP+AV

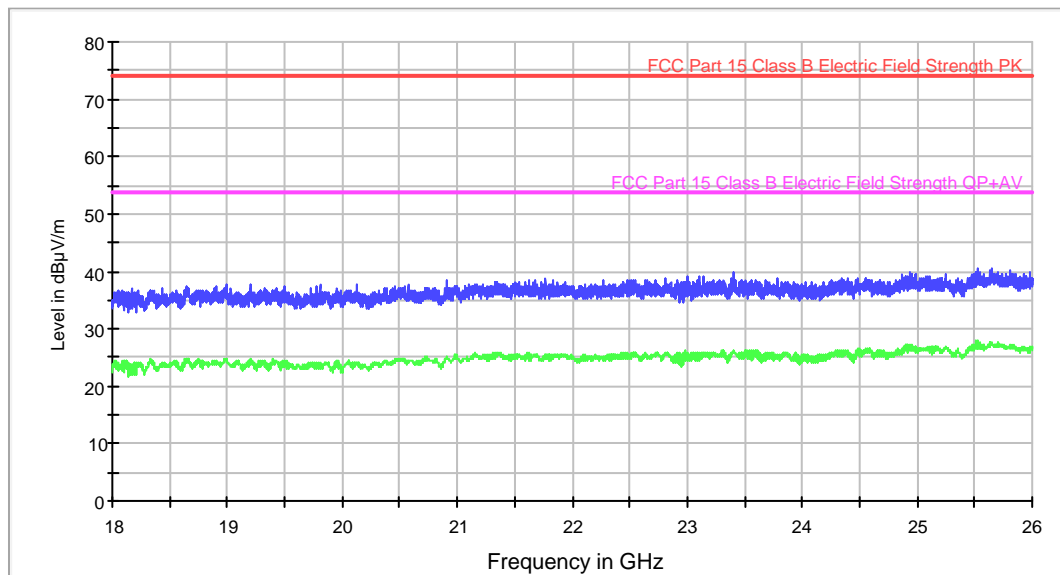
### Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV/m)	Average-ClearWrite (dBµV/m)
18637.000000	38.1	24.6
19741.000000	38.4	23.9
21406.000000	38.5	24.9
22781.000000	39.0	25.3
23048.000000	39.4	25.6
25516.000000	40.7	27.7

## Radiated Emission. CR0202HR2\_PV

Project: 50459REM.003  
 Company: ERICSSON AB  
 Sample: S/02  
 Operation mode: OM#02  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout Ethernet/USB port Power supply via POE: 50Vdc. Vertical Polarization.

### FCC 18-26GHz class B



— Peak Scan  
 — Average Scan  
 — FCC Part 15 Class B Electric Field Strength PK  
 — FCC Part 15 Class B Electric Field Strength QP+AV

### Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV/m)	Average-ClearWrite (dBµV/m)
18987.000000	37.7	24.7
20133.000000	37.7	24.1
20903.000000	38.5	24.9
22811.000000	38.8	25.8
23400.000000	39.8	26.2
25528.000000	40.5	27.6



## CONTINUOUS CONDUCTED EMISSION

<b>LIMITS:</b>	Product standard :	FCC CFR 47, Part 15, Subpart B (10-1-15 Edition), Secs. 15.107 and Subpart C (10-1-15 Edition) Secs. 15.207 & ICES-003 Issue 6 (2016)
	Test standard :	FCC CFR 47, Part 15, Subpart B (10-1-15 Edition), Secs. 15.107, 15 and Subpart C (10-1-15 Edition) Secs. 15.207 & ICES-003 Issue 6 (2016)

### CLASS B

The applied limit for continuous conducted emissions in power leads, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-01-15 Edition), Secs. 15.107 and Subpart C (10-1-15 Edition) Secs. 15.207 & ICES-003 Issue 6 (2016), in the frequency range 0,15 to 30 MHz, for Class B equipment was:

