Annex 1: Measurement diagrams
to
TEST REPORT
No.: 6-0082-11-1-2b

According to:
FCC-Regulations
Part 22 & Part 24
IC-Regulations
RSS-132 Issue 2,RSS-133 Issue 5 &
RSS-Gen, Issue 3

for

u-blox AG

RF Data-Module LISA-U200
FCC-ID: XPYLISAU200
IC-ID: 8595A-LISAU200

Laboratory Accreditation and Listings			
DAkkS Deutsche Akkreditierungsstelle D-PL-12047-01-01	Reg. No.: 736496 MRA US-EU 0003	Industry Canada Reg. No.: 3462D-1 Reg. No.: 3462D-2 Reg. No.: 3462D-3	Voluntary Controls for Electromagnetic Emissions Reg. No.: R-2665, R-2666 C-2914, T-1967, G-301
Wi Fi ALLIANCE AUTHORIZED RF LABORATORY	CTIA Authorized Test Lab LAB CODE 20011130-00		
accredited according to DIN EN ISO/IEC 17025			

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1.1.2.FDDV

1. Measurement results

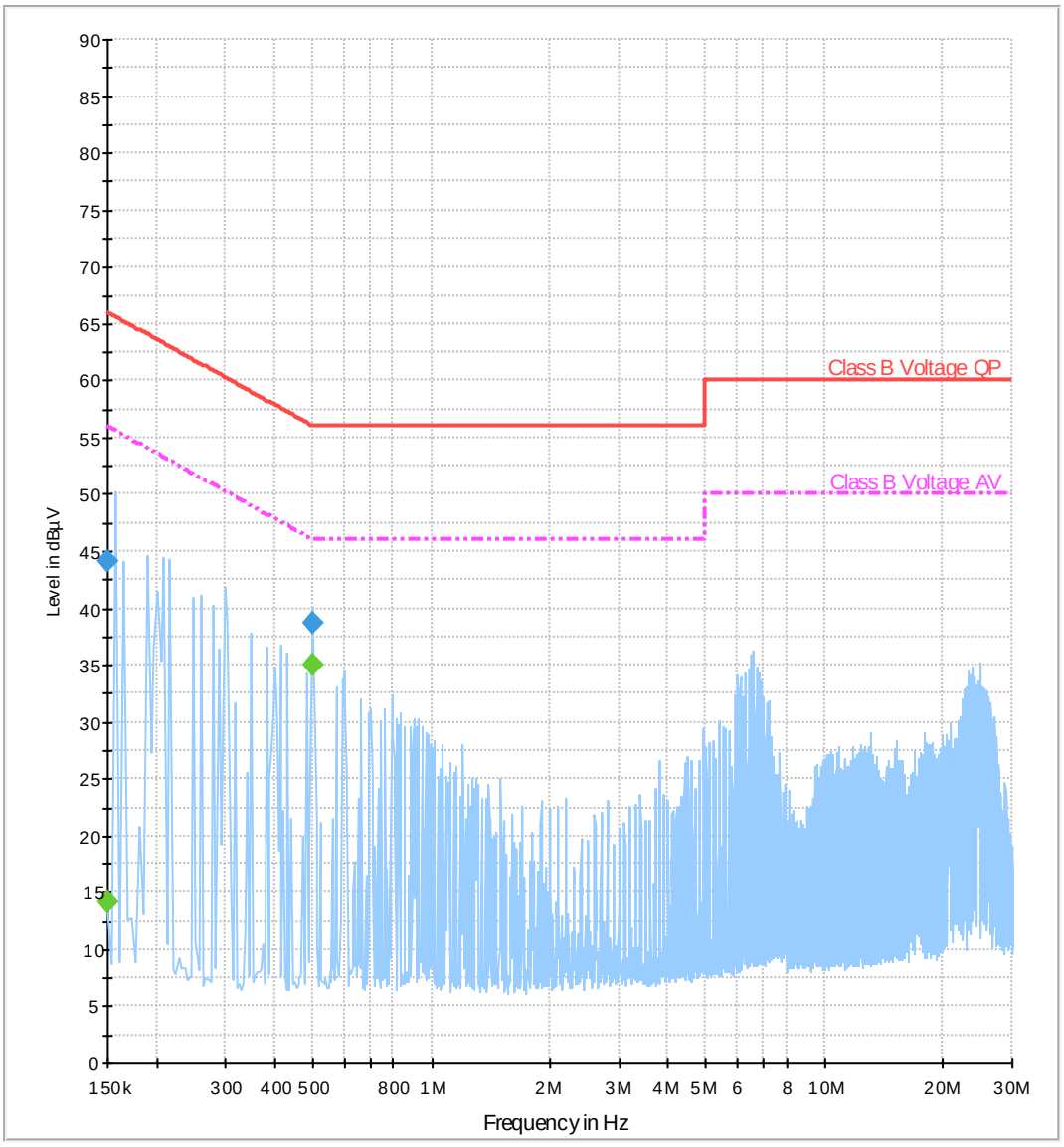
1.1. Conducted emissions on AC-Power lines

1.1.1 FDDII

Diagram No. b_1.1

Test Description:	Conducted Voltage Measurement Class B
Testspezification:	FCC 15.207
Technical Data:	Please see next page for detailed information
Diagram:	Shows the peak values as a sum of measured ports (N+L1) in maxhold
Operator name:	HLa
Report.- Nr.	6-0082-11-1-2b
EUT:	LISA-U200
Manufacturer:	U-blox
Operating mode:	RMC99 FDD II TX
Measured on line:	Mains AC L1 and N
Power during test:	110 V AC 60 Hz
Comment 1:	channel (9262)

01_Class B_Voltage_PK_QPAV_N_L1



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	44.1	15000.0	0.200	GND	N	0.0	21.9	66.0
0.500156	38.8	15000.0	9.000	GND	L1	0.0	17.2	56.0

Final Result 2

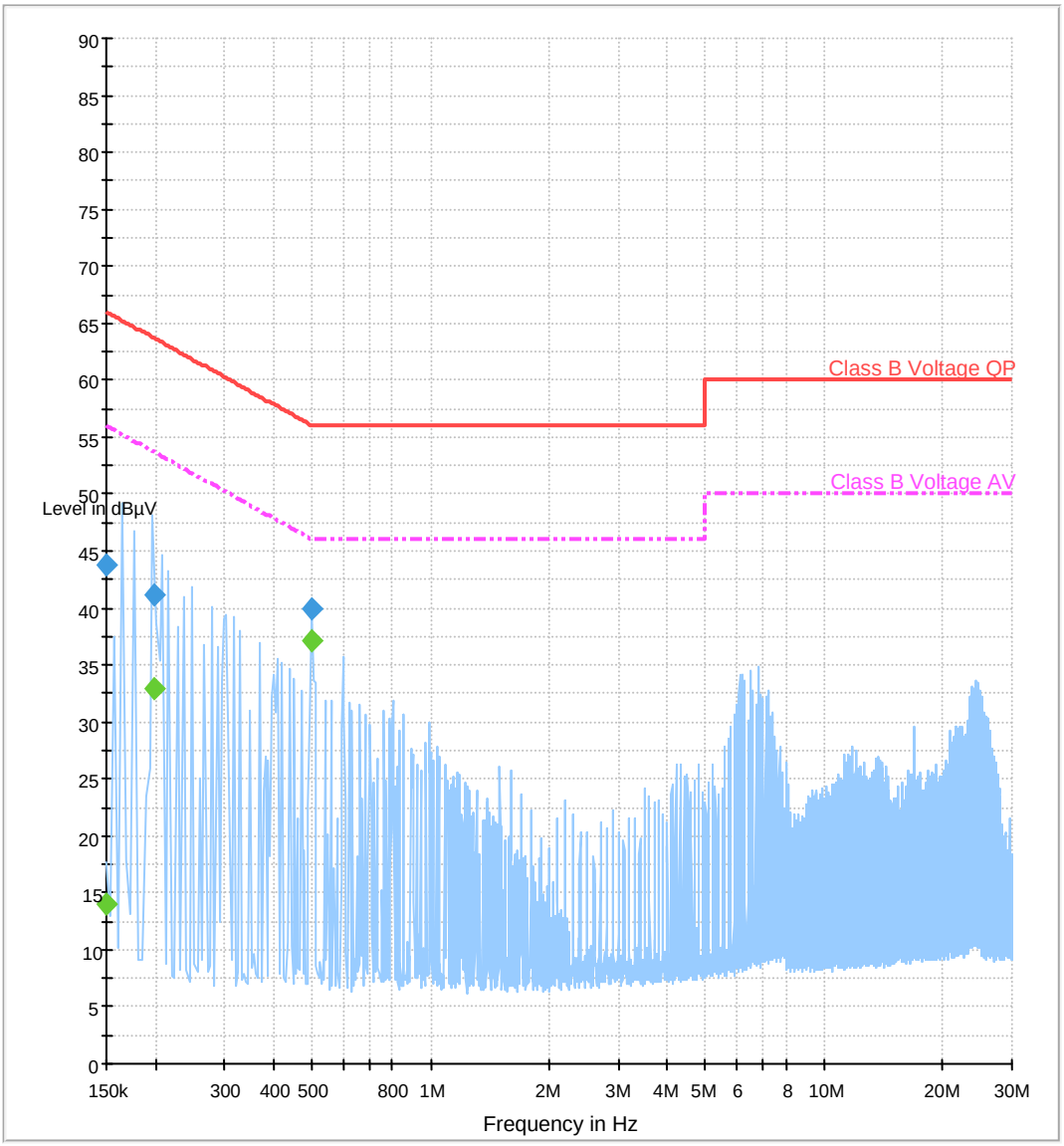
Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	14.3	15000.0	9.000	GND	N	0.0	41.7	56.0
0.500156	35.0	15000.0	9.000	GND	L1	0.0	11.0	46.0

Diagram No. b_1.2

Date: 10.11.2011 Page 1 of 3

Test Description:	Conducted Voltage Measurement Class B
Testspezification:	FCC 15.207
Technical Data:	Please see next page for detailed information
Diagram:	Shows the peak values as a sum of measured ports (N+L1) in maxhold mode
Operator name:	HLa
Report.- Nr.	6-0082-11-1-2b
	-
EUT:	LISA -U200
Manufacturer:	U-blox
Operating mode:	RMC99 FDD II TX
Measured on line:	Mains AC L1 and N
Power during test:	110 V AC 60 Hz
Comment 1:	channel (9400)

01_Class B_Voltage_PK_QPAV_N_L1



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	43.9	15000.0	0.200	GND	L1	0.0	22.2	66.0
0.199375	41.2	15000.0	9.000	GND	L1	0.0	22.5	63.6
0.500156	39.9	15000.0	9.000	GND	L1	0.0	16.1	56.0

Final Result 2

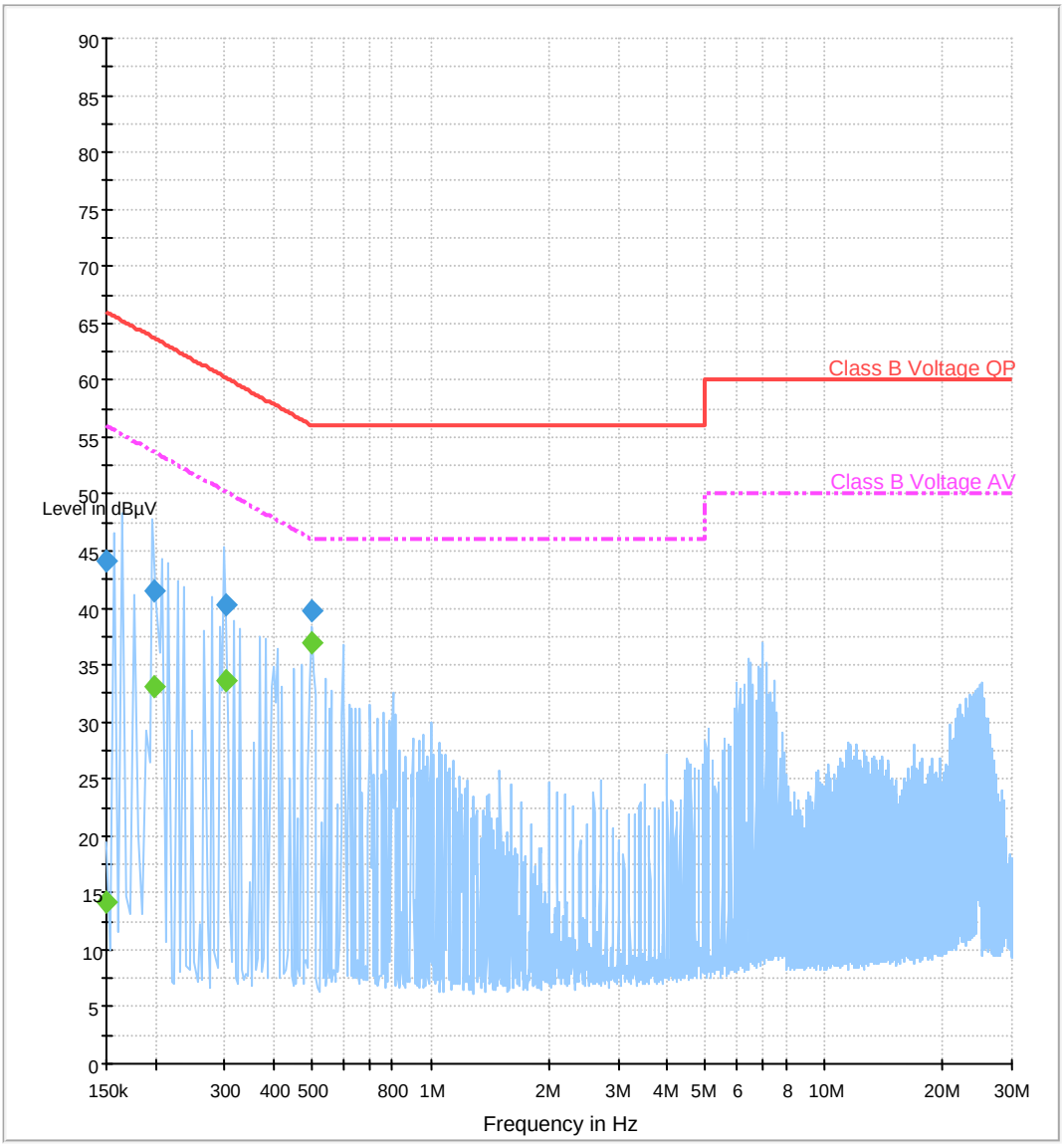
Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	14.0	15000.0	9.000	GND	L1	0.0	42.0	56.0
0.199375	32.9	15000.0	9.000	GND	L1	0.0	20.8	53.6
0.500156	37.2	15000.0	9.000	GND	L1	0.0	8.8	46.0

Diagram No. b_1.3

Date: 10.11.2011 Page 1 of 3

Test Description:	Conducted Voltage Measurement Class B
Testspezification:	FCC 15.207
Technical Data:	Please see next page for detailed information
Diagram:	Shows the peak values as a sum of measured ports (N+L1) in maxhold mode
Operator name:	HLa
Report.- Nr.	6-0082-11-1-2b
EUT:	LISA -U200
Manufacturer:	U-blox
Operating mode:	RMC99 FDD II TX
Measured on line:	Mains AC L1 and N
Power during test:	110 V AC 60 Hz
Comment 1:	channel (9538)

01_Class B_Voltage_PK_QPAV_N_L1



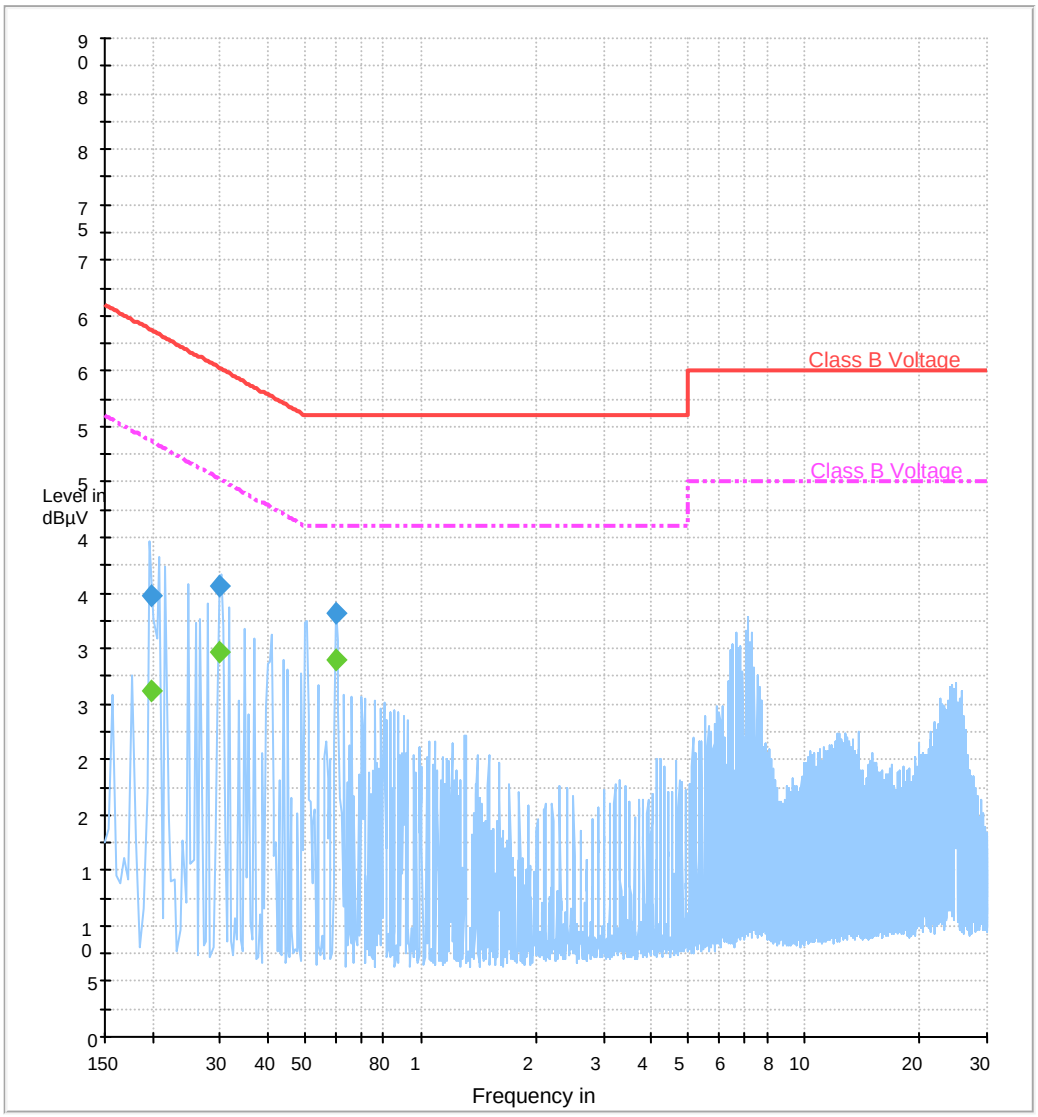
1.1.2.FDDV

1

Diagram No. b_1.4

Test	Conducted Voltage Measurement Class
Testspezification	FCC
Technical	Please see next page for detailed
Diagram	Shows the peak values as sum of measured ports (N+L1) in maxhold
Operator	HL
Report - Nr	6-008 -1 -1-2
EUT	LISA -U200
Manufacturer	U-blox
Operating	RMC99 FDD V
Measured on	Mains AC L1 and
Power during	110 V AC 60
Comment	channel

01_Class



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.199375	39.8	15000.0	9.000	GND	L1	0.0	23.9	63.6
0.299844	40.6	15000.0	9.000	GND	L1	0.0	19.6	60.2
0.601719	38.2	15000.0	9.000	GND	L1	0.0	17.8	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.199375	31.2	15000.0	9.000	GND	L1	0.0	22.5	53.6
0.299844	34.6	15000.0	9.000	GND	L1	0.0	15.6	50.2
0.601719	34.0	15000.0	9.000	GND	L1	0.0	12.0	46.0

Diagram No. b_1.5

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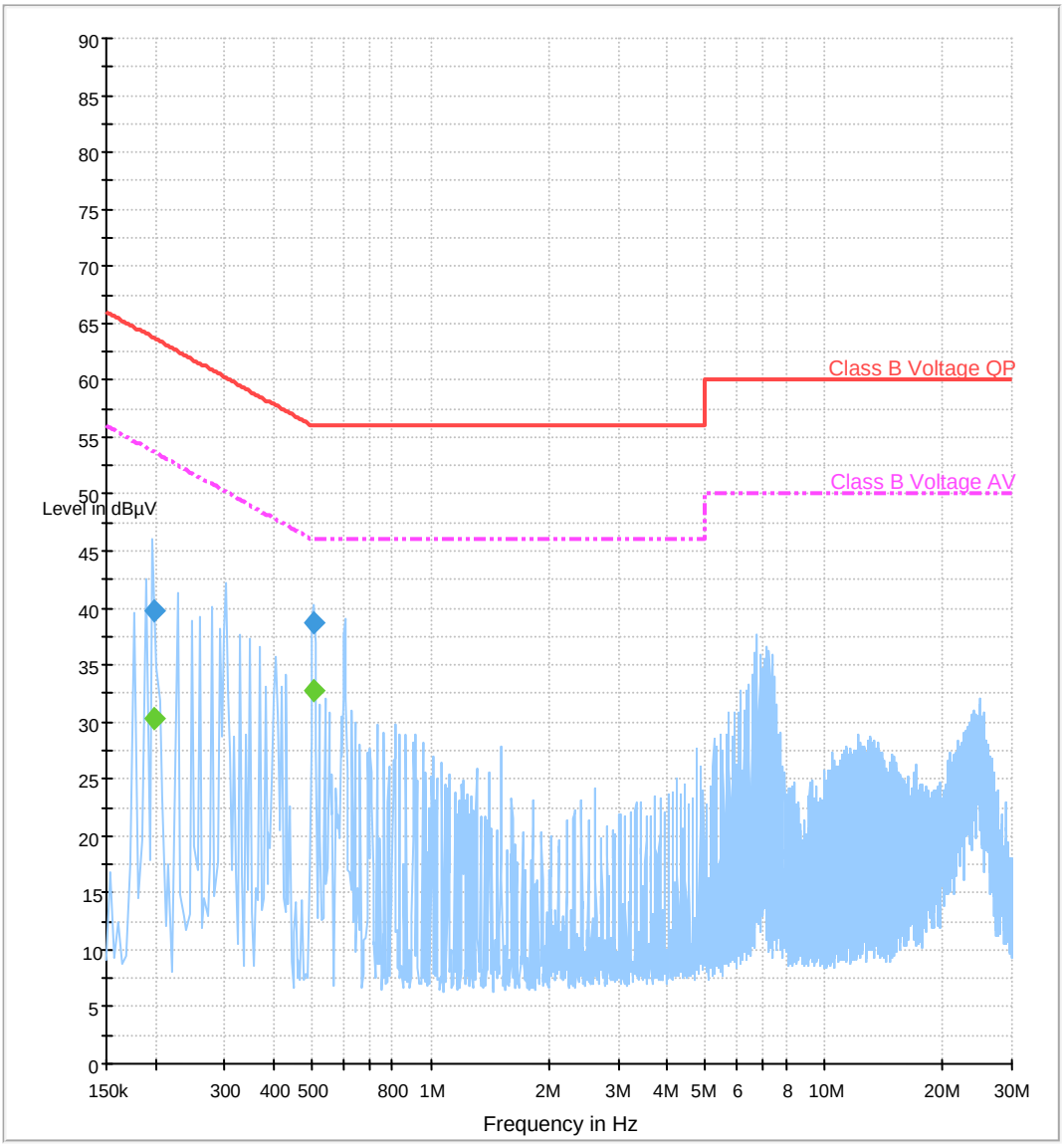
Test Description:	Conducted Voltage Measurement Class B
Testspezification:	FCC 15.207
Technical Data:	Please see next page for detailed information
Diagram:	Shows the peak values as a sum of measured ports (N+L1) in maxhold mode
Operator name:	HLa
Report.- Nr.	6-0082-11-1-2b
EUT:	LISA -U200
Manufacturer:	U-blox
Operating mode:	RMC99 FDD V TX
Measured on line:	Mains AC L1 and N
Power during test:	110 V AC 60 Hz
Comment 1:	channel (4182)

