

Annex 1: Measurement diagrams 23-1-0043901T003a-A1

Number of pages:	18	Date of Report:	2024-Feb-08
Testing company:	cetecom advanced GmbH Untertuerkheimer Str. 6-10 66117 Saarbruecken GERMANY	Applicant:	Continental Engineering Services GmbH
Product: Model:	Telematic Device STP-MID		
FCC ID:	2BDLN-STPMIDNA	IC:	N/A
Testing has been carried out in accordance with:	FCC Regulations Title 47 CFR, Chapter I, Subchapter A Part 15, Subpart C Intentional Radiators; § 15.209 Radiated emission limits; general requirements Title 47 CFR, Chapter I, Subchapter B Part 22, Subpart H Cellular Radiotelephone Service Part 24, Subpart E Paging and Radiotelephone Service Part 27, Subpart C Miscellaneous Wireless Communications Services		

Measurement diagrams

2.201_H_field_UMTS_FDD_B02_CH_9400

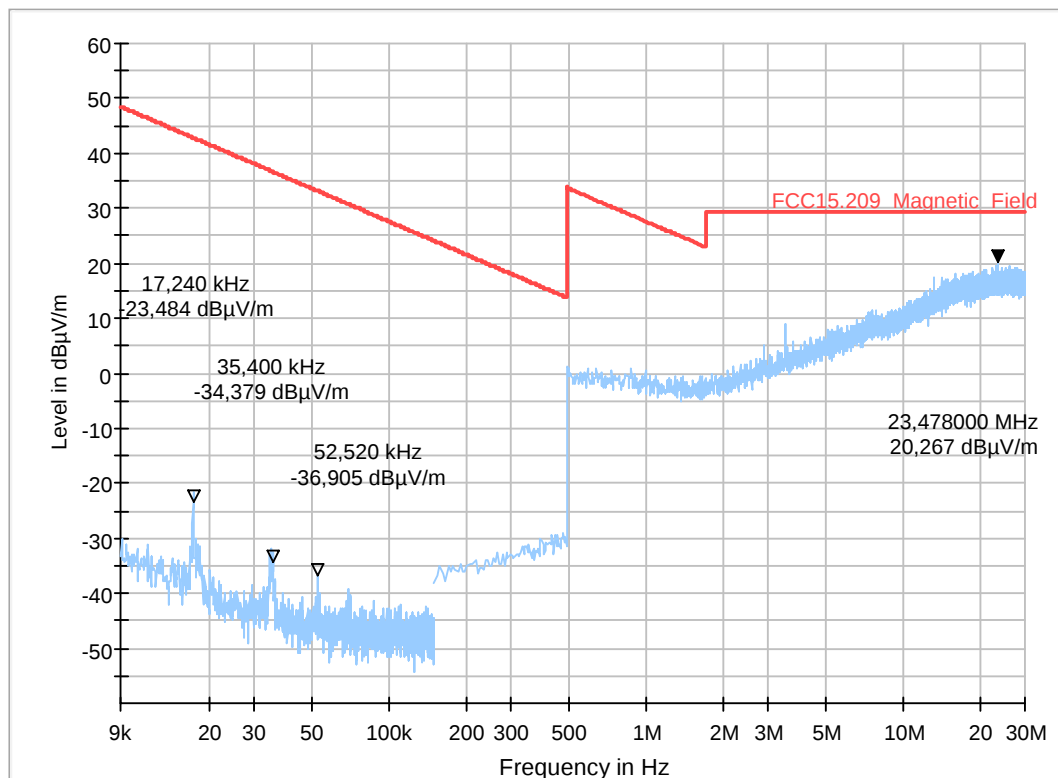
Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Used filter:	bypass
Test Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	PSt
Operating Mode:	UMTS_FDD_B02_CH_9400
Power during tests:	12 V DC
Environmental Conditions:	Humidity : 50% rH; Temperature: 20 °C
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT number:	23-1-00439S03_C01
Power:	12 V DC

Full Spectrum



2.202_H_field_UMTS_FDD_B02_CH_9400

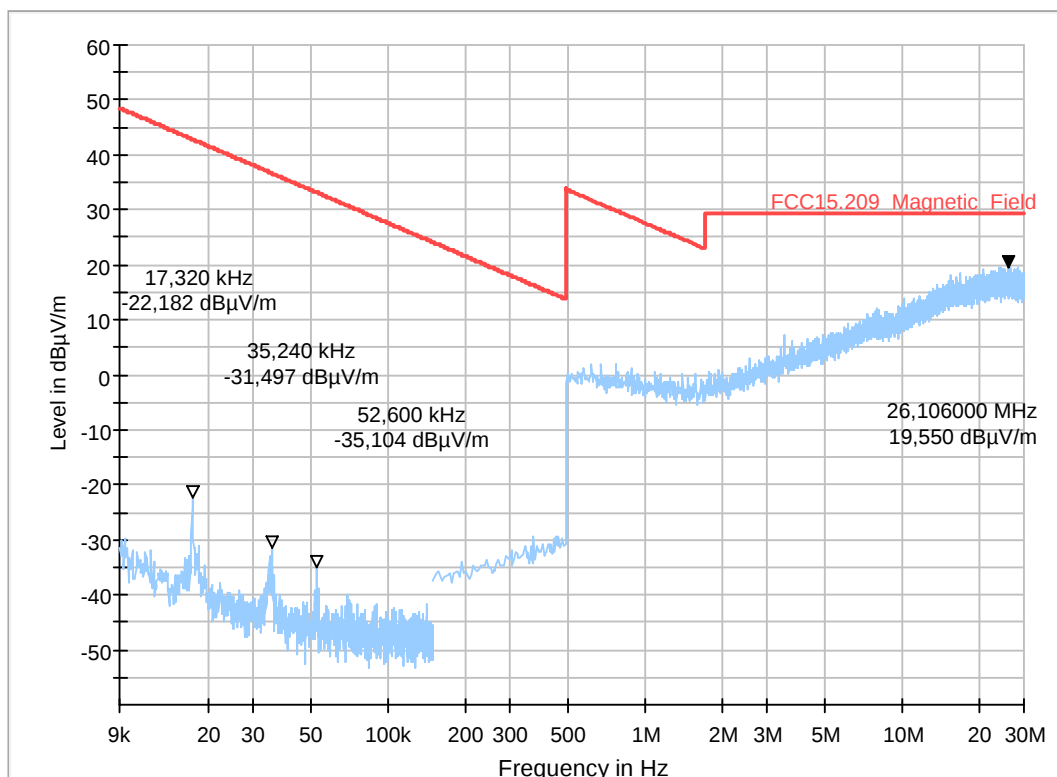
Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Used filter:	bypass
Test Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	PSt
Operating Mode:	UMTS_FDD_B02_CH_9400
Power during tests:	12 V DC
Comment:	EUT standing
Environmental Conditions:	Humidity : 50% rH; Temperature: 20 °C
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT number:	23-1-00439S03_C01
Power:	12 V DC