Frequency range (MHz)	Limit (dBµV)	
	Quasi-peak	Average
0,15 to 0,5	66-56	56-46
0,5 to 5	56	46
5 to 30	60	50

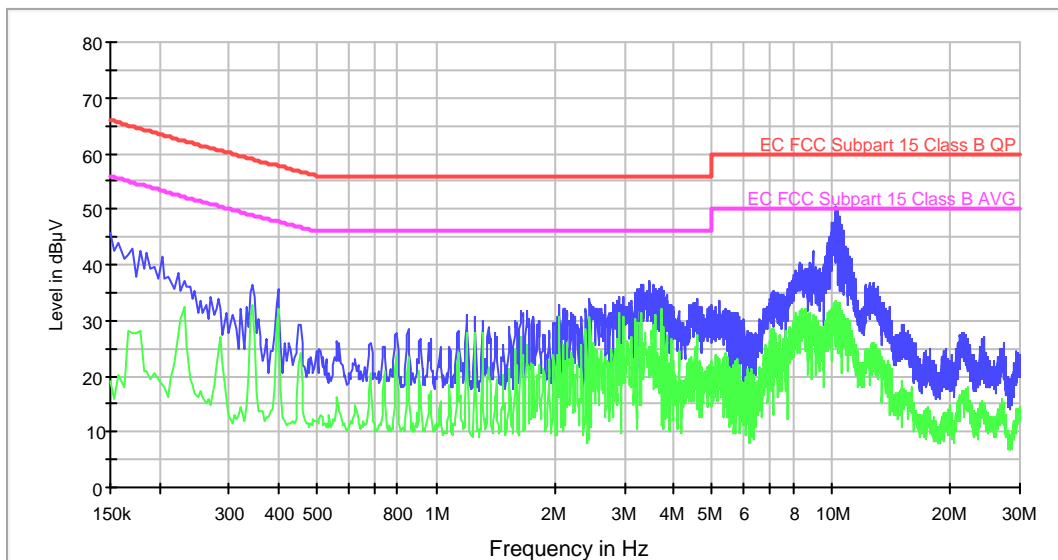
<b>TESTED SAMPLES:</b>	S/01 & S/02
<b>TESTED OPERATION MODES:</b>	OM#03 & OM#04
<b>TEST RESULTS:</b>	CCmmnnhh: CC, Conducted Condition; mm: Sample number; nn: Operation mode; hh: wire

CCmmnnhh	Description	Result
CC01030N	Neutral wire noise.	P
CC0103L1	Phase wire noise.	P
CC01040N	Neutral wire noise.	P
CC0104L1	Phase wire noise.	P
CC02030N	Neutral wire noise.	P
CC0203L1	Phase wire noise.	P
CC02040N	Neutral wire noise.	P
CC0204L1	Phase wire noise.	P

## Conducted Emission. CC01030N

Project: 52440Biem003  
 Company: ERICSSON AB  
 Sample: S/01  
 Operation mode: OM#03  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout USB port. Power supply: 36Vdc by an auxiliary AC/DC power adapter (110 Vac). Neutral Wire noise.

## EMI EC FCC Subpart 15 Class B CC



— Peak Preview                      — Average Preview  
 — EC FCC Subpart 15 Class B QP      — EC FCC Subpart 15 Class B AVG