01_Class B_Voltage_PK_QPAV_N_L1



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.199375	39.8	15000.0	9.000	GND	L1	0.0	23.8	63.6
0.502969	38.7	15000.0	9.000	GND	N	0.0	17.3	56.0

Final Result 2

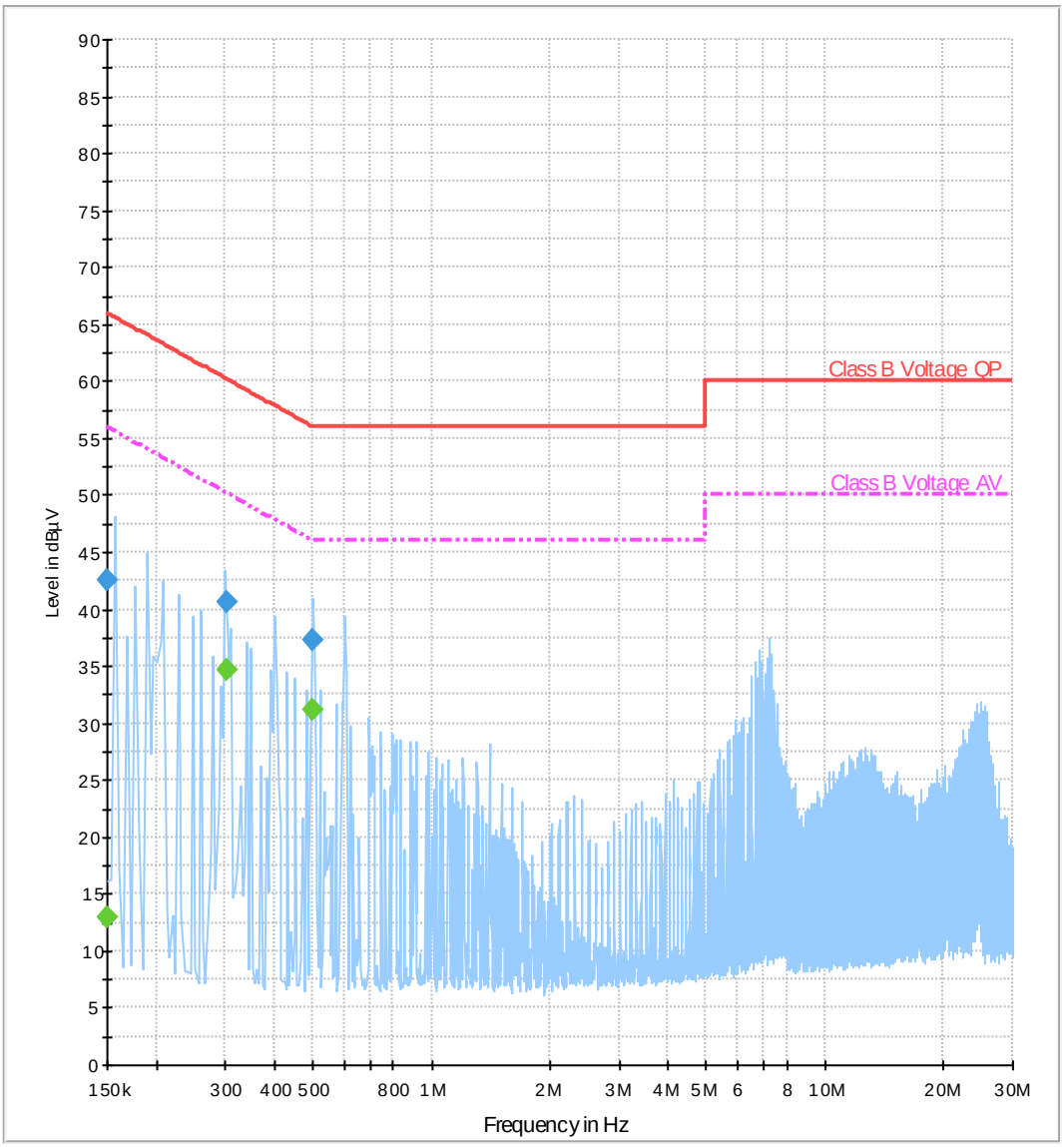
Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.199375	30.3	15000.0	9.000	GND	L1	0.0	23.4	53.6
0.502969	32.8	15000.0	9.000	GND	N	0.0	13.2	46.0

Diagram No. b_1.6

Date: 10.11.2011 Page 1 of 3

Test Description:	Conducted Voltage Measurement Class B
Testspezification:	FCC 15.207
Technical Data:	Please see next page for detailed information
Diagram:	Shows the peak values as a sum of measured ports (N+L1) in maxhold mode
Operator name:	HLa
Report.- Nr.	6-0082-11-1-2b
EUT:	LISA-U200
Manufacturer:	U-blox
Operating mode:	RMC99 FDD V TX
Measured on line:	Mains AC L1 and N
Power during test:	110 V AC 60 Hz
Comment 1:	channel (4233)

01_Class B_Voltage_PK_QPAV_N_L1



Final Result 1

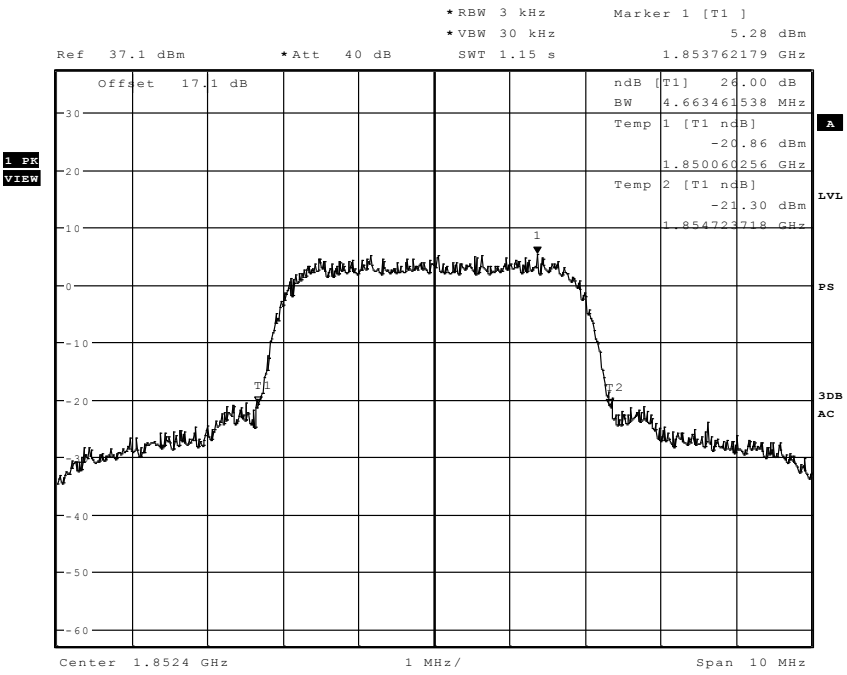
Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	42.6	15000.0	0.200	GND	N	0.0	23.4	66.0
0.300938	40.7	15000.0	9.000	GND	L1	0.0	19.5	60.2
0.499063	37.3	15000.0	9.000	GND	N	0.0	18.7	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	13.0	15000.0	9.000	GND	N	0.0	43.0	56.0
0.300938	34.7	15000.0	9.000	GND	L1	0.0	15.5	50.2
0.499063	31.2	15000.0	9.000	GND	N	0.0	14.8	46.0

1.2. **26dBc Emission bandwidth**

1.2.1. **FDD Band II – RMC99 Mode**



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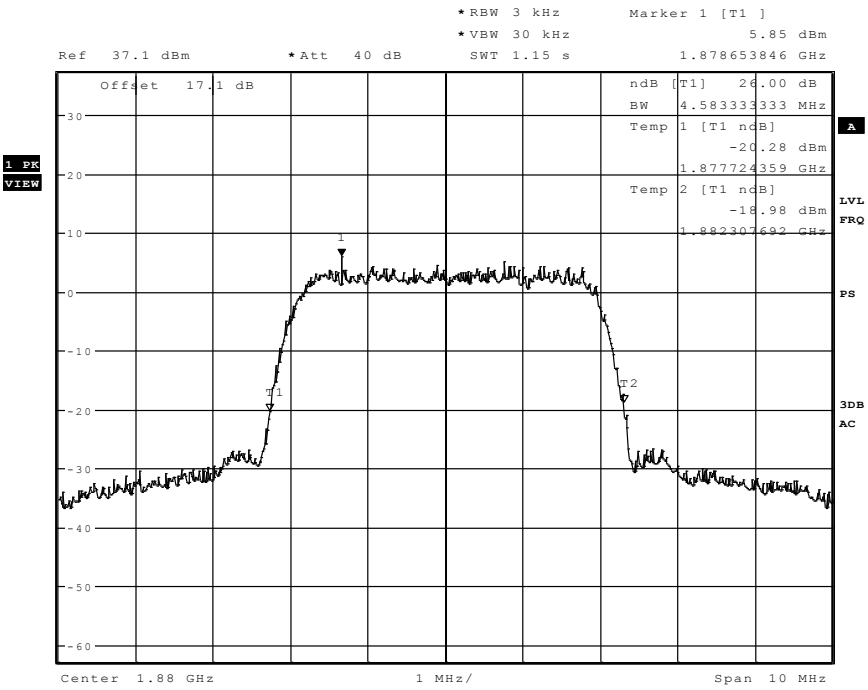
Channel 9262



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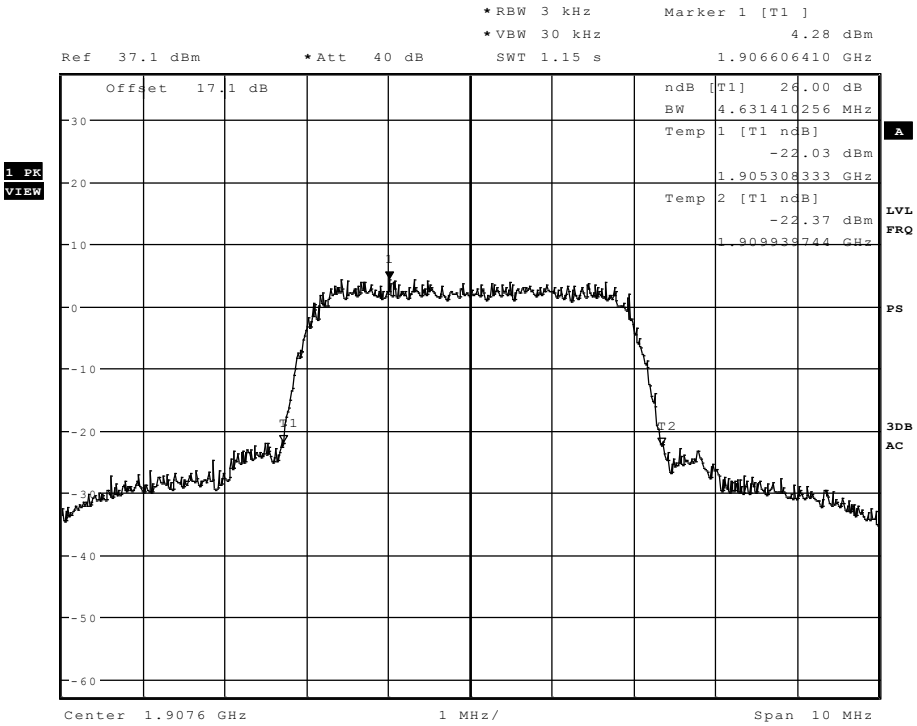

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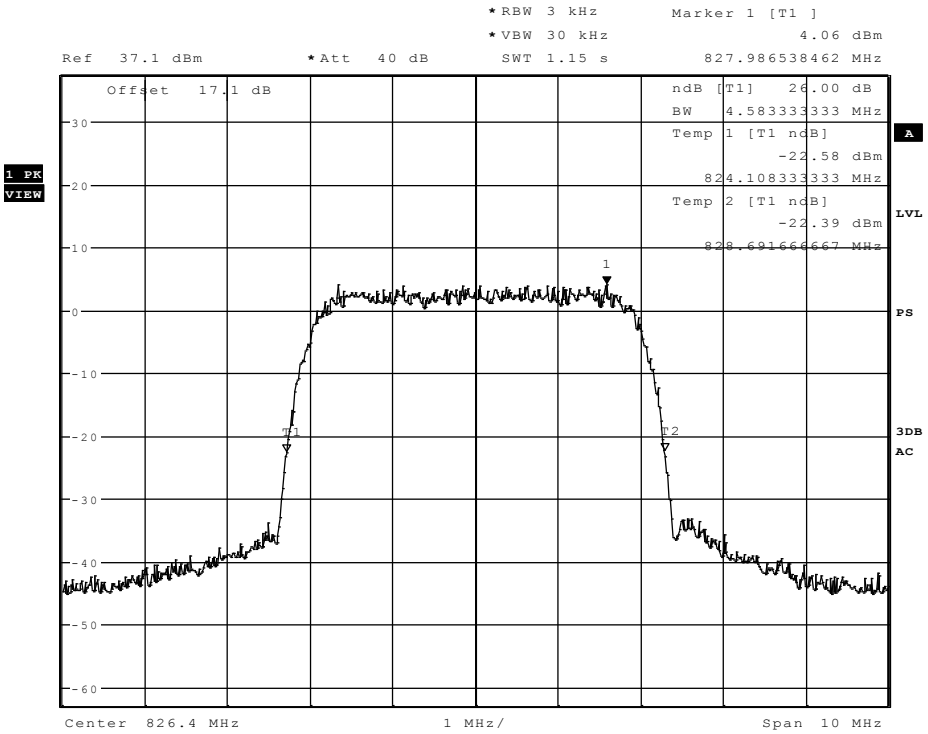
Channel 9538

1.2.2. FDD Band V – RMC99 Mode



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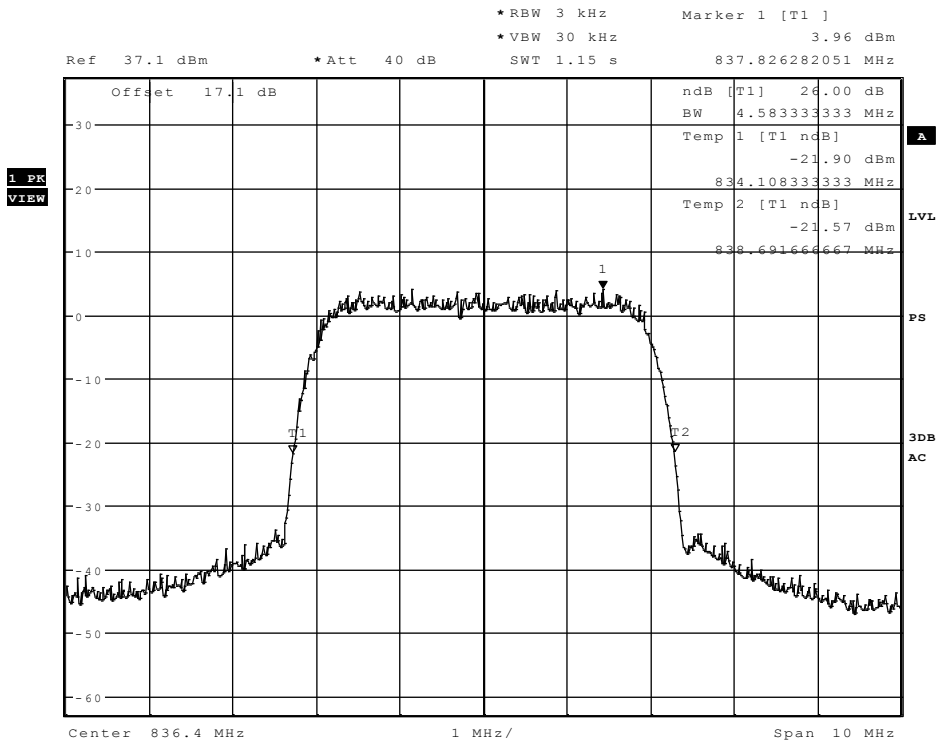
Channel 4132



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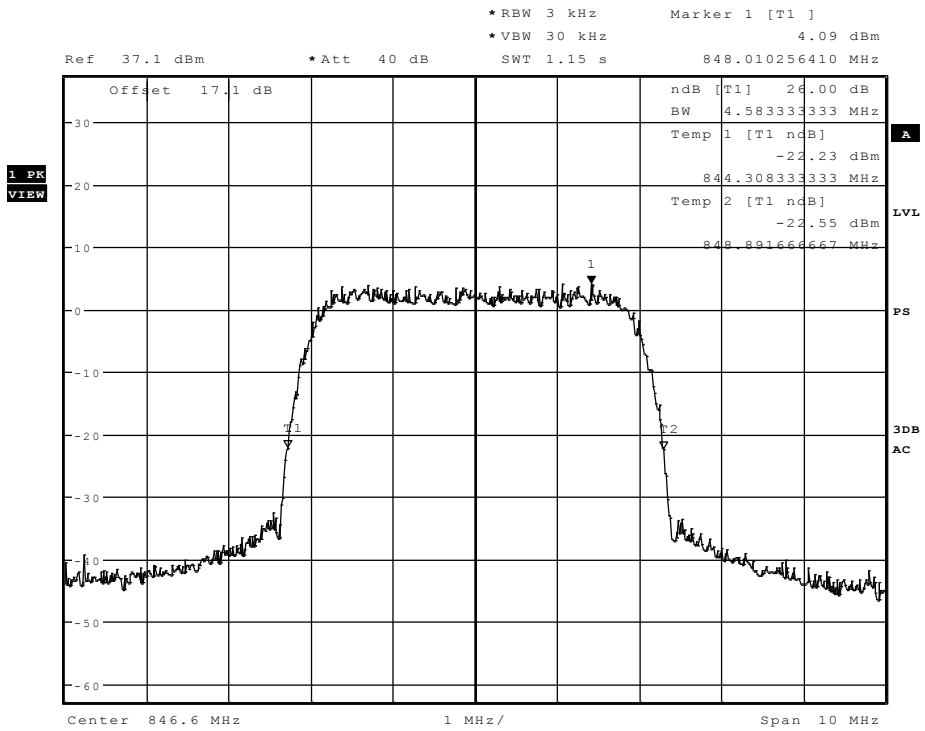
Channel 4182



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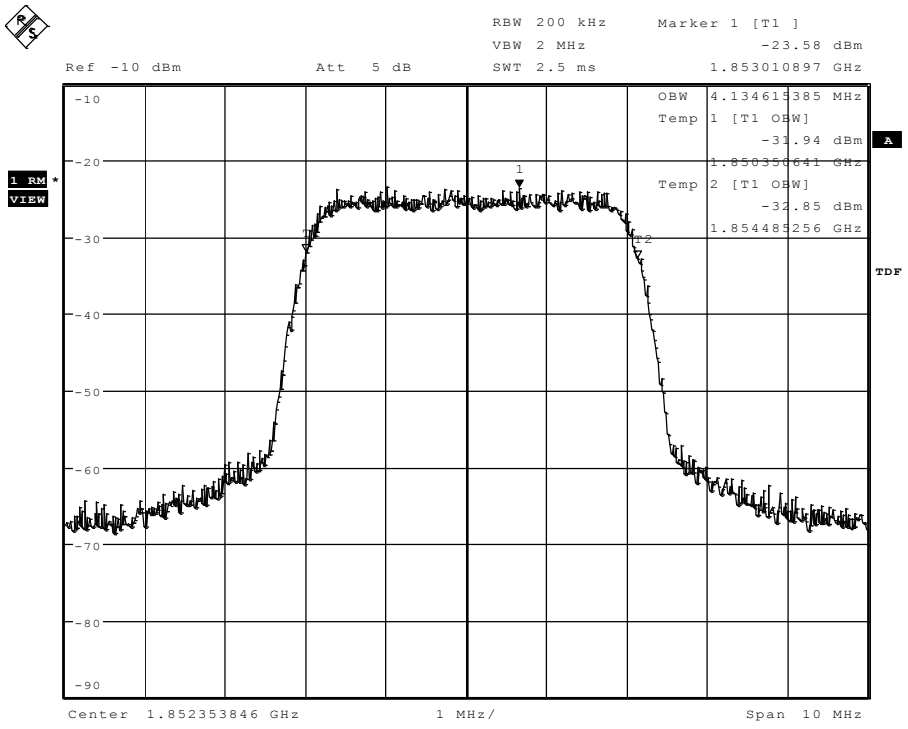
Channel 4233