Full Spectrum



2.401_H_field_UMTS_FDD_B04_CH_1512

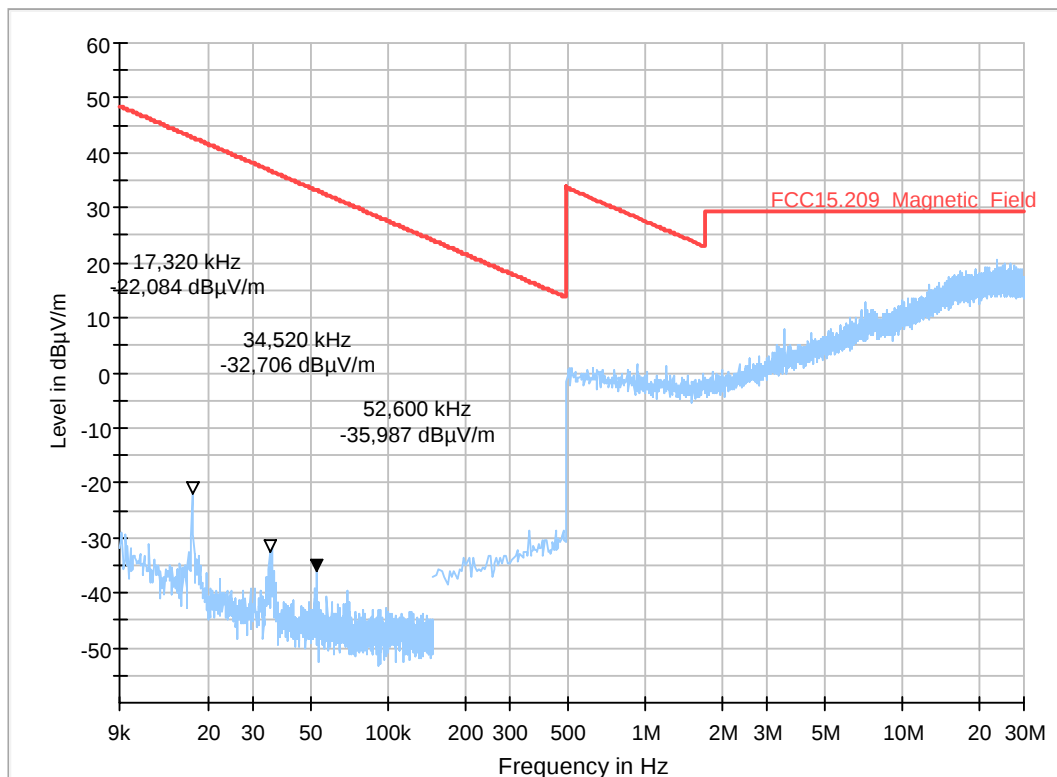
Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Used filter:	bypass
Test Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	PSt
Operating Mode:	UMTS_FDD_B04_CH_1512
Power during tests:	12 V DC
Comment:	EUT standing
Environmental Conditions:	Humidity : 50% rH; Temperature: 20 °C
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT number:	23-1-00439S03_C01
Power:	12 V DC

Full Spectrum



2.501_H_field_UMTS_FDD_B05_CH_4232

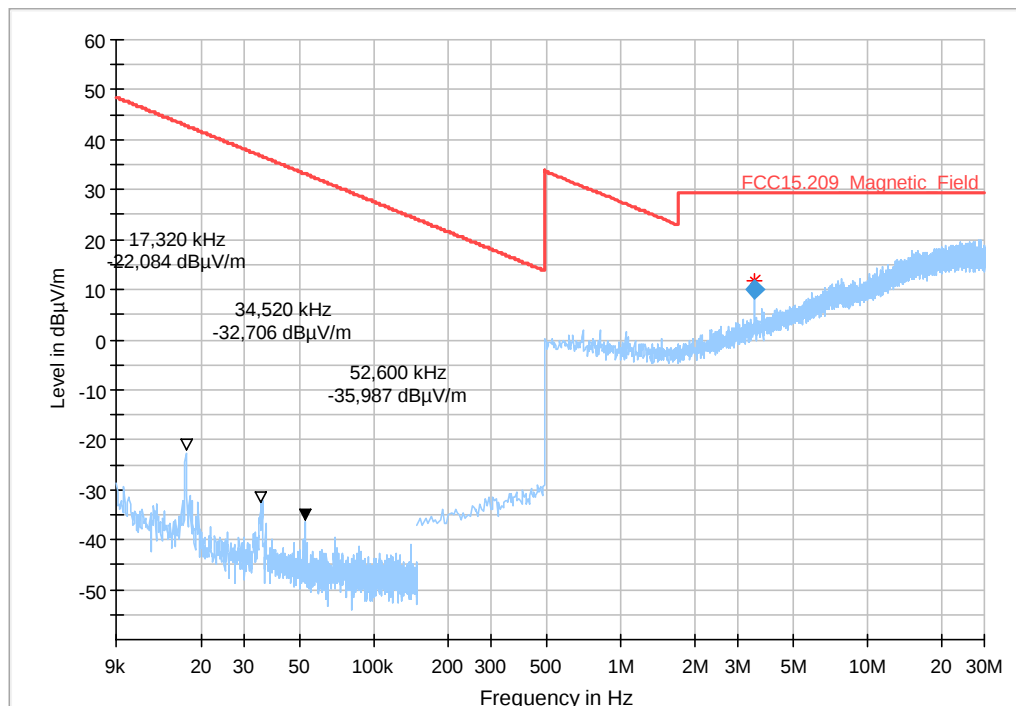
Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Used filter:	bypass
Test Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	PSt
Operating Mode:	UMTS_FDD_B05_CH_4232
Power during tests:	12 V DC
Comment:	EUT standing
Environmental Conditions:	Humidity : 50% rH; Temperature: 20 °C
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT number:	23-1-00439S03_C01
Power:	12 V DC

Full Spectrum



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
3.494000	9.94	29.54	19.60	9.000	H	163.0	-13.9	15:26:44 - 18.12.2023

