

Annex 1: Measurement diagrams

23-1-0035501T002a-C02-A1

Number of pages:	64	Date of Report:	2024-Sep-02
Testing company:	cetecom advanced GmbH Untertuerkheimer Str. 6-10 66117 Saarbruecken GERMANY	Applicant:	Schmitz Cargobull AG
Product: Model:	Telematic Device CTU-Pro		
FCC ID:	2BBVQ-CTUPRO	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 Title 47 CFR, Chapter I, Subchapter D Part 90, Subpart I, General technical standards; Subpart S Private Land Mobile Radio Services		

1 Radiated field strength emissions below 30 MHz

2.201a

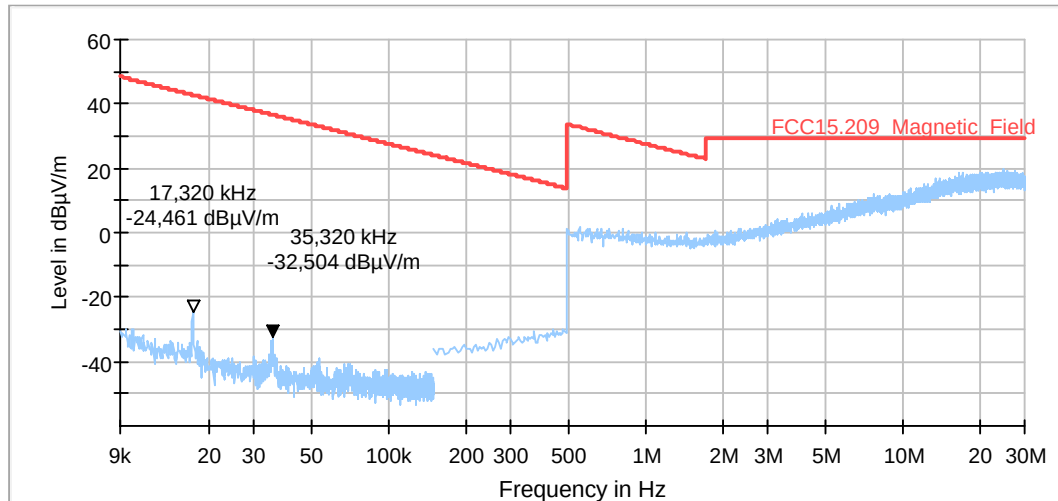
Common Information

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
Operating mode:	LTE_FDD_B02_CH_18700
Operator:	Maa
Environmental Conditions:	Humidity : 40% rH; Temperature: 20 °C
EUT Setup:	EUT Laying
Verdict:	Pass

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



2.201b

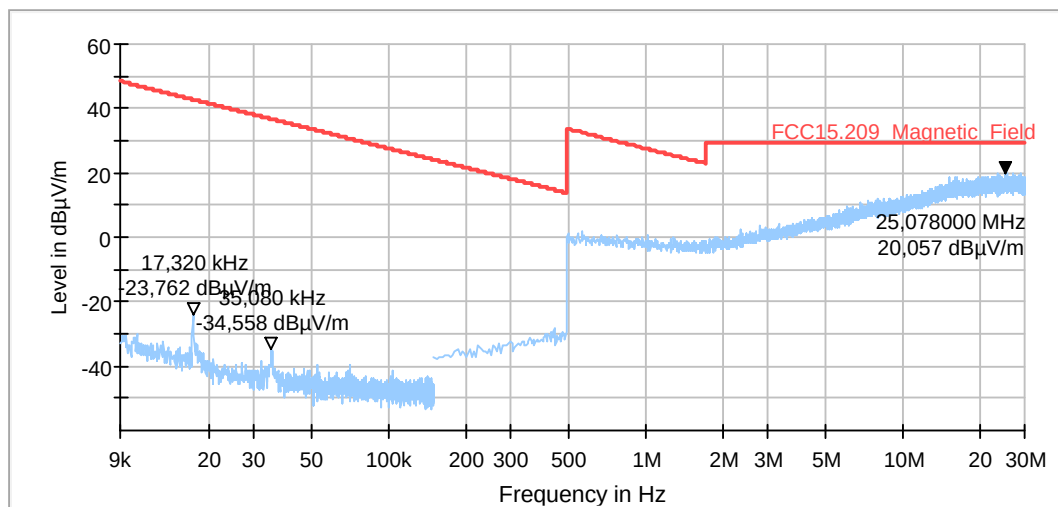
Common Information

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
Operating mode:	LTE_FDD_B02_CH_18700
Operator:	Maa
Environmental Conditions:	Humidity : 40% rH; Temperature: 20 °C
EUT Setup:	EUT Standing
Verdict:	Pass

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



2.401

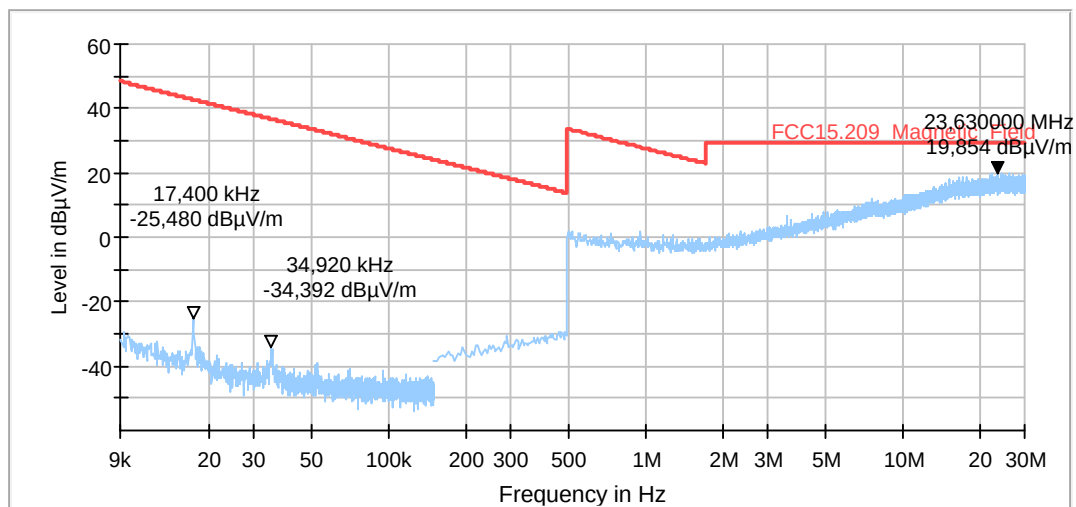
Common Information

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
Operating mode:	LTE_FDD_B04_CH_20175
Operator:	Maa
Environmental Conditions:	Humidity : 40% rH; Temperature: 20 °C
EUT Setup:	EUT Standing
Verdict:	Pass

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



2.501

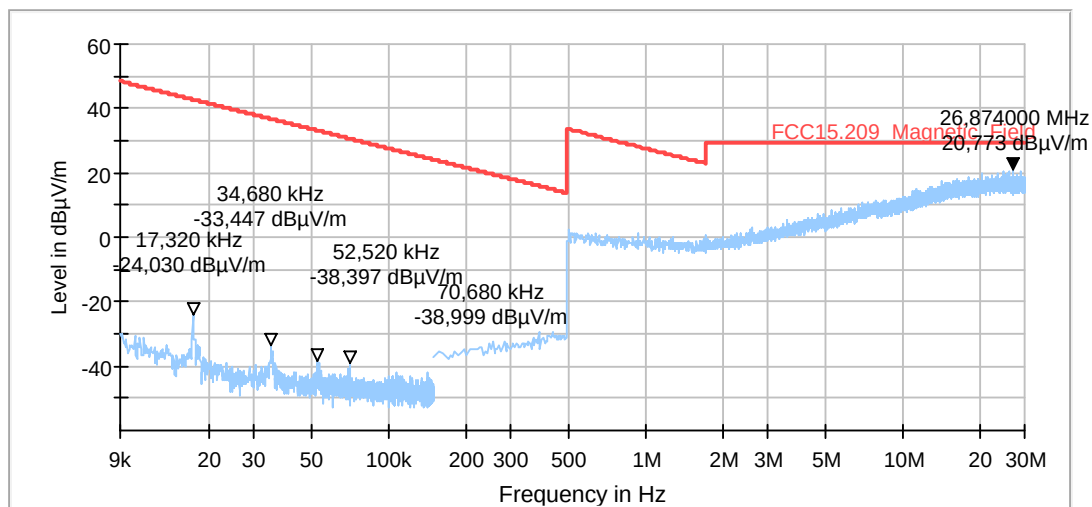
Common Information

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
Operating mode:	LTE_FDD_B05_CH_20600
Operator:	Maa
Environmental Conditions:	Humidity : 40% rH; Temperature: 20 °C
EUT Setup:	EUT Standing
Verdict:	Pass

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



2.701

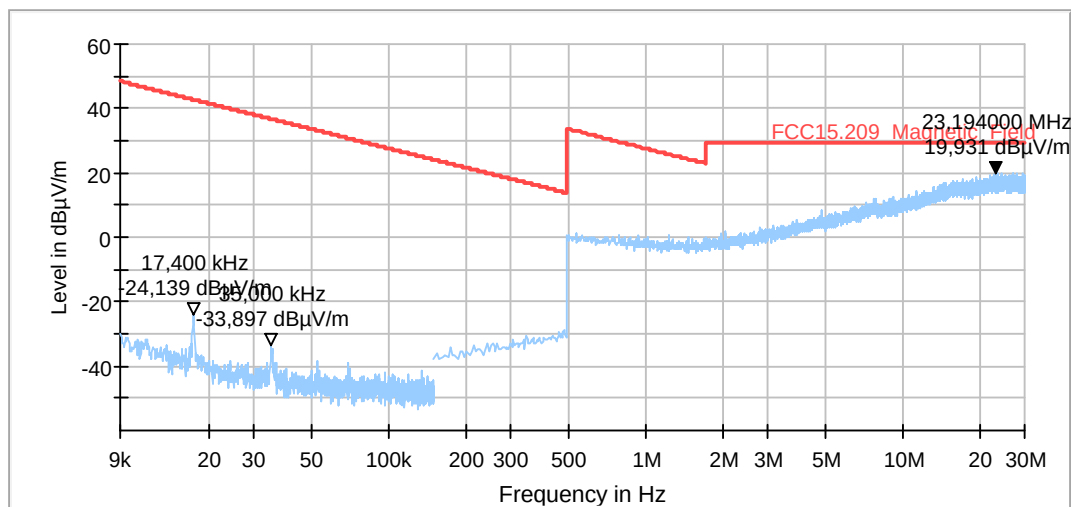
Common Information

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
Operating mode:	LTE_FDD_B07_CH_20800
Operator:	Maa
Environmental Conditions:	Humidity : 40% rH; Temperature: 20 °C
EUT Setup:	EUT Standing
Verdict:	Pass

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



2.1201

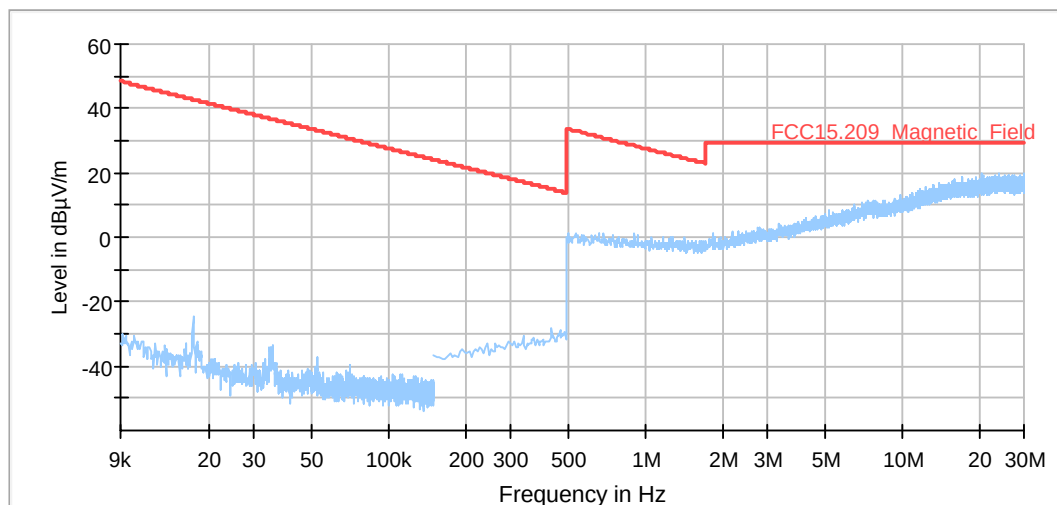
Common Information

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
Operating mode:	LTE_FDD_B12_CH_23130
Operator:	Maa
Environmental Conditions:	Humidity : 40% rH; Temperature: 20 °C
EUT Setup:	EUT Standing
Verdict:	Pass

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



2.1301

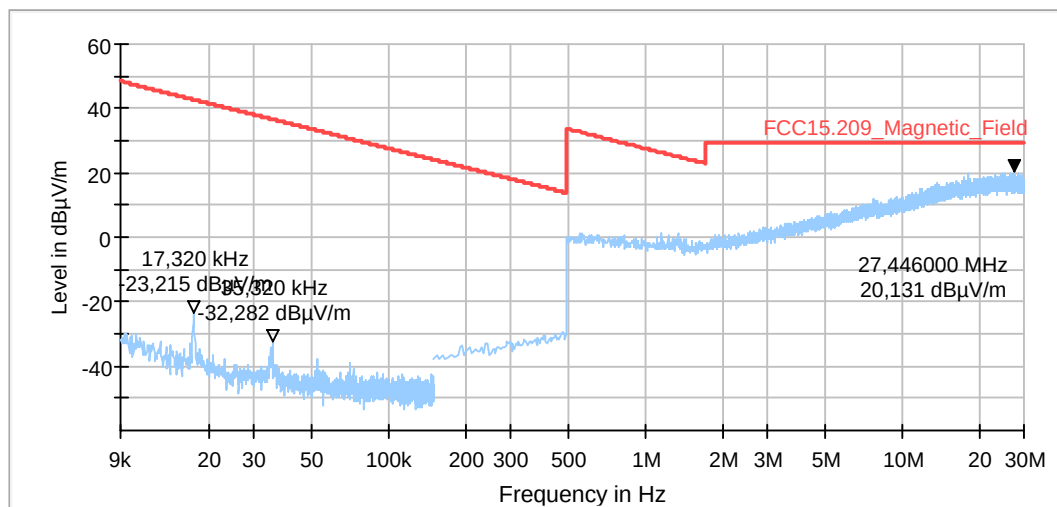
Common Information

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
Operating mode:	LTE_FDD_B13_CH_23230
Operator:	Maa
Environmental Conditions:	Humidity : 40% rH; Temperature: 20 °C
EUT Setup:	EUT Standing
Verdict:	Pass

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



2.4101

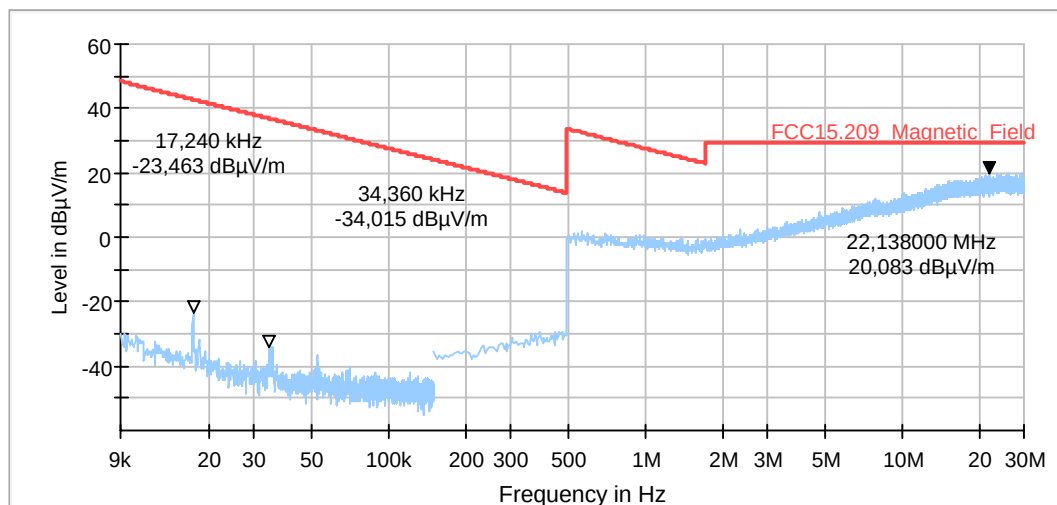
Common Information

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
Operating mode:	LTE_TDD_B41_CH_39700
Operator:	Maa
Environmental Conditions:	Humidity : 40% rH; Temperature: 20 °C
EUT Setup:	EUT Standing
Verdict:	Pass

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



2 Radiated spurious emissions

8.02_Traffic_mode_LTE_FDD_B02_CH_18700

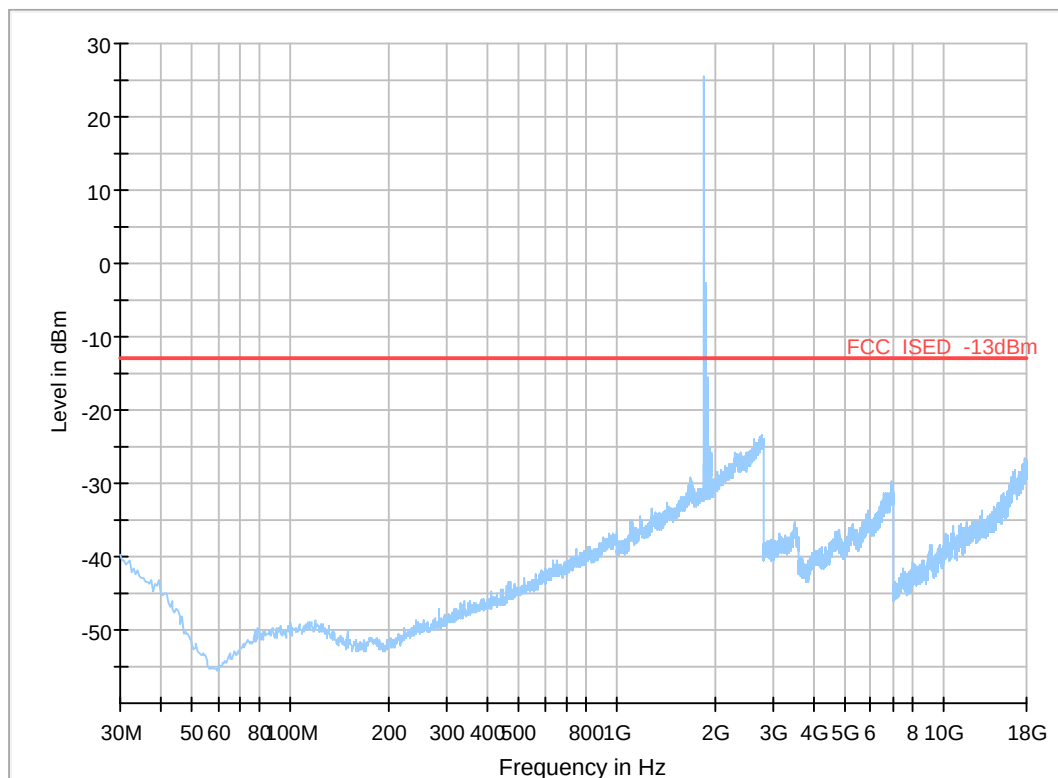
Common Information

Test Description:	Radiated Spurious Emissions
Test Site Location:	cetecom advanced GmbH Essen
Test Standard:	FCC §24.238
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V10.60.20
Operating mode:	LTE_FDD_B02_CH_18700
Operator:	mab-dma
Environmental Conditions:	Humidity: 78 % rH; Temperature: 19 °C
EUT Setup:	01
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



Remark: Emission at 1.86 GHz is uplink frequency of LTE FDD 2 and not related to spurious emission results.

8.03a_c_Traffic_mode_LTE_FDD_B02_CH_18700_AntH

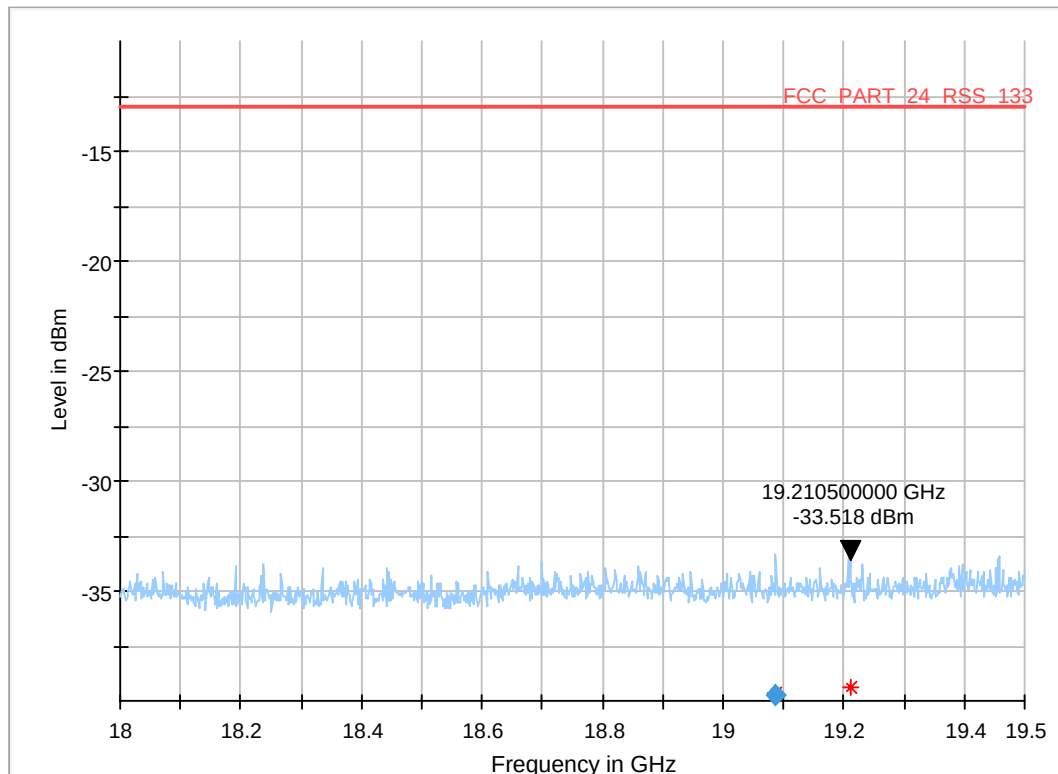
Common Information

Test Description:	Radiated Spurious Emissions
Test Site Location:	cetekom advanced GmbH Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC §24.238
Operating mode:	LTE_FDD_B02_CH_18700
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 63% rH; Temperature:19.1 °C
Operator:	Lor
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



Final_Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Sig Path (dB)	Preamp (dB)
19087.980000	-13.00	26.76	500.0	155.0	H	36.0	90.0	-56.1	2.4	64.1
19213.080000	-13.00	27.34	500.0	155.0	H	85.0	0.0	-56.1	2.4	64.1