1.3. 99% Occupied bandwidth

1.3.1. FDD Band II – RMC99 Mode



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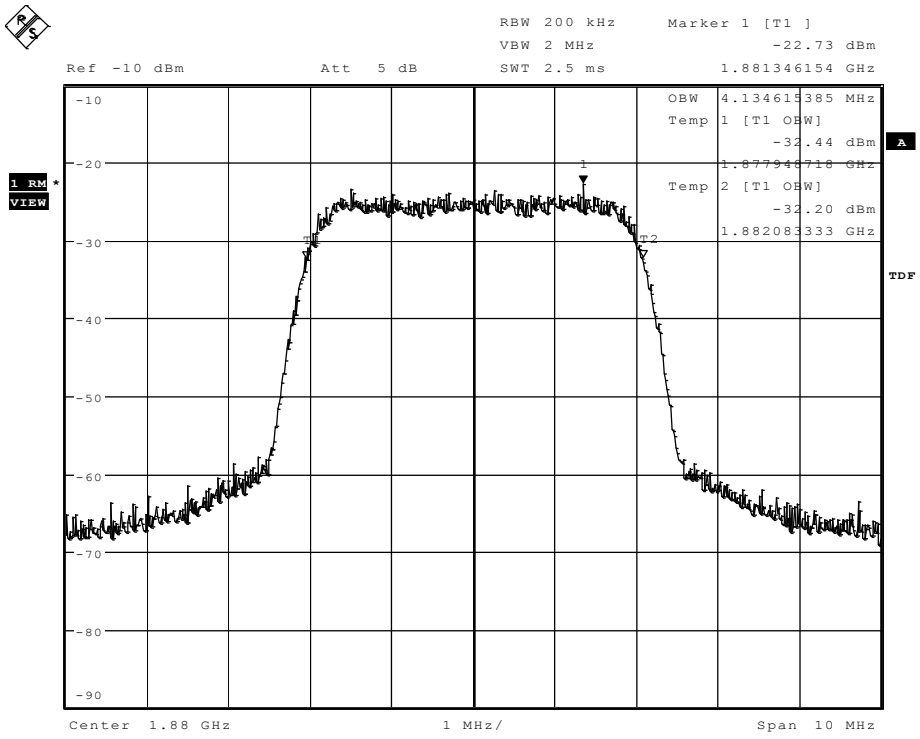
Channel 9262



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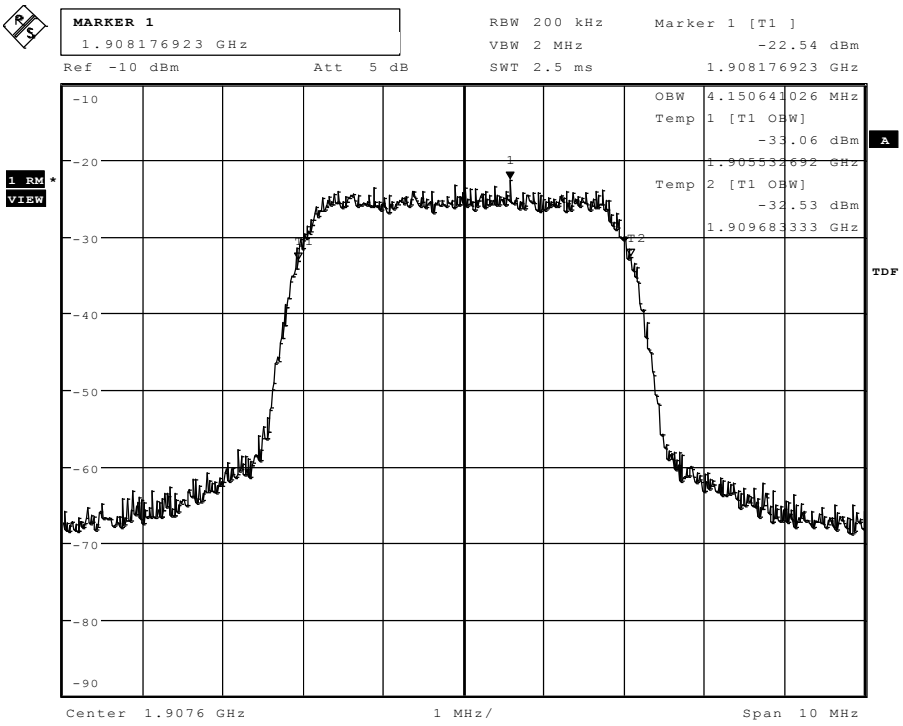
Channel 9400



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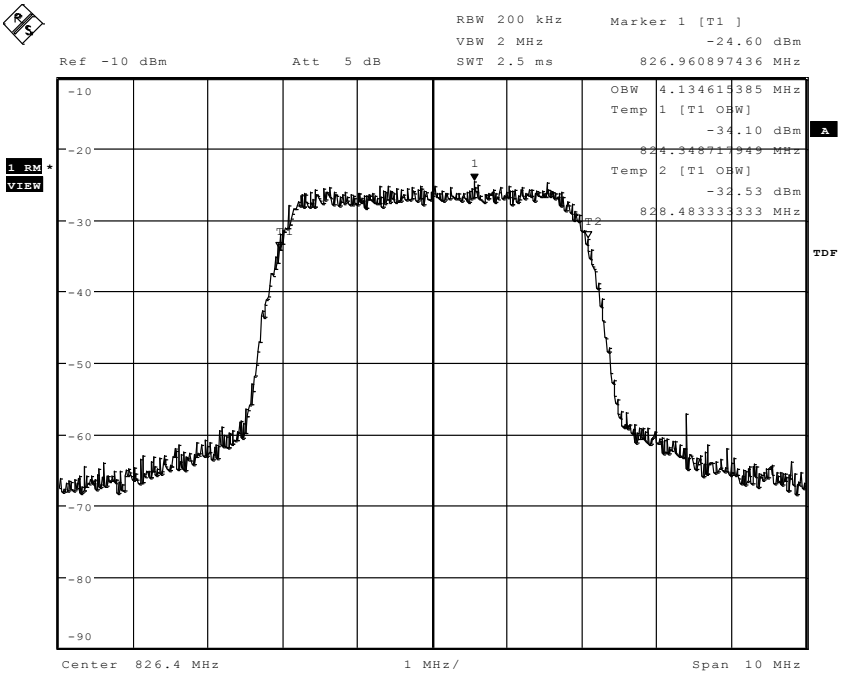
Channel 9538

1.3.2. FDD Band V – RMC99 Mode



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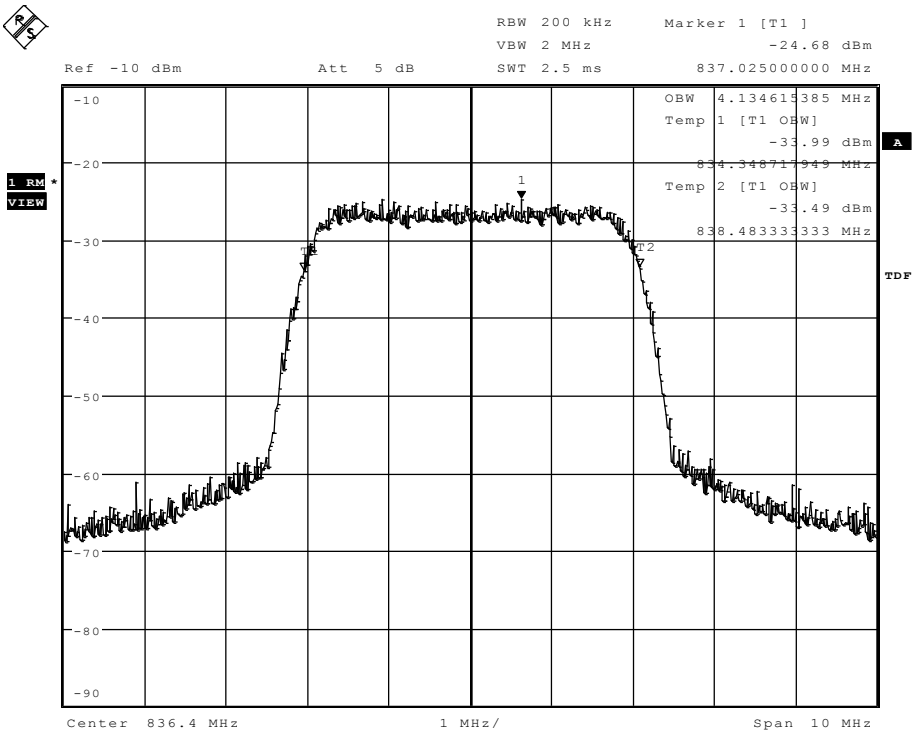
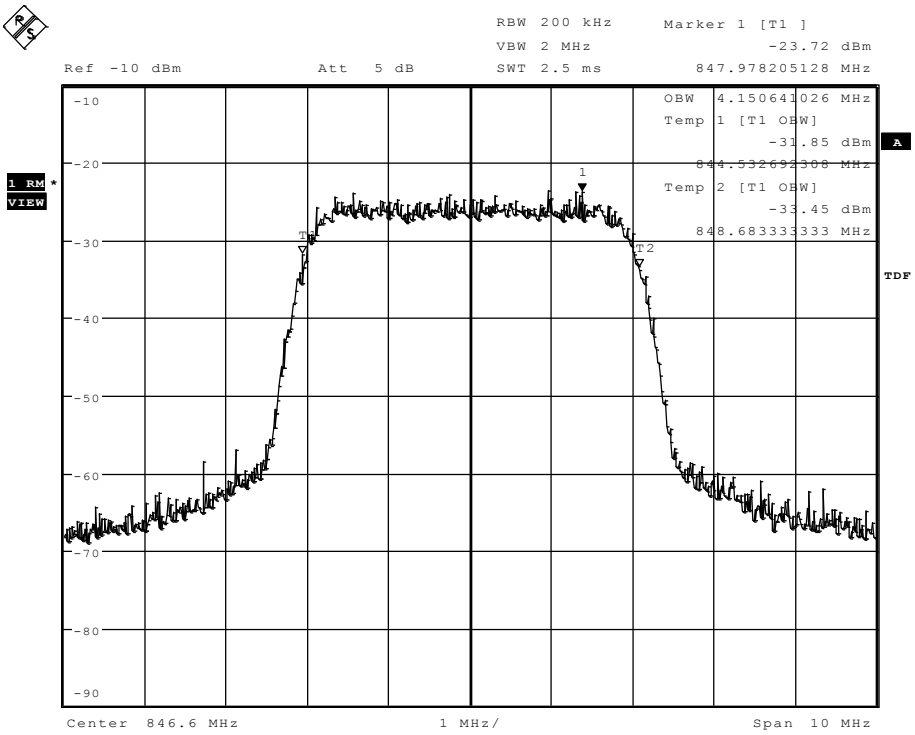
Channel 4132



Channel 4182



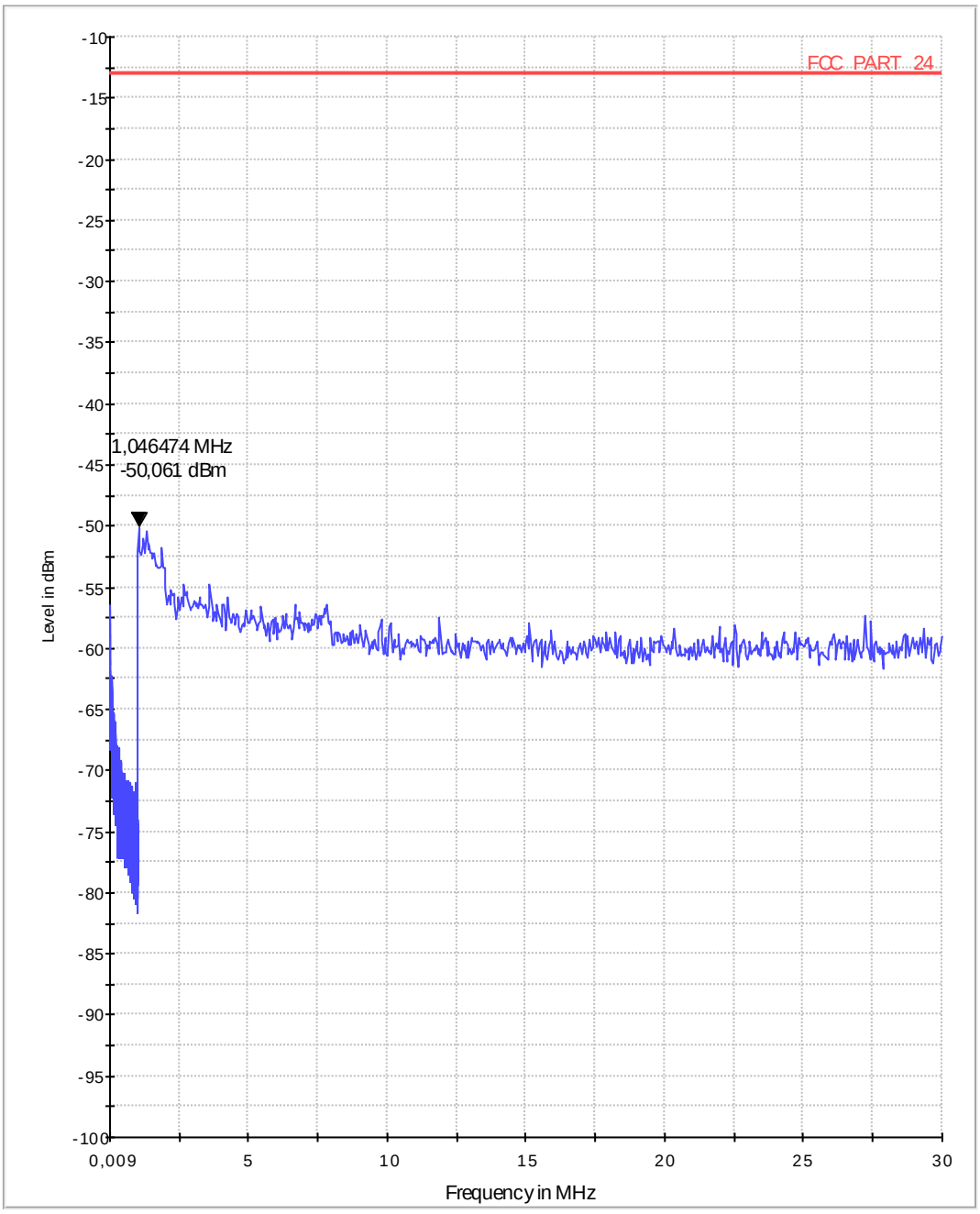
Channel 4233

1.4. Spurious emissions conducted – FDD Band V Mode b_4.09

Common Information

Test Description:	TX Spurious Emission conducted
Test Site:	Radio laboratory
Test Standard:	FCC Part 22, RSS-132
Test condition:	23°C 41%
Operation mode:	FDDV-HSUPA (UARFCN 4132 low)
Operator Name:	dpa

Sweep_1

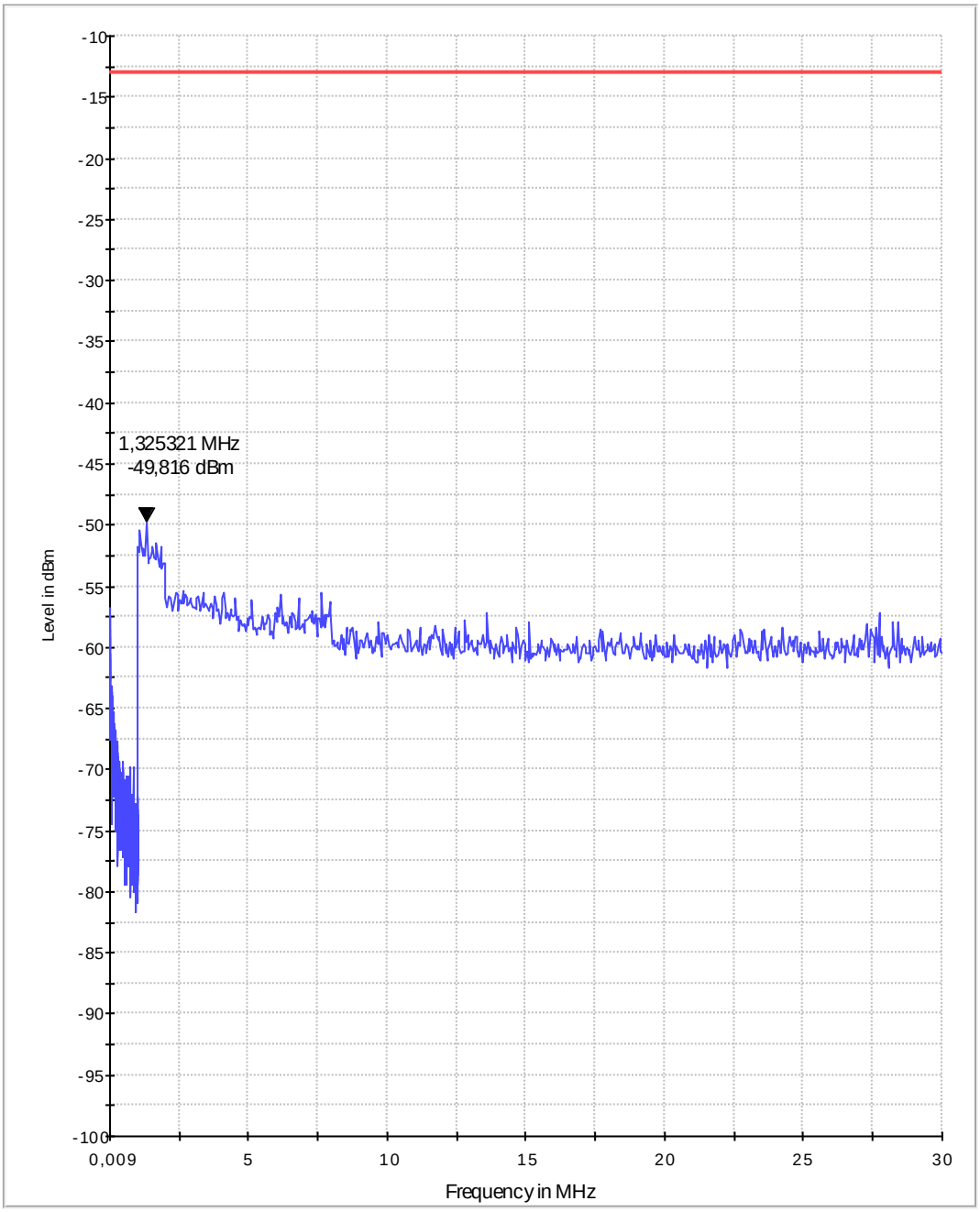


b_4.10

Common Information

Test Description:	TX Spurious Emission conducted
Test Site:	Radio laboratory
Test Standard:	FCC Part 22, RSS-132
Test condition:	23°C 41%
Operation mode:	FDDV-HSUPA (UARFCN 4182 middle)
Operator Name:	dpa

Sweep_1

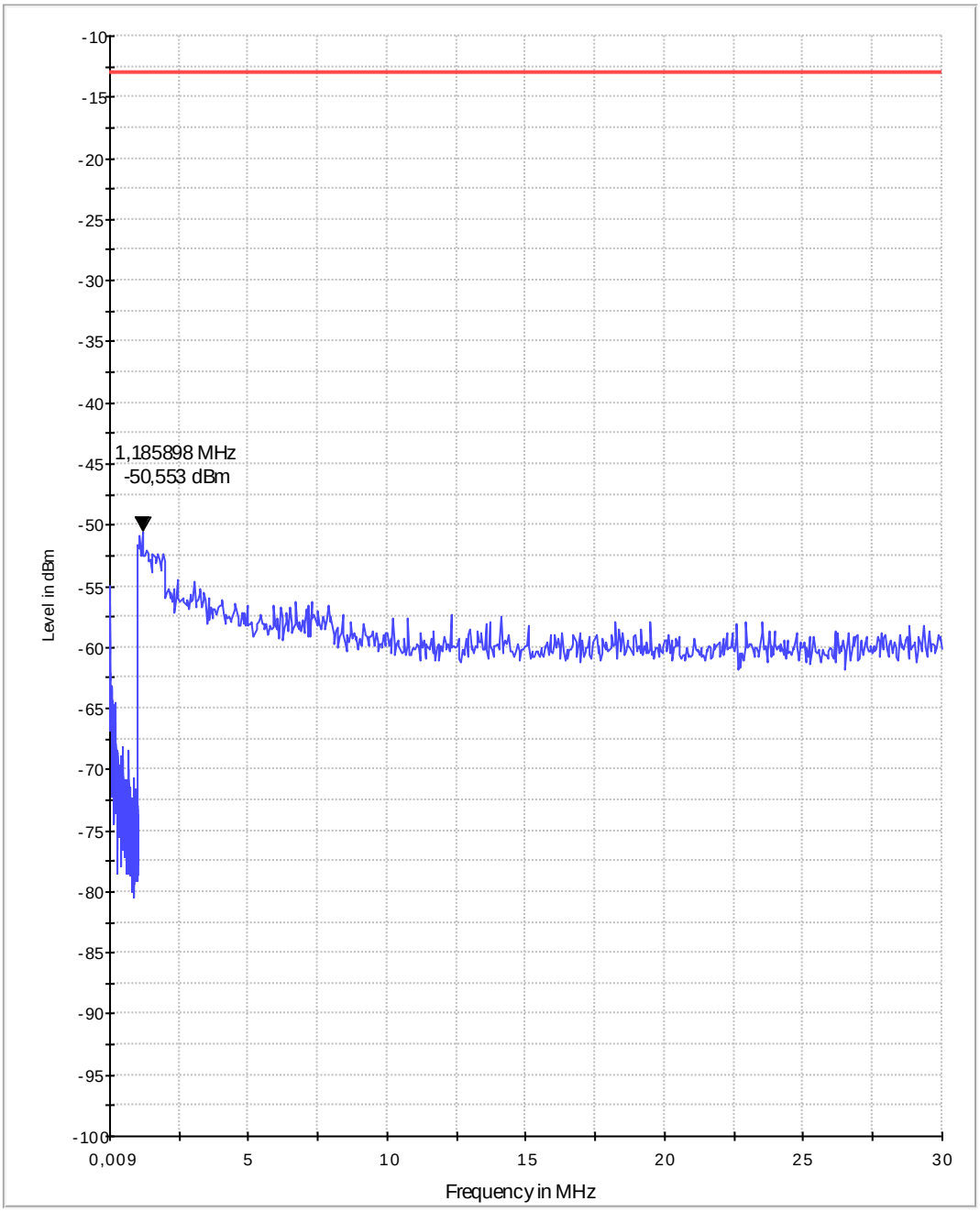


b_4.11

Common Information

Test Description:	TX Spurious Emission conducted
Test Site:	Radio laboratory
Test Standard:	FCC Part 22, RSS-132
Test condition:	23°C 41%
Operation mode:	FDDV-HSUPA (UARFCN 4233 high)
Operator Name:	dpa