8.201a_Traffic_mode_UMTS_FDD_B02_CH_9400

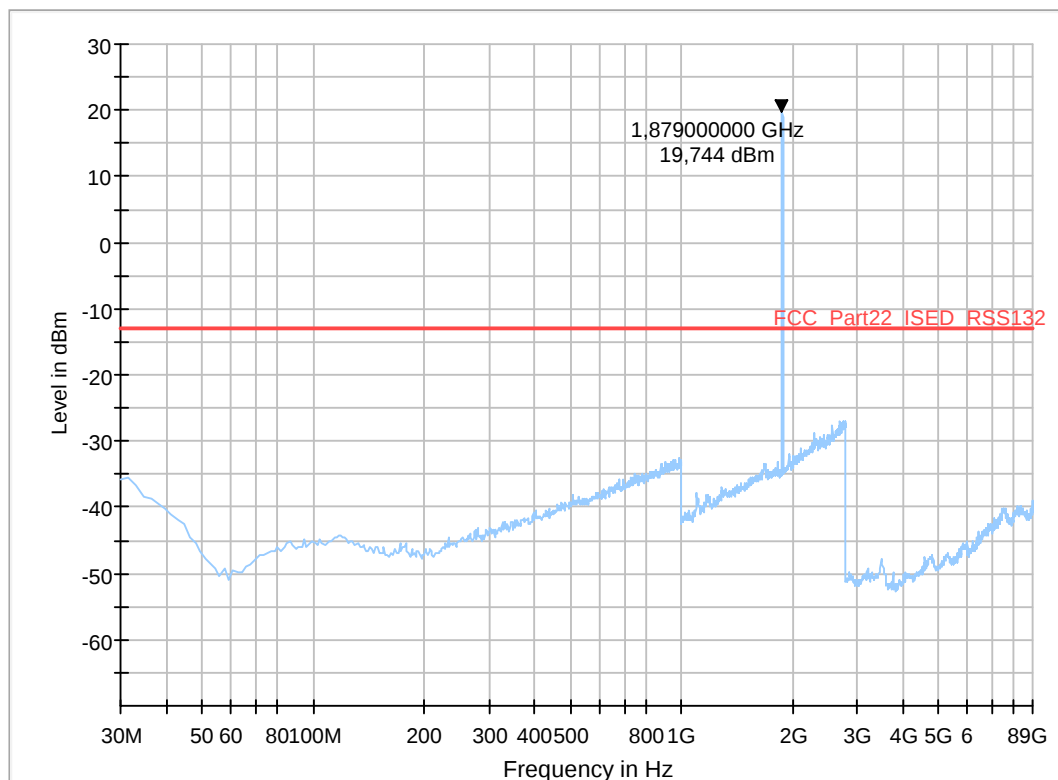
Common Information

Test Description:	Radiated Emissions
Test Site Location:	cetekom advanced GmbH Essen
Test Standard:	FCC §24.238
Antenna polarisation:	vertical / horizontal
Operating Mode:	UMTS_FDD_B02_CH_9400
Operator:	MNu/ASa
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT Sample Nr:	23-1-00439S02_C01
Power Supply:	12 VDC

Full Spectrum



Remark: Emission at 1.88 GHz is uplink frequency of UMTS FDD 2 and not related to spurious emission results.

8.201b_Traffic_mode_UMTS_FDD_B02_CH_9400

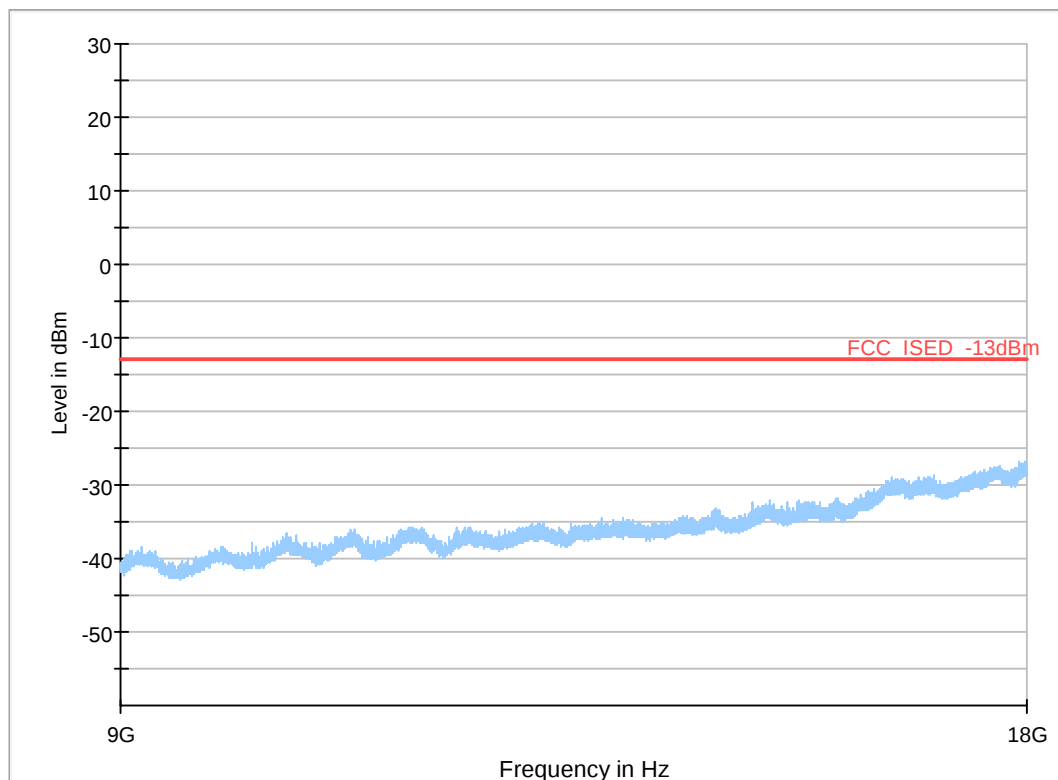
Common Information

Test Description:	Radiated Emissions
Test Site Location:	cetekom advanced GmbH Essen
Test Standard:	FCC §24.238
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V10.60.20
Operating Mode:	UMTS_FDD_B02_CH_9400
Operator:	MNu/ASa
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT Sample Nr:	23-1-00439S02_C01
Power Supply:	12 VDC