8.03b_d_Traffic_mode_LTE_FDD_B02_CH_18700_AntV

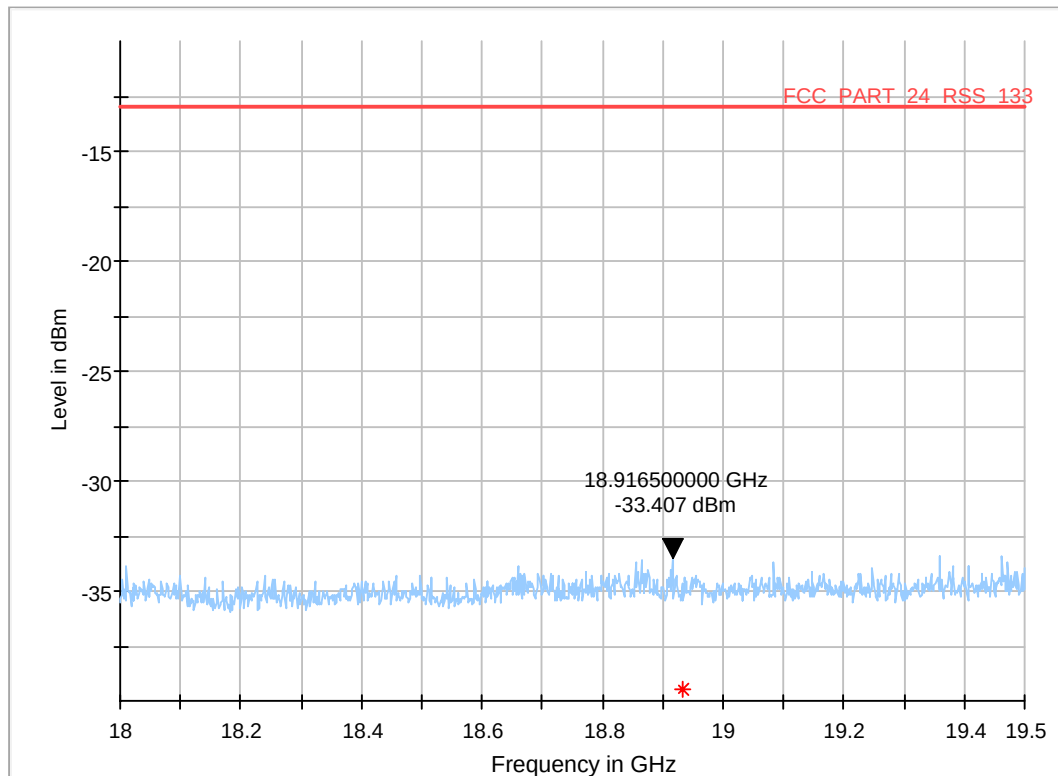
Common Information

Test Description:	Radiated Spurious Emissions
Test Site Location:	cetekom advanced GmbH Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC §24.238
Operating Mode:	LTE_FDD_B02_CH_18700
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 63% rH; Temperature:19.1 °C
Operator:	Lor
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



Final_Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Sig Path (dB)	Preamplifier (dB)
18933.420000	-13.00	27.28	500.0	155.0	V	221.0	90.0	-56.1	2.4	64.0

8.04_Traffic_mode_LTE_FDD_B04_CH_20175

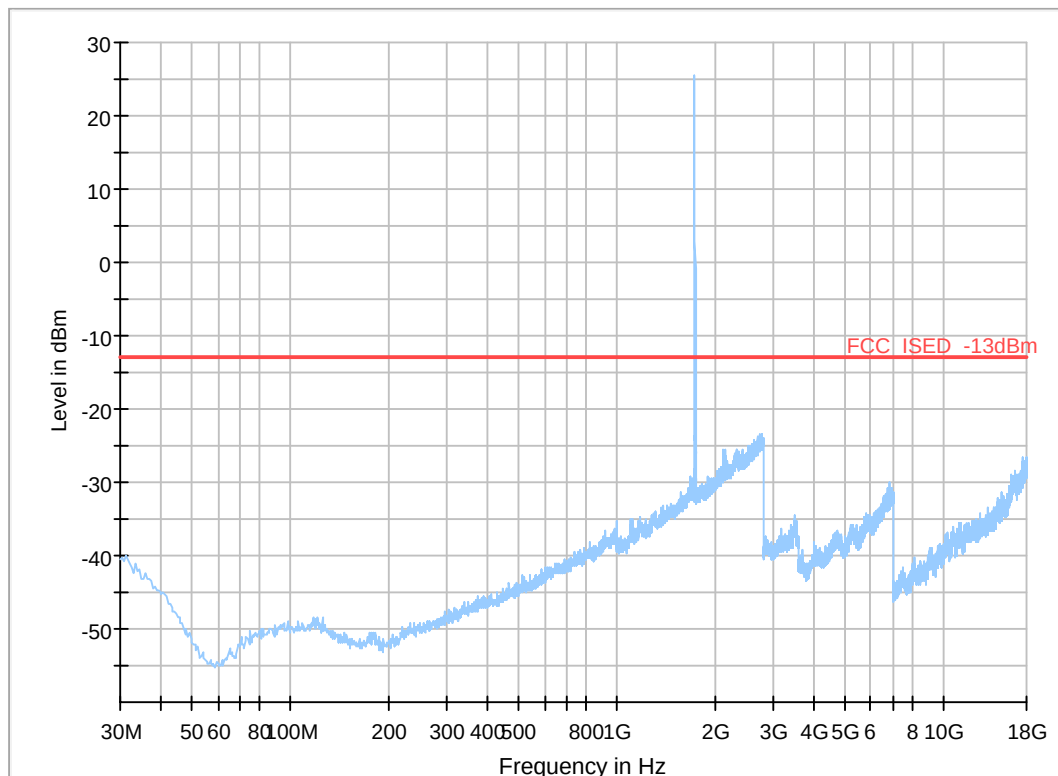
Common Information

Test Description:	Radiated Spurious Emissions
Test Site Location:	cetecom advanced GmbH Essen
Test Standard:	FCC §27.53
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V10.60.20
Operating Mode:	LTE_FDD_B04_CH_20175
Operator:	Mab
Environmental Conditions:	Humidity : 45% rH; Temperature: 20 °C
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



Remark: Emission at 1.73 GHz is uplink frequency of LTE FDD 4 and not related to spurious emission results.

8.05_Traffic_mode_LTE_FDD_B05_CH_20600

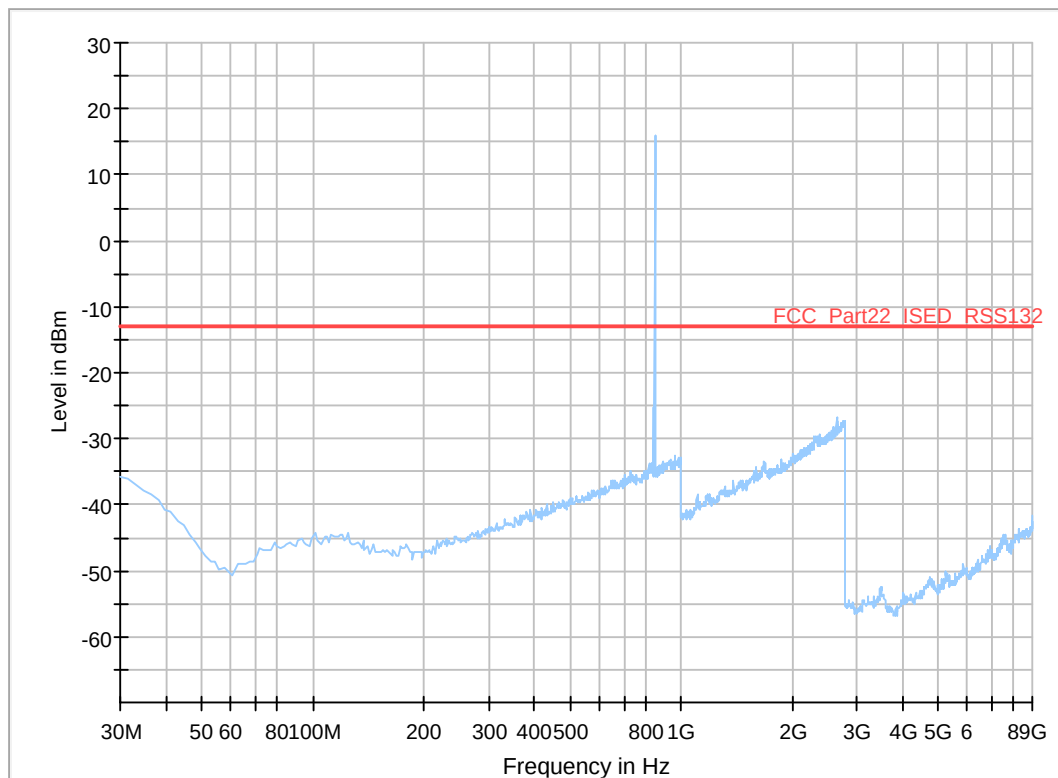
Common Information

Test Description:	Radiated Spurious Emissions
Test Site Location:	cetecom advanced GmbH Essen
Test Standard:	FCC §22.917
Antenna polarisation:	vertical / horizontal
Operating Mode:	LTE_FDD_B05_CH_20600
Operator:	mab
Environmental Conditions:	Humidity : 45% rH; Temperature: 20 °C
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



Remark: Emission at 0.84 GHz is uplink frequency of LTE FDD 5 and not related to spurious emission results.

8.06a_Traffic_mode_LTE_FDD_B07_CH_20800

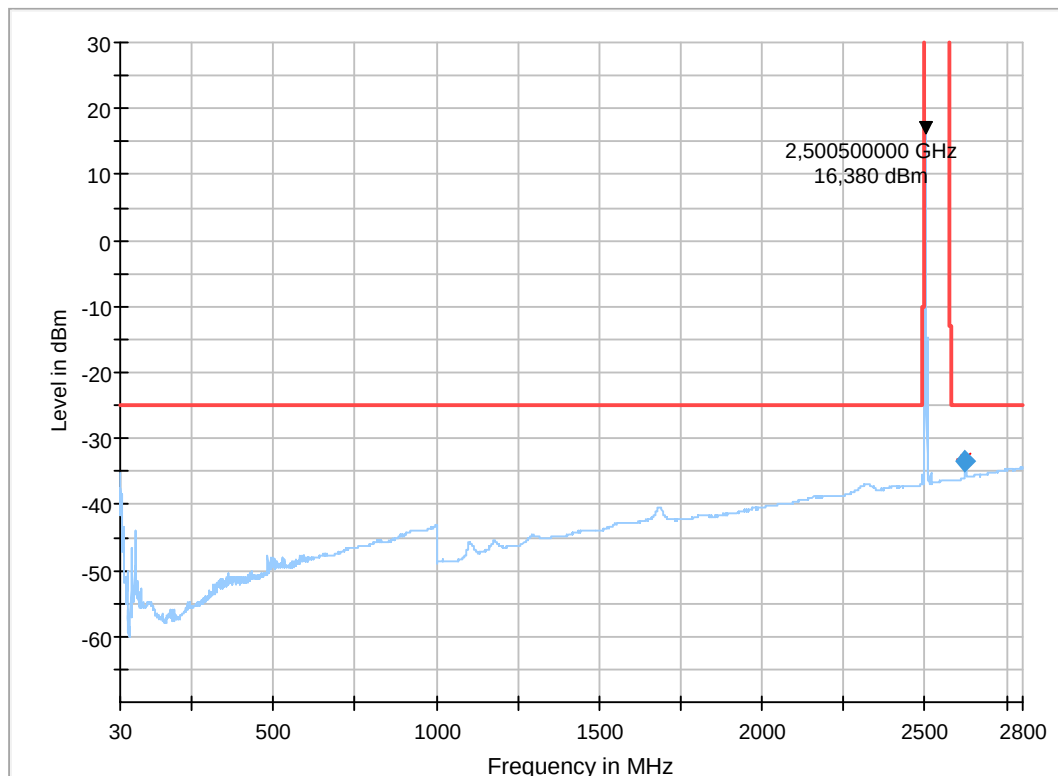
Common Information

Test Description:	Radiated Spurious 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:	LTE_FDD_B07_CH_20800
Environmental Conditions:	Humidity: 48% rH; Temperature: 21 °C
Test SW Version:	EMC32 V10.60.20
Operator:	KTe/maa
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_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)
2621.700000	-33.42	-25.00	8.42	1000.0	1000.000	V	245.0	90.0	-57

8.06b_Traffic_mode_LTE_FDD_B07_CH_20800

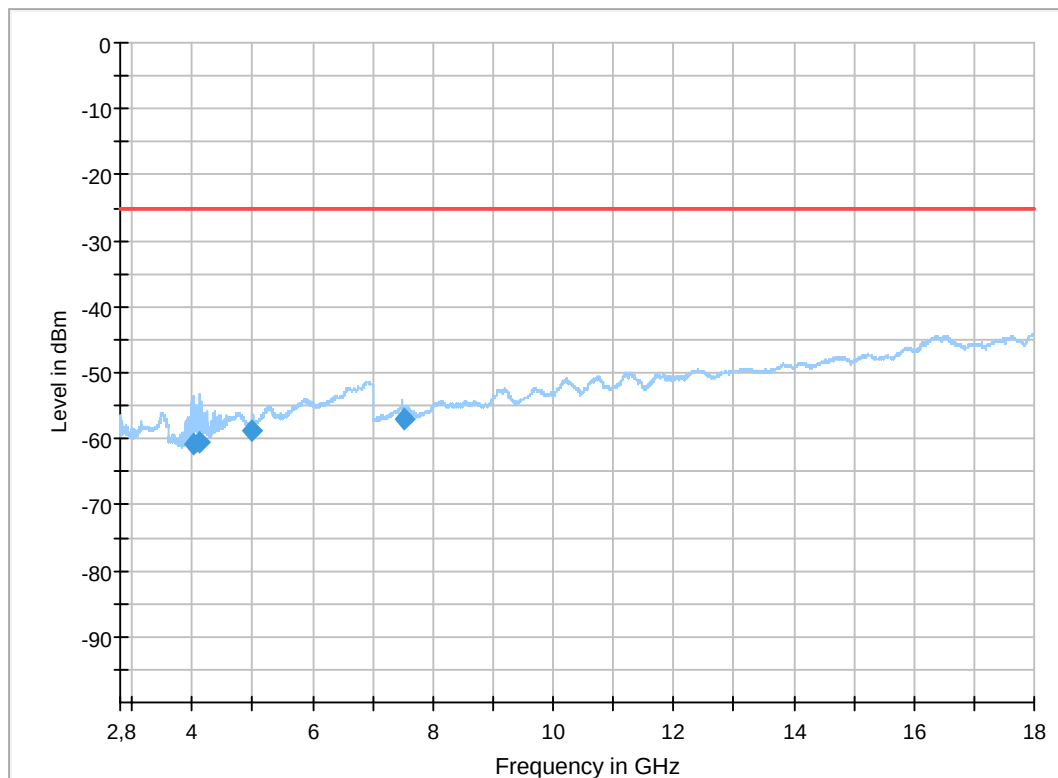
Common Information

Test Description:	Radiated Spurious 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:	LTE_FDD_B07_CH_20800
Environmental Conditions:	Humidity : 48% rH; Temperature: 21 °C
Operator:	KTe
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_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)
4019.665060	-60.82	-25.00	35.82	1000.0	1000.000	H	135.0	0.0	-88
4111.420000	-60.62	-25.00	35.62	1000.0	1000.000	H	45.0	0.0	-87
5001.054300	-58.69	-25.00	33.69	1000.0	1000.000	H	276.0	0.0	-86
7510.906200	-56.97	-25.00	31.97	1000.0	1000.000	V	88.0	0.0	-95

8.07a_c_Traffic_mode_LTE_FDD_B07_CH_20800_AntH

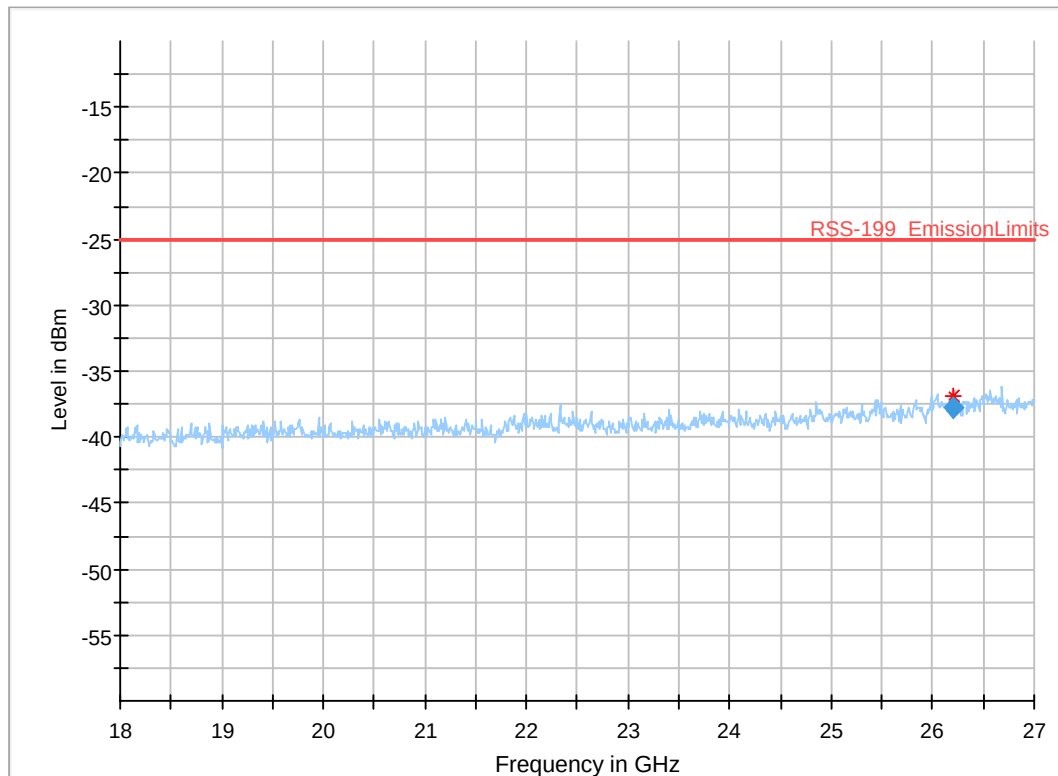
Common Information

Test Description:	Radiated Spurious Emissions
Test Site Location:	cetekom advanced GmbH Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC §27.53
Operating Mode:	LTE_FDD_B07_CH_20800
Exclusionband:	2496 to 2690 MHz
Environmental Conditions:	Humidity: 63% rH; Temperature:19.1 °C
Operator:	Lor
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



Final_Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Sig Path (dB)	Preamp (dB)
26198.940000	-25.00	12.84	500.0	155.0	H	251.0	0.0	-54.7	2.7	66.8

8.07a_d_Traffic_mode_LTE_FDD_B07_CH_20800_AntV

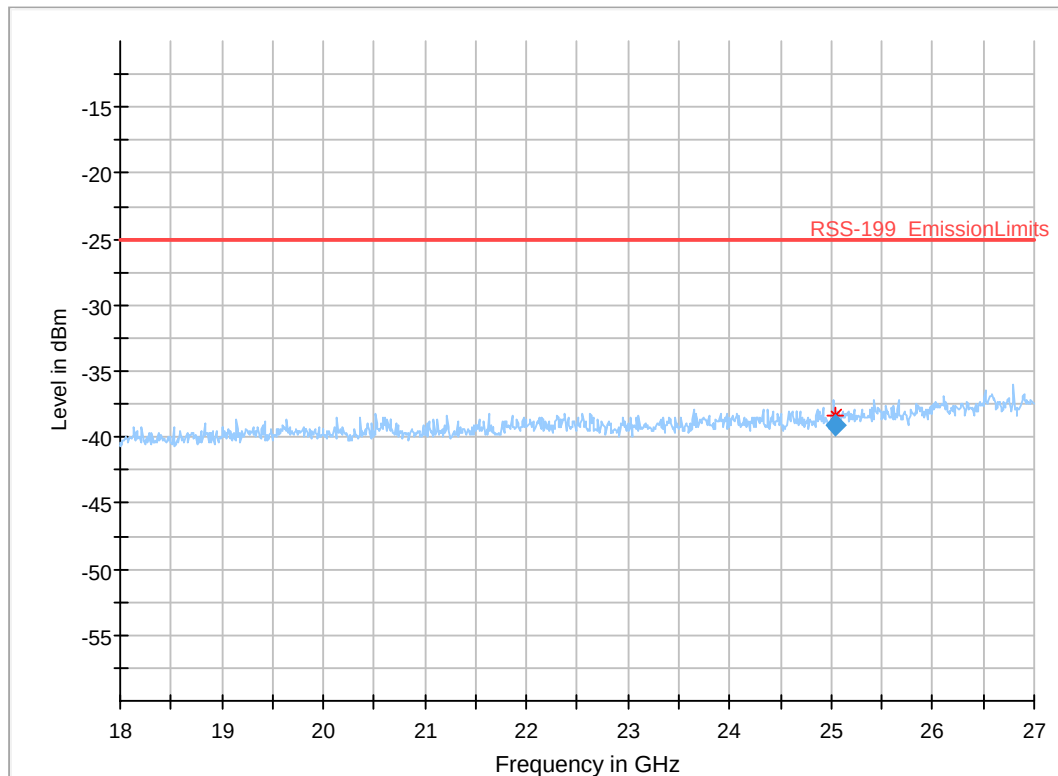
Common Information

Test Description:	Radiated Spurious Emissions
Test Site Location:	cetekom advanced GmbH Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC §27.53
Operating Mode:	LTE_FDD_B07_CH_20800
Exclusionband:	2496 to 2690 MHz
Environmental Conditions:	Humidity: 63% rH; Temperature:19.1 °C
Operator:	Lor
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



Final_Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Sig Path (dB)	Preamp (dB)
25035.600000	-25.00	14.09	500.0	155.0	V	102.0	0.0	-55.4	2.6	66.4

8.12_Traffic_mode_LTE_FDD_B12_CH_23130

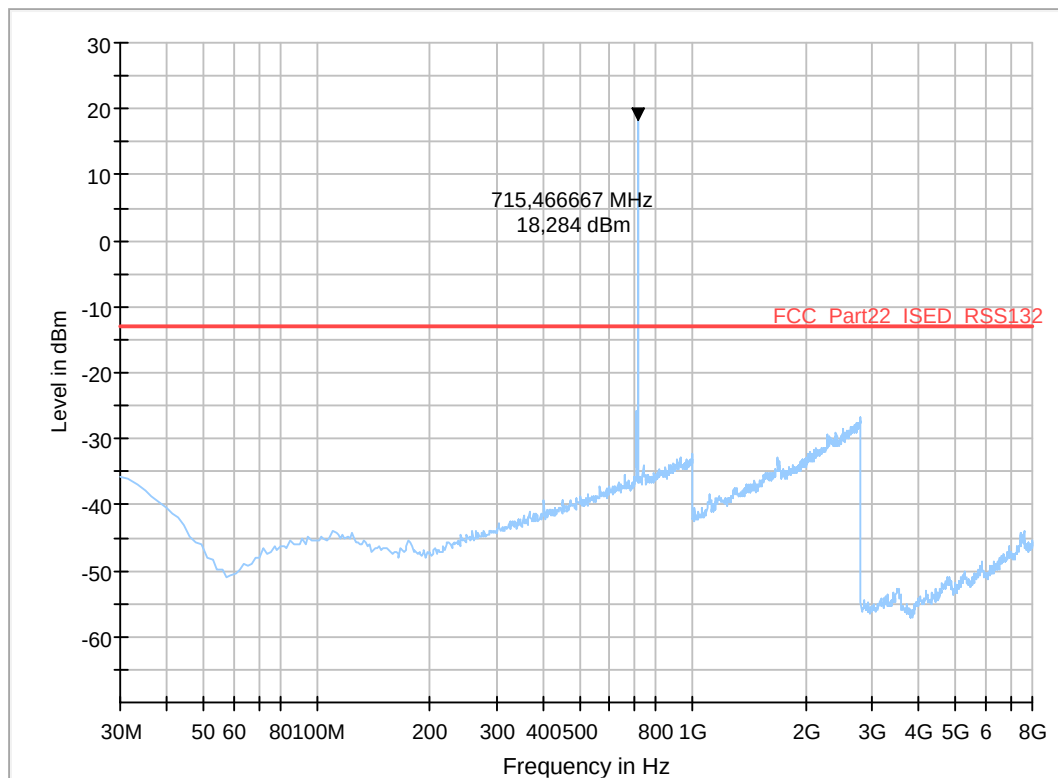
Common Information

Test Description:	Radiated Spurious Emissions
Test Site Location:	cetecom advanced GmbH Essen
Test Standard:	FCC §27.53
Antenna polarisation:	vertical / horizontal
Operating Mode:	LTE_FDD_B12_CH_23130
Operator:	KTe
Environmental Conditions:	Humidity : 48% rH; Temperature: 21 °C
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



Remark: Emission at 0.715 GHz is uplink frequency of LTE FDD 12 and not related to spurious emission results.