Sweep_1



b_4.14

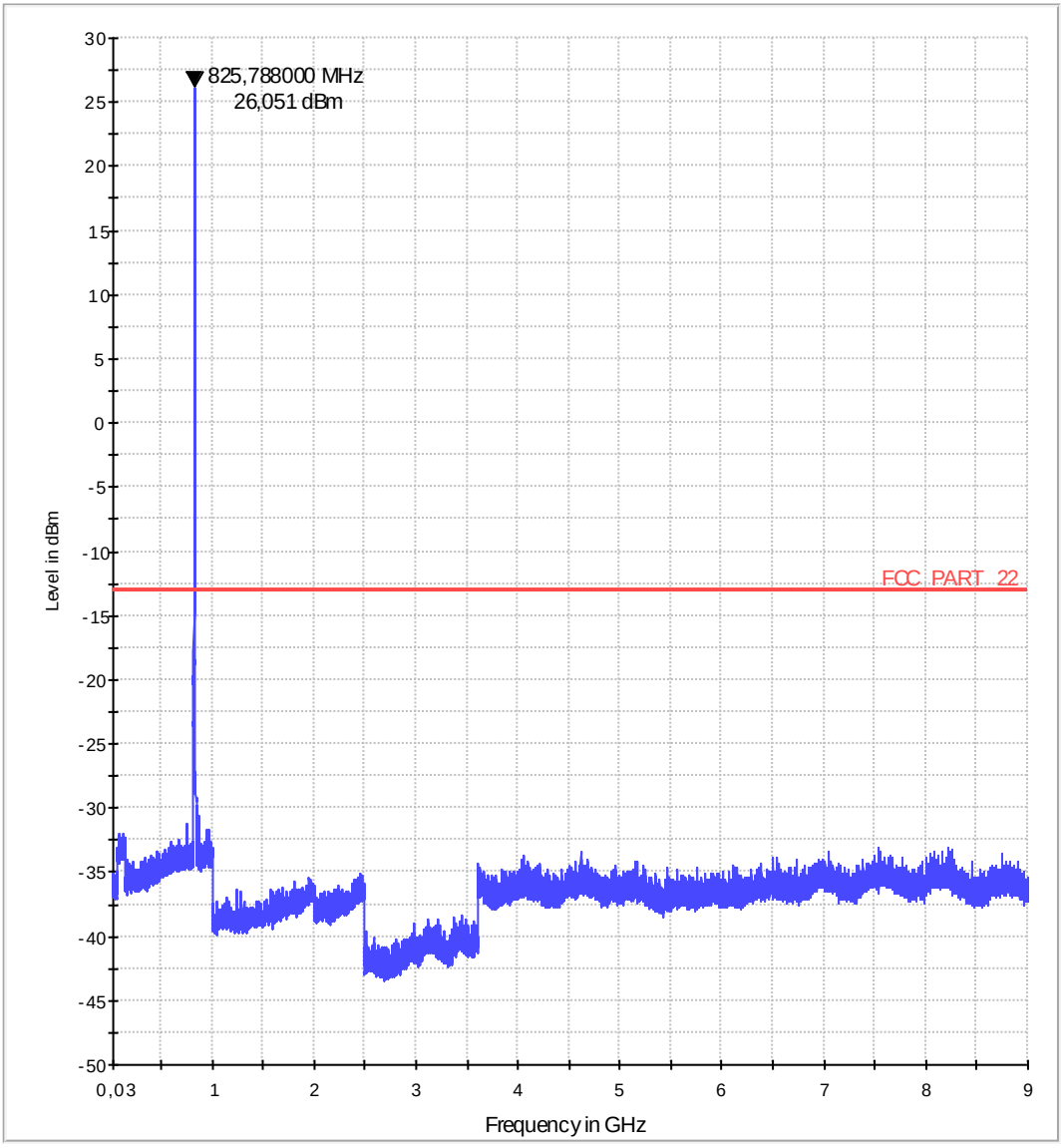
Common Information

Test Description:	TX Spurious Emission conducted
Test Site:	Radio laboratory
Test Standard:	FCC Part 22, RSS-132
Test condition:	23°C 41%
Operation mode:	FDDV-HSUPA (UARFCN 4132 low)

EUT Information

EUT Name:	LISA-U200
Manufacturer:	u-blox AG
Serial Number:	358901040001353
Hardware Rev:	21.03
Voltage:	3,8 VDC

Sweep_2



b_4.15

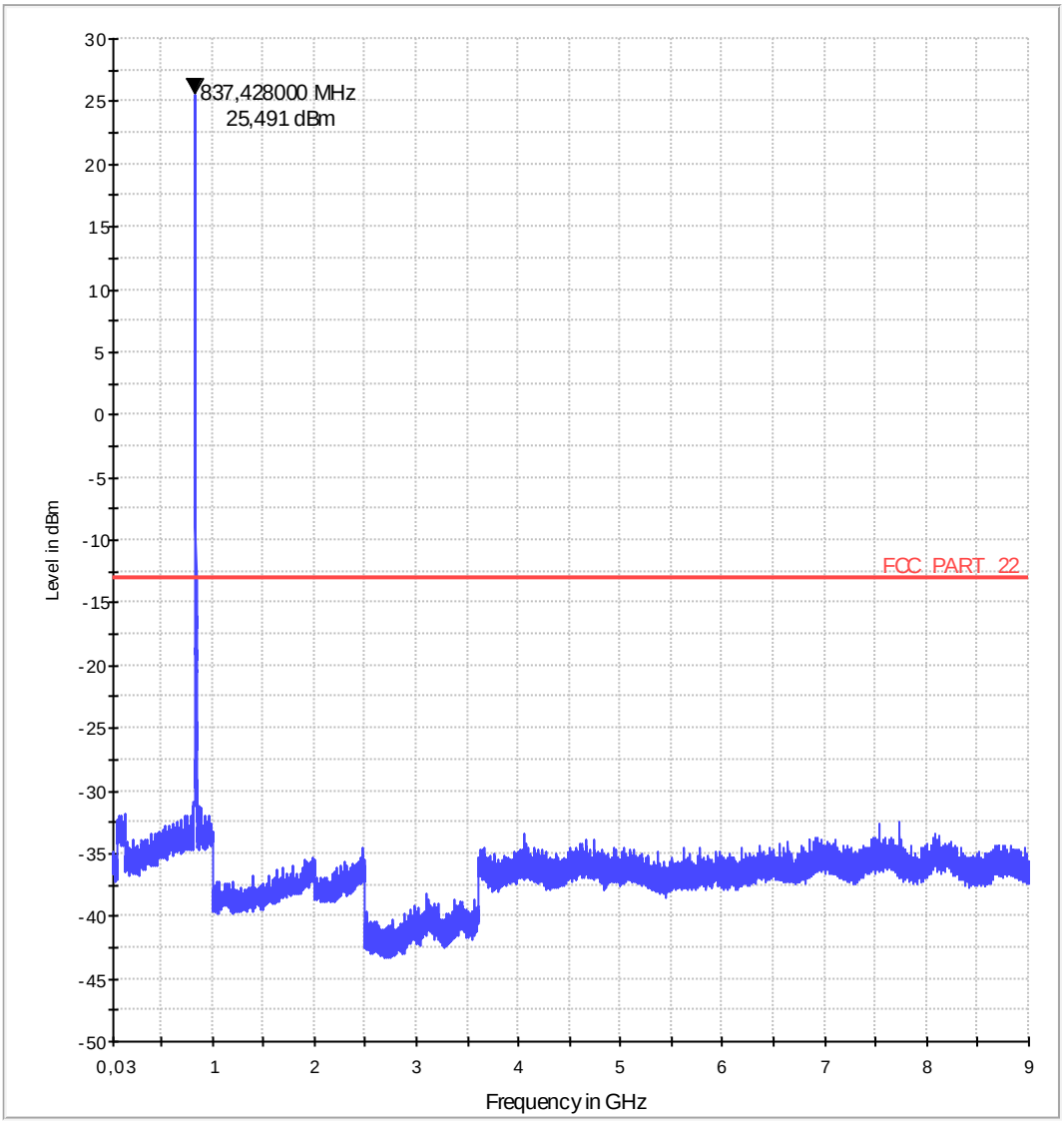
Common Information

Test Description:	TX Spurious Emission conducted
Test Site:	Radio laboratory
Test Standard:	FCC Part 22, RSS-132
Test condition:	23°C 41%
Operation mode:	FDDV-HSUPA (UARFCN 4182 middle)
Operator:	dpa

EUT Information

EUT Name:	LISA-U200
Manufacturer:	u-blox AG
Serial Number:	358901040001353
Hardware Rev:	21.03
Voltage:	3,8 VDC

Sweep_2



b_4.16

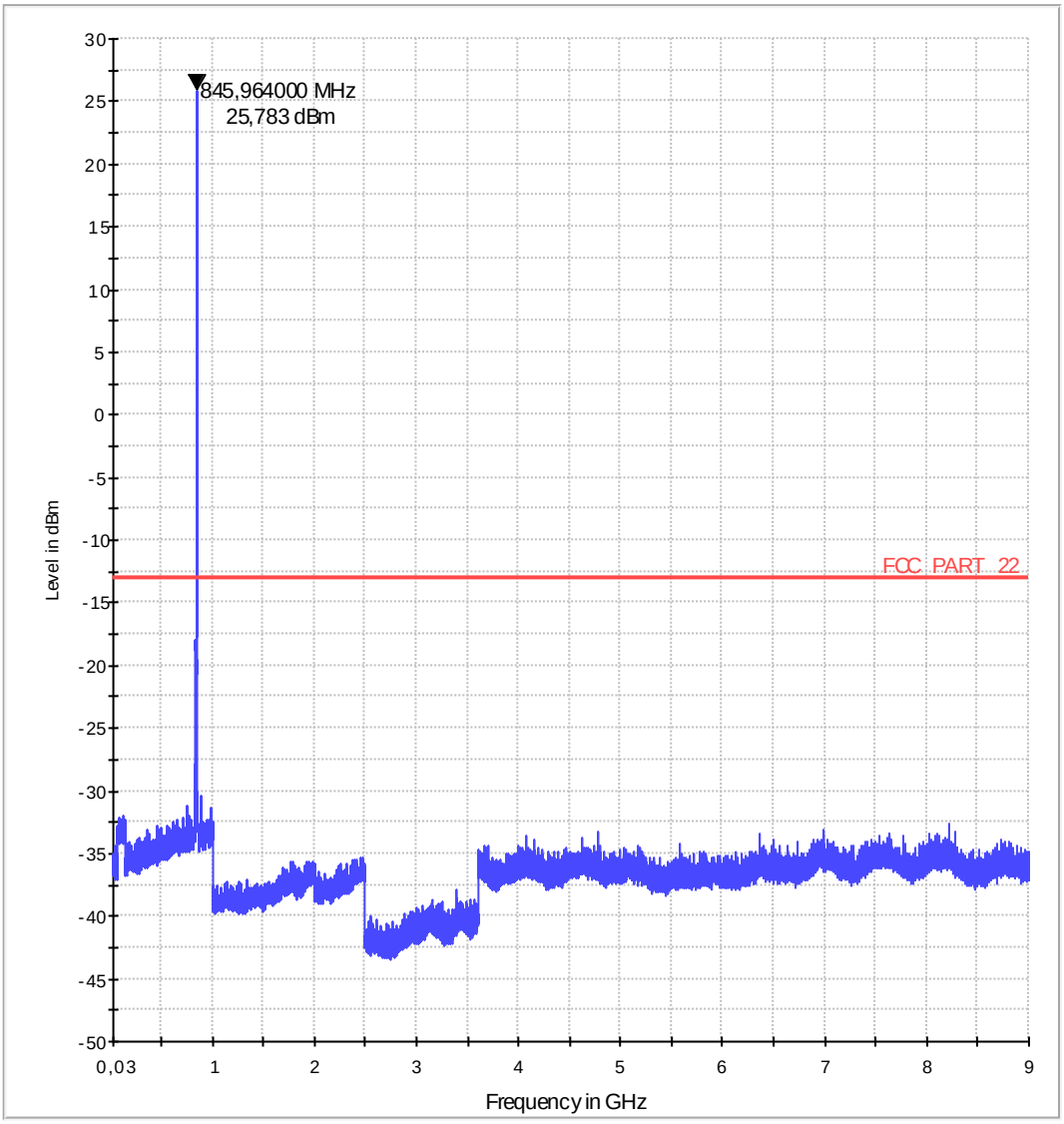
Common Information

Test Description:	TX Spurious Emission conducted
Test Site:	Radio laboratory
Test Standard:	FCC Part 22, RSS-132
Test condition:	23°C 41%
Operation mode:	FDDV-HSUPA (UARFCN 4233 high)
Operator:	dpa

EUT Information

EUT Name:	LISA-U200
Manufacturer:	u-blox AG
Serial Number:	358901040001353
Hardware Rev:	21.03
Voltage:	3,8 VDC

Sweep_2



1.4.1. Band-Edge compliance conducted

b_4.12

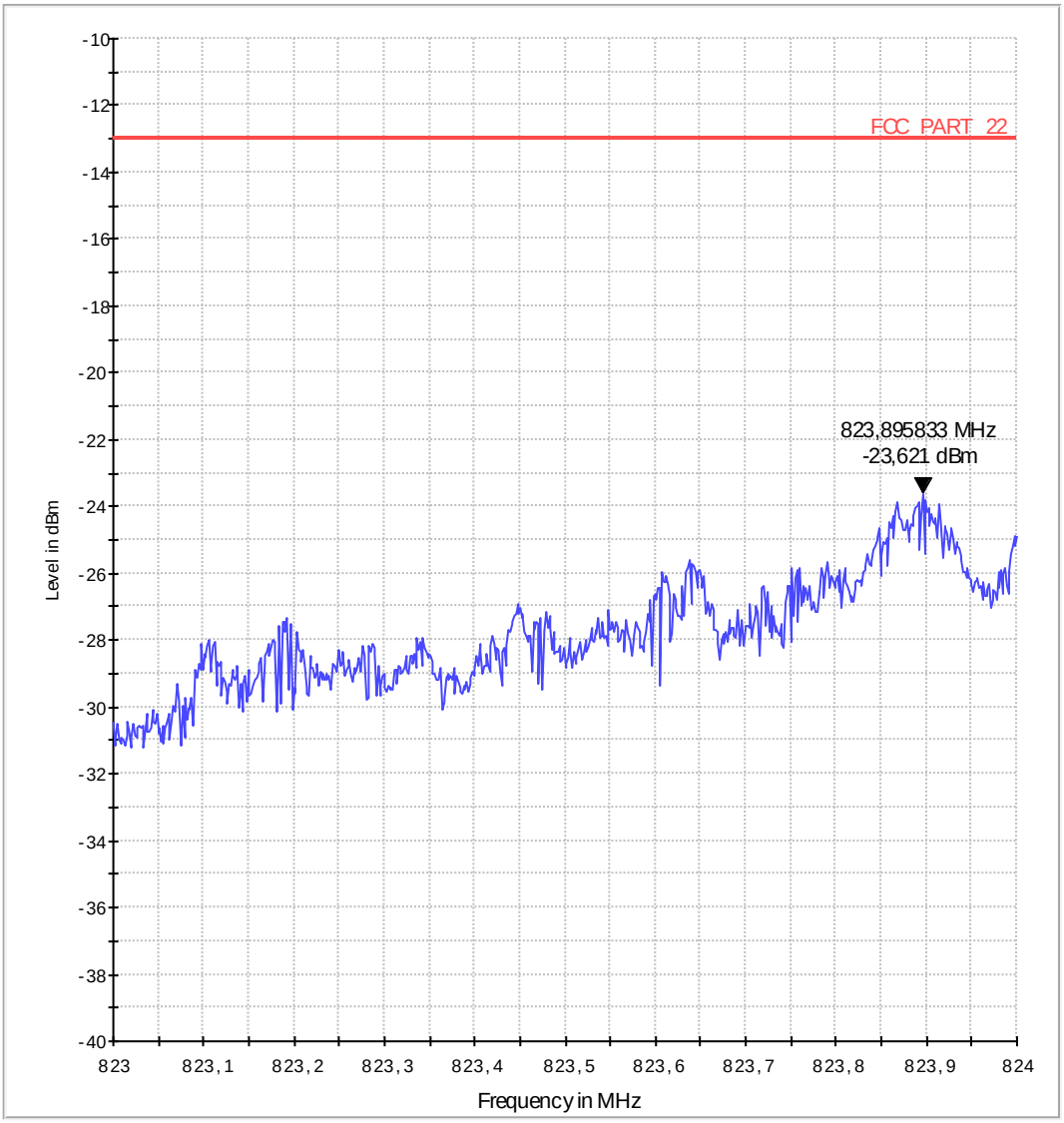
Common Information

Test Description:	Band Edge
Test Site:	Radio laboratory
Test Standard:	FCC Part 22, RSS-132
Test condition:	23°C 41%
Operation mode:	FDDV-HSUPA (UARFCN 4132 low)
Operator:	dpa

EUT Information

EUT Name:	LISA-U200
Manufacturer:	u-blox AG
Serial Number:	358901040001353
Hardware Rev:	21.03
Voltage:	3,8 VDC

Sweep_3a_Band_Edge_Channel_4132_PK



b_4.13

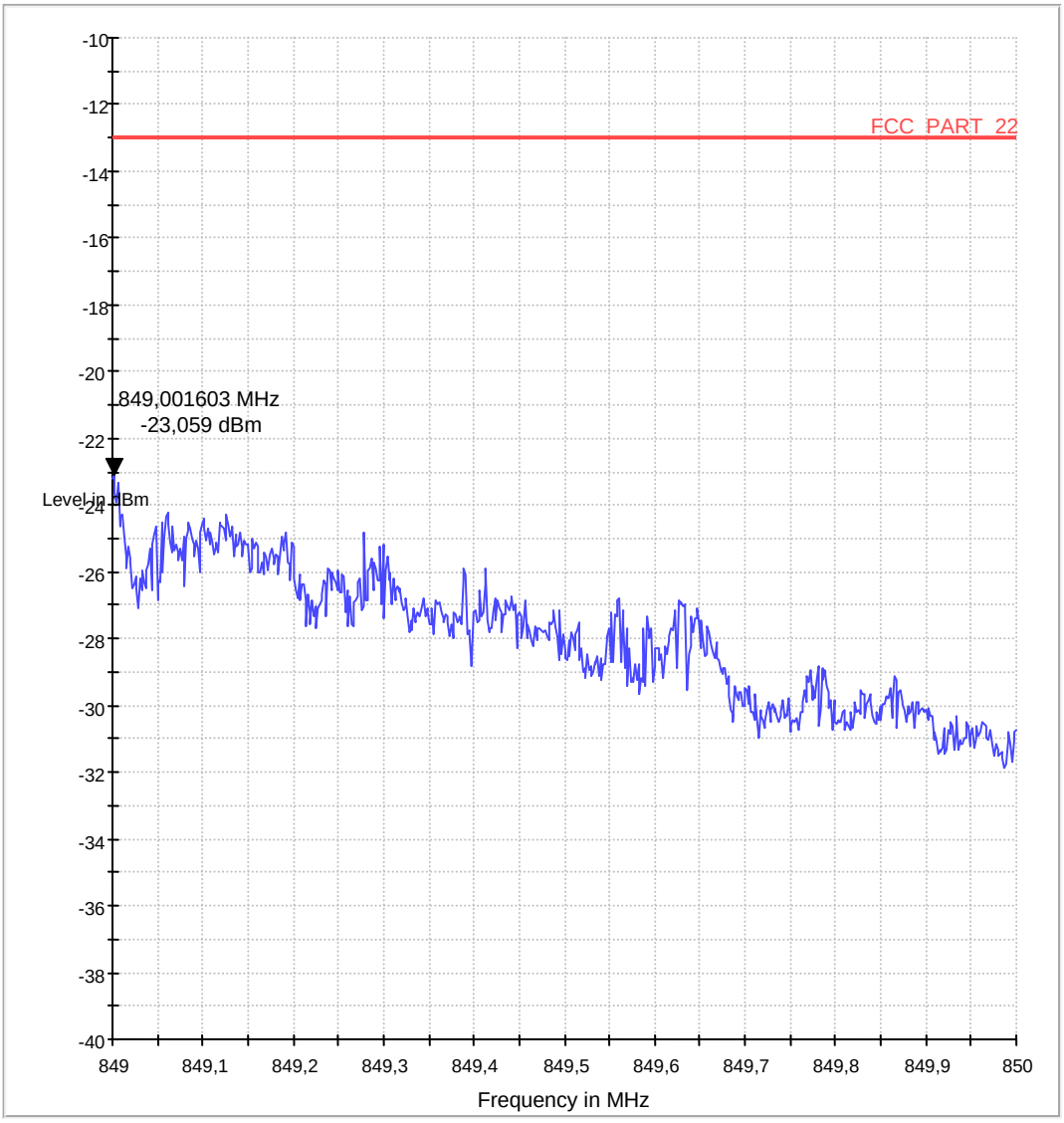
Common Information

Test Description:	Band Edge
Test Site:	Radio laboratory
Test Standard:	FCC Part 22, RSS-132
Test condition:	23°C 41%
Operation mode:	FDDV-HSUPA (UARFCN 4233 high)
Operator:	dpa

EUT Information

EUT Name:	LISA-U200
Manufacturer:	u-blox AG
Serial Number:	358901040001353
Hardware Rev:	21.03
Voltage:	3,8 VDC