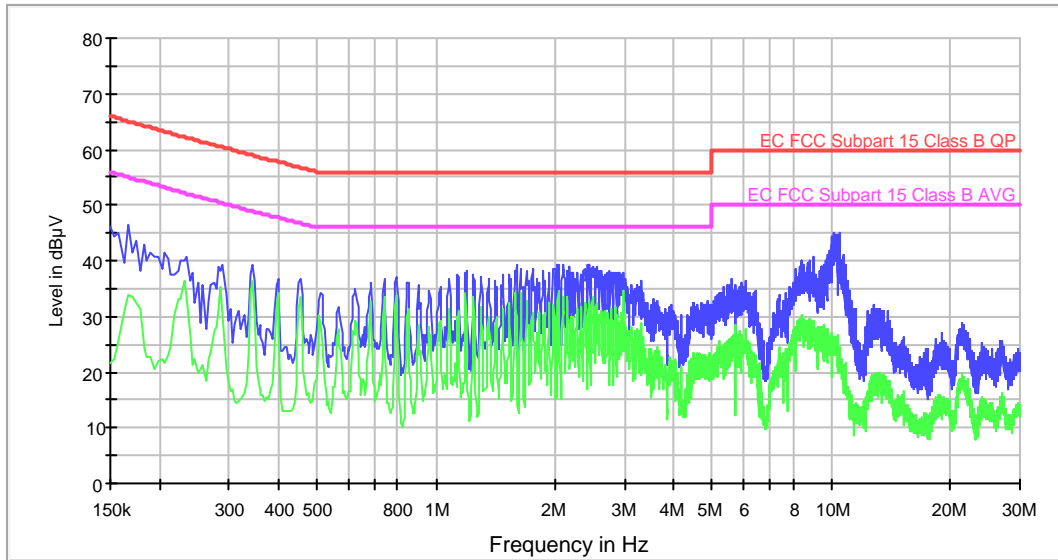
## Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.150000	45.7	19.0
0.342000	36.3	32.8
0.450000	29.2	22.0
1.198000	31.0	27.7
2.054000	32.8	30.6
3.474000	37.1	24.9
3.710000	35.9	31.9
10.270000	50.3	31.1
10.510000	48.7	29.2
21.566000	27.6	16.6

## Conducted Emission. CC0103L1

Project: 52440Biem003  
 Company: ERICSSON AB  
 Sample: S/01  
 Operation mode: OM#03  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout USB port. Power supply: 36Vdc by an auxiliary AC/DC power adapter (110 Vac). Phase Wire noise.

### EMI EC FCC Subpart 15 Class B CC



— Peak Preview  
 — EC FCC Subpart 15 Class B QP  
 — Average Preview  
 — EC FCC Subpart 15 Class B AVG

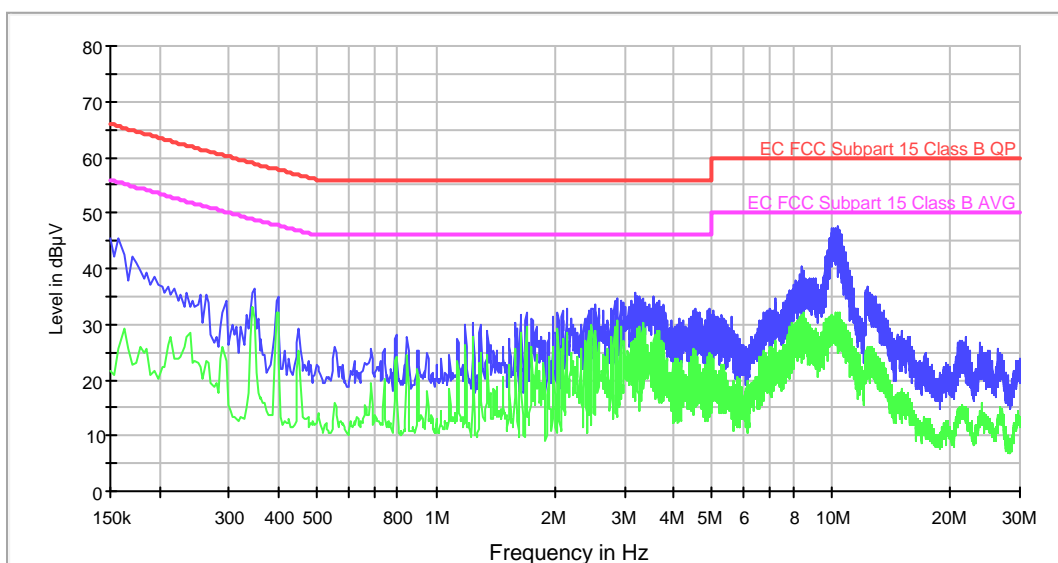
### Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.166000	46.6	33.8
0.342000	39.2	36.4
0.454000	36.6	33.5
1.198000	38.2	26.3
2.030000	39.4	30.1
2.426000	39.2	30.0
5.598000	36.6	24.3
10.166000	45.2	26.4
10.442000	45.2	23.1
21.394000	29.0	18.4