8.13a_Traffic_mode_LTE_FDD_B13_CH_23230

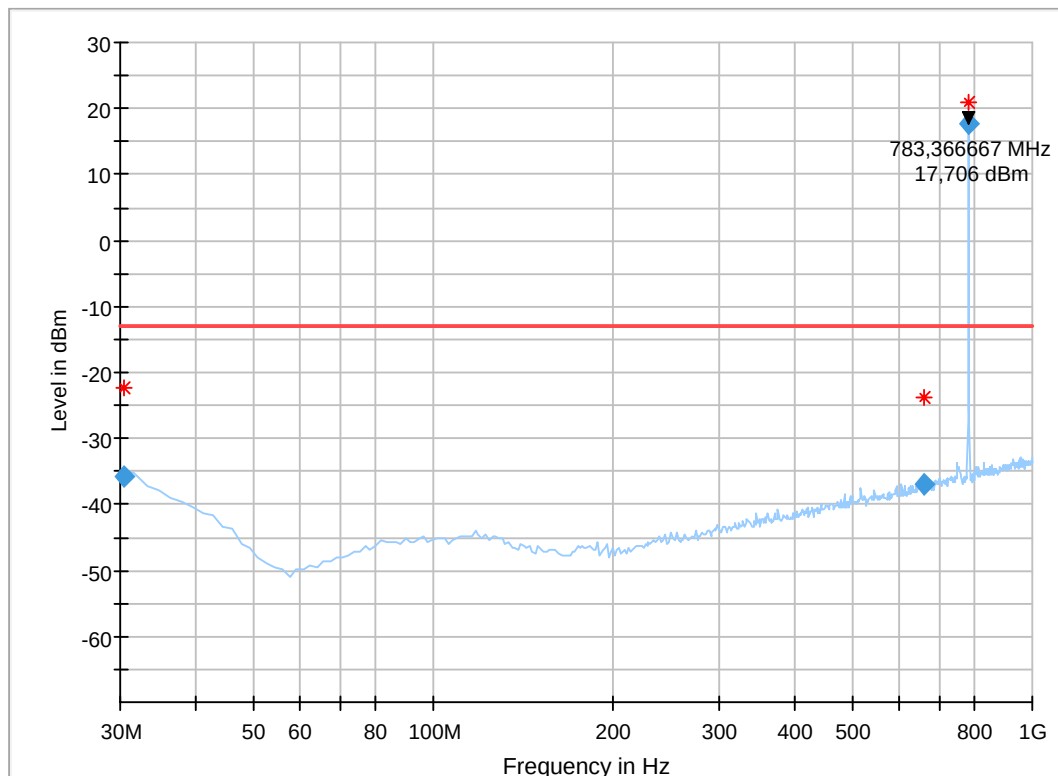
Common Information

Test Description:	Radiated Spurious Emissions
Test Site Location:	cetecom advanced GmbH Essen
Test Standard:	FCC §27.53
Antenna polarisation:	vertical / horizontal
Measurement software version	Measurement software version EMC32 V10.60.20
Operating Mode:	LTE_FDD_B13_CH_23230
Operator:	LAB
Environmental Conditions:	Humidity : 45% rH; Temperature: 20 °C
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



Remark: Emission at 0.783 GHz is uplink frequency of LTE FDD 13 and not related to spurious emission results.

Final_Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
30.412500	-35.65	-13.00	22.65	100.0	100.000	155.0	H	48.0	0.0	-77
782.066667	17.77	-13.00	-30.77	100.0	100.000	155.0	H	145.0	0.0	-77
660.691667	-36.91	-13.00	23.91	100.0	100.000	155.0	H	195.0	0.0	-78

8.13b_Traffic_mode_LTE_FDD_B13_CH_23230

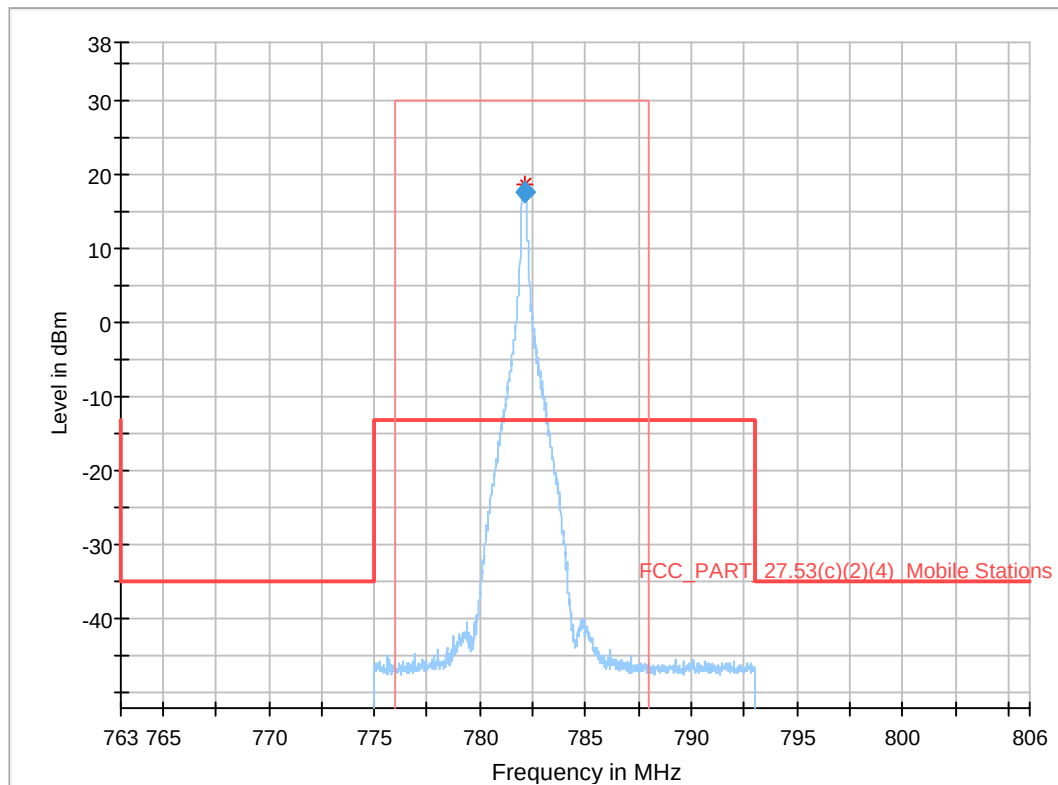
Common Information

Test Description:	Radiated Spurious 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:	LTE_FDD_B13_CH_23230
Environmental Conditions:	Humidity: 75 % rH; Temperature: 18 °C
Operator:	LAB
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



Final_Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
782.092000	17.66	-13.00	-30.66	100.0	100.000	H	150.0	0.0	-77

8.13c_Traffic_mode_LTE_FDD_B13_CH_23230

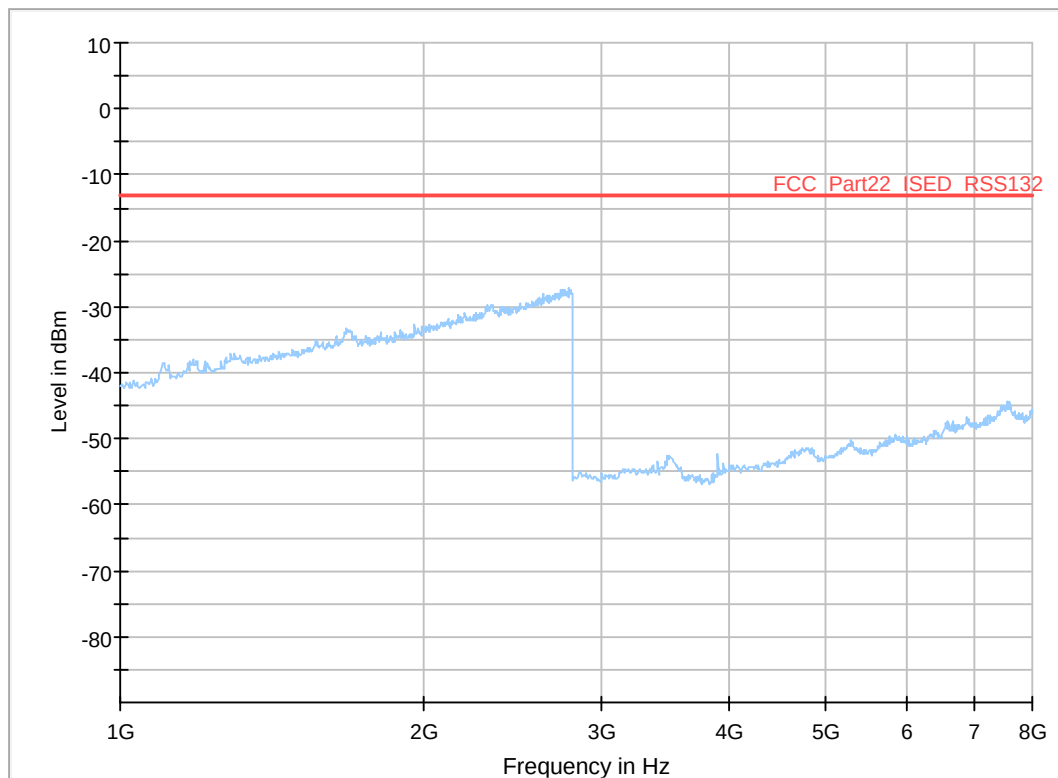
Common Information

Test Description:	Radiated Spurious Emissions
Test Site Location:	cetecom advanced GmbH Essen
Test Standard:	FCC §27.53
Antenna polarisation:	vertical / horizontal
Operating Mode:	LTE_FDD_B13_CH_23230
Operator:	LAB
Environmental Conditions:	Humidity : 45% rH; Temperature: 20 °C
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



8.13d_Traffic_mode_LTE_FDD_B13_CH_23230_GPS_Band

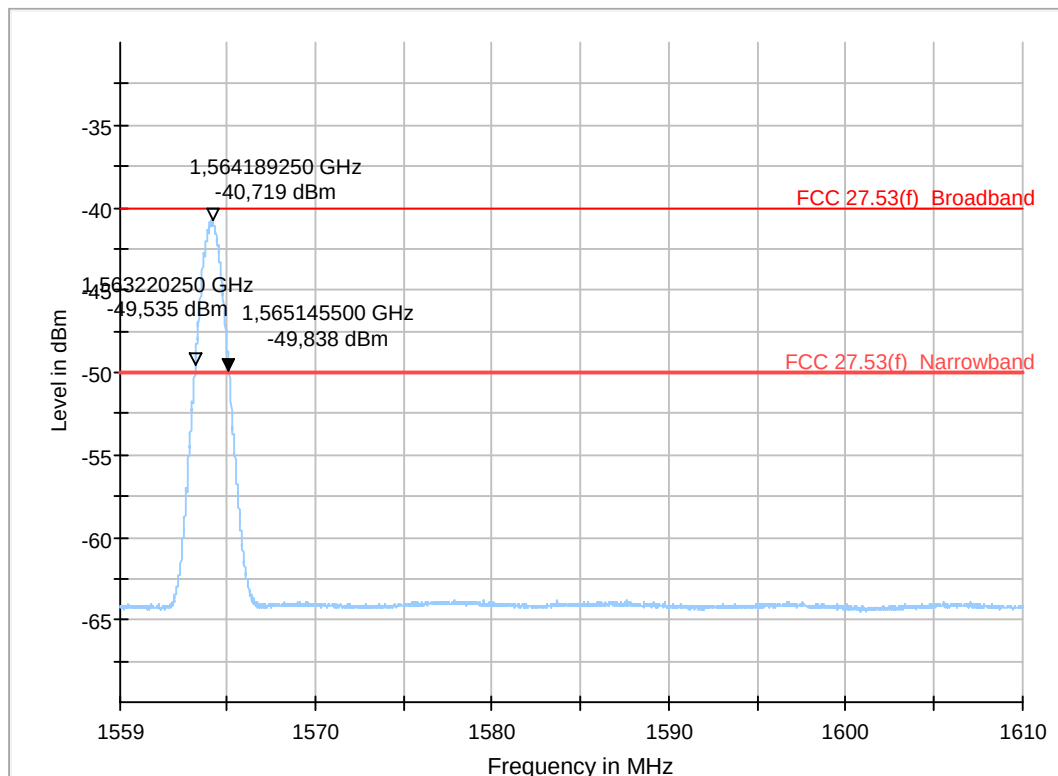
Common Information

Test Description:	Radiated Spurious 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:	LTE_FDD_B13_CH_23230
Exclusionband:	Uplink: 776-787MHz Downlink: -31MHz Offset
Environmental Conditions::	Humidity : 45% rH; Temperature: 19 °C
Operator:	LAB
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



Remark: broadband limit applicable

8.41a_Traffic_mode_LTE_TDD_B41_CH_39700

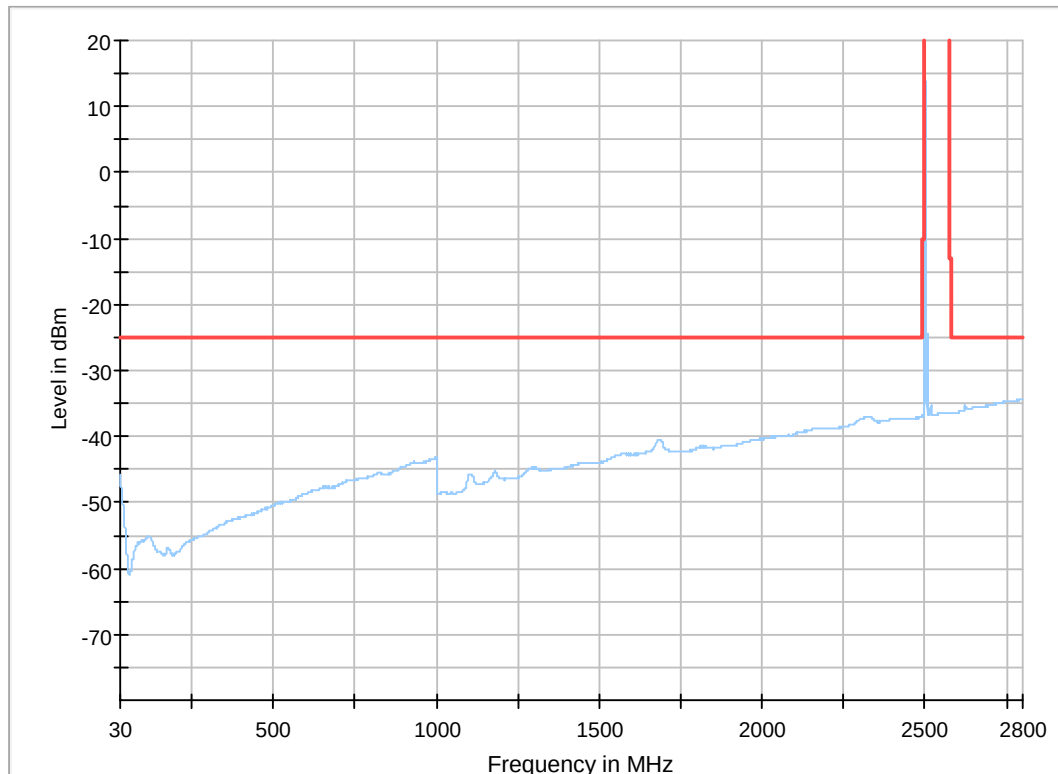
Common Information

Test Description:	Radiated Spurious 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:	LTE_TDD_B41_CH_39700
Environmental Conditions:	Humidity : 45 % rH; Temperature: 19 °C
Test SW Version:	EMC32 V10.60.20
Operator:	LAB
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



8.41b_Traffic_mode_LTE_TDD_B41_CH_39700

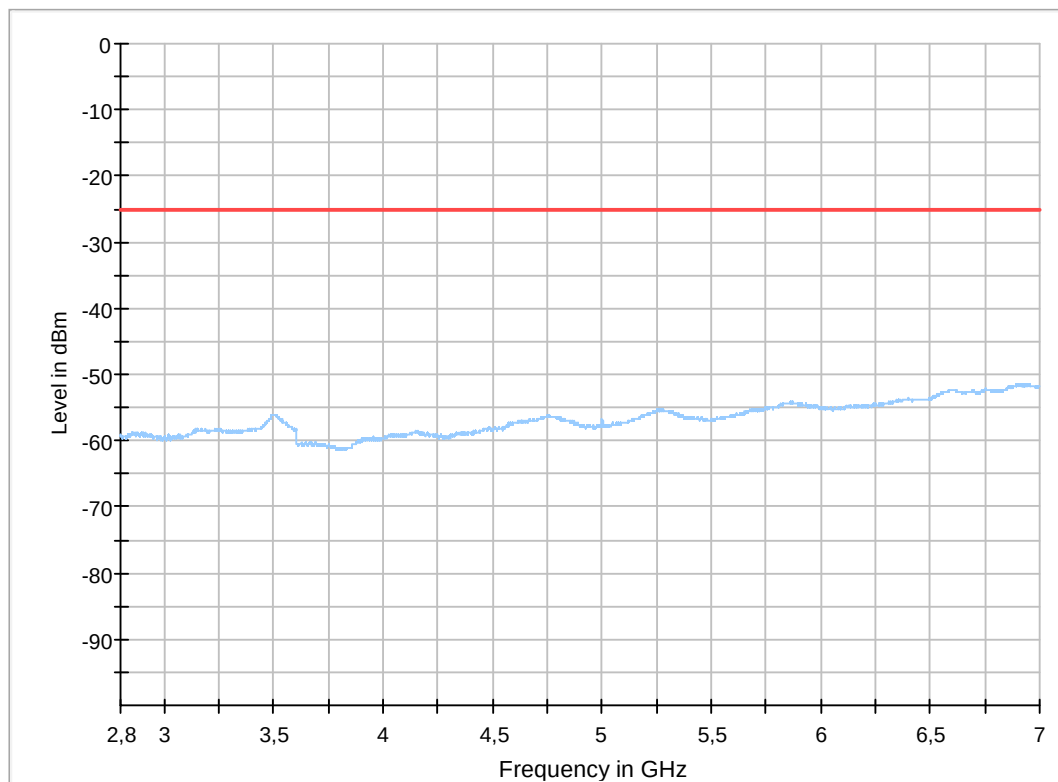
Common Information

Test Description:	Radiated Spurious 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:	LTE_TDD_B41_CH_39700
Environmental Conditions:	Humidity: 45% rH; Temperature: 19 C
Operator:	LAB
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



8.41c_Traffic_mode_LTE_TDD_B41_CH_39700

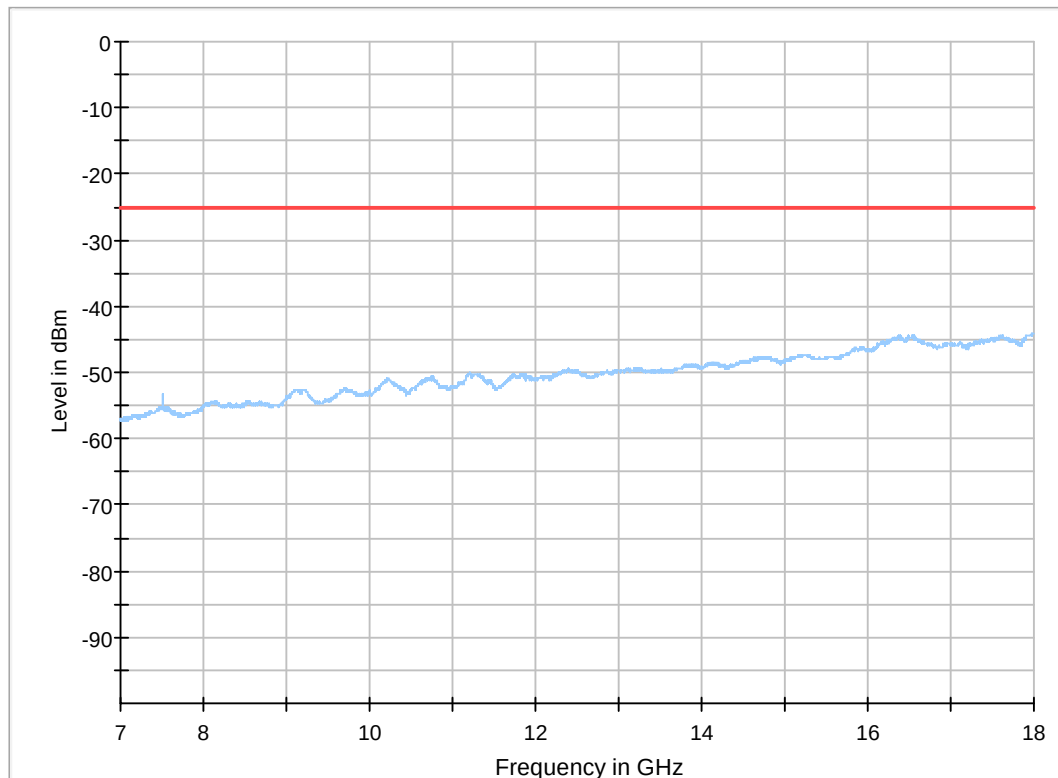
Common Information

Test Description:	Radiated Spurious 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:	LTE_TDD_B41_CH_39700
Environmental Conditions:	Humidity: 45% rH; Temperature: 19 C
Operator:	LAB
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



8.41d_Traffic_mode_LTE_TDD_B41_CH_39700_AntV

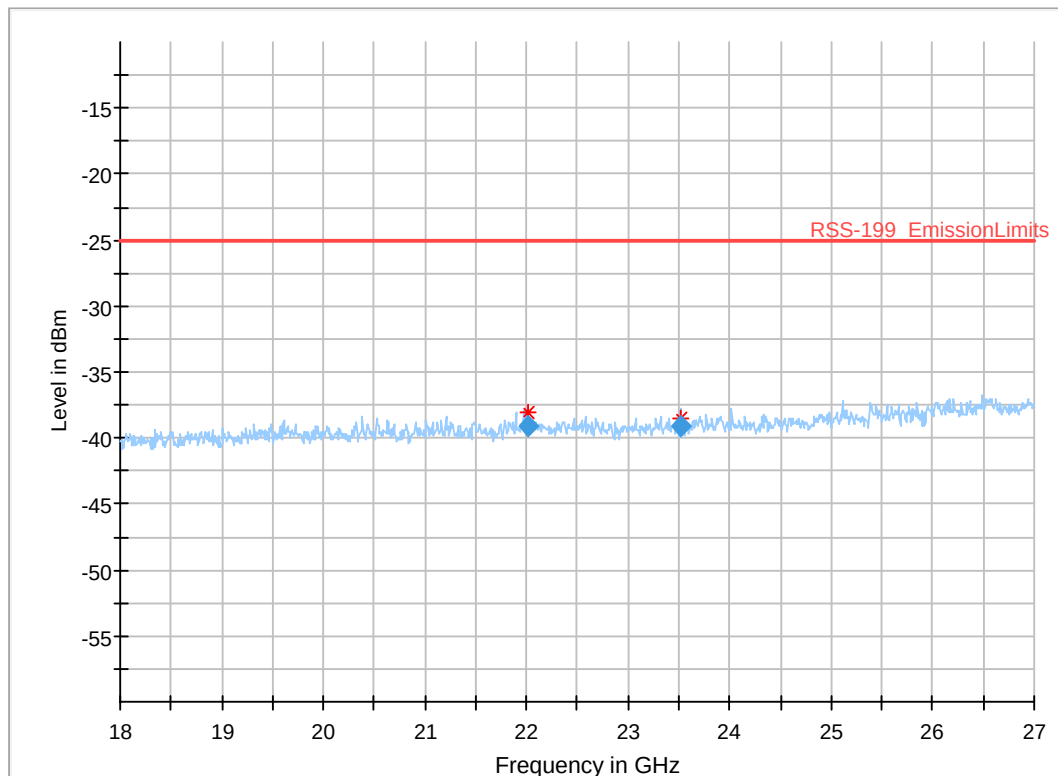
Common Information

Test Description:	Radiated Spurious Emissions
Test Site Location:	cetekom advanced GmbH Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC §27.53
Operating Mode:	LTE_TDD_B41_CH_39700
Environmental Conditions:	Humidity: 63% rH; Temperature:19.1 °C
Operator:	Lor
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