Sweep_3a_Band_Edge_Channel_4233_PK



1.5.Spurious emissions conducted – FDD Band II Mode

b_4.19

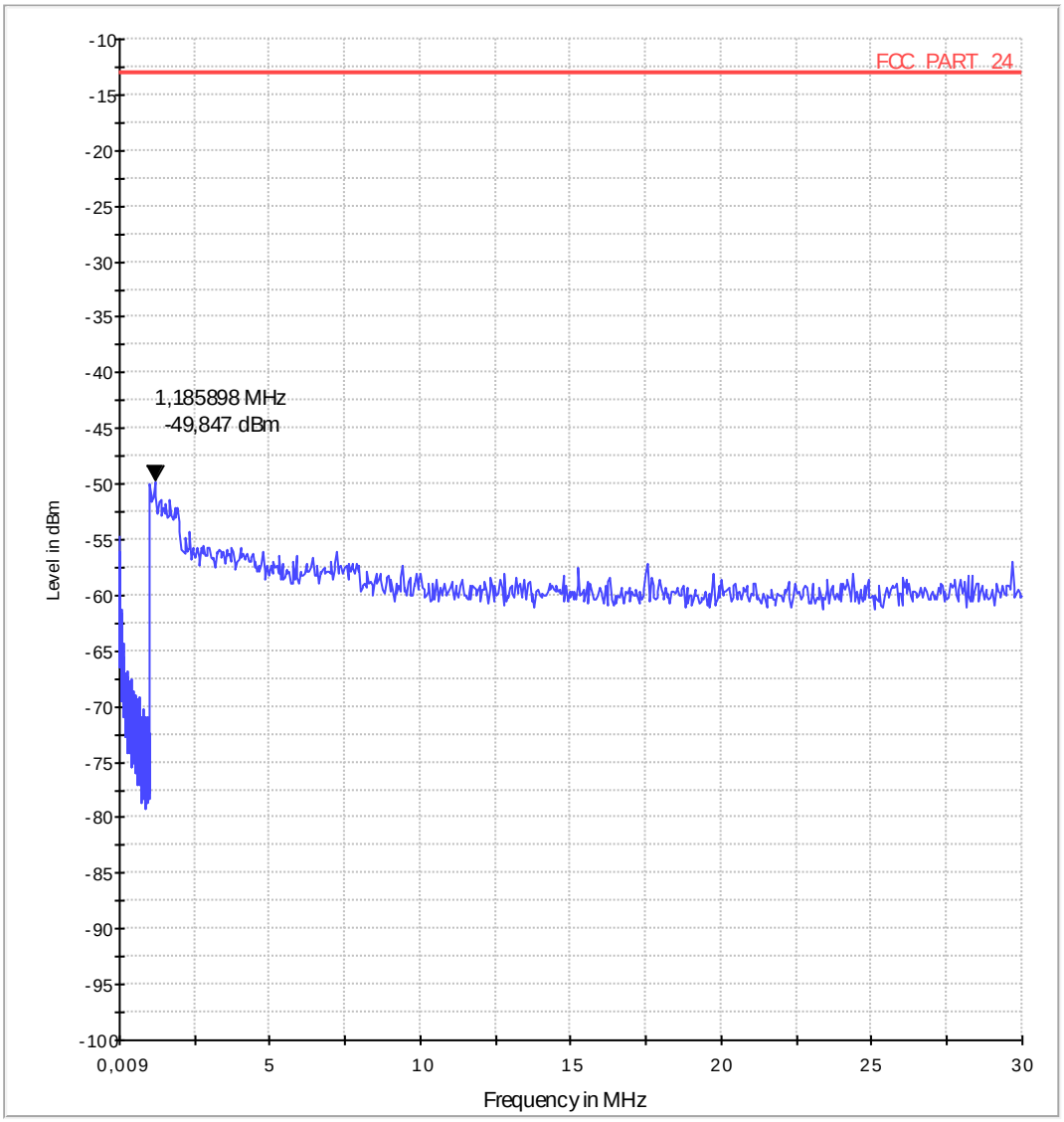
Common Information

Test Description:	TX Spurious Emission conducted
Test Site:	Radio laboratory
Test Standard:	FCC Part 24.238, RSS-133
Test Conditions:	23°C 41%
Operation mode:	FDDII-HSUPA (UARFCN 9262 low)
Operator Name:	dpa

EUT Information

EUT Name:	LISA-U200
Manufacturer:	u-blox AG
Serial Number:	358901040001353
Hardware Rev:	21.03
Voltage:	3,8 VDC

Sweep_1



b_4.20

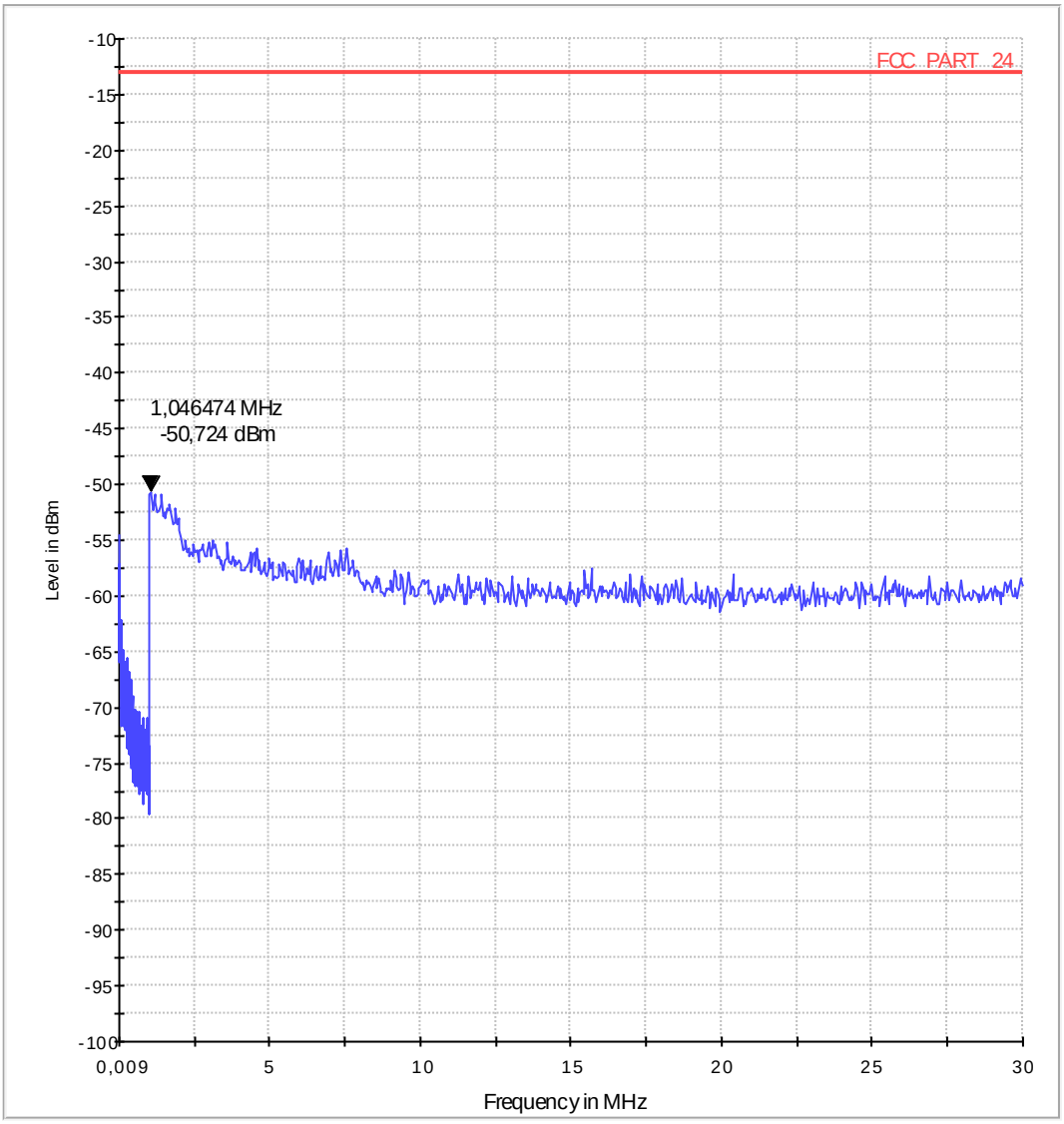
Common Information

Test Description:	TX Spurious Emission conducted
Test Site:	Radio laboratory
Test Standard:	FCC Part 24.238, RSS-133
Test Conditions:	23°C 41%
Operation mode:	FDDII-HSUPA (UARFCN 9400 middle)
Operator Name:	dpa
Comment:	

EUT Information

EUT Name:	LISA-U200
Manufacturer:	u-blox AG
Serial Number:	358901040001353
Hardware Rev:	21.03
Voltage:	3,8 VDC

Sweep_1



b_4.21

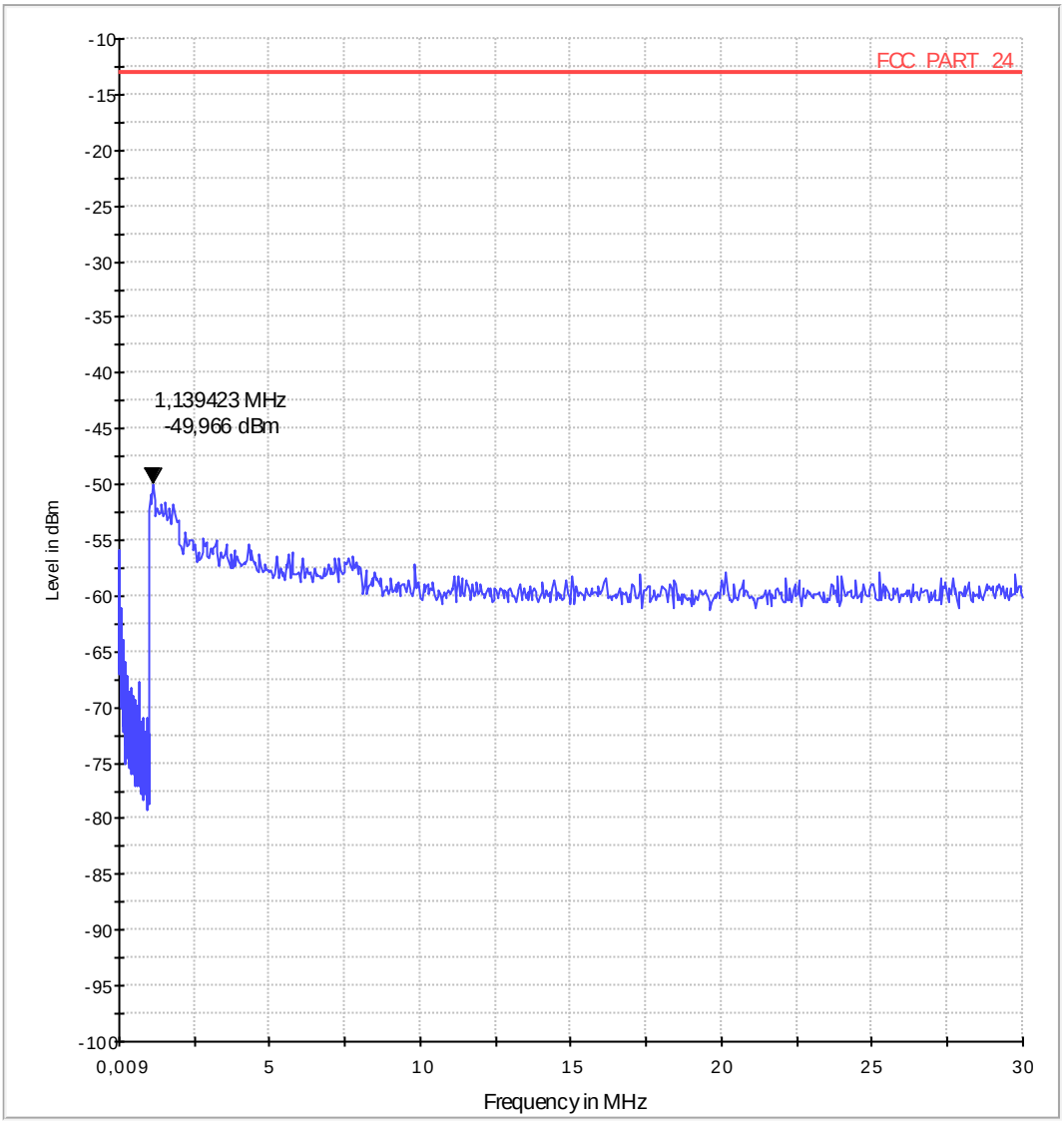
Common Information

Test Description:	TX Spurious Emission conducted
Test Site:	Radio laboratory
Test Standard:	FCC Part 24.238, RSS-133
Test Conditions:	23°C 41%
Operation mode:	FDDII-HSUPA (UARFCN 9538 high)
Operator Name:	dpa
Comment:	

EUT Information

EUT Name:	LISA-U200
Manufacturer:	u-blox AG
Serial Number:	358901040001353
Hardware Rev:	21.03
Voltage:	3,8 VDC

Sweep_1



b_4.22

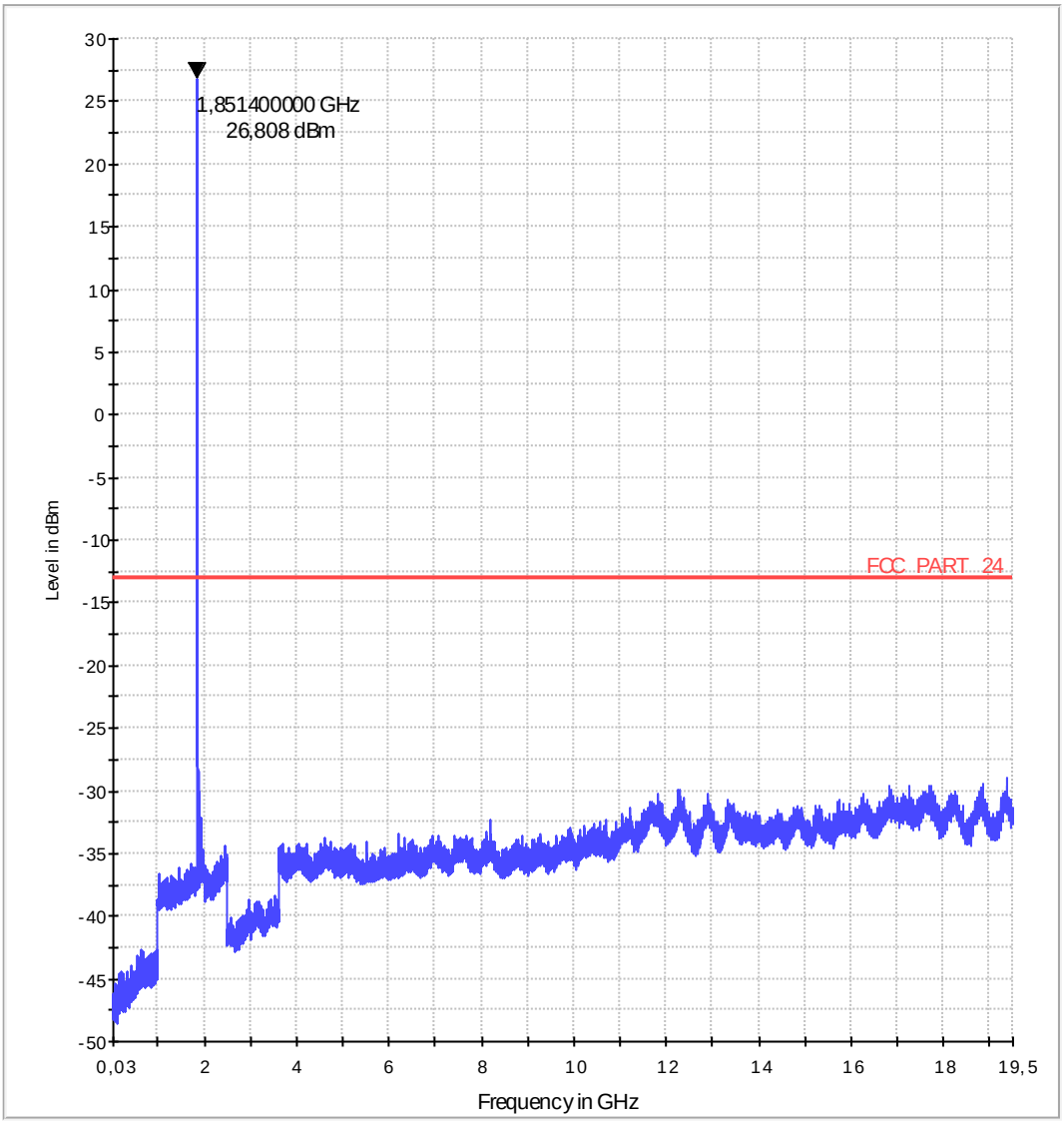
Common Information

Test Description:	TX Spurious Emission conducted
Test Site:	Radio laboratory
Test Standard:	FCC Part 24.238, RSS-133
Test condition:	23°C 41%
Operation mode:	FDDII-HSUPA (UARFCN 9262 low)
Operator:	dpa

EUT Information

EUT Name:	LISA-U200
Manufacturer:	u-blox AG
Serial Number:	358901040001353
Hardware Rev:	21.03
Voltage:	3,8 VDC

Sweep_2



b_4.23

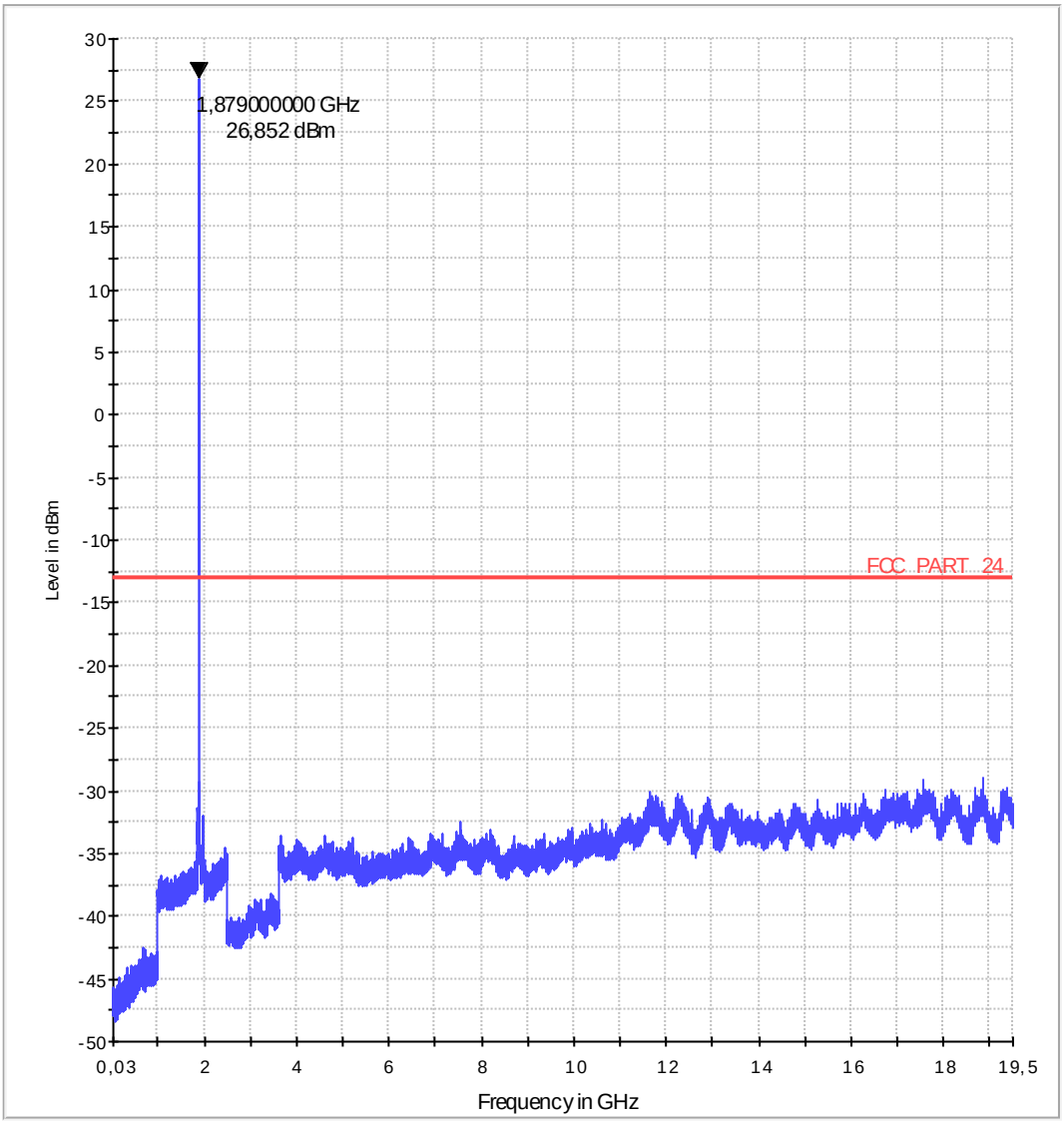
Common Information

Test Description:	TX Spurious Emission conducted
Test Site:	Radio laboratory
Test Standard:	FCC Part 24.238, RSS-133
Test condition:	23°C 41%
Operation mode:	FDDII-HSUPA (UARFCN 9400 middle)
Operator:	dpa

EUT Information

EUT Name:	LISA-U200
Manufacturer:	u-blox AG
Serial Number:	358901040001353
Hardware Rev:	21.03
Voltage:	3,8 VDC

Sweep_2



b_4.24

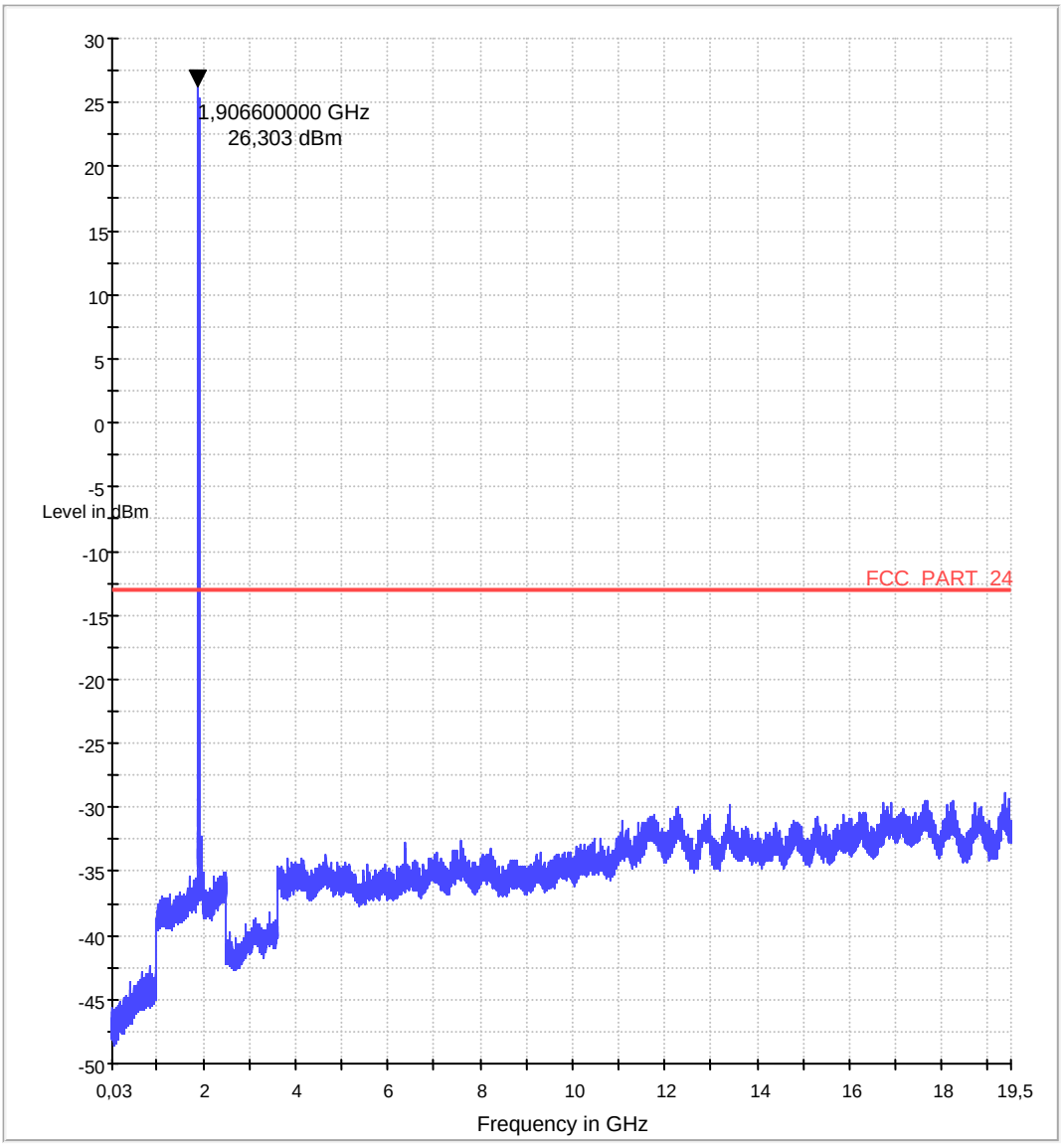
Common Information

Test Description:	TX Spurious Emission conducted
Test Site:	Radio laboratory
Test Standard:	FCC Part 24.238, RSS-133
Test condition:	23°C 41%
Operation mode:	FDDII-HSUPA (UARFCN 9538 high)