## Conducted Emission. CC01040N

Project: 52440Biem003  
 Company: ERICSSON AB  
 Sample: S/01  
 Operation mode: OM#04  
 Description: EUT ON. Lora Tx mode. Cellular communications Tx mode. GNSS Rx mode Data transmission with an auxiliary laptop throughout USB port. Power supply: 36Vdc by an auxiliary AC/DC power adapter (110 Vac). Neutral Wire noise

## EMI EC FCC Subpart 15 Class B CC



— Peak Preview      — Average Preview  
— EC FCC Subpart 15 Class B QP      — EC FCC Subpart 15 Class B AVG

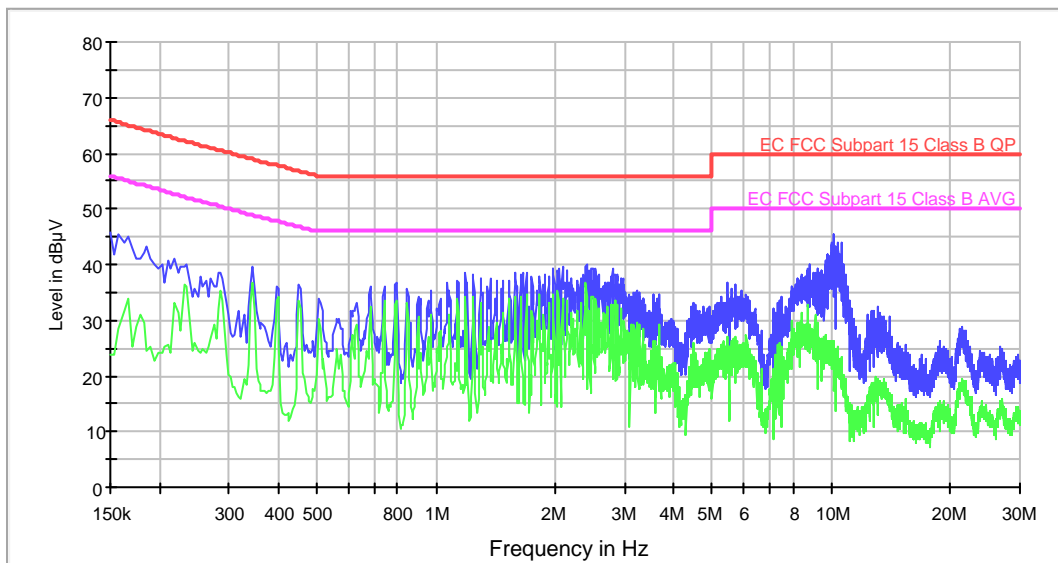
## Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.158000	45.6	25.7
0.346000	36.2	31.0
0.450000	29.1	25.1
1.242000	30.3	27.6
2.086000	32.6	24.6
3.190000	35.7	27.4
3.674000	34.1	28.8
10.362000	47.4	30.9
10.430000	47.4	30.7
21.806000	27.7	14.5

**Conducted Emission. CC0104L1**

Project: 52440Biem003  
 Company: ERICSSON AB  
 Sample: S/01  
 Operation mode: OM#04  
 Description: EUT ON. Lora Tx mode. Cellular communications Tx mode. GNSS Rx mode Data transmission with an auxiliary laptop throughout USB port. Power supply: 36Vdc by an auxiliary AC/DC power adapter (110 Vac). Phase Wire noise

**EMI EC FCC Subpart 15 Class B CC**



— Peak Preview                      — Average Preview  
— EC FCC Subpart 15 Class B QP    — EC FCC Subpart 15 Class B AVG