Final_Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Sig Path (dB)	Preamp (dB)
22007.400000	-25.00	14.13	500.0	155.0	V	81.0	90.0	-55.7	2.5	65.3
23509.740000	-25.00	14.06	500.0	155.0	V	99.0	0.0	-55.5	2.6	65.9

8.41e_Traffic_mode_LTE_TDD_B41_CH_39700_Anth

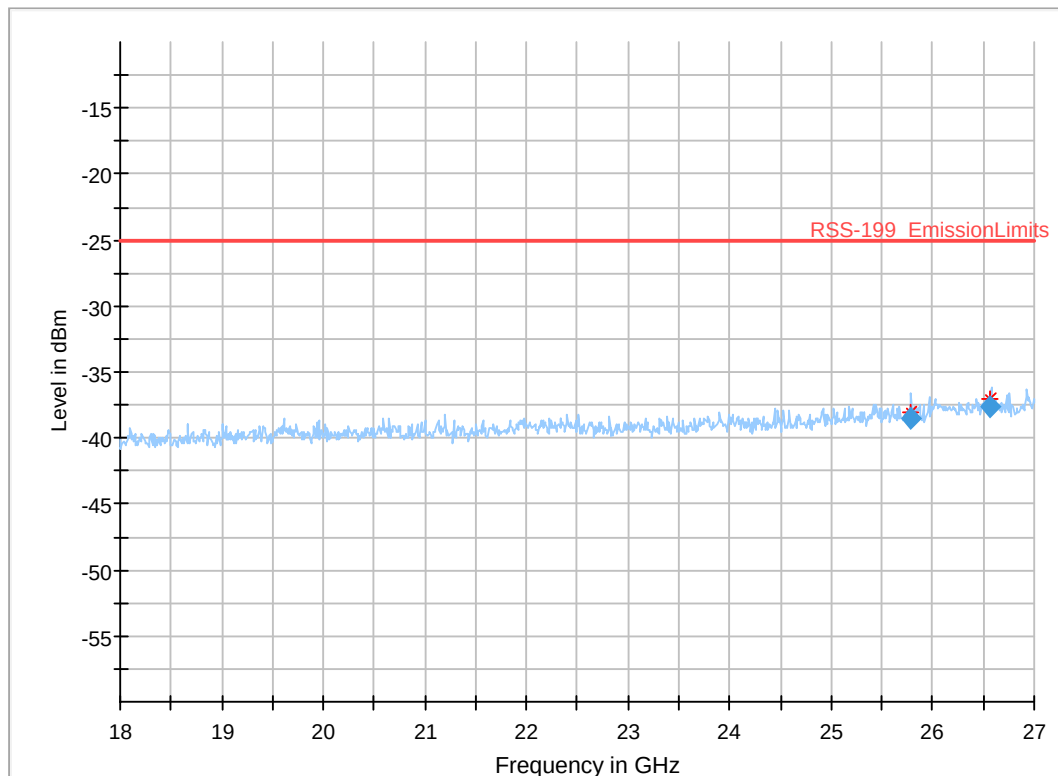
Common Information

Test Description:	Radiated Spurious Emissions
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC §27.53
Operating Mode:	LTE_TDD_B41_CH_39700
Environmental Conditions:	Humidity: 63% rH; Temperature:19.1 °C
Operator:	Lor
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



3 Radiated Band Edge

9.203a_Bandedge_low_LTE_FDD_B02_CH_low_1RB

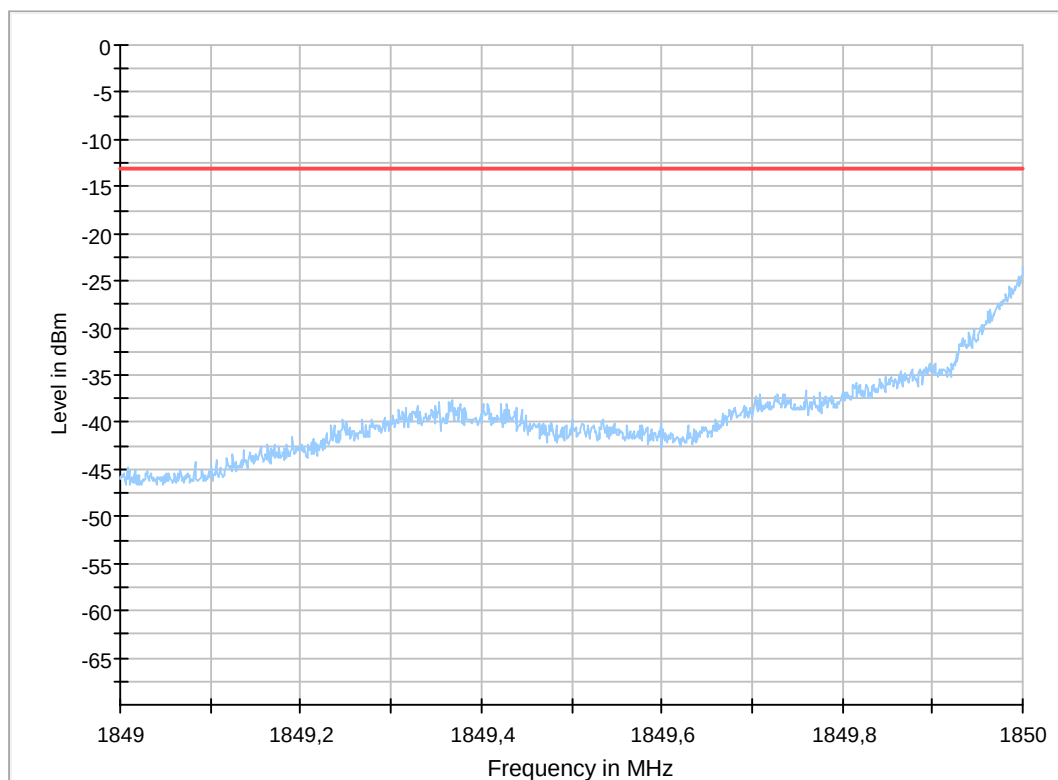
Common Information

Test Description:	Band-Edge
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §24.238
Operating Mode:	channel no=18607-low BW= 1,4 RB=1 Modulation= LTE_FDD2
Environmental Conditions:	Humidity : 45% rH; Temperature: 20 °C
Operator:	mab/dma
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



9.203b_Bandedge_low_LTE_FDD_B02_CH_low_FullRB

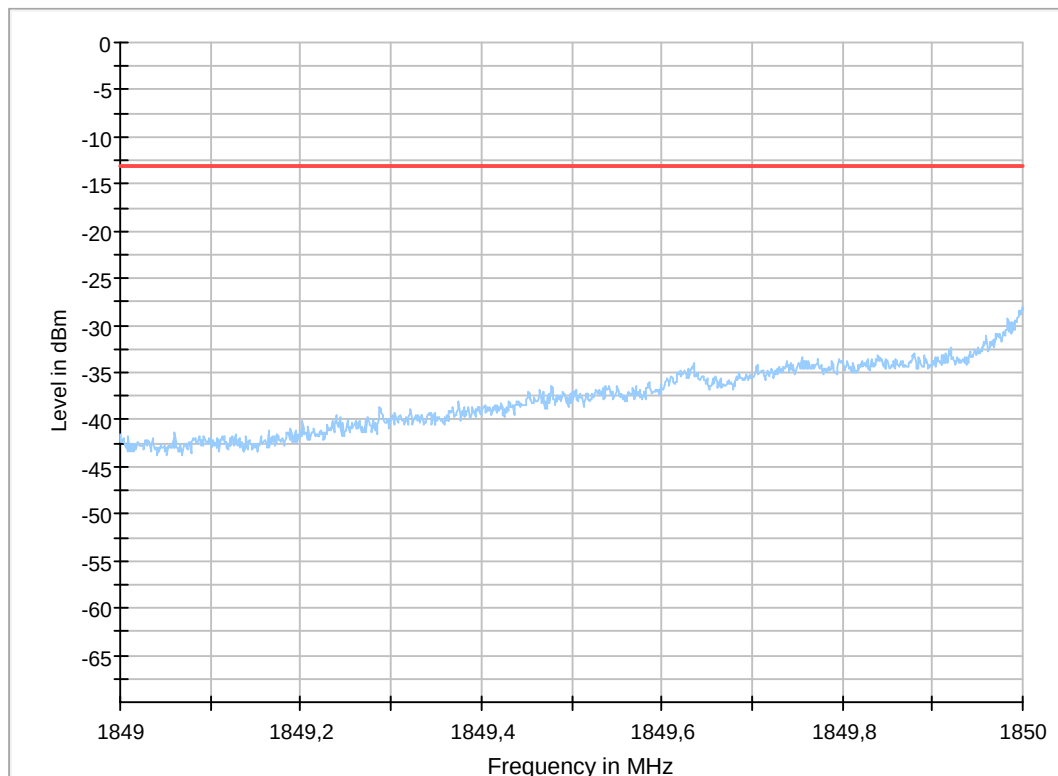
Common Information

Test Description:	Band-Edge
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §24.238
Test Case:	TX
Operating Mode:	channel no=18607-low BW= 1,4 RB=1 Modulation= LTE_FDD2
Environmental Conditions:	Humidity : 45% rH; Temperature: 20 °C
Operator:	mab/dma
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



9.204a_Bandedge_high_LTE_FDD_B02_CH_high_1RB

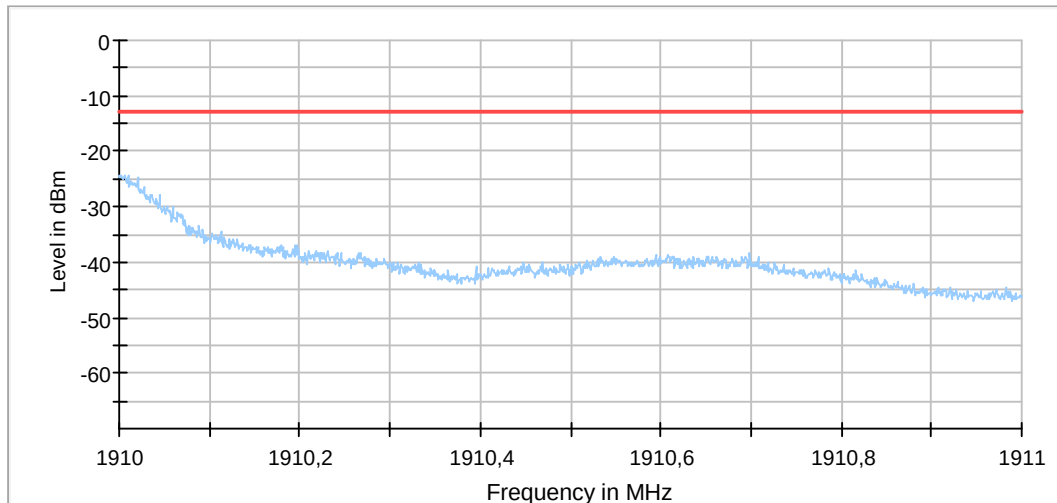
Common Information

Test Description:	Band-Edge
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §24.238
Test Case:	TX
Operating Mode:	Bandedge =High BW= 1,4 RB=1 Modulation= LTE_FDD2
Environmental Conditions:	Humidity : 45% rH; Temperature: 20 °C
Operator:	mab
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



9.204b_Bandedge_high_LTE_FDD_B02_CH_high_FullRB

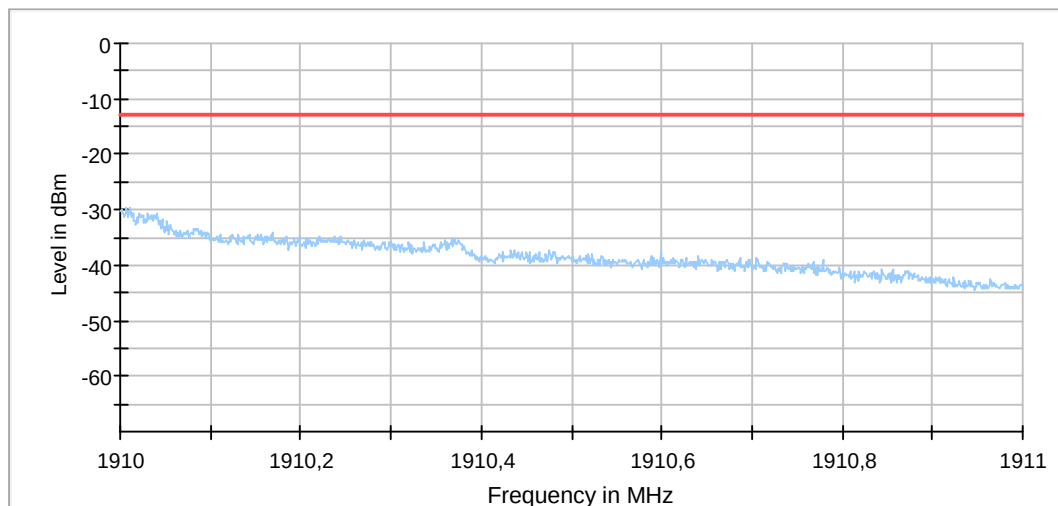
Common Information

Test Description:	Band-Edge
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §24.238
Test Case:	TX
Operating Mode:	Bandedge =High BW= 1,4 RB=6 Modulation= LTE_FDD2
Environmental Conditions:	Humidity : 45% rH; Temperature: 20 °C
Operator:	mab
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



9.403a_Bandedge_low_LTE_FDD_B04_CH_low_1RB

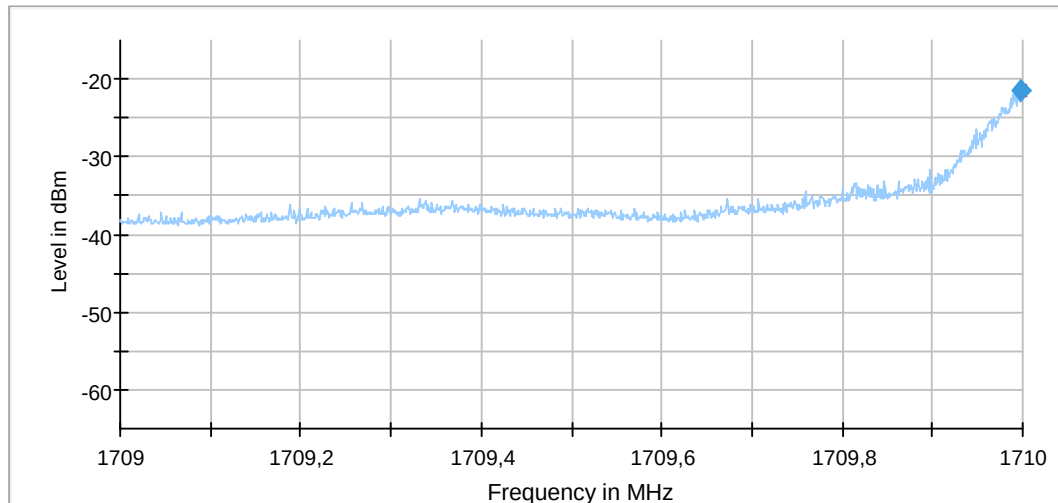
Common Information

Test Description: Band-Edge
 Test Site Location: cetecom advanced GmbH Essen
 Test Site: Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
 Test Standard: FCC §24.238
 Test Case: TX
 Operating Mode: Bandedge =low BW= 1,4 RB=1 Modulation= LTE_FDD4
 Environmental Conditions: Humidity : 45% rH; Temperature: 20 °C
 Operator: mab
 Verdict: Passed

EUT Information

PMT number: 23-1-00355S04_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)
1709.998000	-21.55	-13.00	8.55	700.0	20.000	H	245.0	0.0	-62

9.403b_Bandedge_low_LTE_FDD_B04_CH_low_FullRB

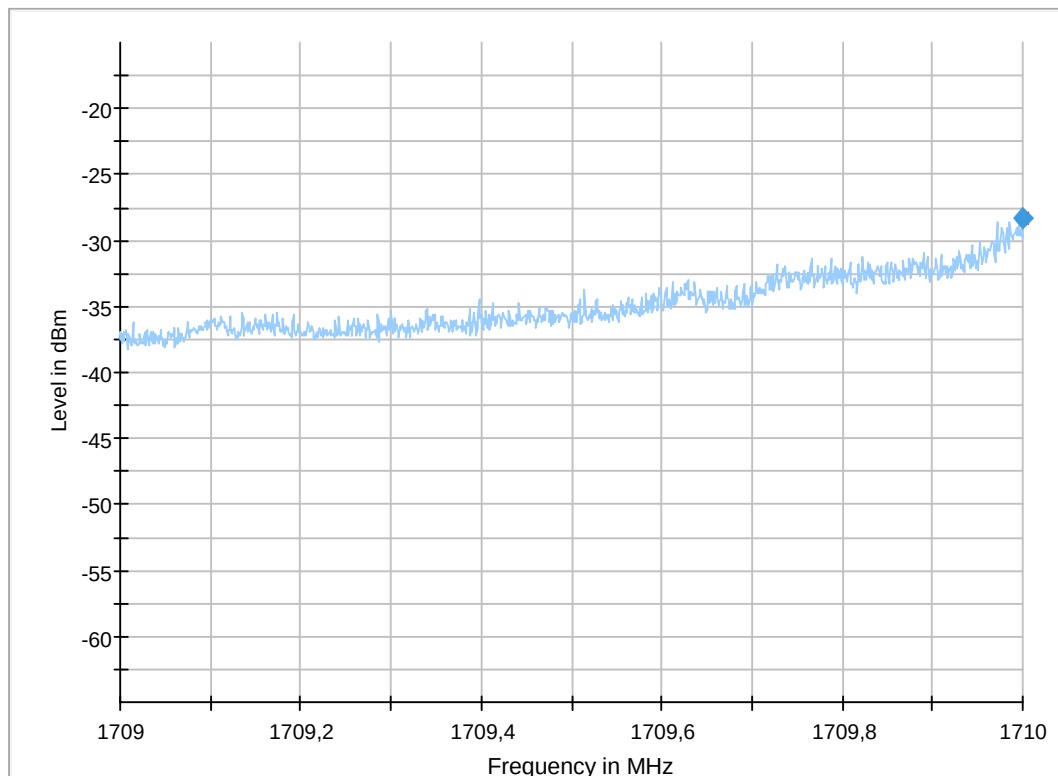
Common Information

Test Description:	Band-Edge
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §27.53
Test Case:	TX
Operating Mode:	Bandedge =low BW= 1,4 RB=6 Modulation= LTE_FDD4
Environmental Conditions:	Humidity : 45% rH; Temperature: 20 °C
Operator:	mab
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_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)
1710.000000	-28.29	-13.00	15.29	700.0	20.000	H	249.0	0.0	-62

9.404a_Bandedge_high_LTE_FDD_B04_CH_high_1RB

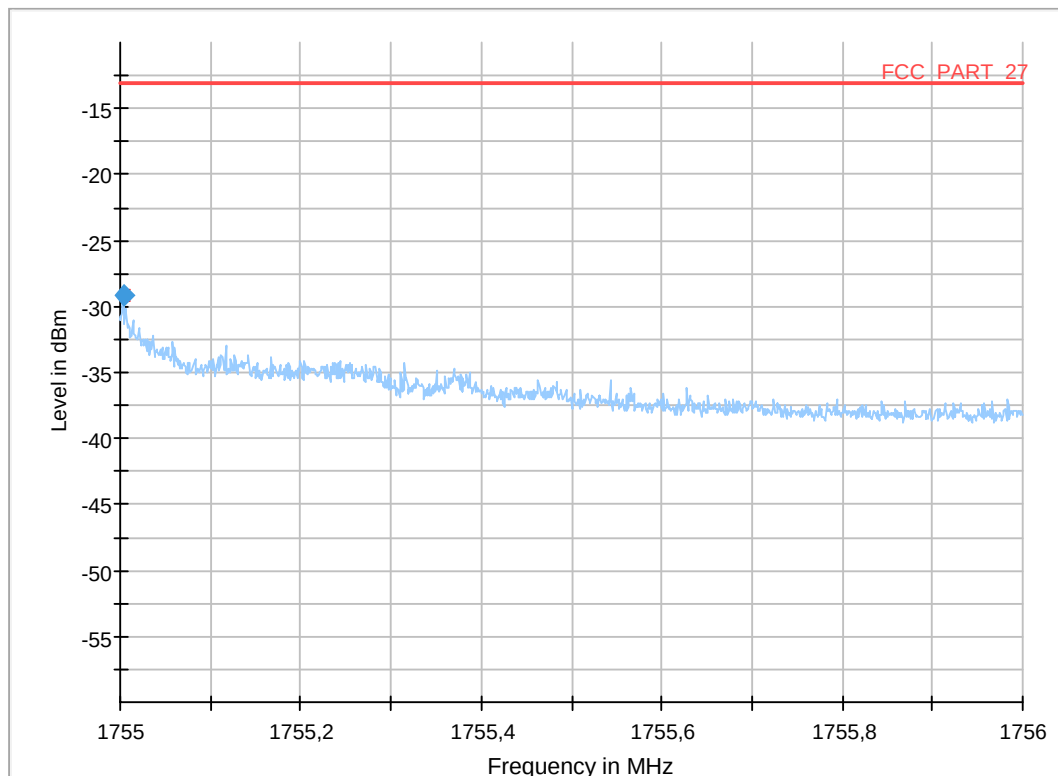
Common Information

Test Description:	Band-Edge
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §27.53
Test Case:	TX
Operating Mode:	Bandedge =high BW= 1,4 RB=1 Modulation= LTE_FDD4
Environmental Conditions:	Humidity : 45% rH; Temperature: 20 °C
Operator:	mab
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_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)
1755.004000	-29.21	-13.00	16.21	700.0	20.000	H	78.0	90.0	-62