EUT Information

EUT Name:	LISA-U200
Manufacturer:	u-blox AG
Serial Number:	358901040001353
Hardware Rev:	21.03
Voltage:	3,8 VDC

Sweep_2



1.5.1. Band-Edge compliance conducted

b_4.27

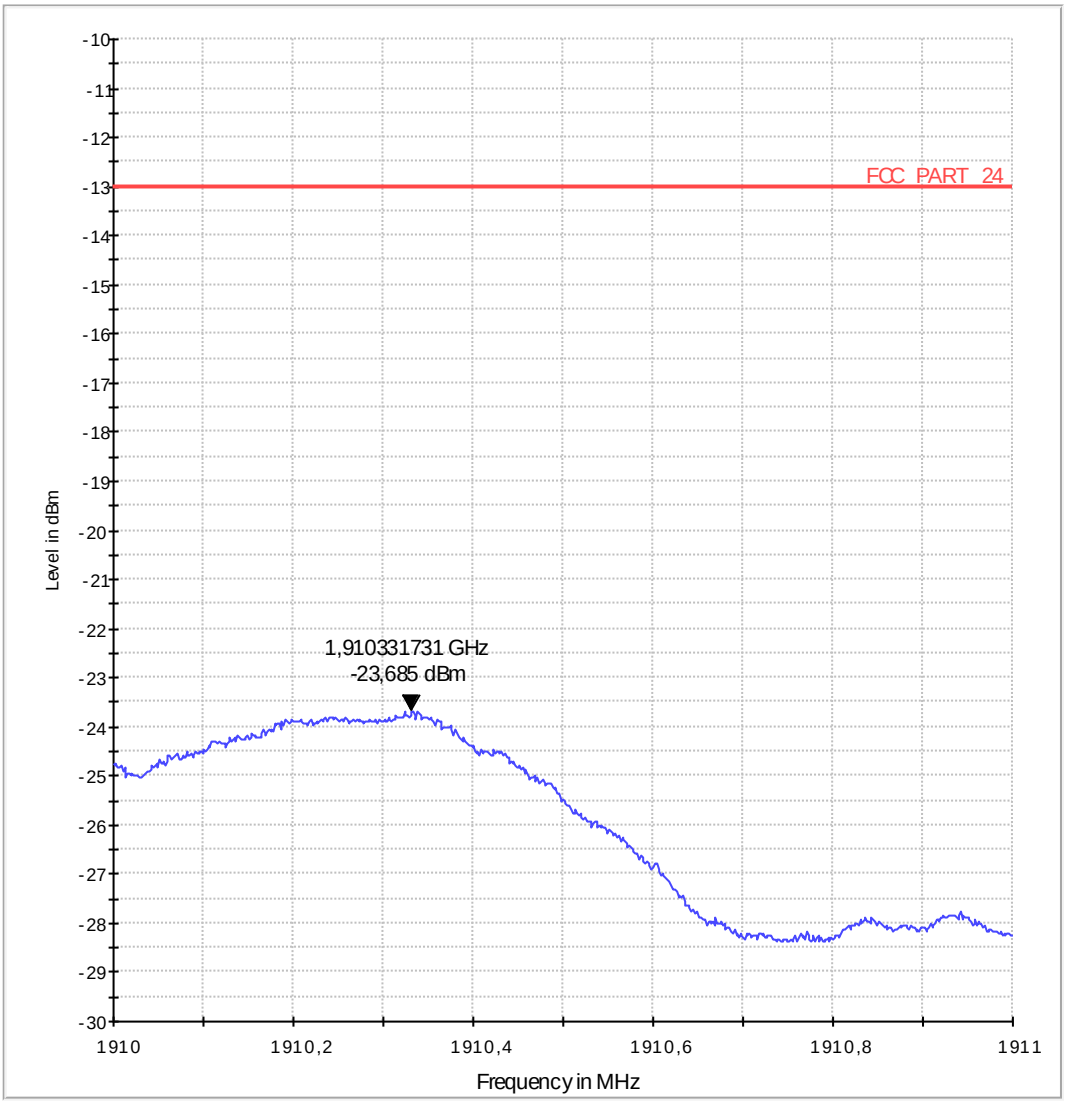
Common Information

Test Description:	Band Edge
Test Site:	Radio laboratory
Test Standard:	FCC Part 24.238, RSS-133
Test condition:	23°C 41%
Operation mode:	FDDII-HSUPA (UARFCN 9538 high)
Operator:	dpa
Comment:	

EUT Information

EUT Name:	LISA-U200
Manufacturer:	u-blox AG
Serial Number:	358901040001353
Hardware Rev:	21.03
Voltage:	3,8 VDC

Sweep_3b_Band_Edge_Channel_9538_AV



b_4.28

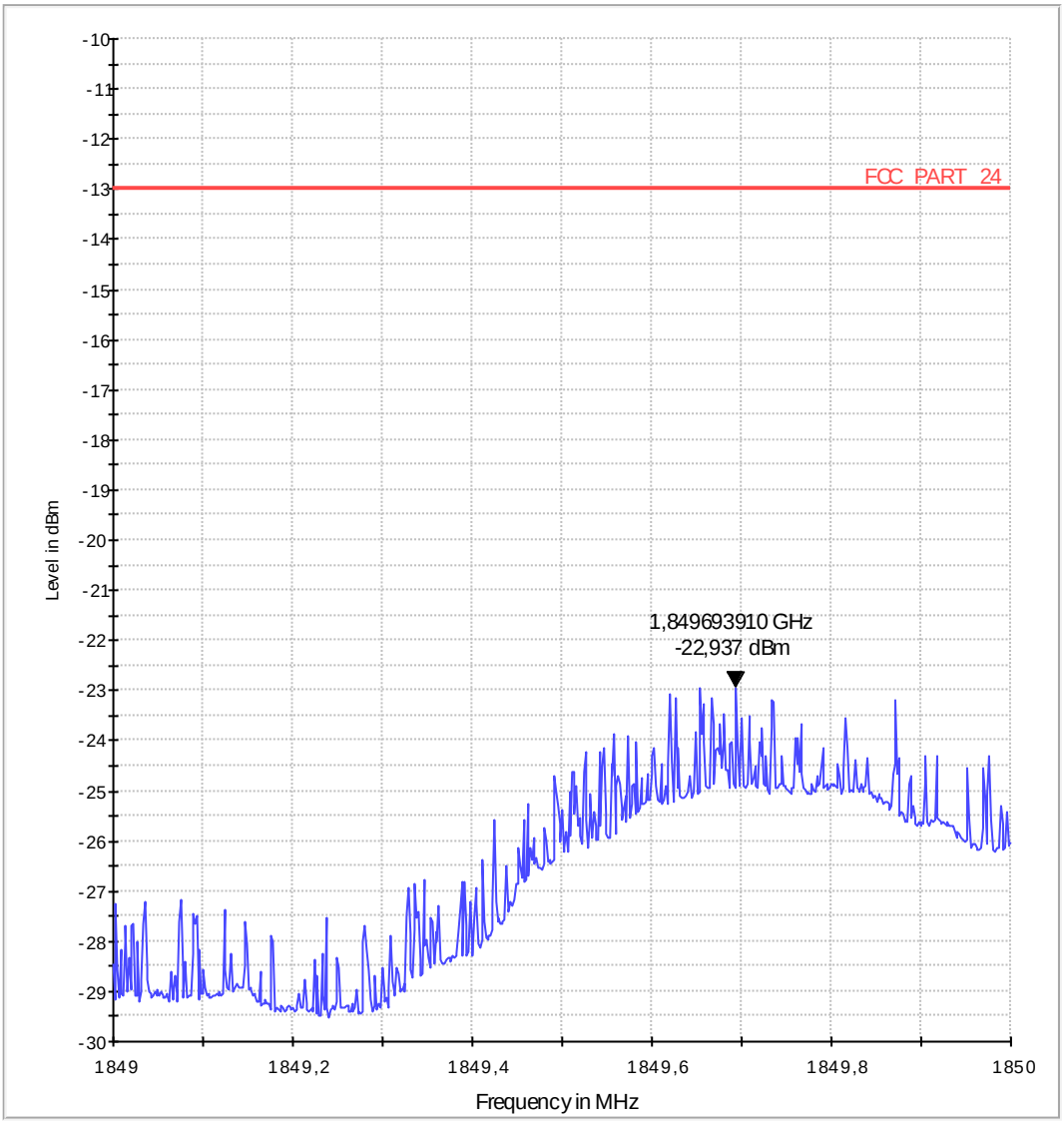
Common Information

Test Description:	Band Edge
Test Site:	Radio laboratory
Test Standard:	FCC Part 24.238, RSS-133
Test condition:	23°C 41%
Operation mode:	FDDII-HSUPA (UARFCN 9262 low)
Operator:	dpa

EUT Information

EUT Name:	LISA-U200
Manufacturer:	u-blox AG
Serial Number:	358901040001353
Hardware Rev:	21.03
Voltage:	3,8 VDC

Sweep_3b_Band_Edge_Channel_9262_AV



1.6. Spurious emissions radiated – FDD Band II Mode

1.6.1. Spurious emissions magnetic-field <30MHz

Diagram No. b_3.01

Common Information

Test description:	Magnetic Fieldstrength Measurement related to 3 m distance
Test site and distance:	Semi Anechoic Room covered with absorbers (SAR) with 3 m measurement distance
Measured sides of EUT:	front, right, rear, left
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Turntable step:	90° during pre-scan
Used filter:	bypass
Test specification.:	FCC 15.205 § 15.209; RSS-Gen: Issue 3
Operator:	HLa
Operating conditions:	FDD II TX
Power during tests:	110V/60Hz
Comment 1:	Channel low (9262)

FCC15.209_magn hor+vert

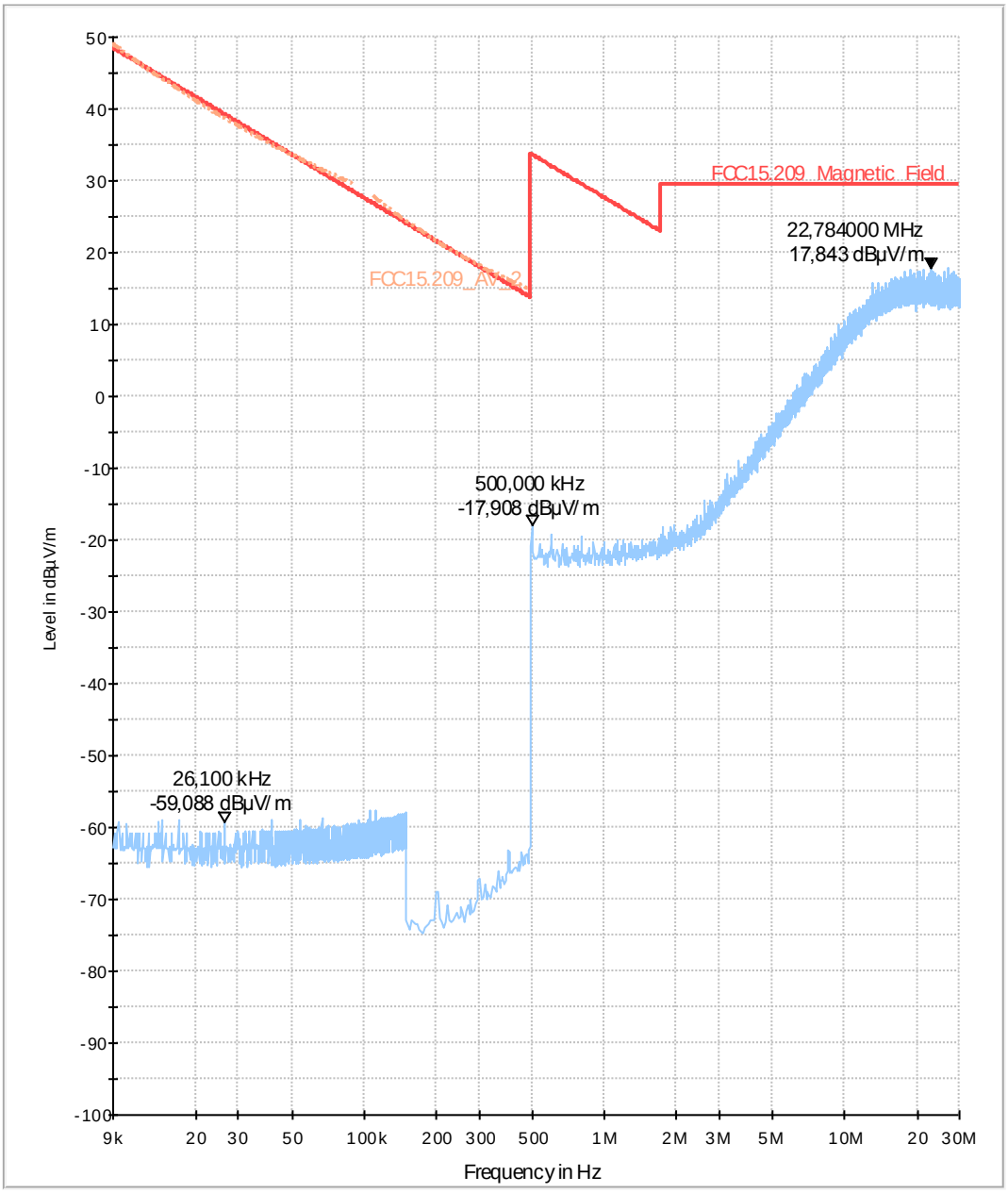


Diagram No. b_3.02

Common Information

Test description:	Magnetic Fieldstrength Measurement related to 3 m distance
Test site and distance:	Semi Anechoic Room (SAR) + mobile floor absorbers and 3m measurement distance
Measured sides of EUT:	front, right, rear, left
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Turntable step:	90° during pre-scan
Used filter:	lowpass 1200 MHz
Test specification.:	FCC 15.205 § 15.209; RSS-Gen: Issue 3
Operator:	HLa
Operating conditions:	HSUPA TX-on
Power during tests:	110V/60Hz
Comment 1:	Channel middle (9400) FDD II

EUT Information

EUT Name:	M/N LISA-U200
Manufacturer:	u-blox AG
IMEI:	358901040001734
FW:	21.03

FCC15.209_magn hor+vert

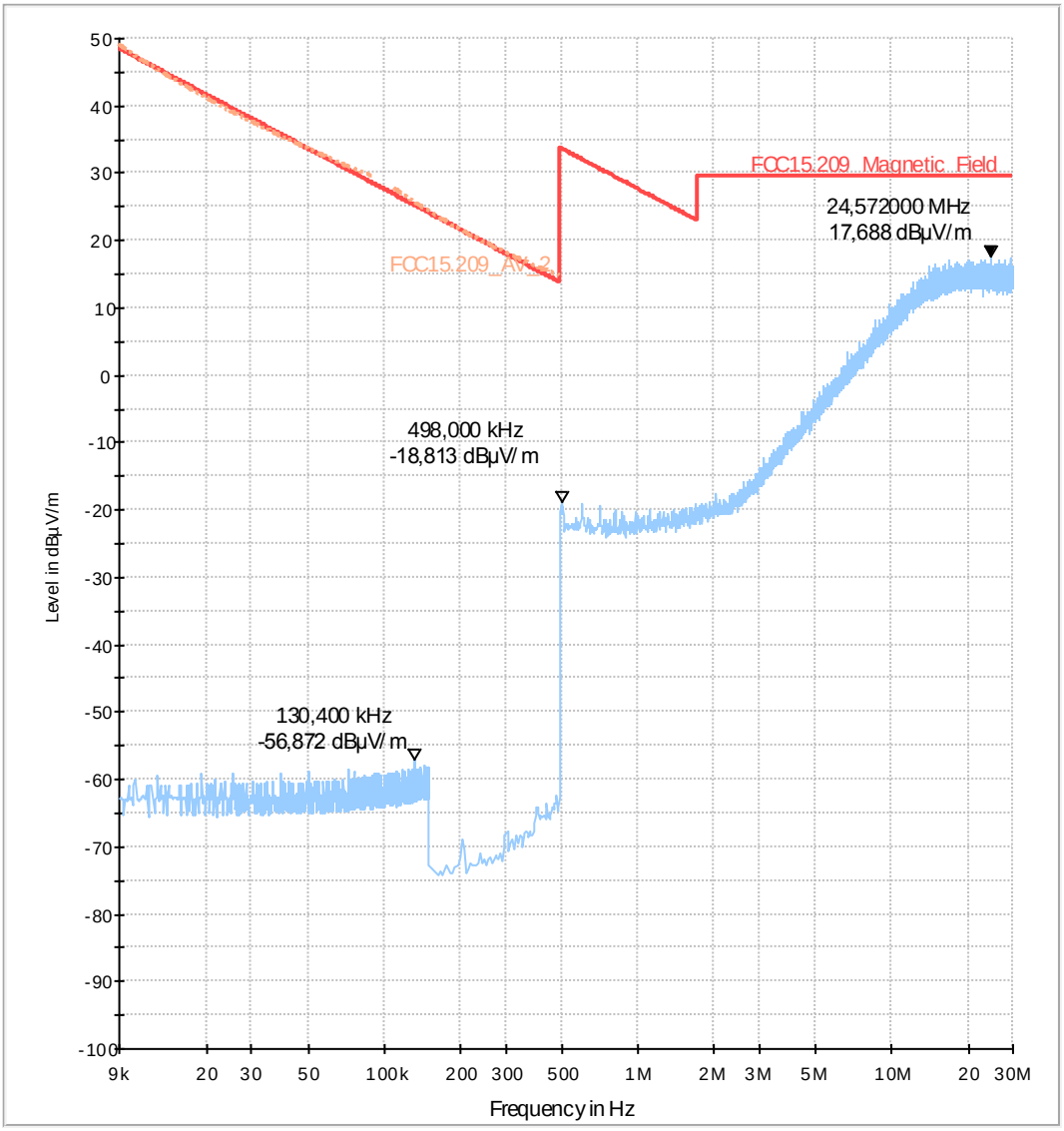


Diagram No. b_3.03

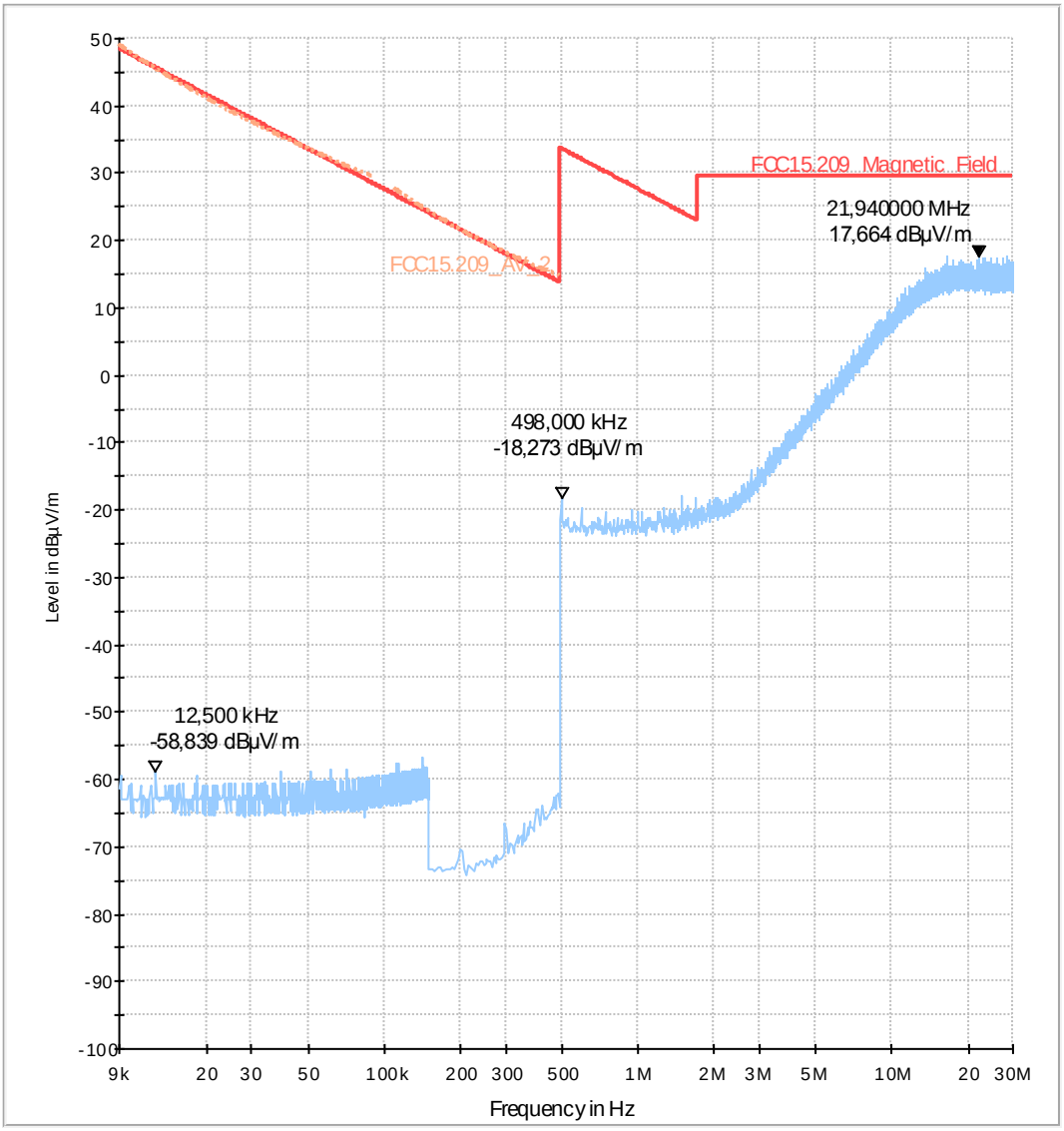
Common Information

Test description:	Magnetic Fieldstrength Measurement related to 3 m distance
Test site and distance:	Semi Anechoic Room (SAR) + mobile floor absorbers and 3m measurement distance
Measured sides of EUT:	front, right, rear, left
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Turntable step:	90° during pre-scan
Used filter:	lowpass 1200 MHz
Test specification.:	FCC 15.205 § 15.209; RSS-Gen: Issue 3
Operator:	HLa
Operating conditions:	FDD II TX
Power during tests:	110V/60Hz
Comment 1:	Channel high (9538) FDD II