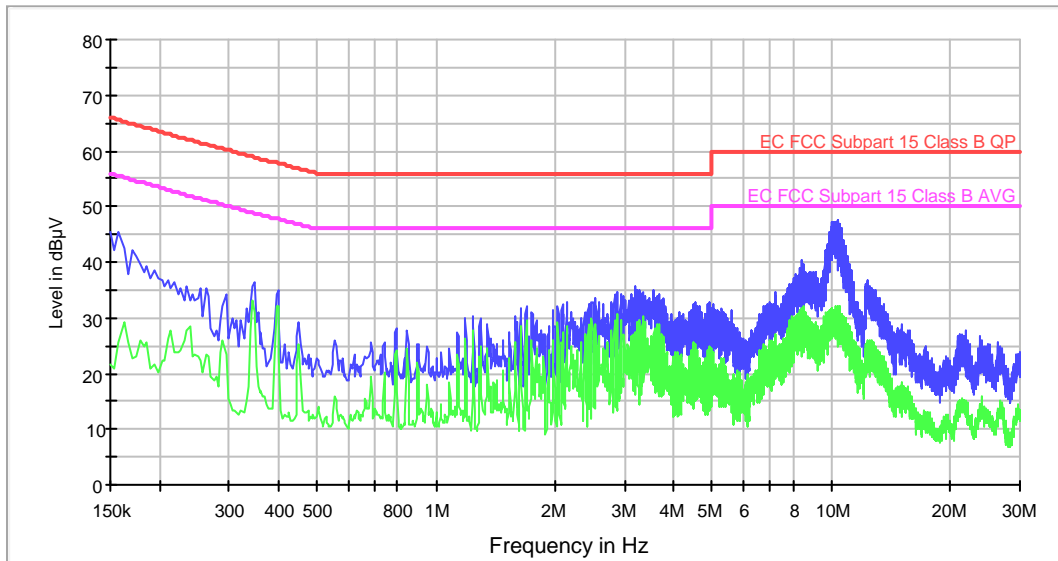
**Subrange Maxima**

Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.150000	45.8	23.9
0.342000	39.5	36.9
0.450000	36.5	33.6
1.190000	38.5	34.2
2.086000	39.5	33.3
2.398000	40.1	34.1
5.478000	36.7	24.7
10.086000	45.3	26.2
10.566000	44.0	23.5
21.322000	29.0	18.5

## Conducted Emission. CC02030N

Project: 52440Biem003  
 Company: ERICSSON AB  
 Sample: S/02  
 Operation mode: OM#03  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout USB port. Power supply: 36Vdc by an auxiliary AC/DC power adapter (110 Vac). Neutral Wire noise.

### EMI EC FCC Subpart 15 Class B CC



— Peak Preview      — Average Preview  
 — EC FCC Subpart 15 Class B QP      — EC FCC Subpart 15 Class B AVG

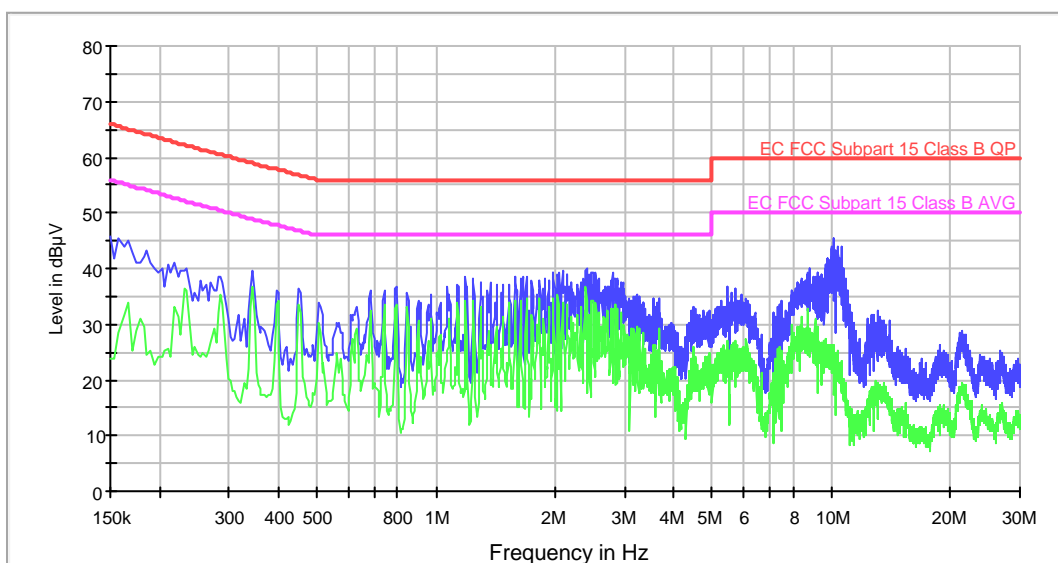
### Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.158000	44.3	25.4
0.346000	36.5	31.2
0.450000	29.6	25.6
1.242000	30.3	27.5
2.086000	32.4	24.9
3.190000	36.1	27.4
3.674000	33.2	28.7
10.362000	46.6	30.5
10.430000	47.1	30.6
21.806000	26.3	14.7