9.404b_Bandedge_high_LTE_FDD_B04_CH_high_FullRB

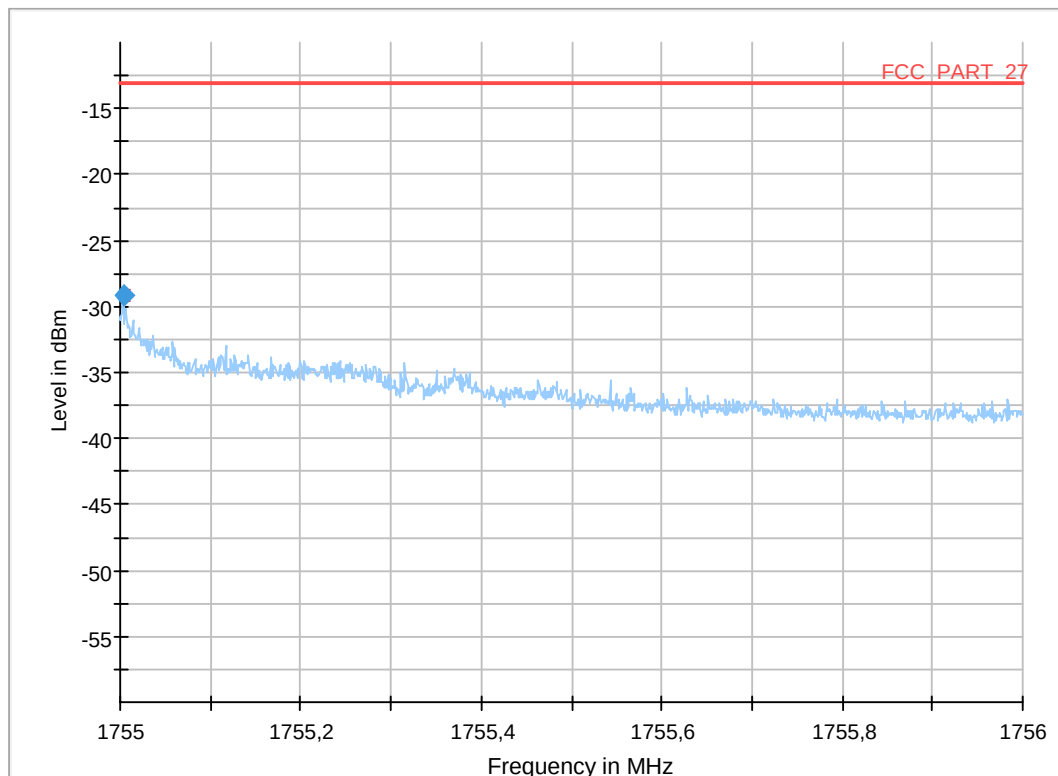
Common Information

Test Description:	Band-Edge
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §27.53
Test Case:	TX
Operating Mode:	Bandedge =high BW= 1,4 RB=6 Modulation= LTE_FDD4
Environmental Conditions:	Humidity : 45% rH; Temperature: 20 °C
Operator:	mab
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_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)
1755.004000	-29.21	-13.00	16.21	700.0	20.000	H	78.0	90.0	-62

9.501a_Bandedge_low_LTE_FDD_B05_CH_low_1RB

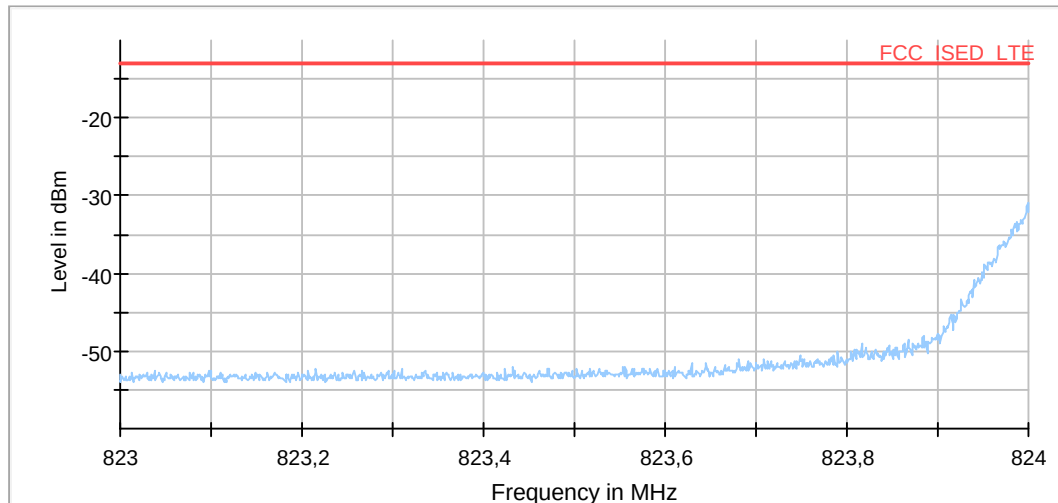
Common Information

Test Description:	Band-Edge
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §22.917
Operating Mode:	UE allocated channel 20407
Environmental Conditions:	Humidity: 60% rH; Temperature: 21 °C
Test SW Version:	EMC32 V10.60.20
Operator:	npe
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



9.501b_Bandedge_low_LTE_FDD_B05_CH_low_FullRB

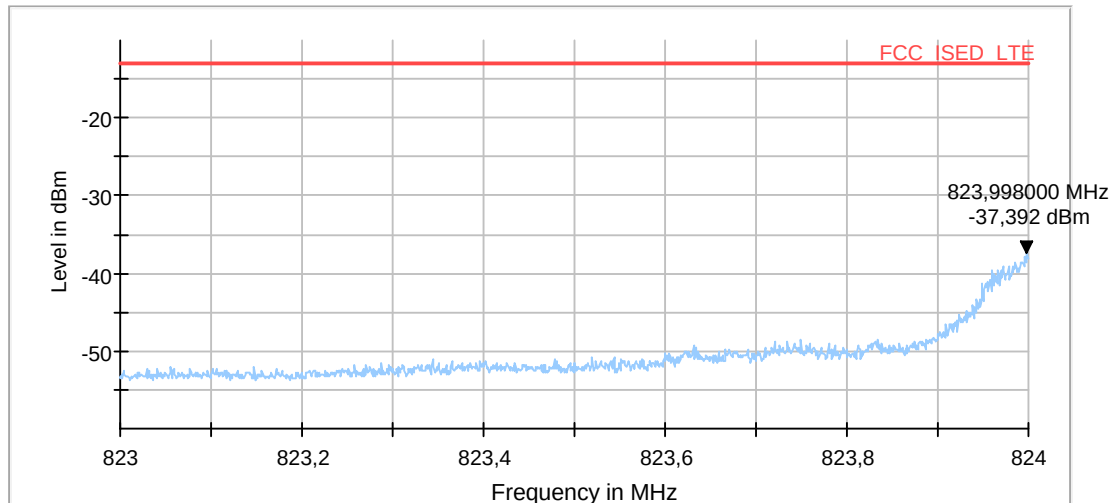
Common Information

Test Description:	Band-Edge
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §22.917
Operating Mode:	UE allocated channel 20407
Environmental Conditions:	Humidity: 60% rH; Temperature: 21 °C
Test SW Version:	EMC32 V10.60.20
Operator:	mab
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



9.502a_Bandedge_high_LTE_FDD_B05_CH_high_1RB

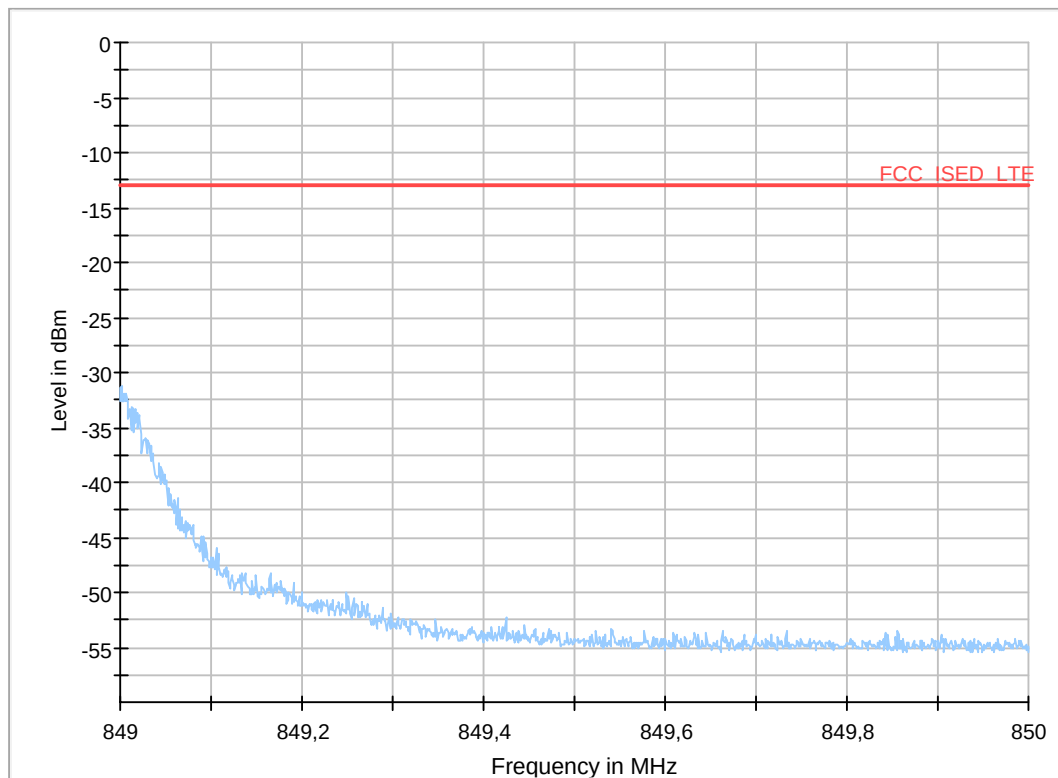
Common Information

Test Description:	Band-Edge
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §22.917
Operating Mode:	UE allocated channel 20643
Environmental Conditions:	Humidity: 60% rH; Temperature: 21 °C
Test SW Version:	EMC32 V10.60.20
Operator:	mab
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



9.502b_Bandedge_high_LTE_FDD_B05_CH_high_FullRB

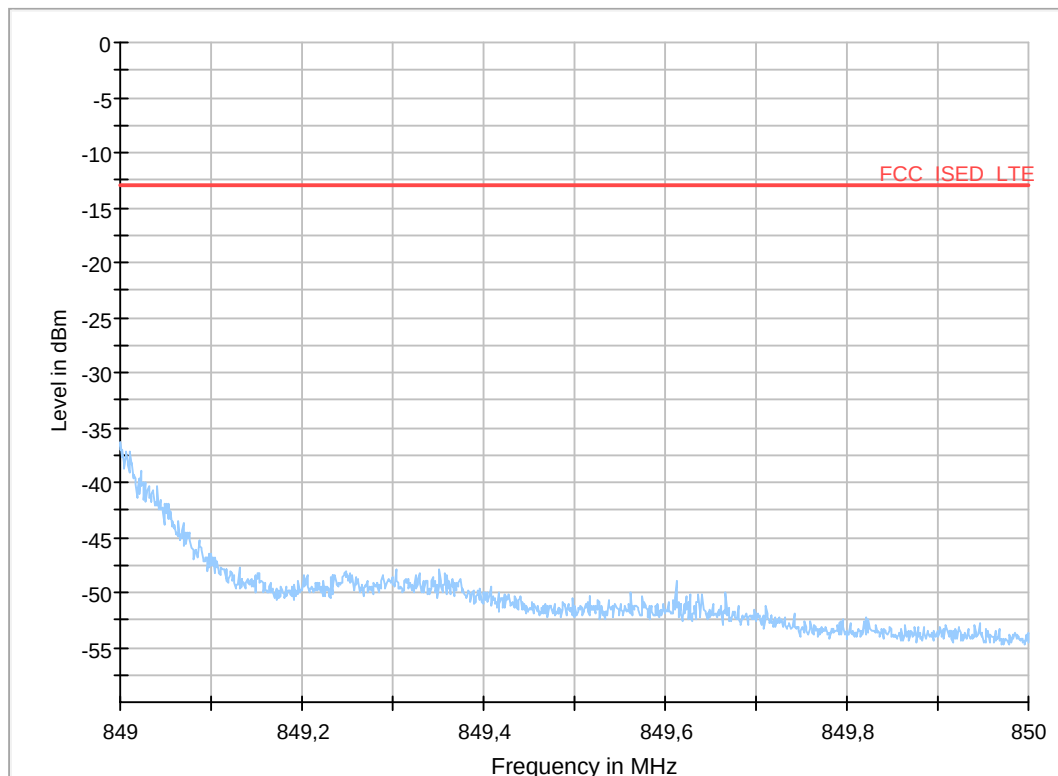
Common Information

Test Description:	Band-Edge
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §22.917
Operating Mode:	UE allocated channel 20643
Environmental Conditions:	Humidity: 60% rH; Temperature: 21 °C
Test SW Version:	EMC32 V10.60.20
Operator:	mab
Verdict:	Passed

EUT Information

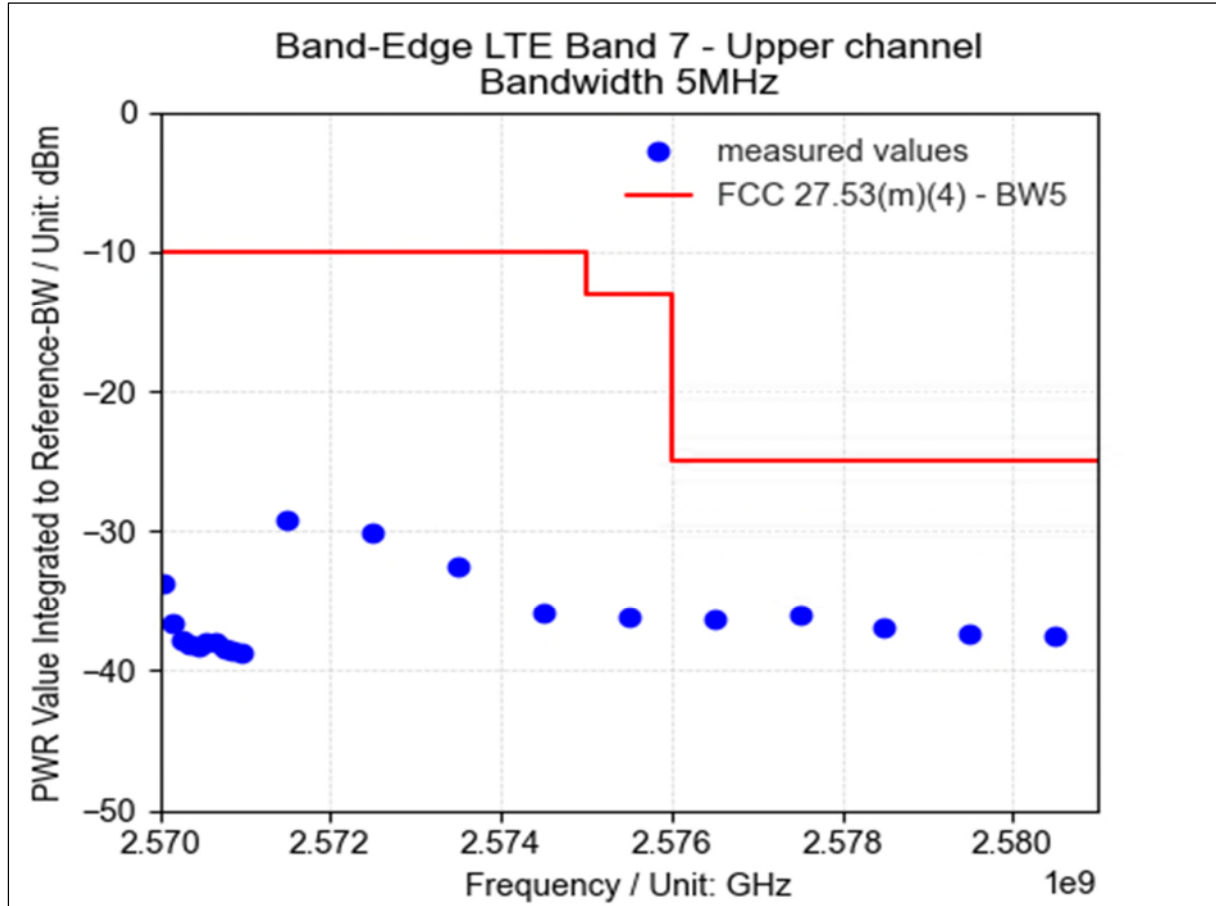
PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum



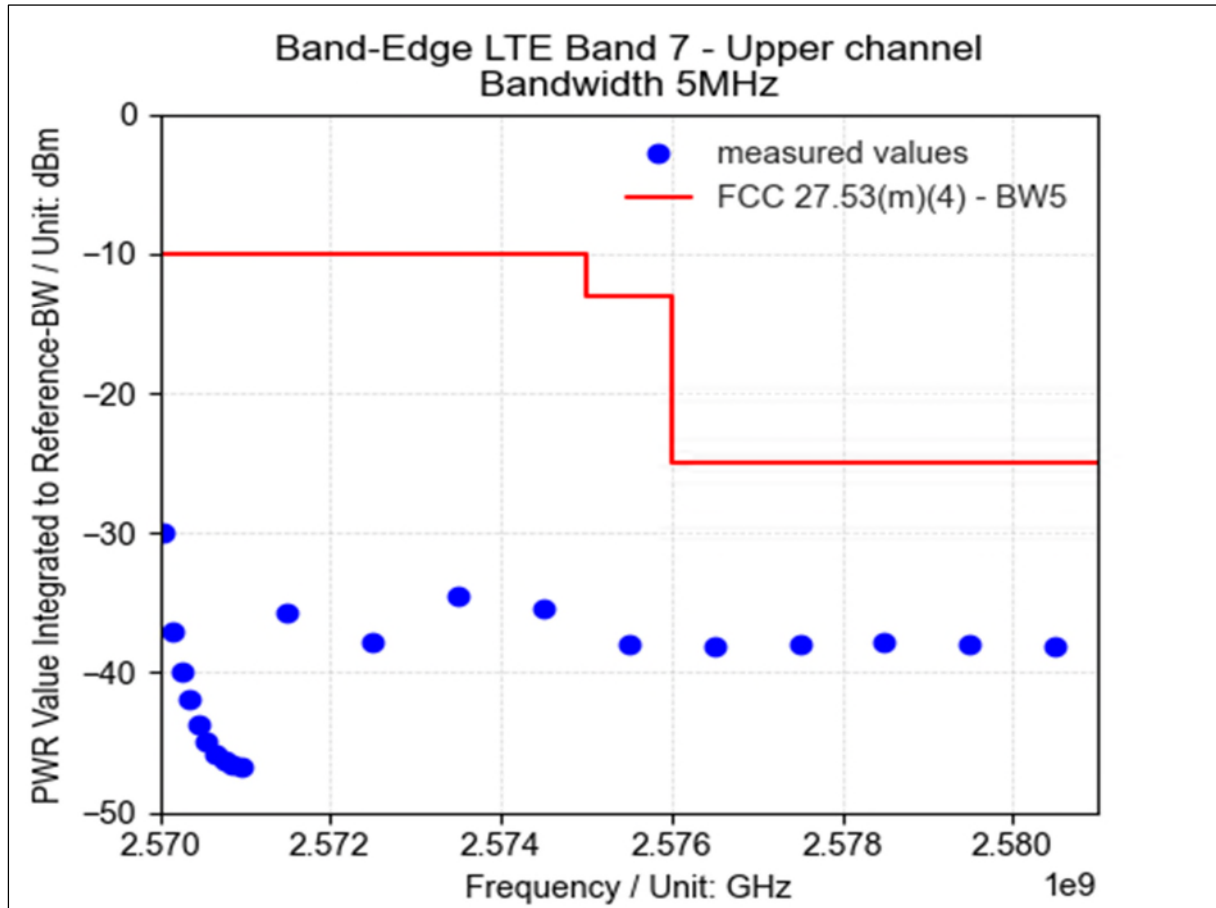
9.701

T002_D9_7_04b_BE_high_S04_C01_Step2_Ch21425_25RBs_QPSK_52deg_Elev0_AntV



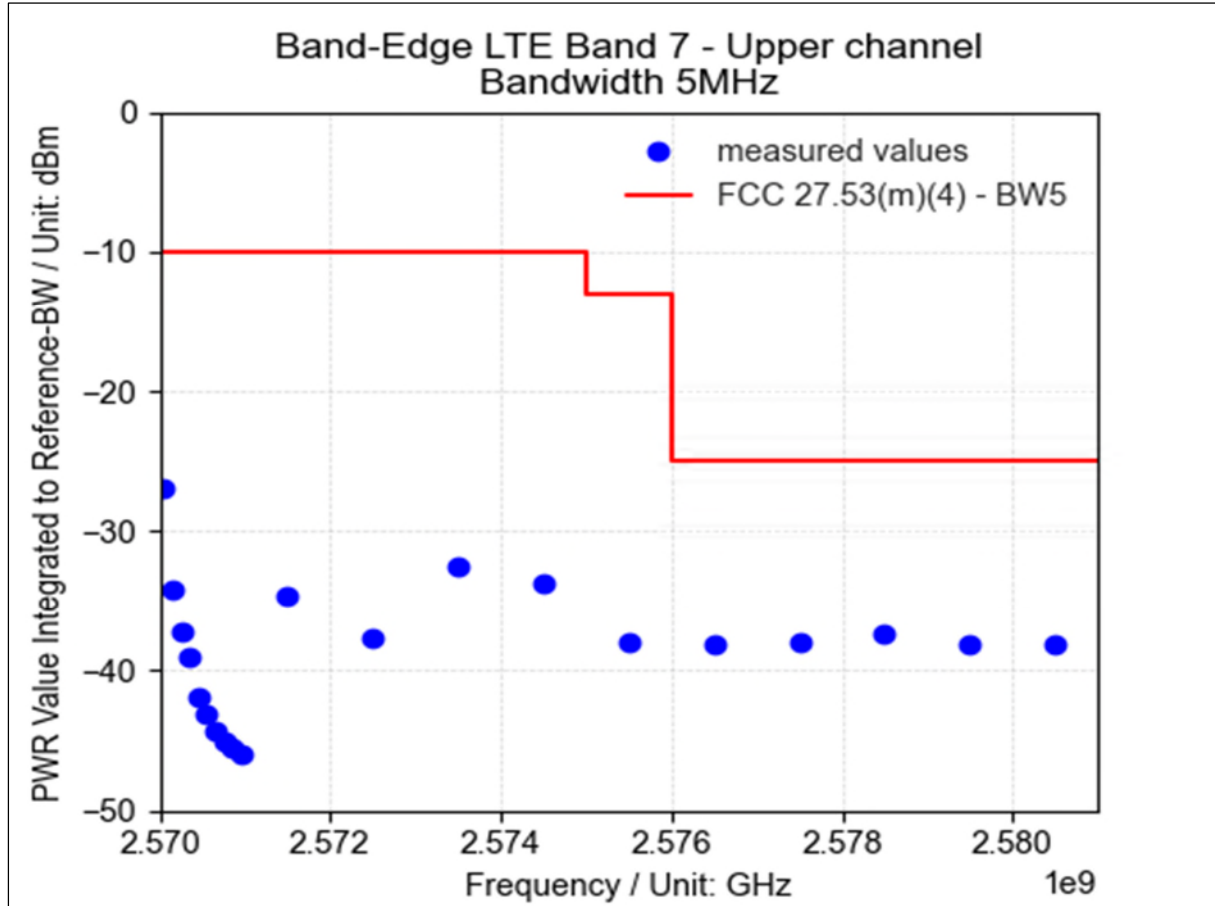
9.702

T002_D9_7_05b_BE_high_S04_C01_Step2_Ch21425_1RB49_QPSK_52deg_Elev0_AntV



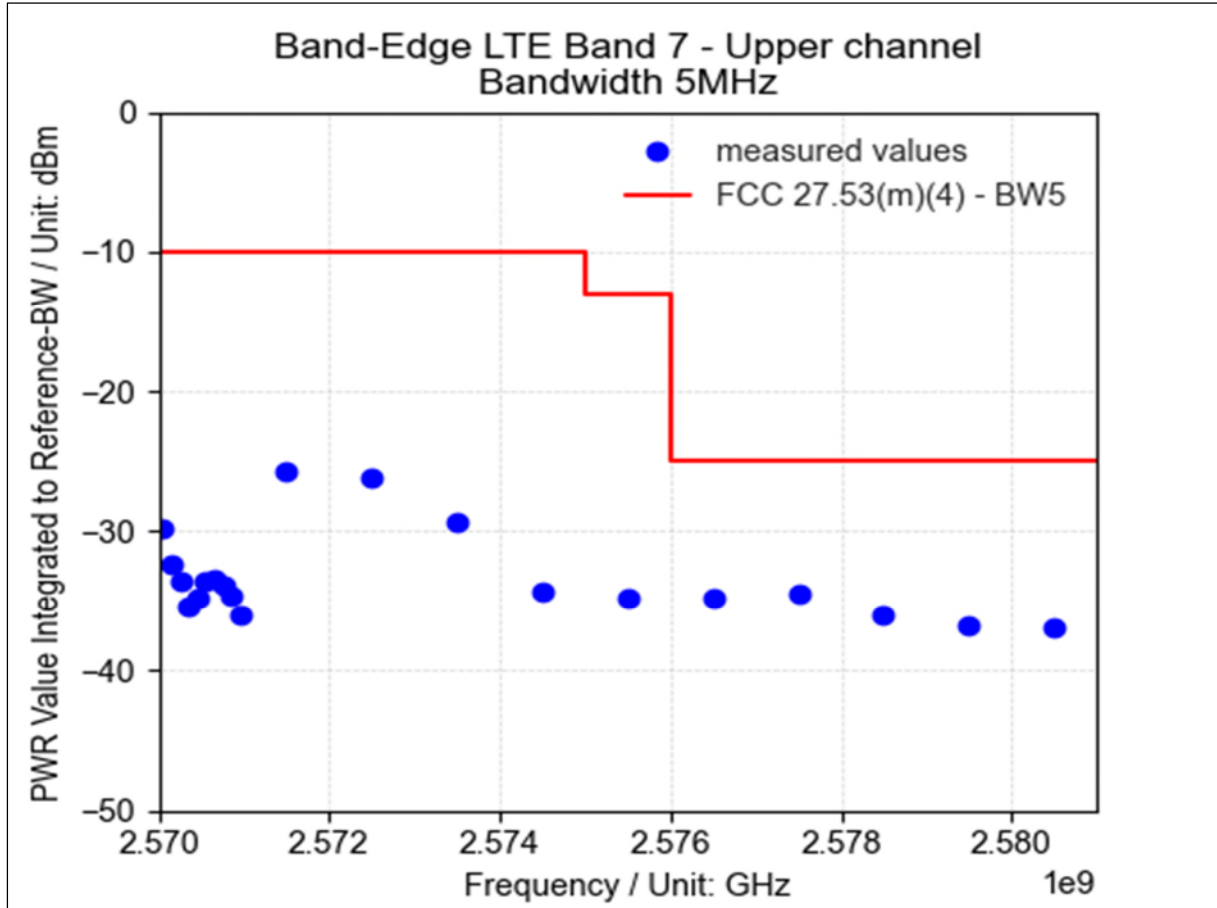
9.703

T002_D9_7_06b_BE_high_S04_C01_Step2_Ch21425_1RB49_QPSK_288deg_Elev0_AntH



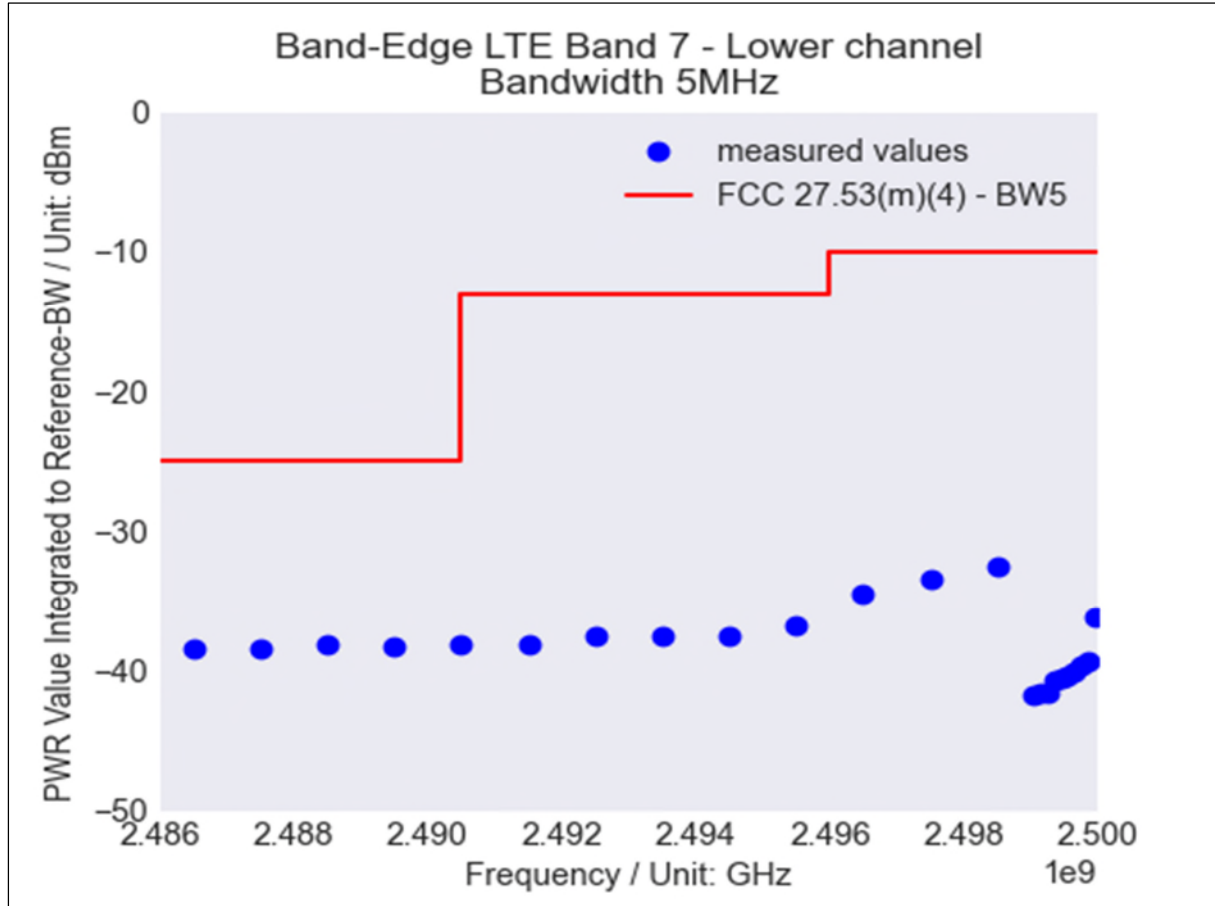
9.704

T002_D9_7_07b_BE_high_S04_C01_Step2_Ch21425_25RBs_QPSK_288deg_Elev0_AntH



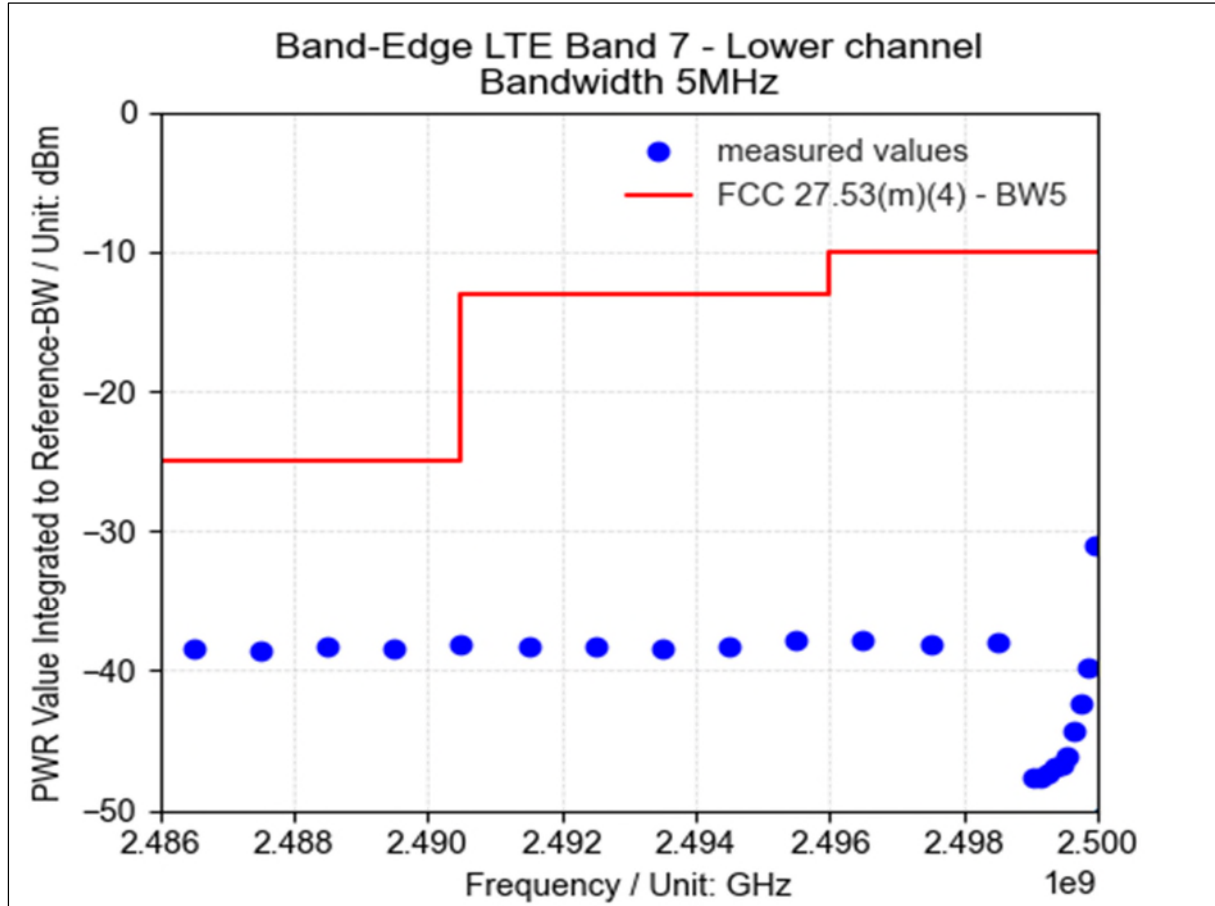
9.705

T002_D9_7_08b_BE_low_S04_C01_Step2_Ch20775_25RBs_QPSK_45eg_Elev0_AntV



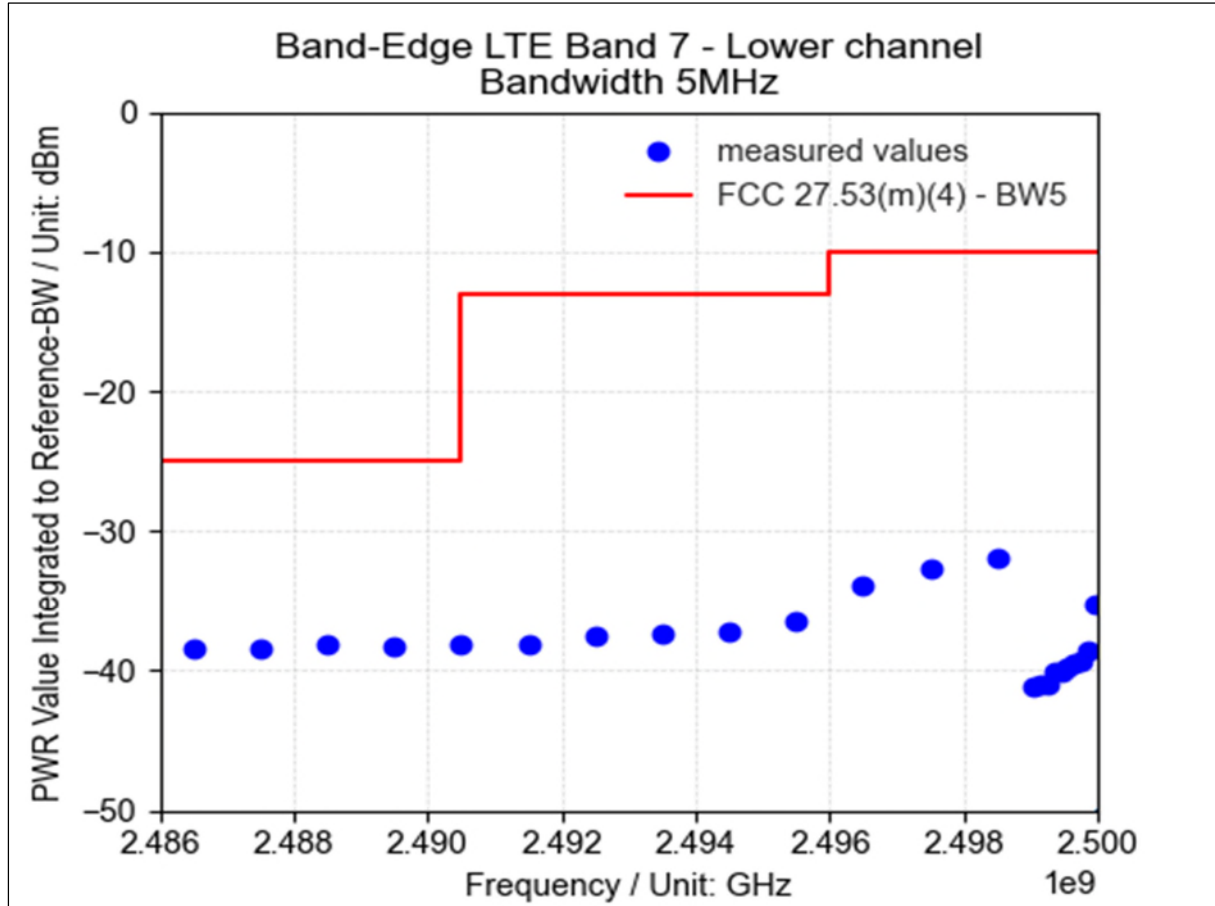
9.706

T002_D9_7_09b_BE_low_S04_C01_Step2_Ch20775_1RB0_QPSK_45eg_Elev0_AntV



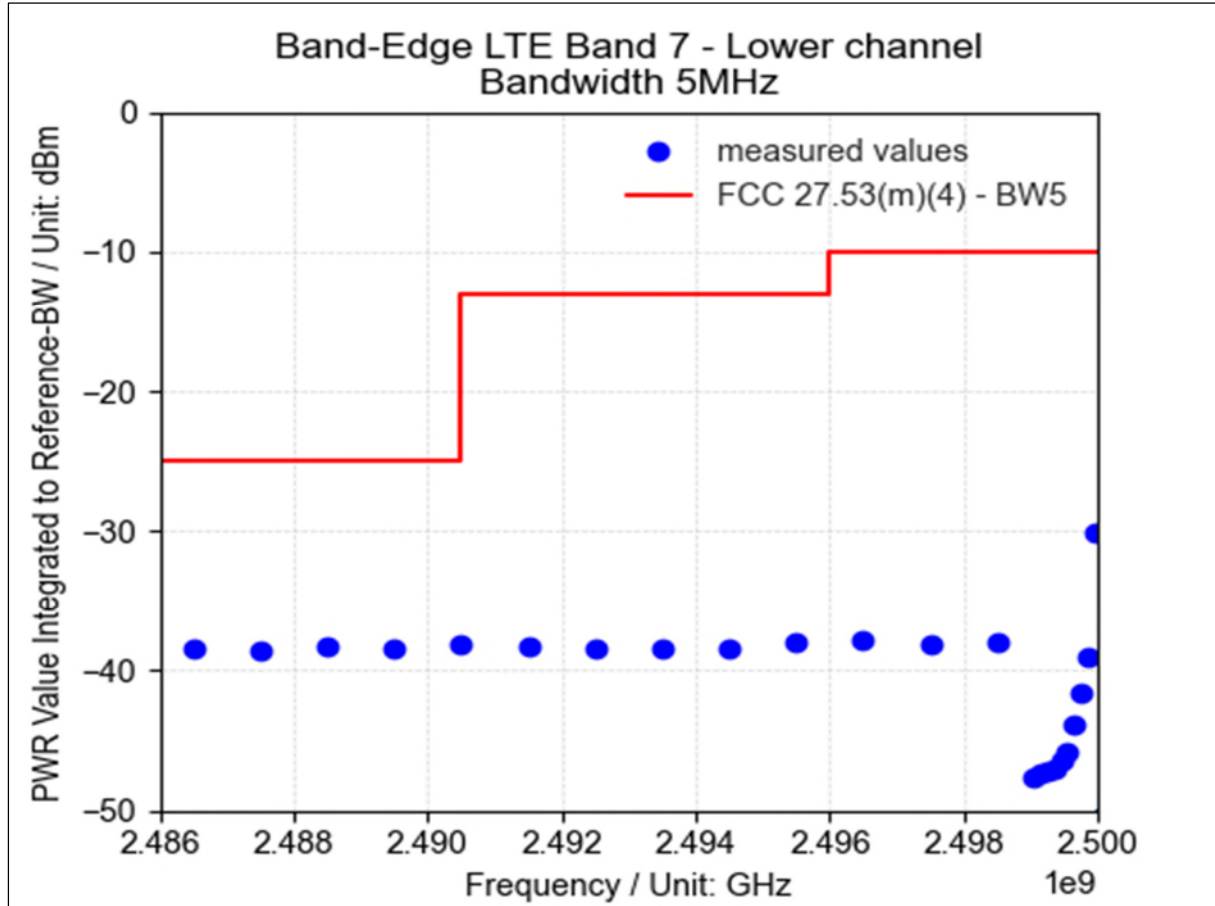
9.707

T002_D9_7_10a_BE_low_S04_C01_Step2_Ch20775_25RBs_QPSK_280eg_Elev0_AntH



9.708

T002_D9_7_11a_BE_low_S04_C01_Step2_Ch20775_1RB0_QPSK_280eg_Elev0_AntH



9.1201a_Bandedge_low_LTE_FDD_B12_CH_low_1RB

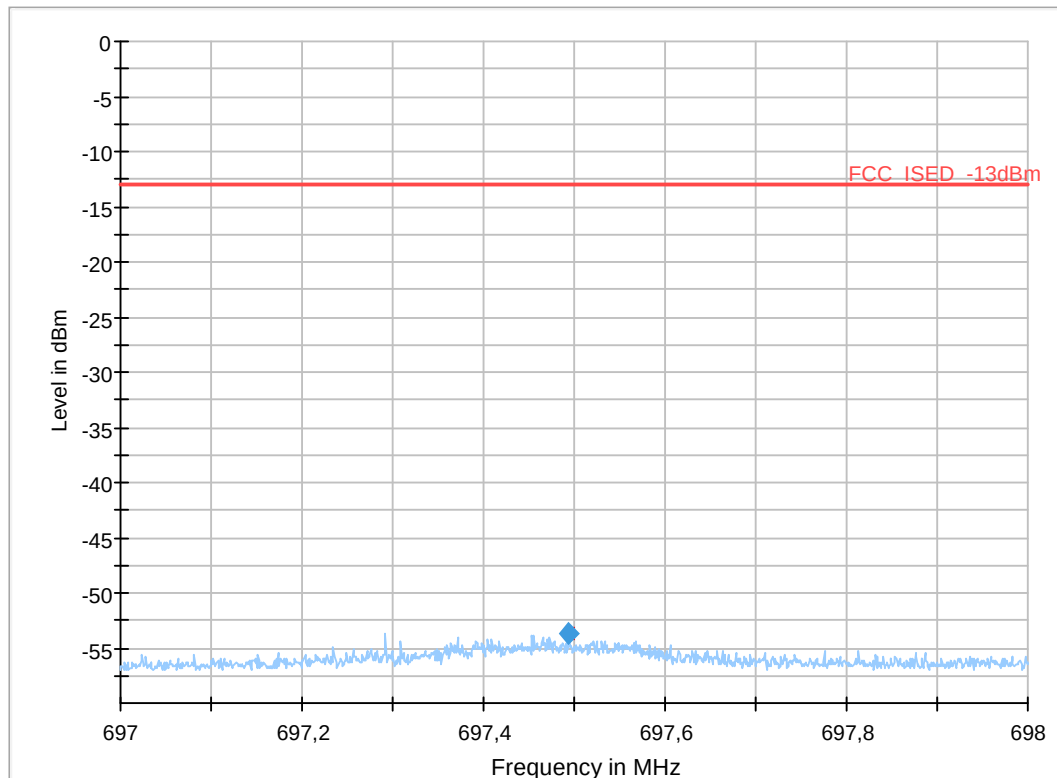
Common Information

Test Description:	Band-Edge
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_low_LTE_FDD_B12_CH_low_1RB
Environmental Conditions:	Humidity: 48% rH; Temperature: 21 °C
Test SW Version:	EMC32 V10.60.20
Operator:	KTe
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_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)
697.494000	-53.71	-13.00	40.71	700.0	20.000	H	126.0	0.0	-78

9.1201b_Bandedge_low_LTE_FDD_B12_CH_low_FullRB

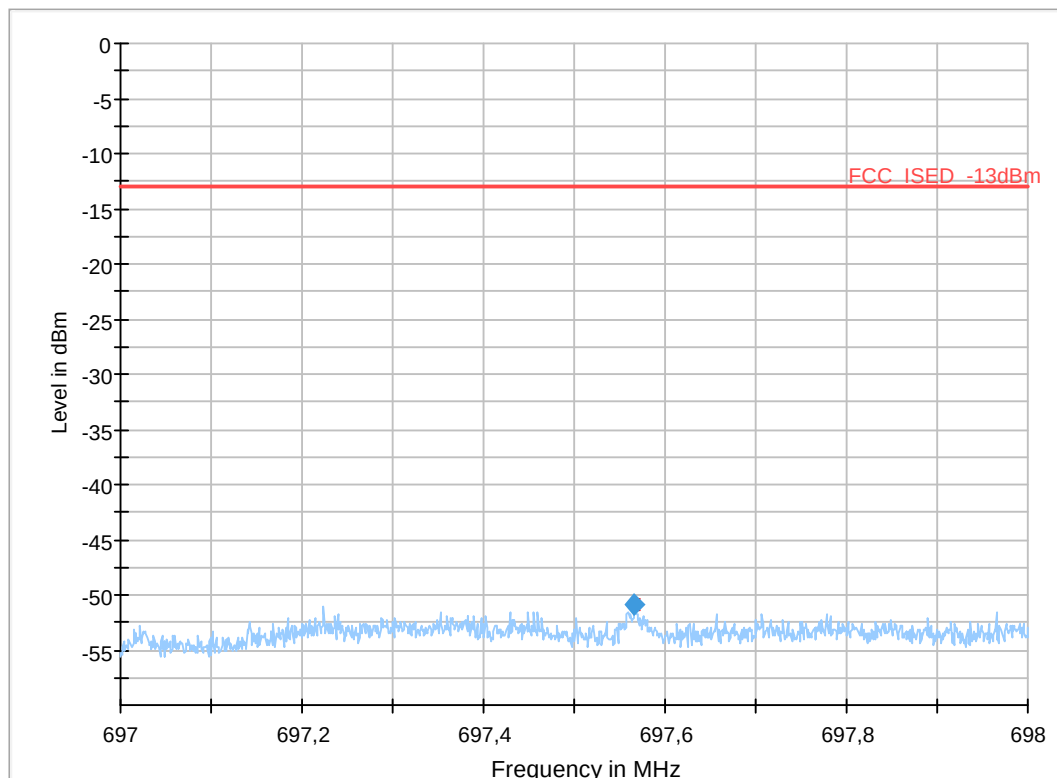
Common Information

Test Description:	Band-Edge
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_low_LTE_FDD_B12_CH_low_FullRB
Environmental Conditions:	Humidity: 48% rH; Temperature: 21 °C
Test SW Version:	EMC32 V10.60.20
Operator:	KTe
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_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)
697.566000	-50.89	-13.00	37.89	700.0	20.000	H	130.0	0.0	-78