Full Spectrum



8.201c.a_Traffic_mode_UMTS_FDD_B02_CH_9400_laying

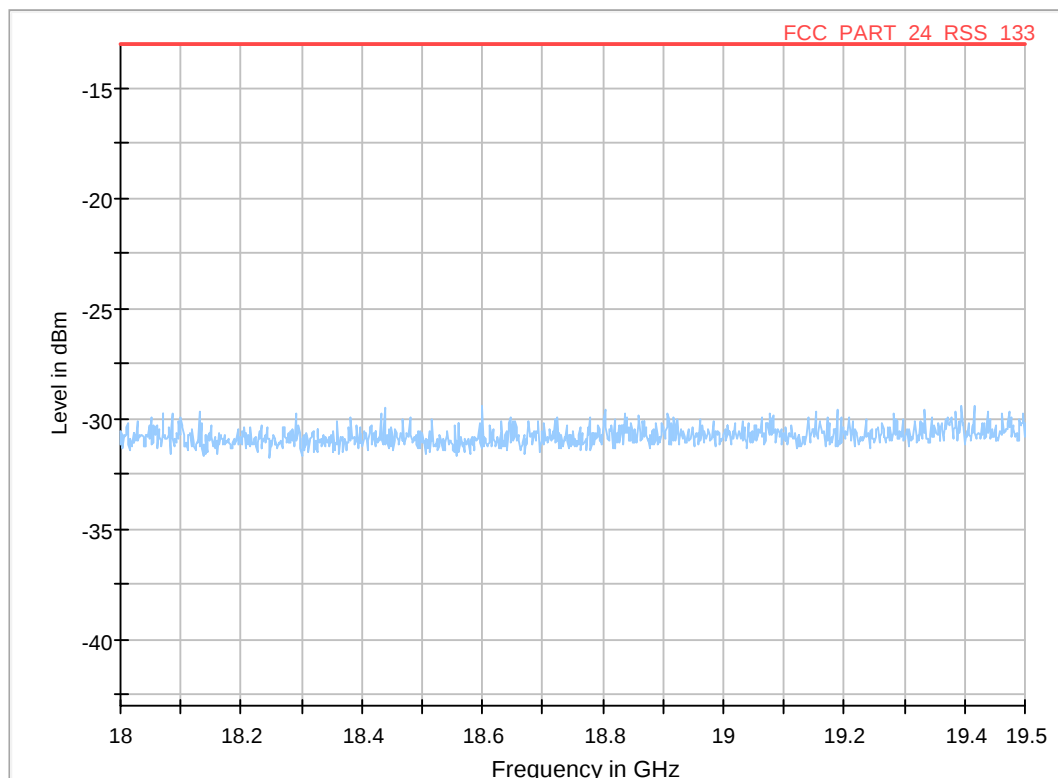
Common Information

Test Description:	Radiated Emissions
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC §24.238
Comm. Link:	GSM1900, Voice/EDGE
Operating Mode:	Traffic_mode_UMTS_FDD_B02_CH_9400_laying
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 59% rH; Temperature: 22.7 °C
Operator:	DMA
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT Sample Nr.	23-1-00439S03_C01
power:	12 V DC

Full Spectrum



8.201c.b_Traffic_mode_UMTS_FDD_B02_CH_9400_standing

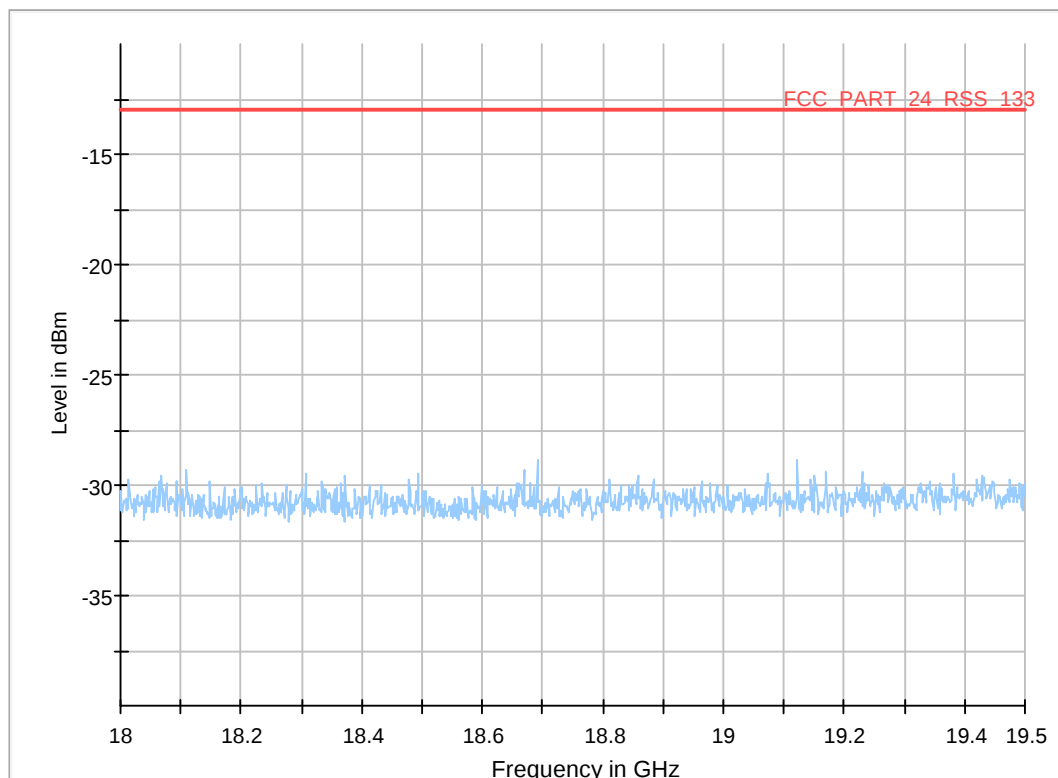
Common Information

Test Description:	Radiated Emissions
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC §24.238
Comm. Link:	GSM1900, Voice/EDGE
Operating Mode:	Traffic_mode_UMTS_FDD_B02_CH_9400_standing
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 59% rH; Temperature: 22.7 °C
Operator:	DMA
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT Sample Nr.	23-1-00439S03_C01
power:	12 V DC