EUT Information

EUT Name:	M/N LISA-U200
Manufacturer:	u-blox AG
IMEI:	358901040001734
FW:	21.03

FCC15.209_magn hor+vert



1.6.2. Spurious emissions electric field-strength emission >30 MHz+ Block-Edge+ E.I.R.P.

b_5.14

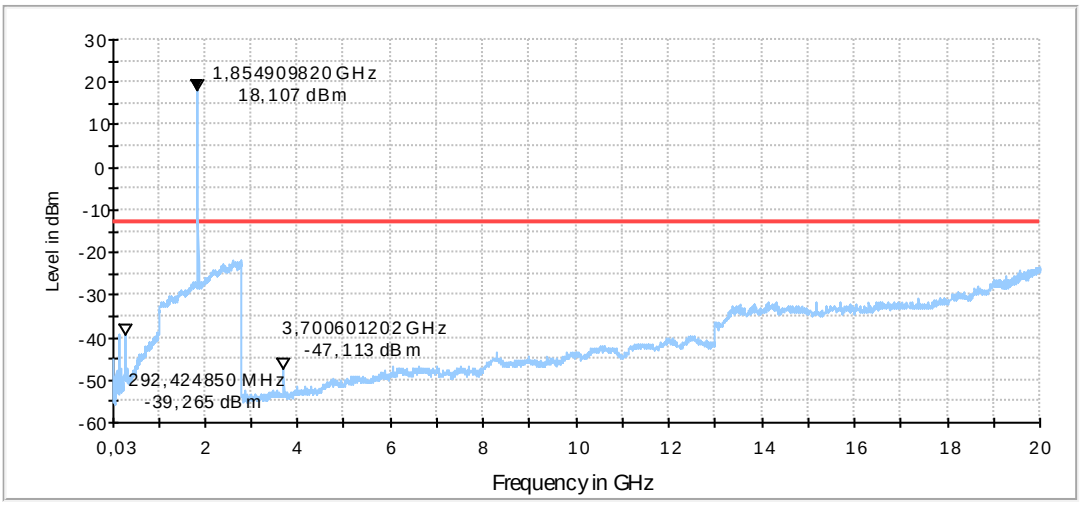
Common Information

Test Description:	Radiated Spurious Emissions UMTS FDD II
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part24
Antenna polarisation:	UMTS FDDII, HSUPA, Channel 9262 (UL 1852,4MHz)
Environmental Conditions:	Humidity: 58%rH; Temperature: 19°C
Operator Name:	YZH

EUT Information

Manufacturer:	u-blox AG
Model:	LISA-U200
Type:	
---	---
EUT:	
EUT additional information:	-
HW version:	-
SW version:	-
Additional SW:	-
Config:	-
Serial number:	
Connected Interfaces:	
Power Supply:	
Comments:	

030414_FCC_Part24_UMTS-FDDII_TX_all_channels_30M-25G



b_5.14_BE

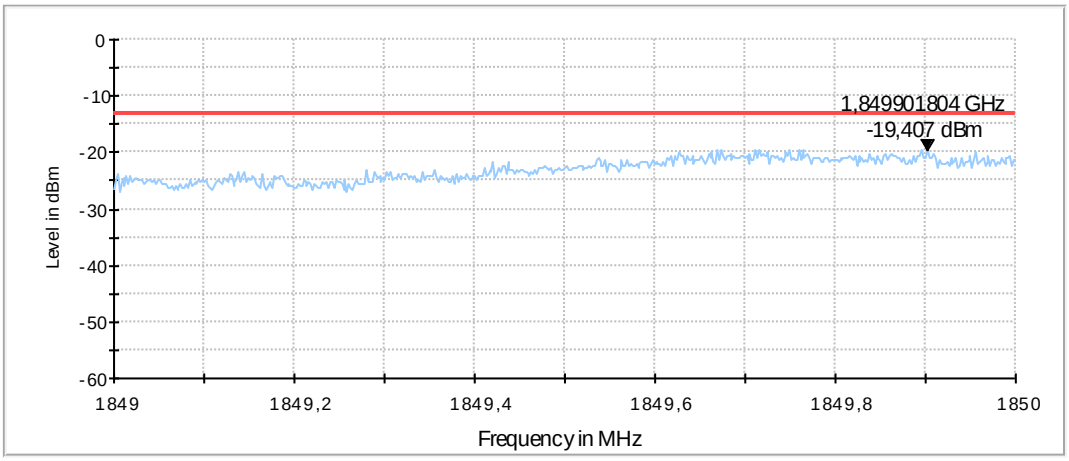
Common Information

Test Description:	Band-Edge Radiated FDDII
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part24
Operation mode:	UMTS FDDII, HSUPA, Channel 9262 (UL 1852,4MHz)
Environmental Conditions:	Humidity: 58%rH; Temperature: 19°C
Operator Name:	YZH

EUT Information

Manufacturer:	u-blox
Model:	LISA-U200
Type:	GSM/WCDMA Module
---	---
EUT:	-
EUT additional information:	-
HW version:	-
SW version:	21.03
Additional SW:	-
Config:	-
Serial number:	358901040001353
Aux. Devices:	Magnet Antenna GA107, AC/DC 12V Charger
Power Supply:	AC Charger connected to 110 V / 60 Hz
Comments:	

030415_FCC_Part24_UMTS-FDDII_TX_low_channel_band_edge



b_5.15

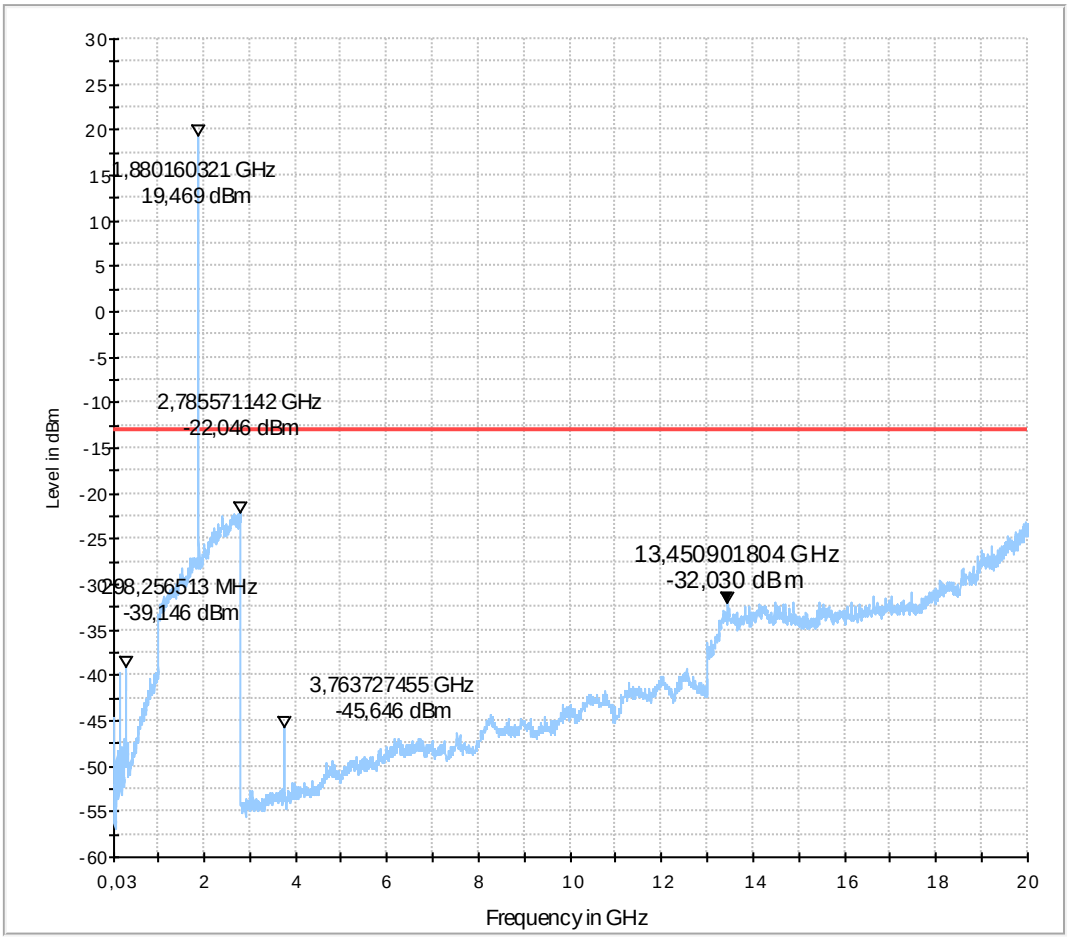
Common Information

Test Description:	Radiated Spurious Emissions UMTS FDD II
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part24
Operation Mode:	UMTS FDDII, HSUPA, Channel 9400 (UL 1880,0MHz)
Environmental Conditions:	Humidity: 58%rH; Temperature: 19°C
Operator Name:	YZH

EUT Information

Manufacturer:	u-blox
Model:	LISA-U200
Type:	GSM/WCDMA Module
---	---
EUT:	-
EUT additional information:	-
HW version:	-
SW version:	21.03
Additional SW:	-
Config:	-
Serial number:	358901040001353
Aux. Devices:	Magnet Antenna GA107, AC/DC 12V Charger
Power Supply:	AC Charger connected to 110 V / 60 Hz
Comments:	

030414_FCC_Part24_UMTS-FDDII_TX_all_channels_30M-25G



b_5.16

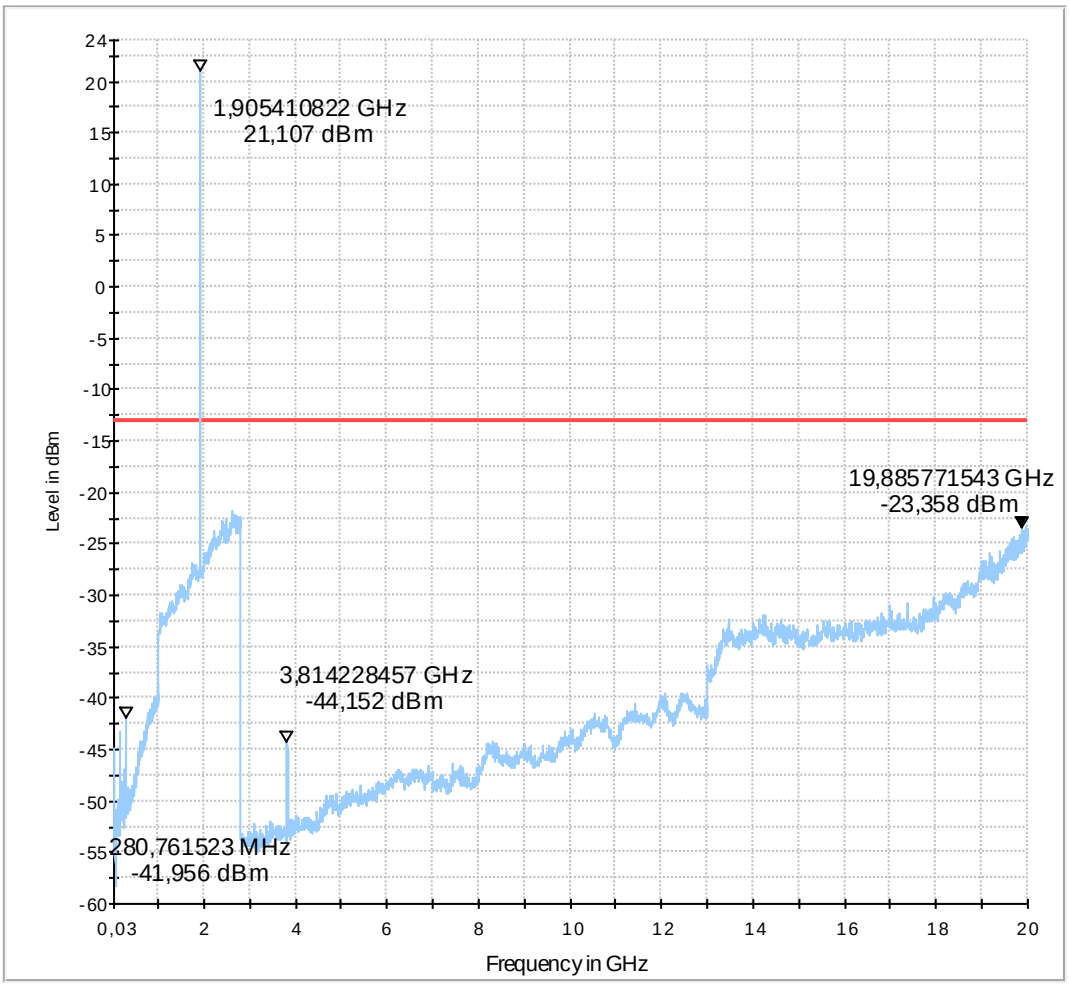
Common Information

Test Description:	Radiated Spurious Emissions UMTS FDD II (FCC Part 24)
Operating Conditions:	Fully Anechoic Room (FAR)
Operator Name:	Tas
Project no.:	6-0082-11-1-2b
Operating mode	UMTS FDD II, HSUPA, TX-Channel UARFCN 9538 High

EUT Information

Manufacturer:	u-blox
Model:	LISA-U200
Type:	GSM/WCDMA Module
---	---
EUT:	-
EUT additional information:	-
HW version:	-
SW version:	21.03
Additional SW:	-
Config:	-
Serial number:	358901040001353
Aux. Devices:	Magnet Antenna GA107, AC/DC 12V Charger
Power Supply:	AC Charger connected to 110 V / 60 Hz
Comments:	

030414_FCC_Part24_UMTS-FDDII_TX_all_channels_30M-25G



b_5.16_BE

Common Information

Test Description:	Radiated Spurious Emissions UMTS FDD II (FCC Part 24)
Operating Conditions:	Fully Anechoic Room (FAR)
Operator Name:	Tas
Project no.	6-0082-11-1-2b
Operating mode	UMTS FDD II, HSUPA, TX-Channel UARFCN 9538 High

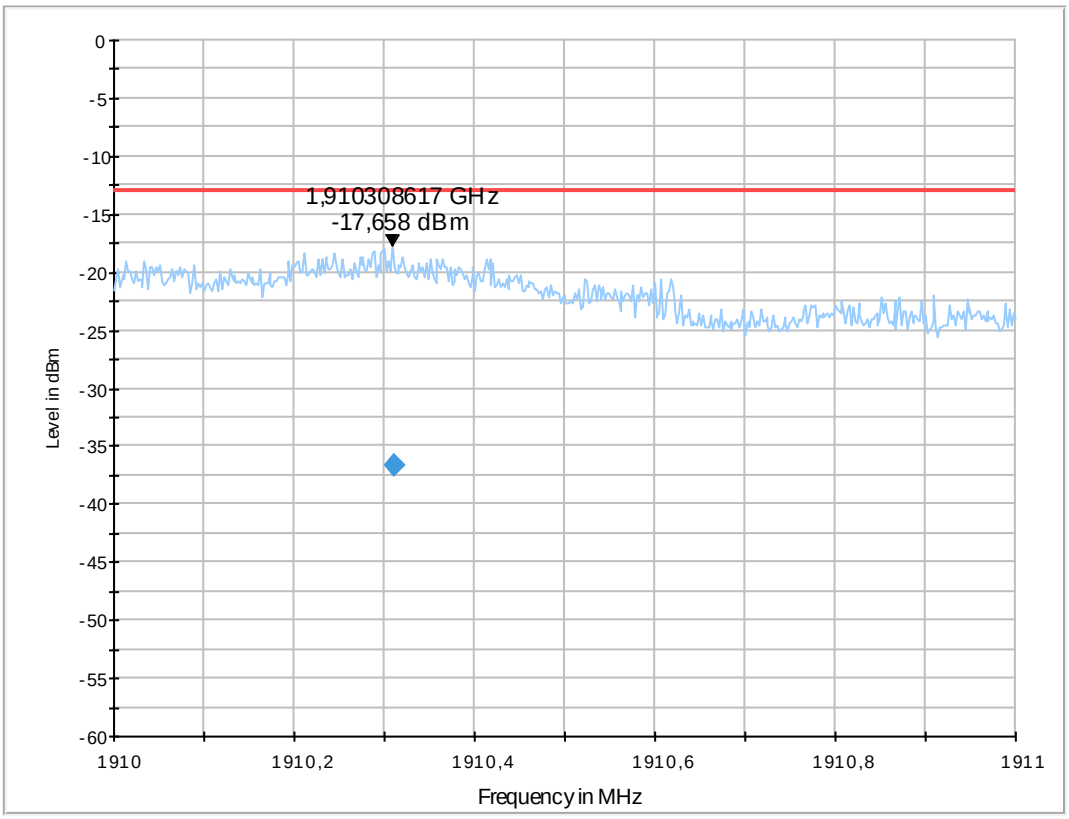
EUT Information

Manufacturer:	u-blox
Model:	LISA-U200
Type:	GSM/WCDMA Module
---	---
EUT:	-
EUT additional information:	-
HW version:	-
SW version:	21.03
Additional SW:	-
Config:	-
Serial number:	358901040001353
Aux. Devices:	Magnet Antenna GA107, AC/DC 12V Charger
Power Supply:	AC Charger connected to 110 V / 60 Hz
Comments:	

Final Result 1

Frequency (MHz)	Average (dBm)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)	Limit (dBm)
1910.310621	-36.7	10000.0	5.000	V	12.0	90.0	-62.7	23.7	-13.0

030416_FCC_Part24_UMTS-FDDII_TX_high_channel_band_edge



1.7. Spurious emissions radiated – FDD Band V Mode

1.7.1. Spurious emissions magnetic field strength (f<30 MHz)

Diagram No. b_3.04

Common Information

Test description:	Magnetic Fieldstrength Measurement related to 3 m distance
Test site and distance:	Semi Anechoic Room (SAR) + mobile floor absorbers and 3m measurement
Measured sides of EUT:	front, right, rear, left
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Turntable step:	90° during pre-scan
Used filter:	lowpass 1200 MHz
Test specification.:	FCC 15.205 & 15.209; RSS-Gen: Issue 3
Operator:	HLa
Operating conditions:	HSUPA TX-on
Power during tests:	110V/60Hz
Comment 1:	Channel low (4132) FDD V