9.1202a_Bandedge_high_LTE_FDD_B12_CH_high_1RB

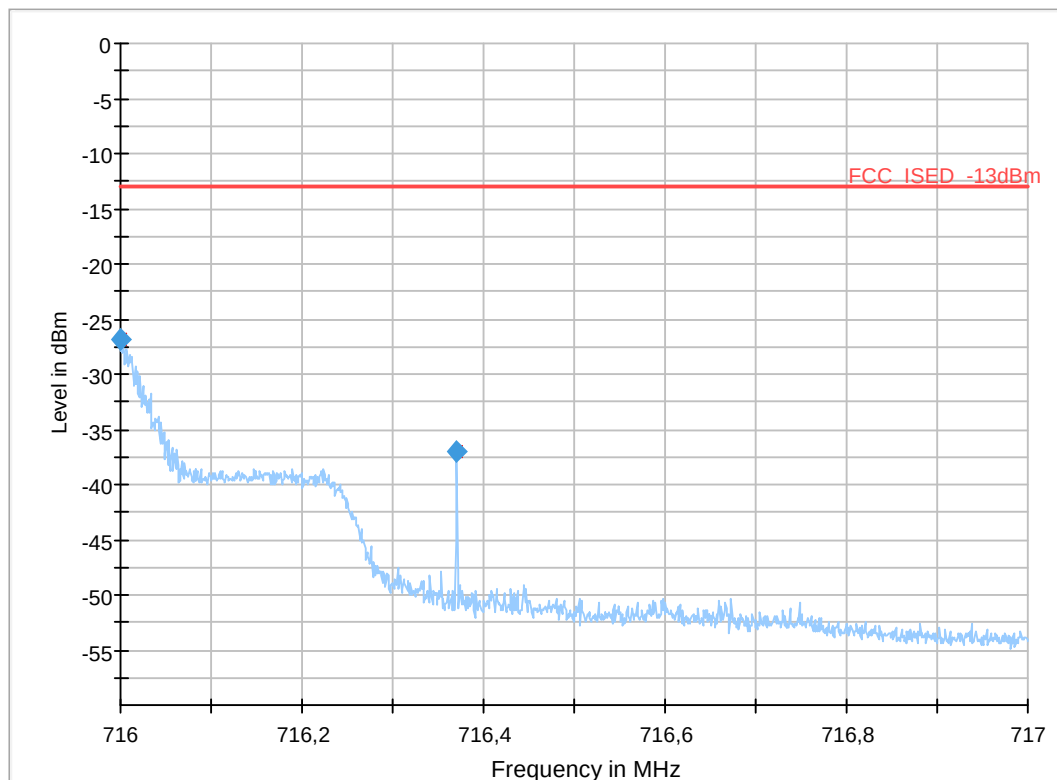
Common Information

Test Description:	Band-Edge
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_LTE_FDD_B12_CH_high_1RB
Environmental Conditions:	Humidity: 48% rH; Temperature: 21 °C
Test SW Version:	EMC32 V10.60.20
Operator:	KTe
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_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)
716.001000	-26.89	-13.00	13.89	700.0	30.000	H	122.0	0.0	-78
716.371000	-37.03	-13.00	24.03	700.0	30.000	H	143.0	0.0	-78

9.1202b_Bandedge_high_LTE_FDD_B12_CH_high_FullRB

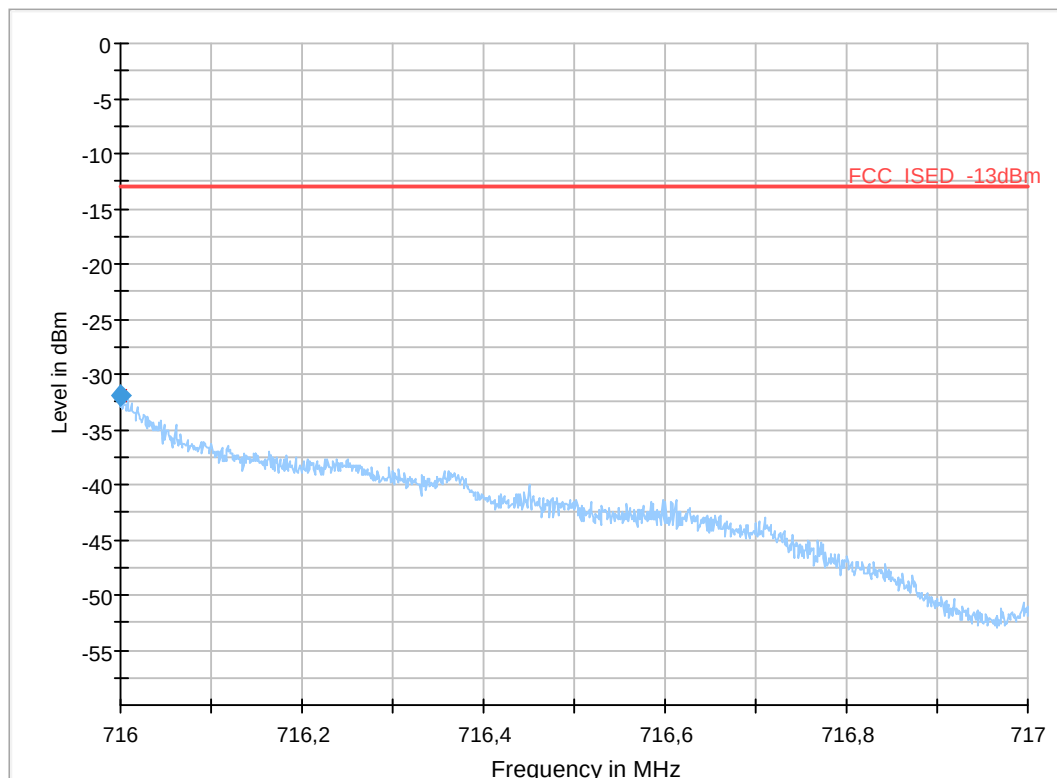
Common Information

Test Description:	Band-Edge
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_LTE_FDD_B12_CH_high_FullRB
Environmental Conditions:	Humidity: 48% rH; Temperature: 21 °C
Test SW Version:	EMC32 V10.60.20
Operator:	KTe
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_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)
716.000000	-31.98	-13.00	18.98	700.0	30.000	H	133.0	0.0	-78

9.1301a_Bandedge_low_LTE_FDD_B13_CH_low_1RB

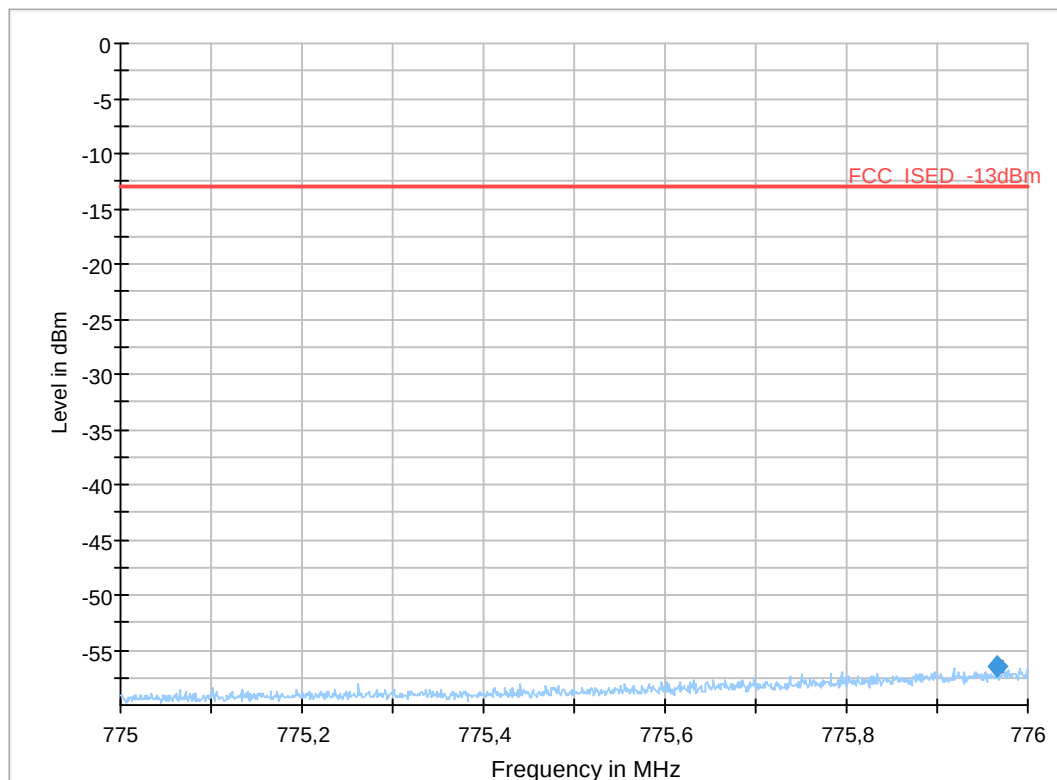
Common Information

Test Description:	Band-Edge
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §27.53
Operating Mode:	mode 1 Ant0 ch50
Environmental Conditions::	Humidity : 75% rH; Temperature: 19 °C
Test SW Version:	EMC32 V10.60.20
Operator:	LAB
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_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)
775.966000	-56.43	-13.00	43.43	700.0	50.000	H	143.0	0.0	-77

9.1301b_Bandedge_low_LTE_FDD_B13_CH_low_FullRB

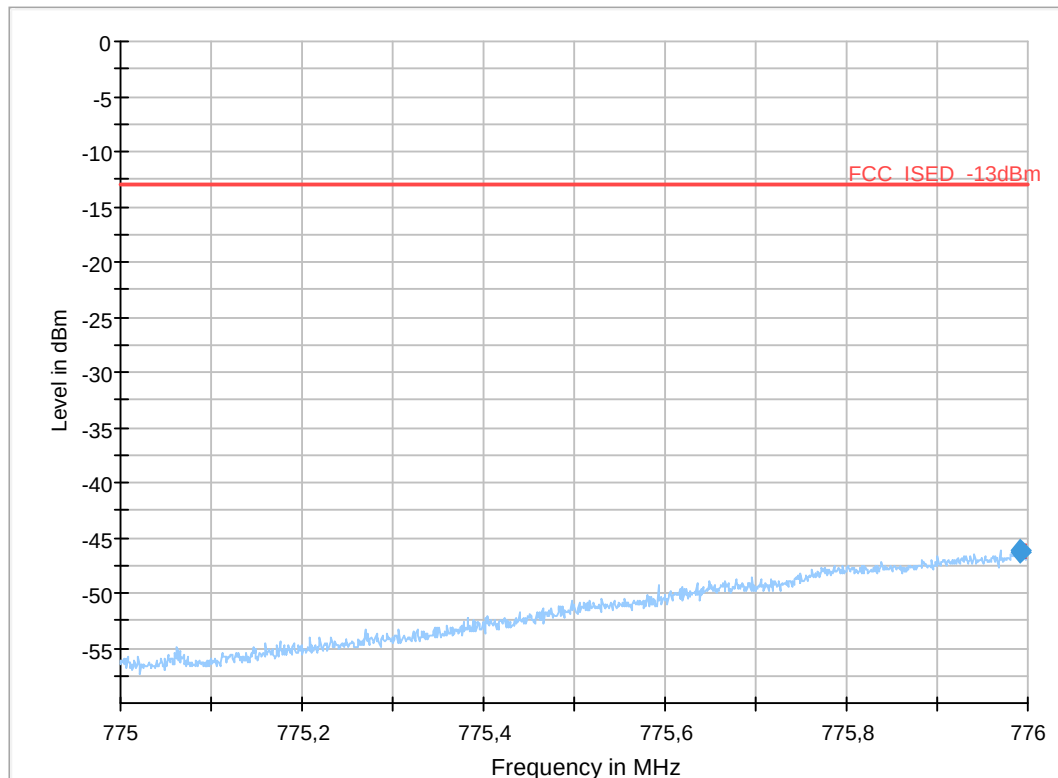
Common Information

Test Description:	Band-Edge
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §27.53
Operating Mode:	TX
Environmental Conditions::	Humidity: 48% rH; Temperature: 21 °C
Test SW Version:	EMC32 V10.60.20
Operator:	LAB/Maa
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_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)
775.991000	-46.15	-13.00	33.15	700.0	50.000	H	191.0	90.0	-77
775.992000	-46.29	-13.00	33.29	700.0	50.000	H	200.0	90.0	-77

9.1302a_Bandedge_high_LTE_FDD_B13_CH_high_1RB

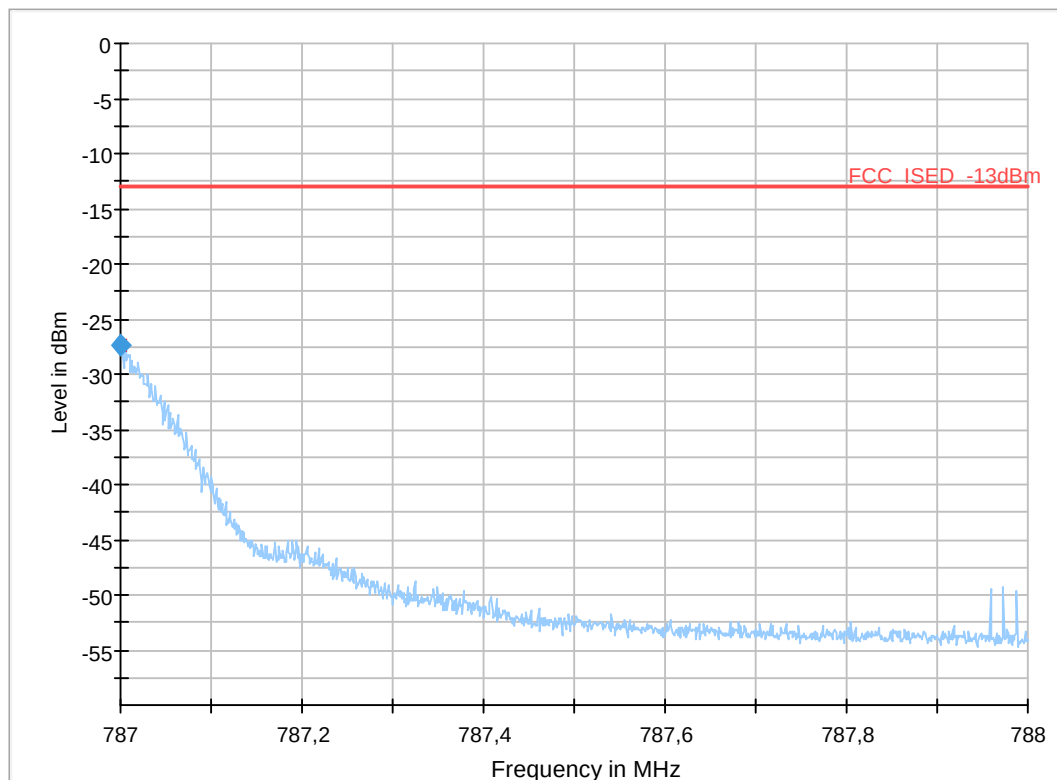
Common Information

Test Description:	Band-Edge
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §27.53
Operating Mode:	TX
Environmental Conditions::	Humidity : 45 % rH; Temperature: 19 °C
Test SW Version:	EMC32 V10.60.20
Operator:	KTe/Maa
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_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)
787.001000	-27.37	-13.00	14.37	700.0	50.000	H	146.0	0.0	-77

9.1302b_Bandedge_high_LTE_FDD_B13_CH_high_FullRB

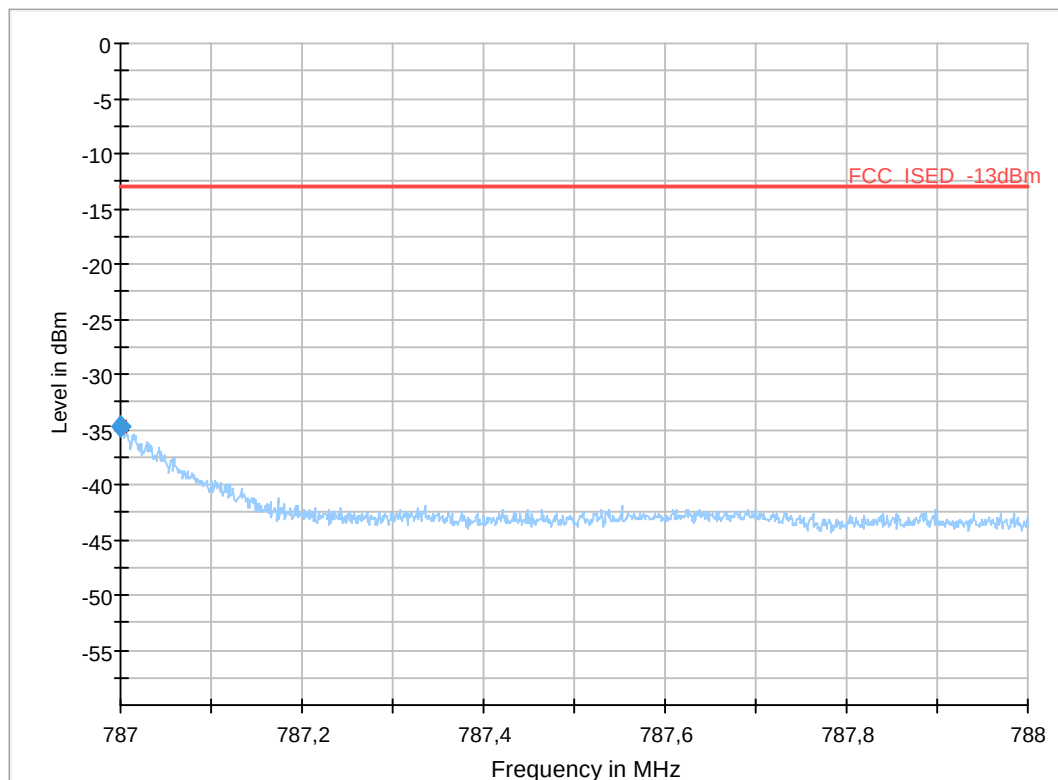
Common Information

Test Description:	Band-Edge
Test Site Location:	cetecom advanced GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC §27.53
Operating Mode:	TX
Environmental Conditions::	Humidity : 45 % rH; Temperature: 19 °C
Test SW Version:	EMC32 V10.60.20
Operator:	LAB
Verdict:	Passed

EUT Information

PMT number:	23-1-00355S04_C01
Power supply:	12 V DC

Full Spectrum

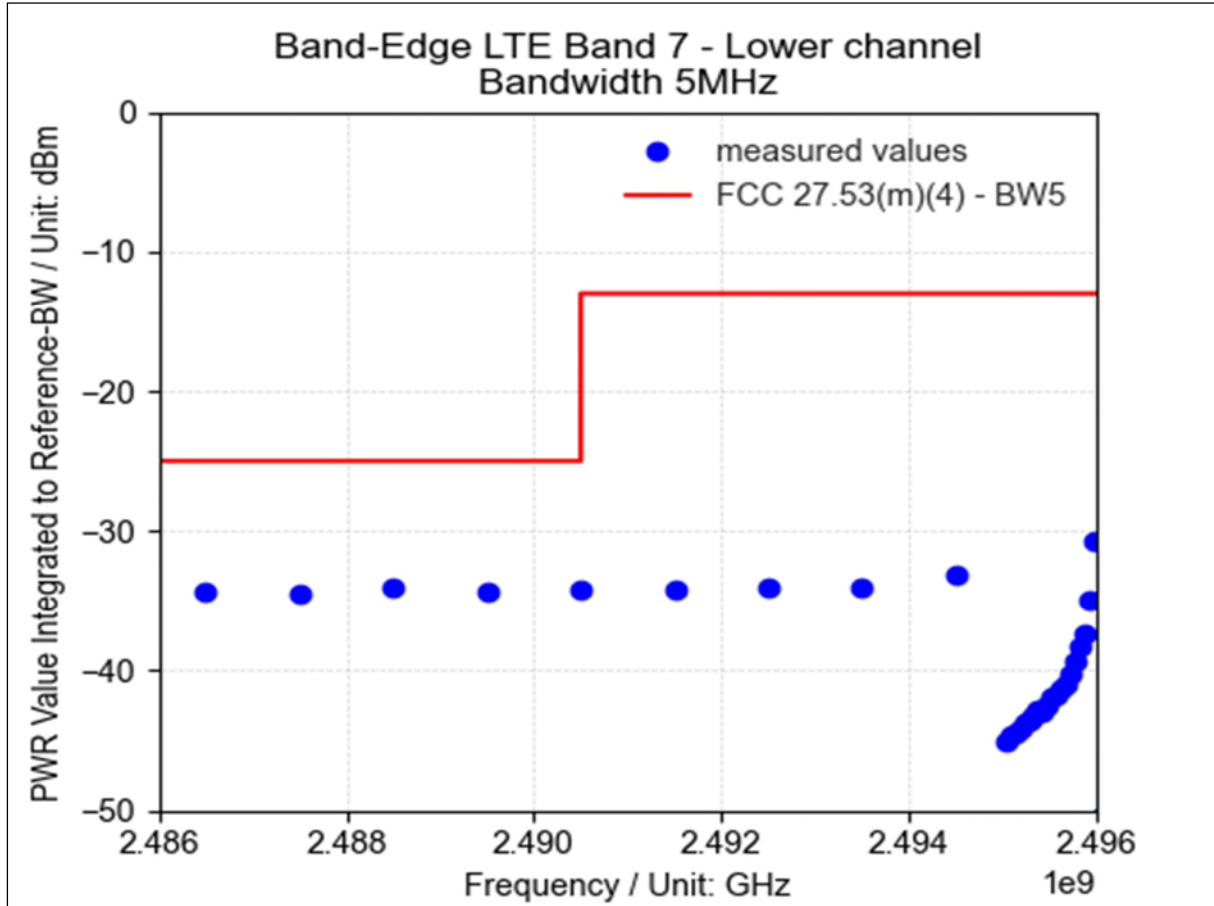


Final_Result

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
787.000000	-34.67	-13.00	21.67	700.0	50.000	H	147.0	0.0	-77

9.4101

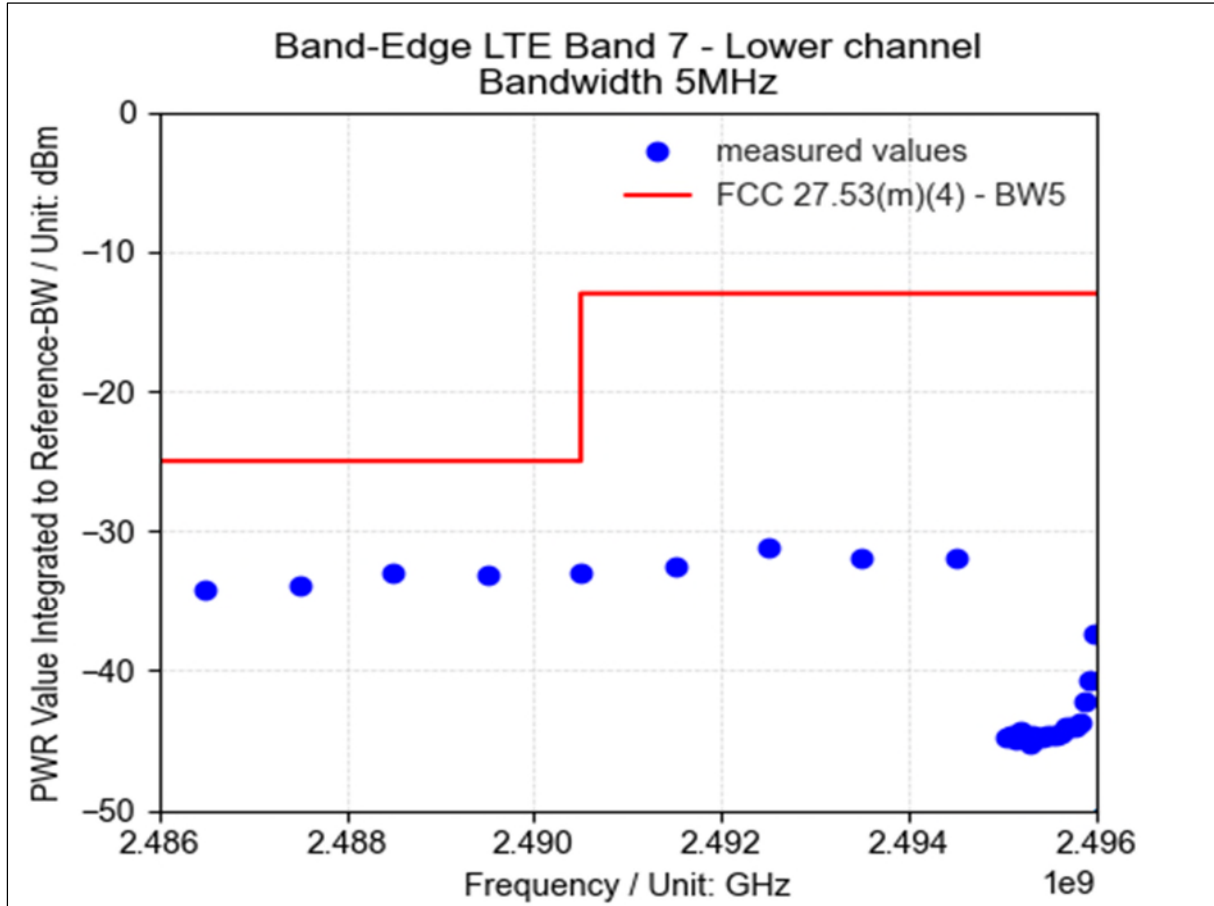
T002_D9_41_12b_BE_Low_Ch39675_S04_C01_1RB0_QPSK_Elev0_AntV