Full Spectrum



8.401a_Traffic_mode_UMTS_FDD_B04_CH_1512

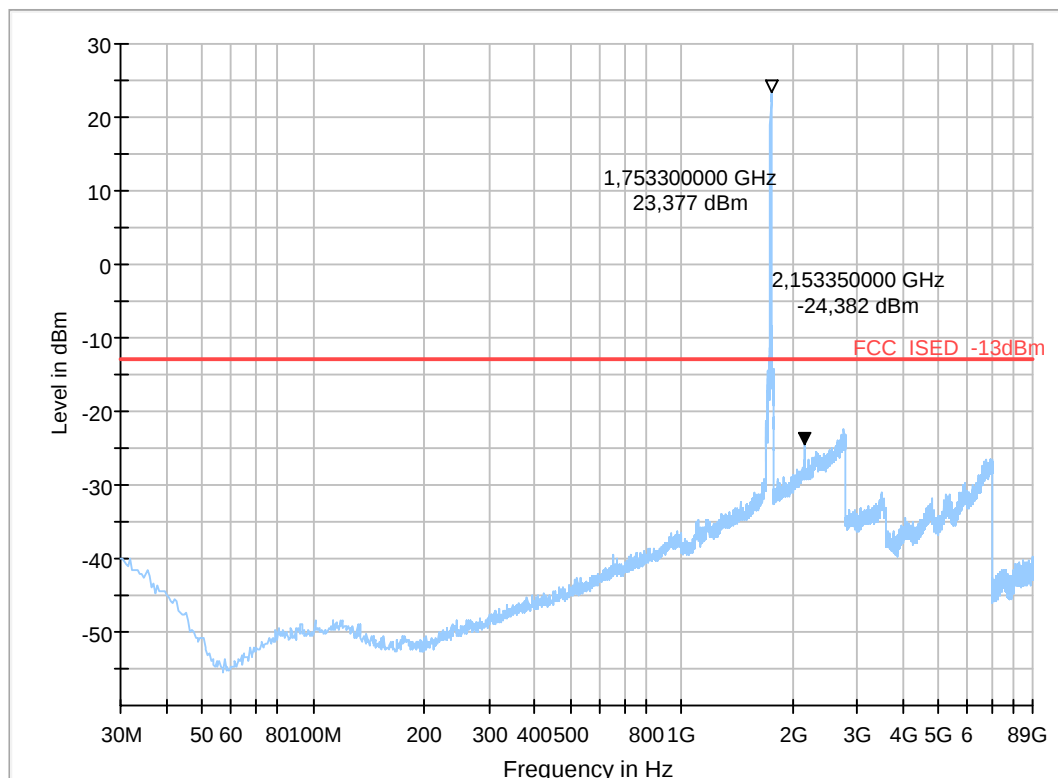
Common Information

Test Description:	Radiated Emissions
Test Site Location:	cetekom advanced GmbH Essen
Test Standard:	FCC §27.53
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V10.60.20
Operating Mode:	Traffic_mode_UMTS_FDD_B04_CH_1512
Operator:	LAB
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT Sample Nr:	23-1-00439S02_C01
Power Supply:	12 VDC

Full Spectrum



Remark: Emission at 1.75 GHz is uplink frequency of UMTS FDD 4 and not related to spurious emission results.

8.401b_Traffic_mode_UMTS_FDD_B04_CH_1512

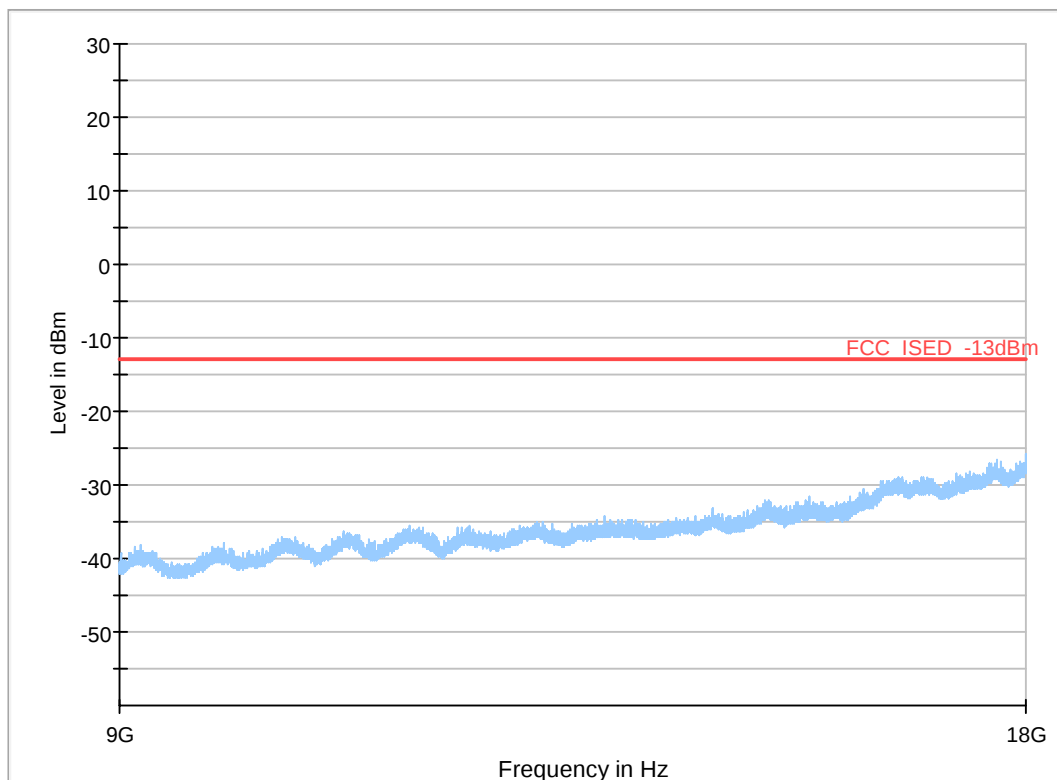
Common Information

Test Description:	Radiated Emissions
Test Site Location:	cetekom advanced GmbH Essen
Test Standard:	FCC §27.53
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V10.60.20
Operating Mode:	Traffic_mode_UMTS_FDD_B04_CH_1512
Operator:	LAB
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT Sample Nr:	23-1-00439S02_C01
Power Supply:	12 VDC

Full Spectrum



8.501_Traffic_mode_UMTS_FDD_B05_CH_4232

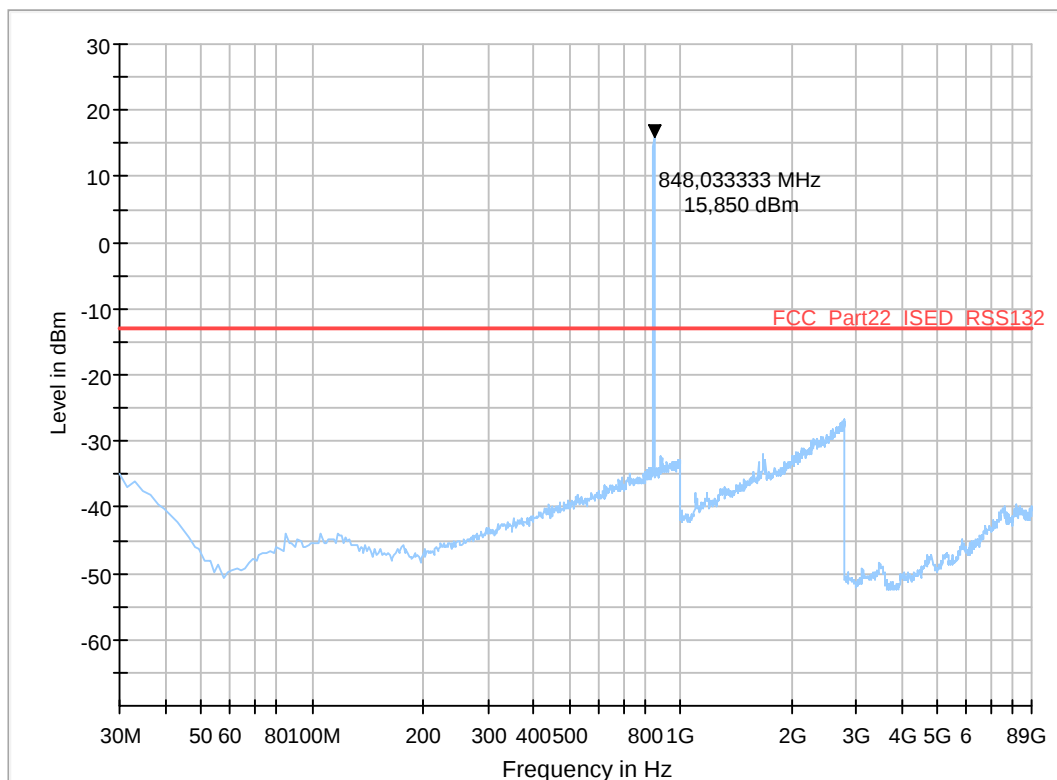
Common Information

Test Description:	Radiated Emissions
Test Site Location:	cetekom advanced GmbH Essen
Test Standard:	FCC §22.917
Antenna polarisation:	vertical / horizontal
Operating Mode:	UMTS_FDD_B05_CH_4232
Operator:	MNu/ASa
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT Sample Nr:	23-1-00439S02_C01
Power Supply:	12 VDC