## Conducted Emission. CC0203L1

Project: 52440Biem003  
 Company: ERICSSON AB  
 Sample: S/02  
 Operation mode: OM#03  
 Description: EUT ON. Lora Rx mode. Cellular communications idle mode. GNSS Rx mode. Data transmission with an auxiliary laptop throughout USB port. Power supply: 36Vdc by an auxiliary AC/DC power adapter (110 Vac). Phase Wire noise.

## EMI EC FCC Subpart 15 Class B CC



— Peak Preview                      — Average Preview  
 — EC FCC Subpart 15 Class B QP      — EC FCC Subpart 15 Class B AVG

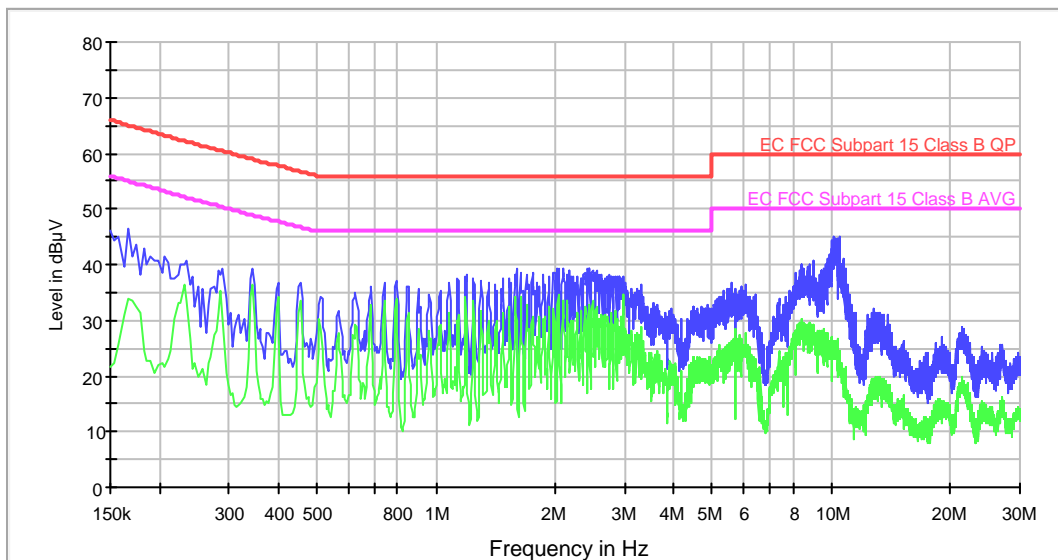
## Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.150000	43.7	23.7
0.342000	39.6	36.5
0.450000	35.4	34.4
1.190000	37.6	35.4
2.086000	38.7	36.6
2.398000	41.2	33.3
5.478000	37.5	23.8
10.086000	46.4	25.4
10.566000	43.2	24.6
21.322000	28.3	19.7