Remark: wrong LTE band noted in diagram. Measurement result refers to TDD 41, not FDD 7

9.4102

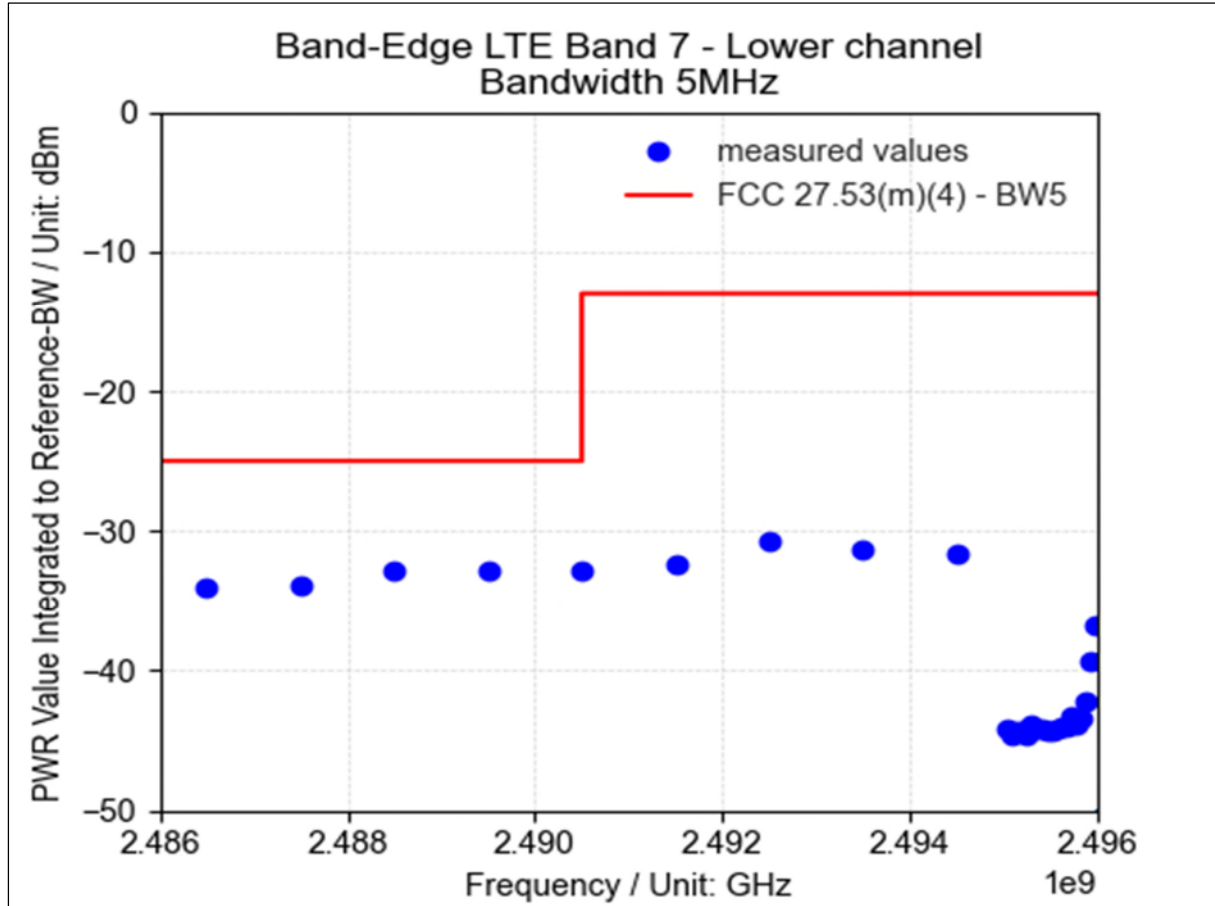
T002_D9_41_13b_BE_Low_Ch39675_S04_C01_25RBs_QPSK_Elev0_AntV



Remark: wrong LTE band noted in diagram. Measurement result refers to TDD 41, not FDD 7

9.4103

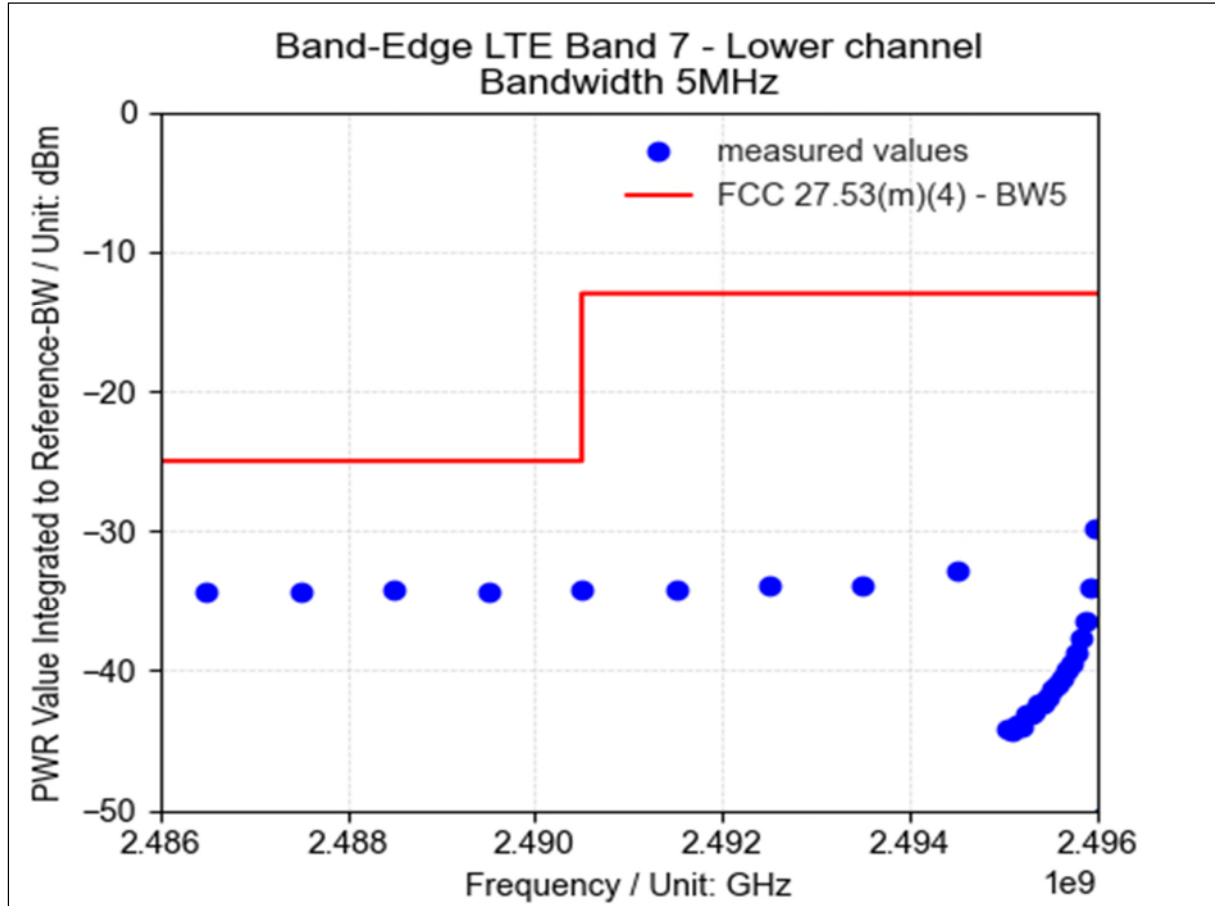
T002_D9_41_14a_BE_Low_Ch39675_S04_C01_25RBs_QPSK_287deg_Elev0_AntH



Remark: wrong LTE band noted in diagram. Measurement result refers to TDD 41, not FDD 7

9.4104

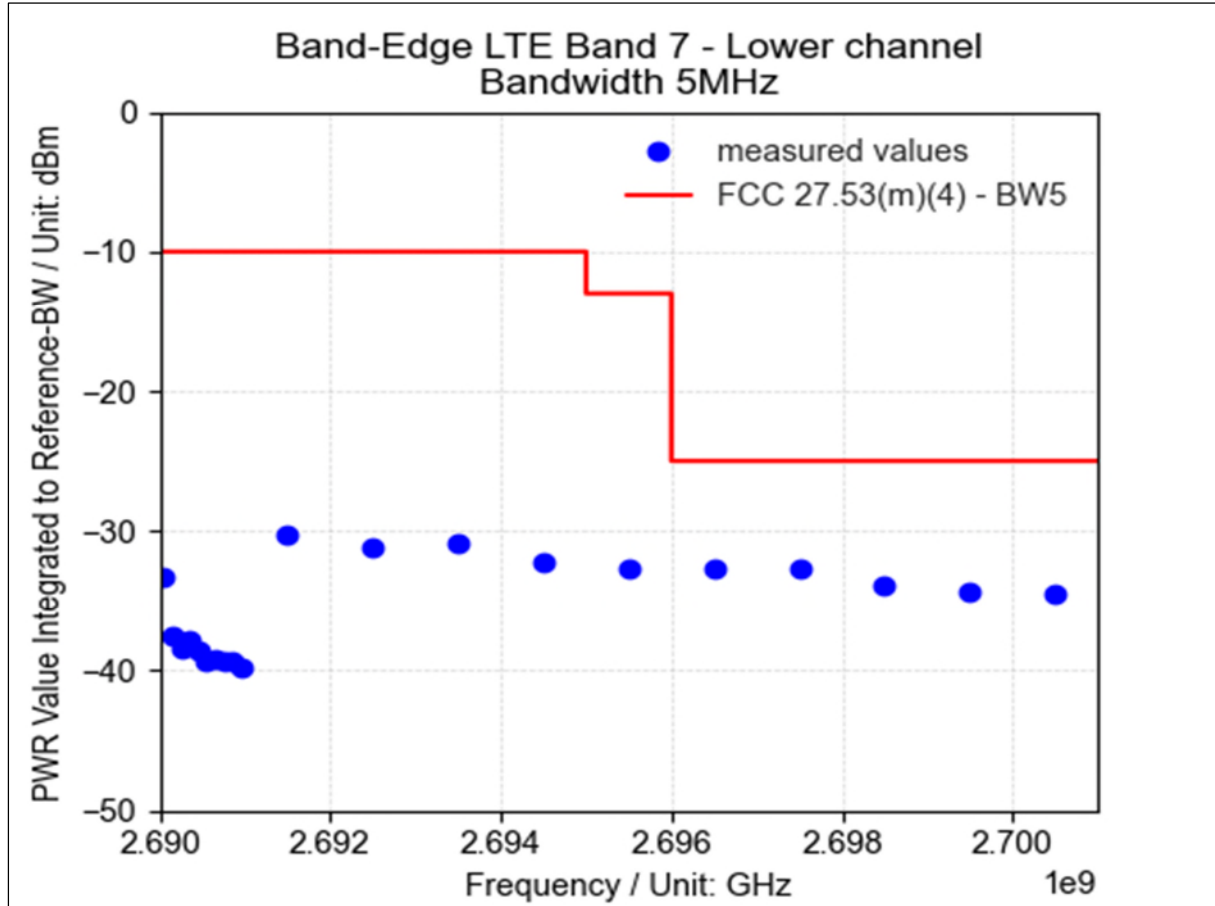
T002_D9_41_15a_BE_Low_Ch39675_S04_C01_1RB0_QPSK_287deg_Elev0_AntH



Remark: wrong LTE band noted in diagram. Measurement result refers to TDD 41, not FDD 7

9.4105

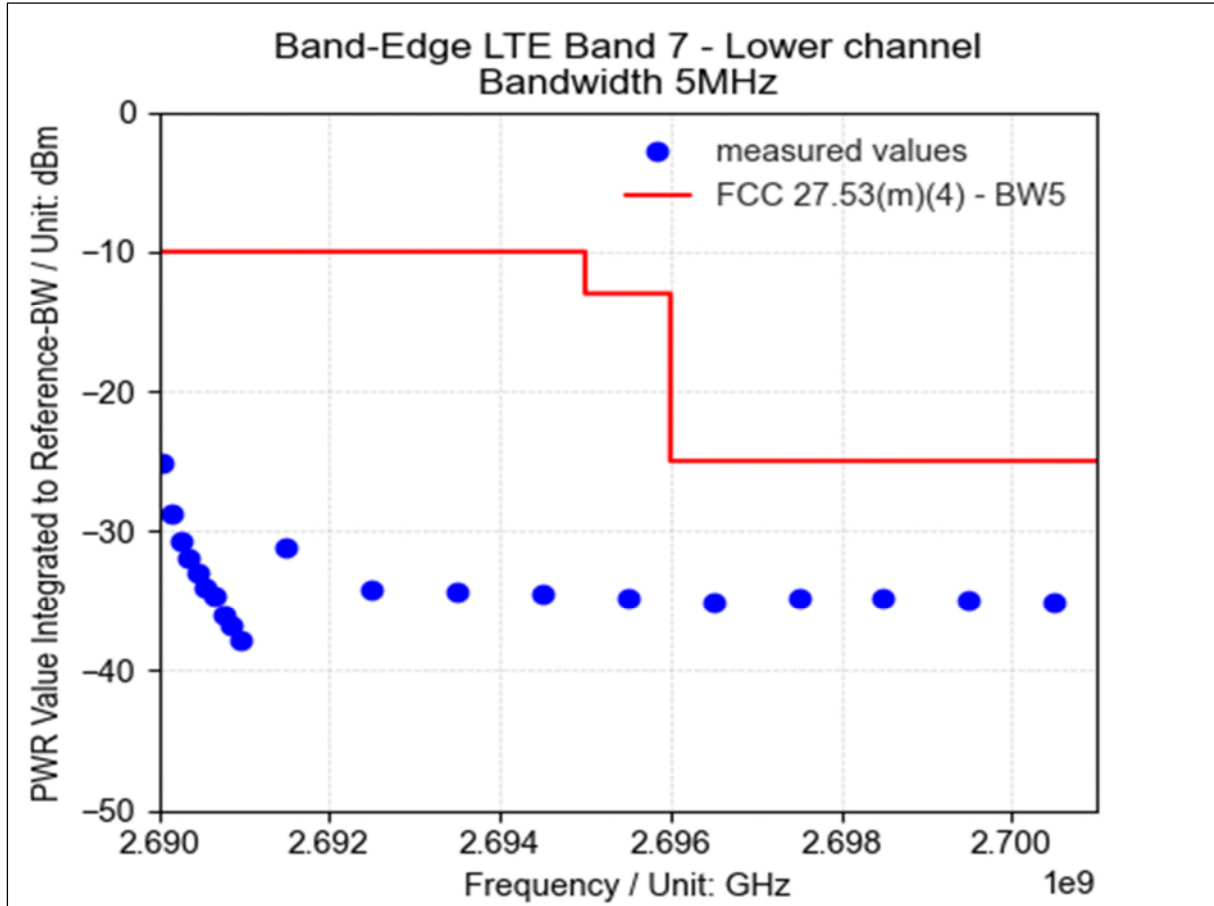
T002_D9_41_16a_BE_High_Ch41565_S04_C01_25RBs_QPSK_280deg_Elev0_AntH



Remark: wrong LTE band noted in diagram. Measurement result refers to TDD 41, not FDD 7

9.4106

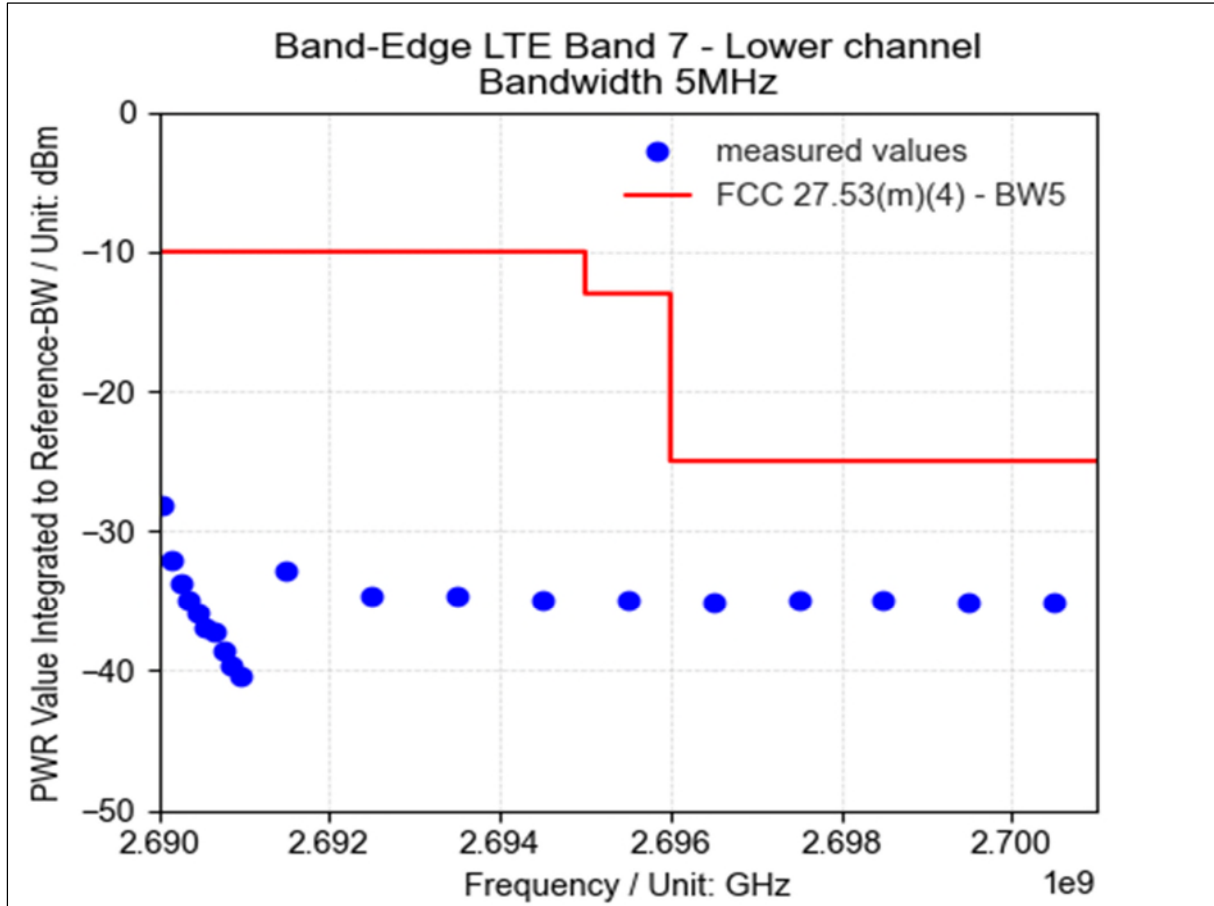
T002_D9_41_17a_BE_High_Ch41565_S04_C01_1RB49_QPSK_280deg_Elev0_AntH



Remark: wrong LTE band noted in diagram. Measurement result refers to TDD 41, not FDD 7

9.4107

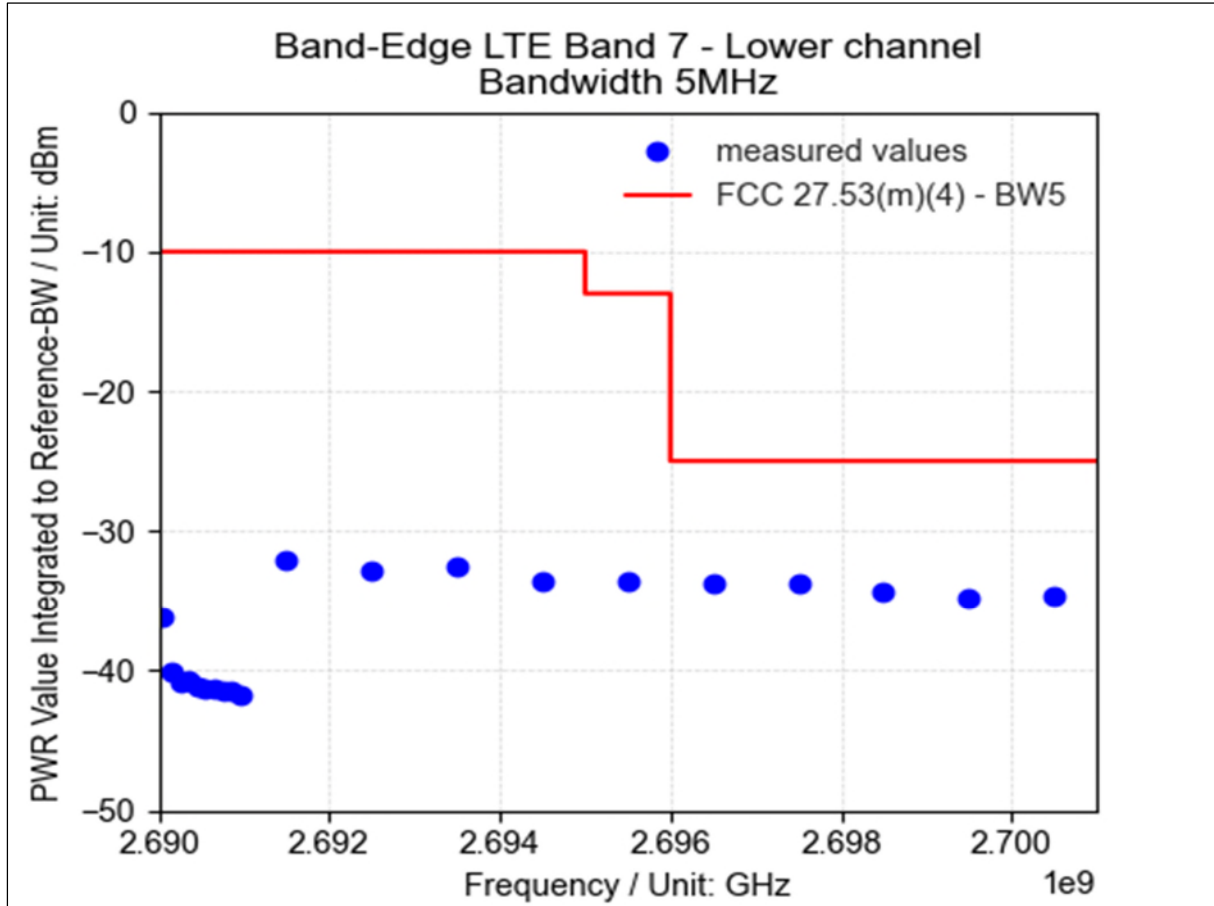
T002_D9_41_18b_BE_High_Ch41565_S04_C01_1RB49_QPSK_60deg_Elev0_AntV



Remark: wrong LTE band noted in diagram. Measurement result refers to TDD 41, not FDD 7

9.4108

T002_D9_41_19b_BE_High_Ch41565_S04_C01_25RBs_QPSK_60deg_Elev0_AntV



Remark: wrong LTE band noted in diagram. Measurement result refers to TDD 41, not FDD 7

End Of Annex 1