Full Spectrum



Remark: Emission at 848.03 MHz is uplink frequency of UMTS FDD 4 and not related to spurious emission results.

9.201_Bandedge_low_Channel_9262_UL_1852.4

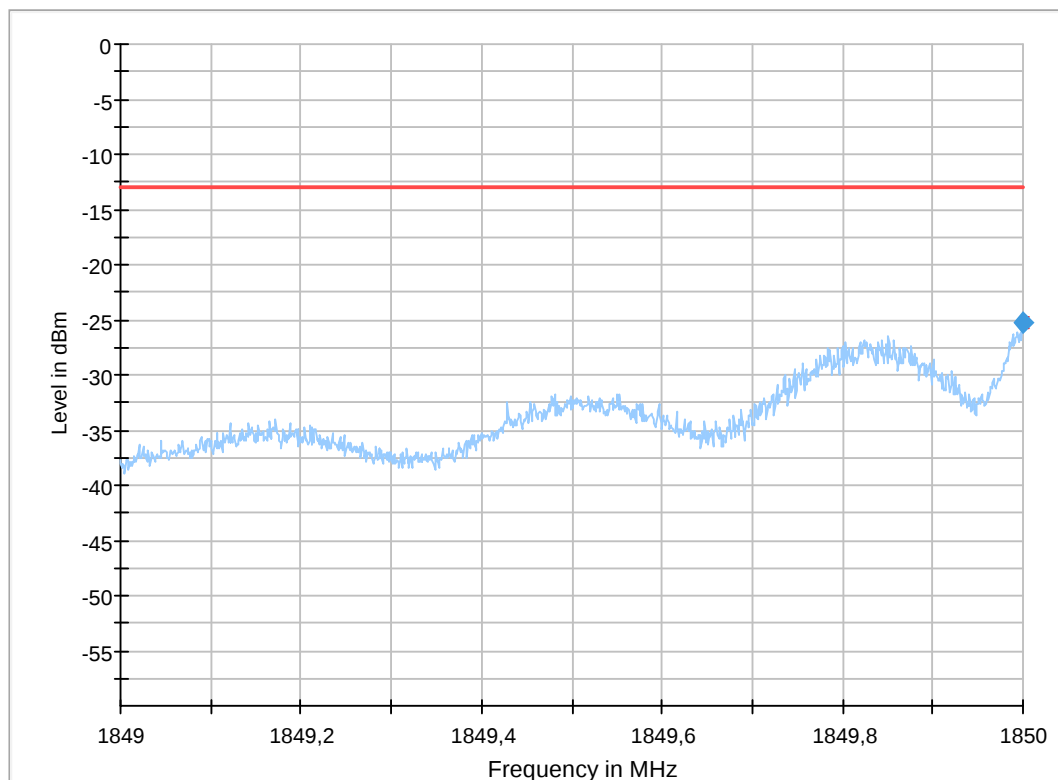
Common Information

Test Description:	Radiated Emissions
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §24.238
Operating Mode:	Bandedge_low_Channel_9262_UL_1852.4
Environmental Conditions:	Humidity : 52% rH; Temperature: 21 °C
Operator:	ASa
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT Sample Nr:	23-1-00439S03_C01
Power Supply:	12 V DC

Full Spectrum



Final_Result

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
1849.999000	-25.21	-13.00	12.21	500.0	50.000	H	0.0	90.0	-62

9.202_Bandedge_high_Channel_9538_UL_1907.6

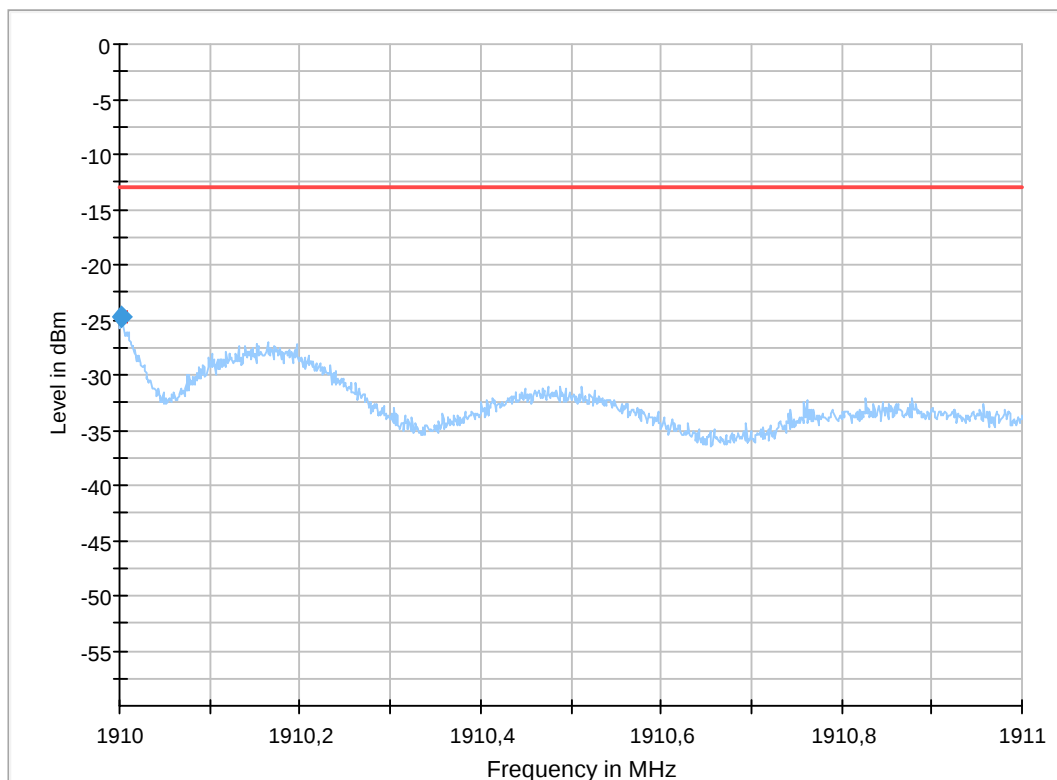
Common Information

Test Description:	Radiated Emissions
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §24.238
Operating Mode:	Bandedge_high_Channel_9538_UL_1907.6
Environmental Conditions:	Humidity : 52% rH; Temperature: 21 °C
Operator:	ASa
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT Sample Nr:	23-1-00439S03_C01
Power Supply:	12 V DC