## Conducted Emission. CC02040N

Project: 52440Biem003  
 Company: ERICSSON AB  
 Sample: S/02  
 Operation mode: OM#04  
 Description: EUT ON. Lora Tx mode. Cellular communications Tx mode. GNSS Rx mode Data transmission with an auxiliary laptop throughout USB port. Power supply: 36Vdc by an auxiliary AC/DC power adapter (110 Vac). Neutral Wire noise

### EMI EC FCC Subpart 15 Class B CC



— Peak Preview                      — Average Preview  
 — EC FCC Subpart 15 Class B QP      — EC FCC Subpart 15 Class B AVG

### Subrange Maxima

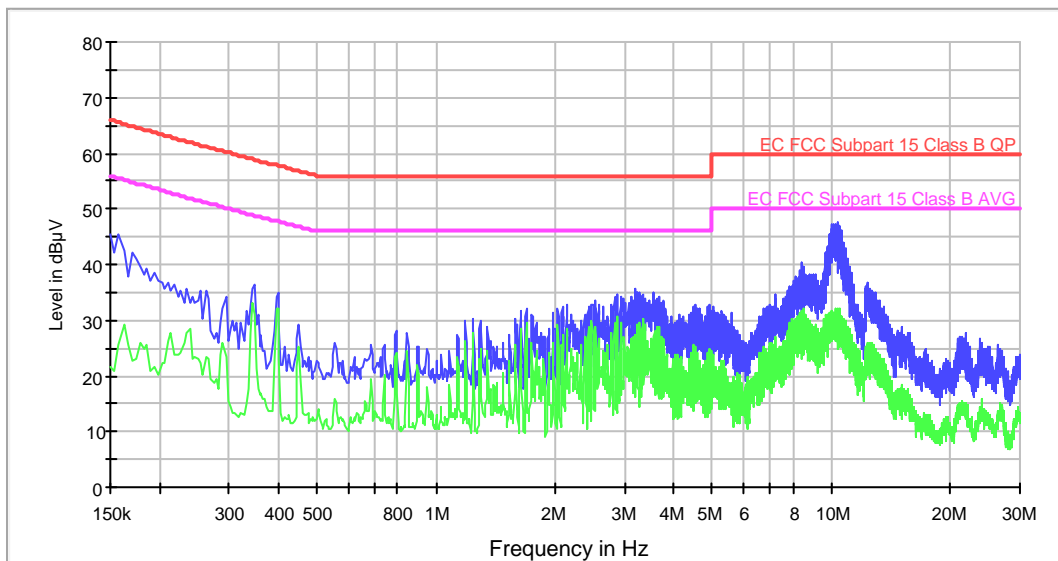
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.166000	45.6	33.8
0.342000	38.1	36.4
0.454000	36.4	33.5
1.198000	38.8	25.3
2.030000	38.5	30.1
2.426000	38.3	30.0
5.598000	36.7	23.3
10.166000	45.4	26.8
10.442000	46.4	23.1
21.394000	28.1	18.4



## Conducted Emission. CC0204L1

Project: 52440Biem003  
 Company: ERICSSON AB  
 Sample: S/02  
 Operation mode: OM#04  
 Description: EUT ON. Lora Tx mode. Cellular communications Tx mode. GNSS Rx mode Data transmission with an auxiliary laptop throughout USB port. Power supply: 36Vdc by an auxiliary AC/DC power adapter (110 Vac). Phase Wire noise

## EMI EC FCC Subpart 15 Class B CC



— Peak Preview      — Average Preview  
— EC FCC Subpart 15 Class B QP      — EC FCC Subpart 15 Class B AVG

## Subrange Maxima

Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.158000	44.6	24.7
0.346000	37.4	30.2
0.450000	29.3	25.6
1.242000	31.6	28.5
2.086000	30.6	25.8
3.190000	36.6	26.7
3.674000	34.8	27.9
10.362000	47.6	30.1
10.430000	46.6	29.4
21.806000	26.9	13.1