EUT Information

EUT Name:	M/N LISA-U200
Manufacturer:	u-blox AG
IMEI:	358901040001734
FW:	21.03

FCC15.209_magn hor+vert

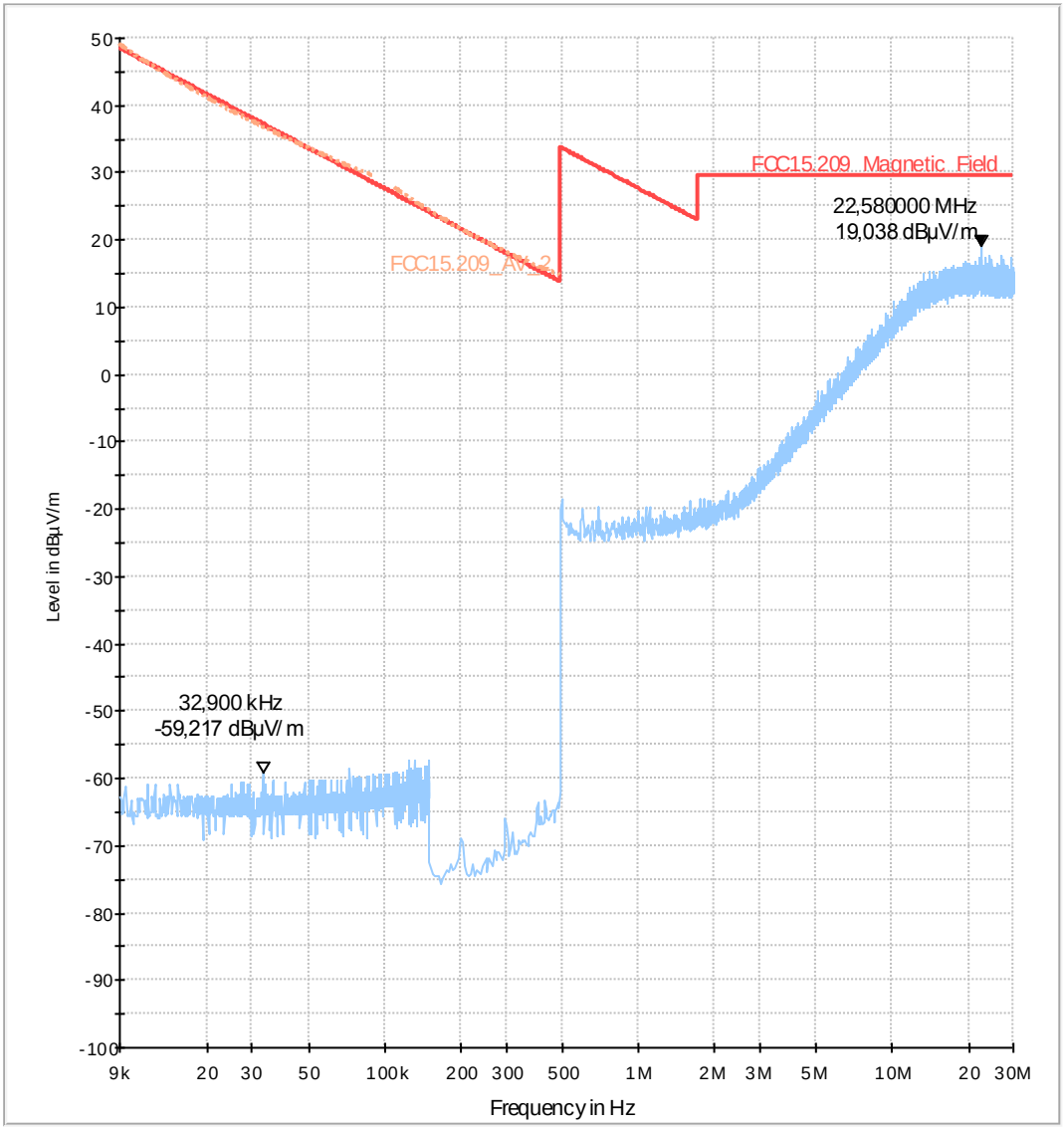


Diagram No. b_3.05

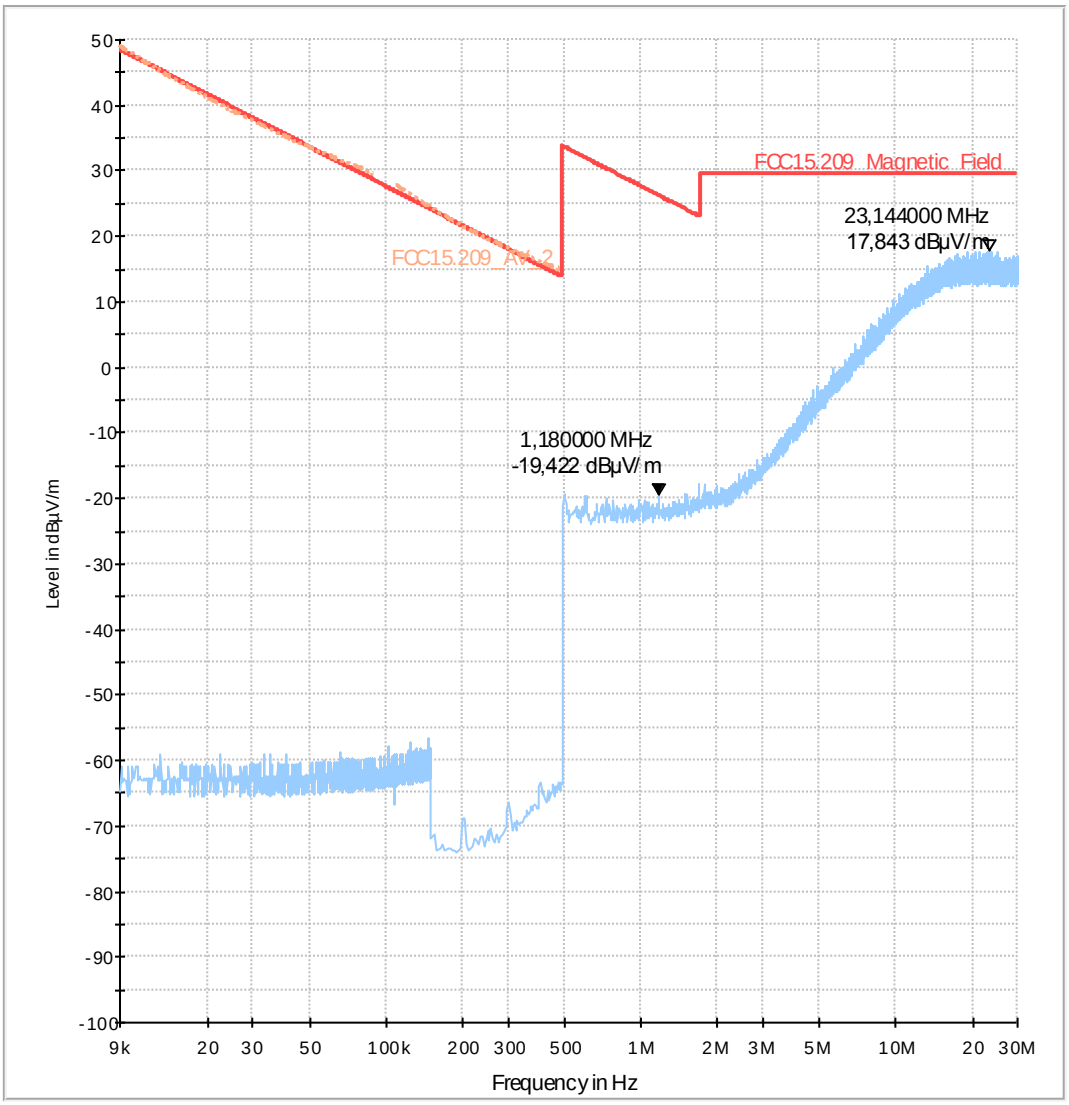
Common Information

Test description:	Magnetic Fieldstrength Measurement related to 3 m distance
Test site and distance:	Semi Anechoic Room (SAR) + mobile floor absorbers and 3m measurement distance
Measured sides of EUT:	front, right, rear, left
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Turntable step:	90° during pre-scan
Used filter:	lowpass 1200 MHz
Test specification.:	FCC 15.205 § 15.209; RSS-Gen: Issue 3
Operator:	HLa
Operating conditions:	HSUPA TX-on
Power during tests:	110V/60Hz
Comment 1:	Channel middle (4182) FDD V

EUT Information

EUT Name:	M/N LISA-U200
Manufacturer:	u-blox AG
IMEI:	358901040001734
FW:	21.03
Accessories:	Two USB cable (1,8m) connected and one to the laptop +GSM ant U-07 + AC/DC adapter

FCC15.209_magn hor+vert



EMI Auto Test Template: FCC15.209_magn hor+vert

Diagram No. b_3.06

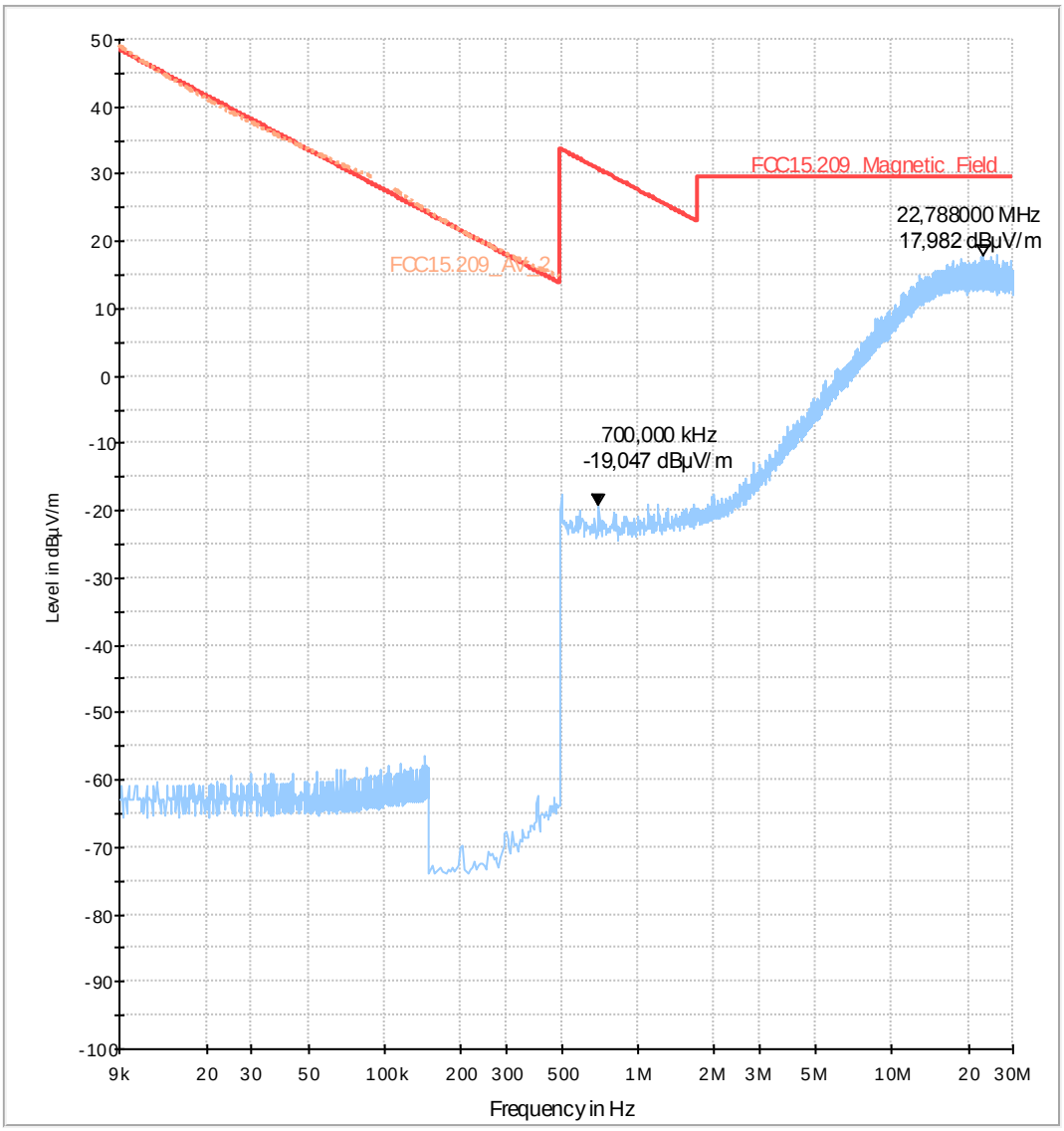
Common Information

Test description:	Magnetic Fieldstrength Measurement related to 3 m distance
Test site and distance:	Semi Anechoic Room (SAR) + mobile floor absorbers and 3m measurement distance
Measured sides of EUT:	front, right, rear, left
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Turntable step:	90° during pre-scan
Used filter:	lowpass 1200 MHz
Test specification.:	FCC 15.205 § 15.209; RSS-Gen: Issue 3
Operator:	HLa
Operating conditions:	HSUPA TX-on
Power during tests:	110V/60Hz
Comment 1:	Channel high (4233) FDD V

EUT Information

EUT Name:	M/N LISA-U200
Manufacturer:	u-blox AG
IMEI:	358901040001734
FW:	21.03

FCC15.209_magn hor+vert



EMI Auto Test Template: FCC15.209_magn hor+vert

1.7.2. Spurious emissions electric field-strength emission >30 MHz+ Block-Edge+ E.R.P.

CETECOM GmbH, 6-0082-11-1-2b

Diagram No.: b_5.11

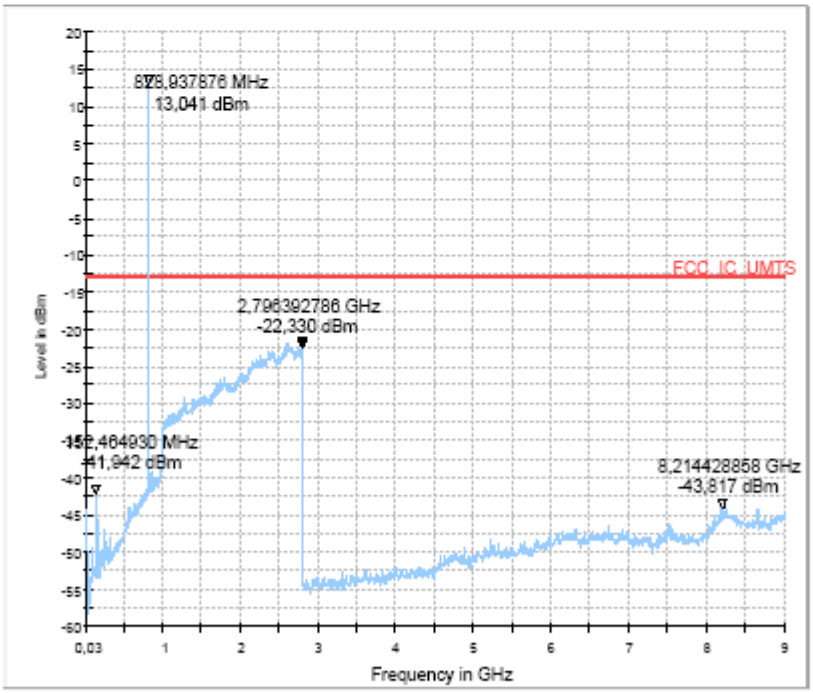
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Side:	CETECOM GmbH Essen
Test Standard:	FCC 15.109 Unintentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	Tx Mode FDD V (UL: UARFCN 4132 Low)
Operator Name:	Oou
Comment:	External Antenna of EUT used

EUT Information

Manufacturer:	u-blox
Model:	LISA-U200
Type:	GSM/WCDMA Module
EUT:	-
EUT additional Information:	-
HW version:	-
SW version:	21.03
Additional SW:	-
Config:	-
Serial number:	358901040001353
Aux. Devices:	Magnet Antenna GA107, AC/DC 12V Charger
Power Supply:	AC Charger connected to 110 V / 60 Hz
Comments:	

030411_FCC_Part22_UMTS-FDDV_TX_all_channels_30M-12G



03.11.2011 10:53:24

b_5.11_BE

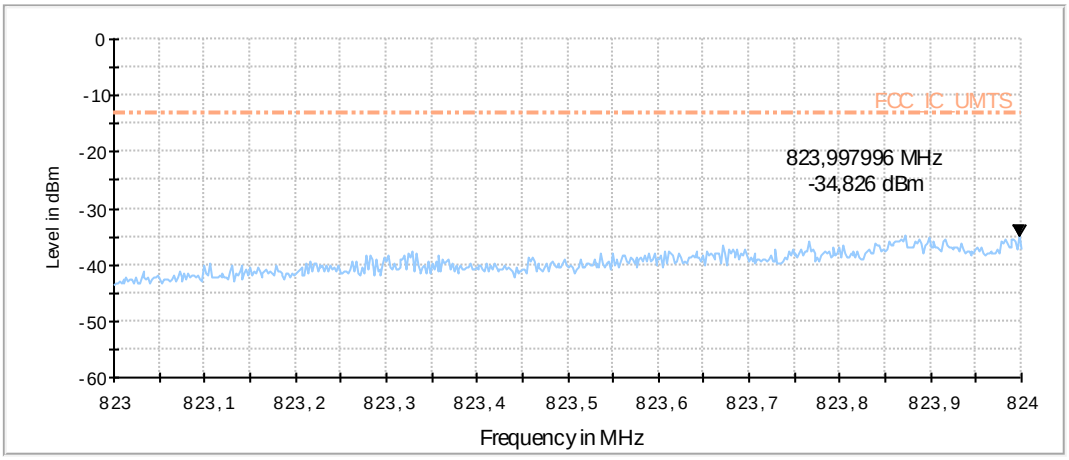
Common Information

Test Description:	Band-Edge Radiated FDDV
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22
Operating Mode:	UMTS FDDV, HSUPA, Channel 4132 (UL 826,4MHz)
Environmental Conditions:	Humidity: 58%rH; Temperature: 20°C
Operator Name:	YZH

EUT Information

Manufacturer:	u-blox
Model:	LISA-U200
Type:	GSM/WCDMA Module
---	---
EUT:	-
EUT additional information:	-
HW version:	-
SW version:	21.03
Additional SW:	-
Config:	-
Serial number:	358901040001353
Aux. Devices:	Magnet Antenna GA107, AC/DC 12V Charger
Power Supply:	AC Charger connected to 110 V / 60 Hz
Comments:	

030412_FCC_Part22_UMTS-FDDV_TX_low_channel_band_edge



b_5.12

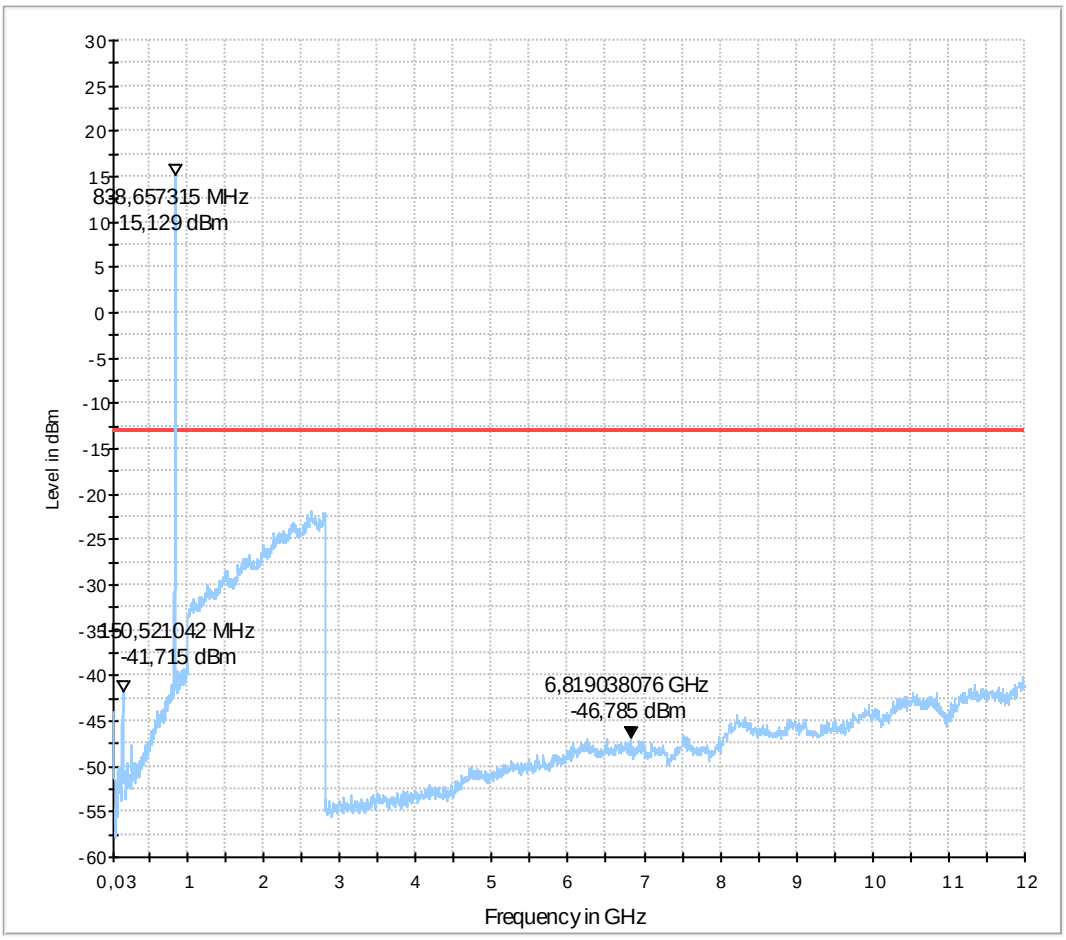
Common Information

Test Description:	Radiated Spurious Emissions UMTS FDD V
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22
Operation mode:	UMTS FDDV, HSUPA (4182 middle)
Environmental Conditions:	Humidity: 44%rH; Temperature: 19°C
Operator Name:	YZH

EUT Information

Manufacturer:	u-blox
Model:	LISA-U200
Type:	GSM/WCDMA Module
---	---
EUT:	-
EUT additional information:	-
HW version:	-
SW version:	21.03
Additional SW:	-
Config:	-
Serial number:	358901040001353
Aux. Devices:	Magnet Antenna GA107, AC/DC 12V Charger
Power Supply:	AC Charger connected to 110 V / 60 Hz
Comments:	

030411_FCC_Part22_UMTS-FDDV_TX_all_channels_30M-12G



b_5.13

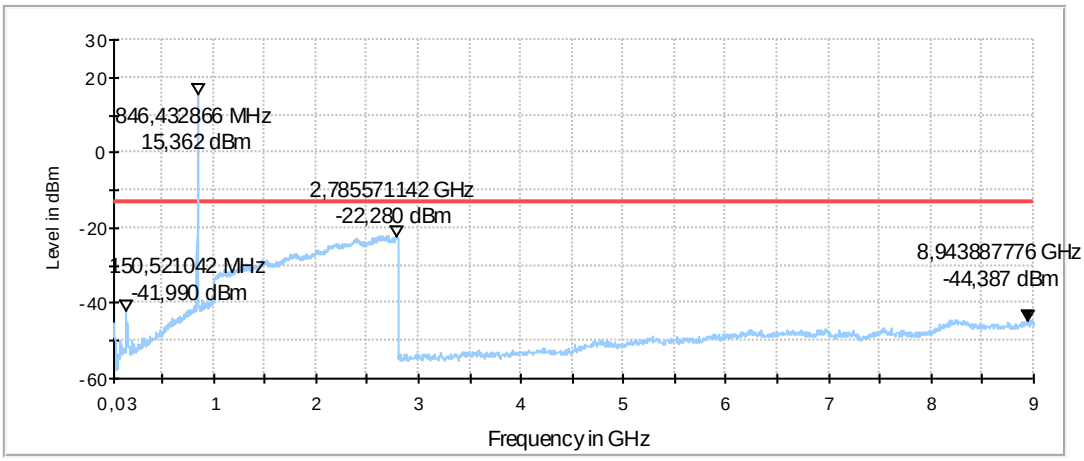
Common Information

Test Description:	Radiated Spurious Emissions UMTS FDD V
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22
Operation mode:	UMTS FDDV, HSUPA, Channel 4233 (UL 846,6MHz)
Environmental Conditions:	Humidity: 58%rH; Temperature: 20°C
Operator Name:	YZH

EUT Information

Manufacturer:	u-blox
Model:	LISA-U200
Type:	GSM/WCDMA Module
---	---
EUT:	-
EUT additional information:	-
HW version:	-
SW version:	21.03
Additional SW:	-
Config:	-
Serial number:	358901040001353
Aux. Devices:	Magnet Antenna GA107, AC/DC 12V Charger
Power Supply:	AC Charger connected to 110 V / 60 Hz
Comments:	

030411_FCC_Part22_UMTS-FDDV_TX_all_channels_30M-12G



b_5.13_BE

Common Information

Test Description:	Band-Edge Radiated FDDV
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22
Operation mode:	UMTS FDDV, HSUPA, Channel 4233 (UL 846,6MHz)
Environmental Conditions:	Humidity: 58%rH; Temperature: 19°C
Operator Name:	YZH

EUT Information

Manufacturer:	u-blox
Model:	LISA-U200
Type:	GSM/WCDMA Module
---	---
EUT:	-
EUT additional information:	-
HW version:	-
SW version:	21.03
Additional SW:	-
Config:	-
Serial number:	358901040001353
Aux. Devices:	Magnet Antenna GA107, AC/DC 12V Charger
Power Supply:	AC Charger connected to 110 V / 60 Hz
Comments:	

030413_FCC_Part22_UMTS-FDDV_TX_high_channel_band_edge