Full Spectrum



Final_Result

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
1910.003000	-24.82	-13.00	11.82	500.0	50.000	H	24.0	90.0	-61

9.401_Bandedge_low_Channel_1312_UL_1712.6

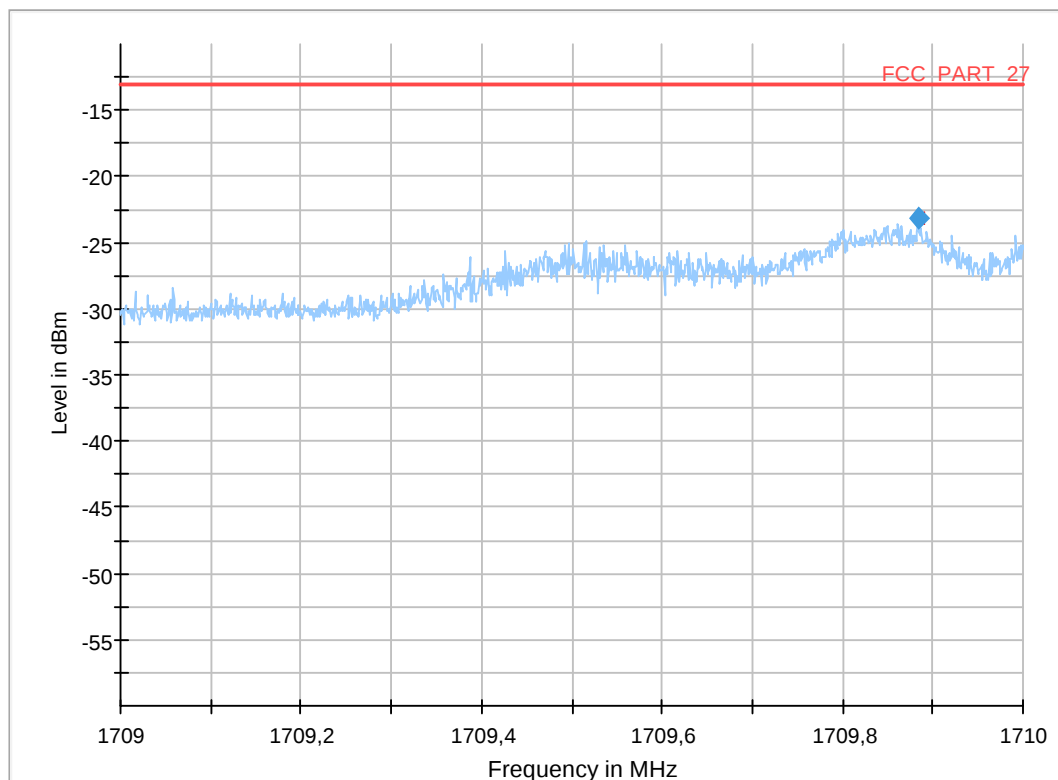
Common Information

Test Description:	Radiated Emissions
Test Site Location:	cetekom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §27.53
Operating Mode:	Bandedge_low_Channel_1312_UL_1712.6
Environmental Conditions:	Humidity : 52% rH; Temperature: 21 °C
Operator:	ASa
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT Sample Nr:	23-1-00439S03_C01
Power Supply:	12 V DC

Full Spectrum



Final_Result

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
1709.884000	-23.09	-13.00	10.09	700.0	50.000	H	17.0	90.0	-62

9.402_Bandedge_high_Channel_1513_UL_1752.4

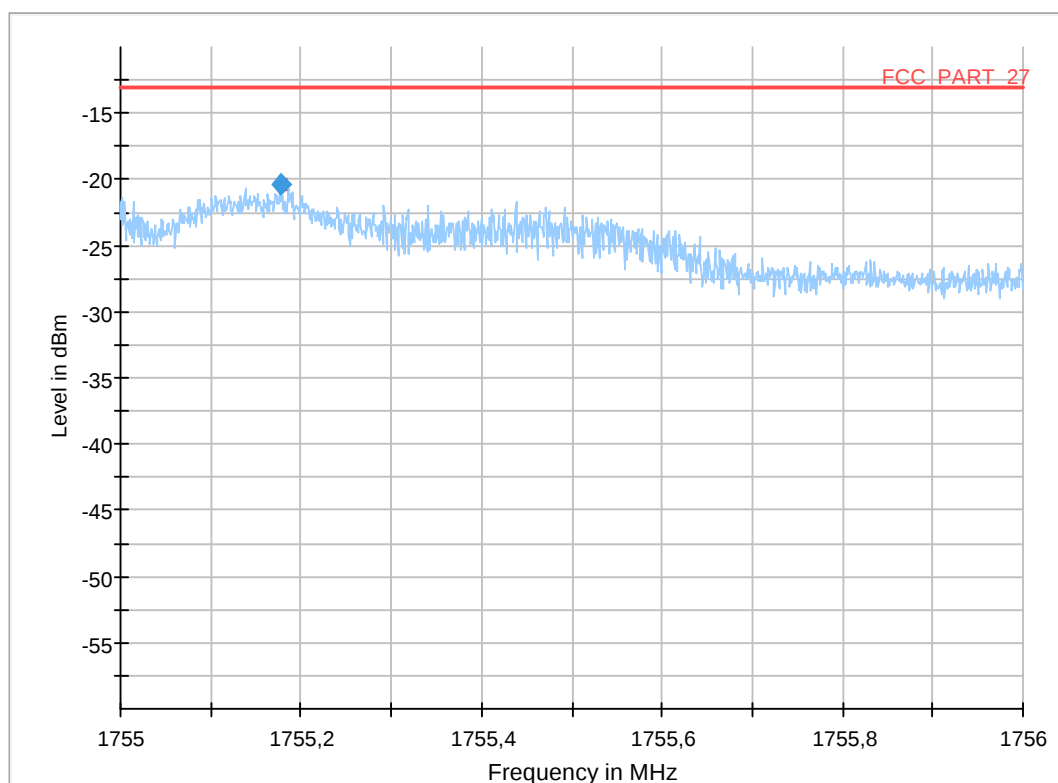
Common Information

Test Description:	Radiated Emissions
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §27.53
Operating Mode:	Bandedge_high_Channel_1513_UL_1752.4
Environmental Conditions:	Humidity : 52% rH; Temperature: 21 °C
Operator:	ASa
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT Sample Nr:	23-1-00439S03_C01
Power Supply:	12 V DC

Full Spectrum



Final_Result

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
1755.177000	-20.34	-13.00	7.34	700.0	50.000	H	16.0	90.0	-62

9.501_Bandedge_low_Channel_4132_UL_826.4

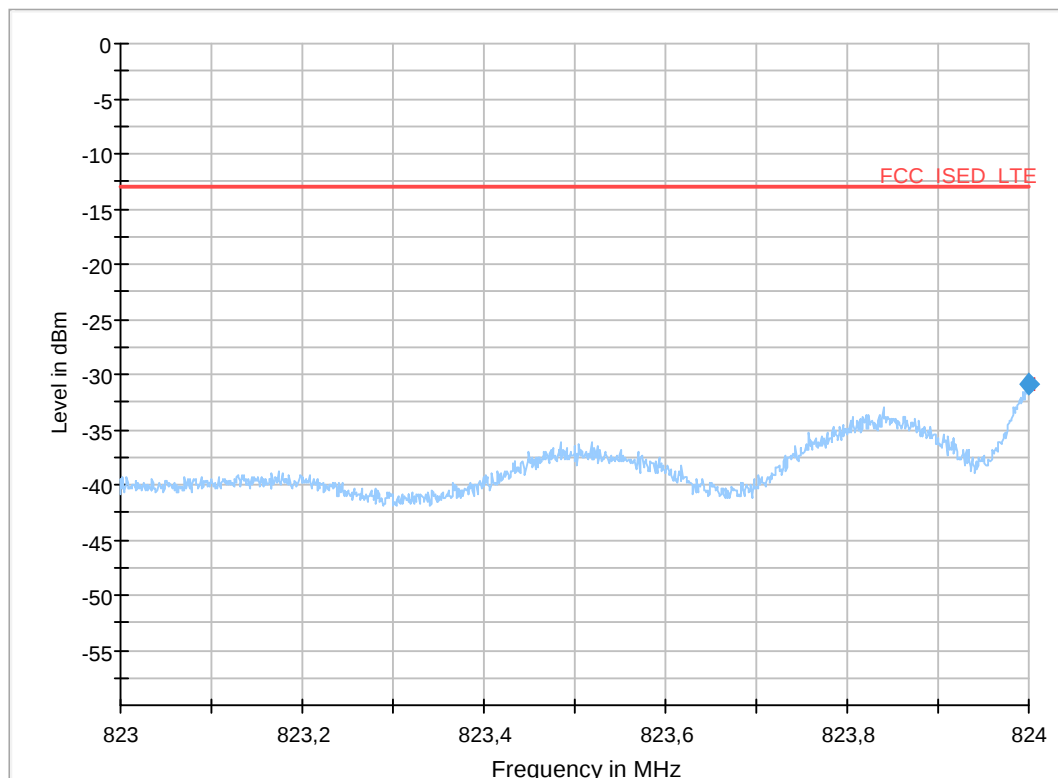
Common Information

Test Description:	Radiated Emissions
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §22.917
Operating Mode:	Bandedge_low_Channel_4132_UL_826.4
Environmental Conditions:	Humidity : 52% rH; Temperature: 20 °C
Test SW Version:	EMC32 V10.60.20
Operator:	ASa
Remarks:	EUT - laying/standing position
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT Sample Nr:	23-1-00439S03_C01
Power Supply:	12 V DC

Full Spectrum



Final_Result

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
823.999000	-30.83	-13.00	17.83	700.0	50.000	V	136.0	0.0	-76

9.502_Bandedge_high_Channel_4233_UL_846.6

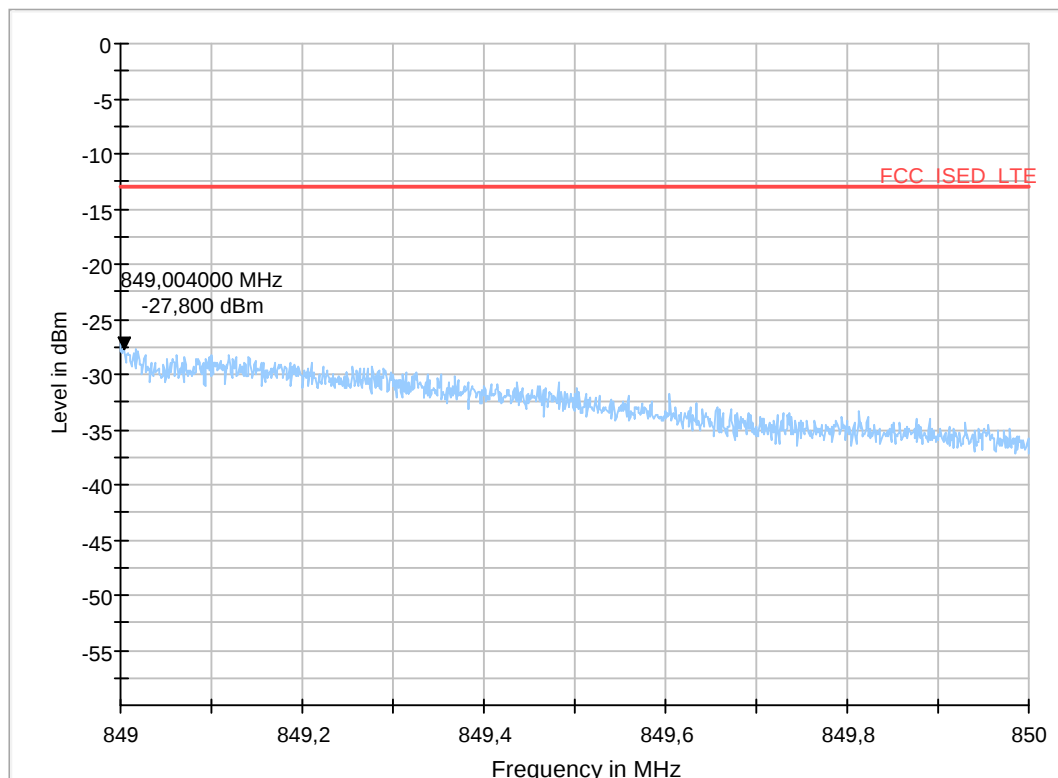
Common Information

Test Description:	Radiated Emissions
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §22.917
Operating Mode:	Bandedge_high_Channel_4233_UL_846.6
Environmental Conditions:	Humidity : 52% rH; Temperature: 20 °C
Test SW Version:	EMC32 V10.60.20
Operator:	SOz
Remarks:	EUT - laying/standing position
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT Sample Nr:	23-1-00439S03_C01
Power Supply:	12 V DC

Full Spectrum



End Of Annex 1