

Annex 1: Measurement diagrams

1-0307-25-01-03_TR1-A201-R01

Number of pages:	26	Date of Report:	2025-Oct-08
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:	--
		PMN:	--
		HVIN	--
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

1 Radiated field strength emissions below 30 MHz

2.201_H_field_LTE_FDD_B02

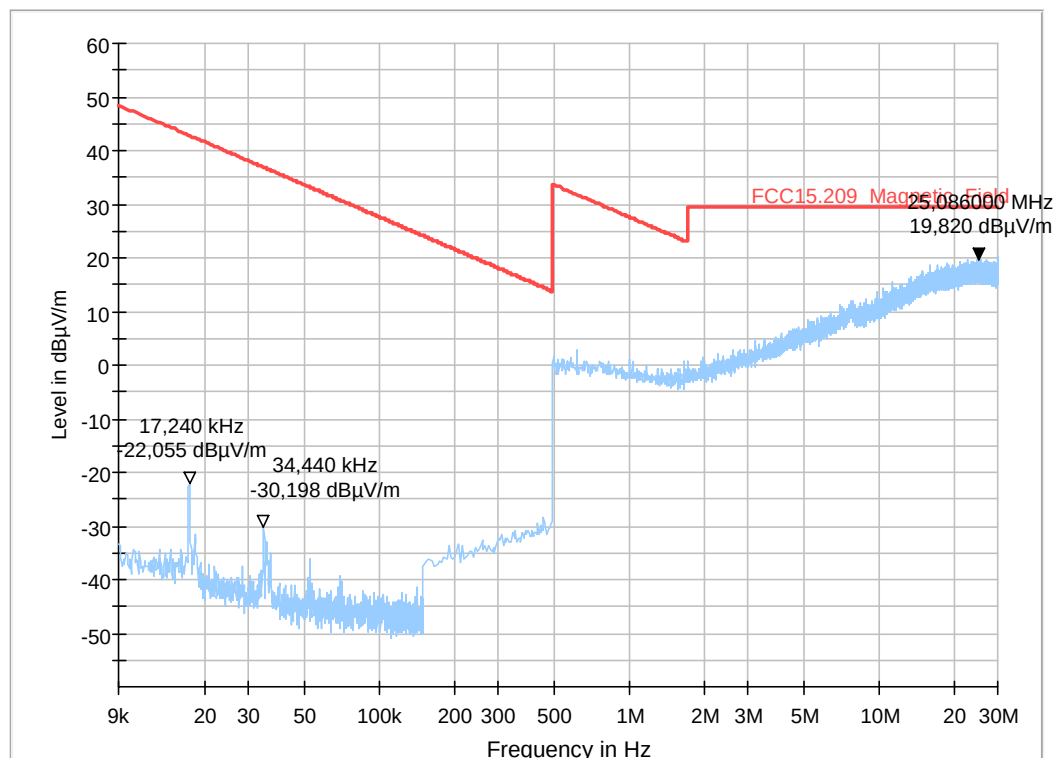
Common Information

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 V10.60.20
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
Operator:	MNu
Operating Mode:	Traffic_mode_LTE_FDD_B02
Comment 1:	Channel mid
Comment 2:	lying
Environmental Conditions:	Humidity: 50 % rH; Temperature: 22.8 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



2.202_H_field_LTE_FDD_B02

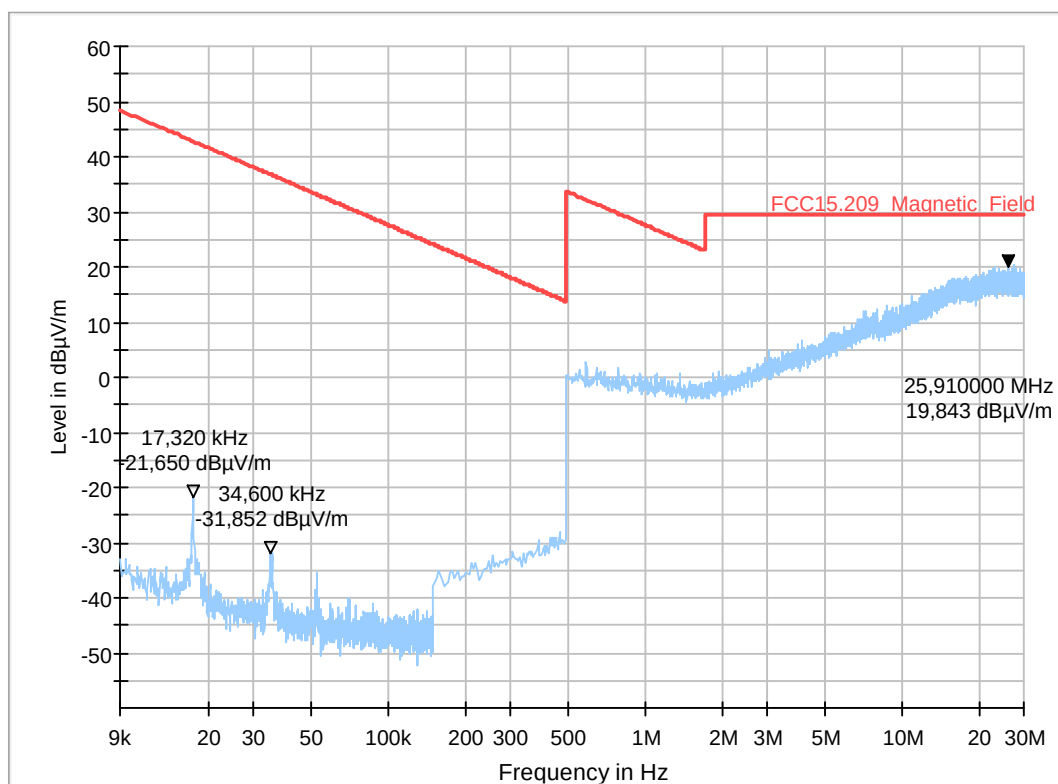
Common Information

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 V10.60.20
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
Operator:	MNu
Operating Mode:	Traffic_mode_LTE_FDD_B02
Comment 1:	Channel mid
Comment 2:	standing
Environmental Conditions:	Humidity: 50 % rH; Temperature: 22.8 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



2.401_Traffic_mode_LTE_FDD_B04

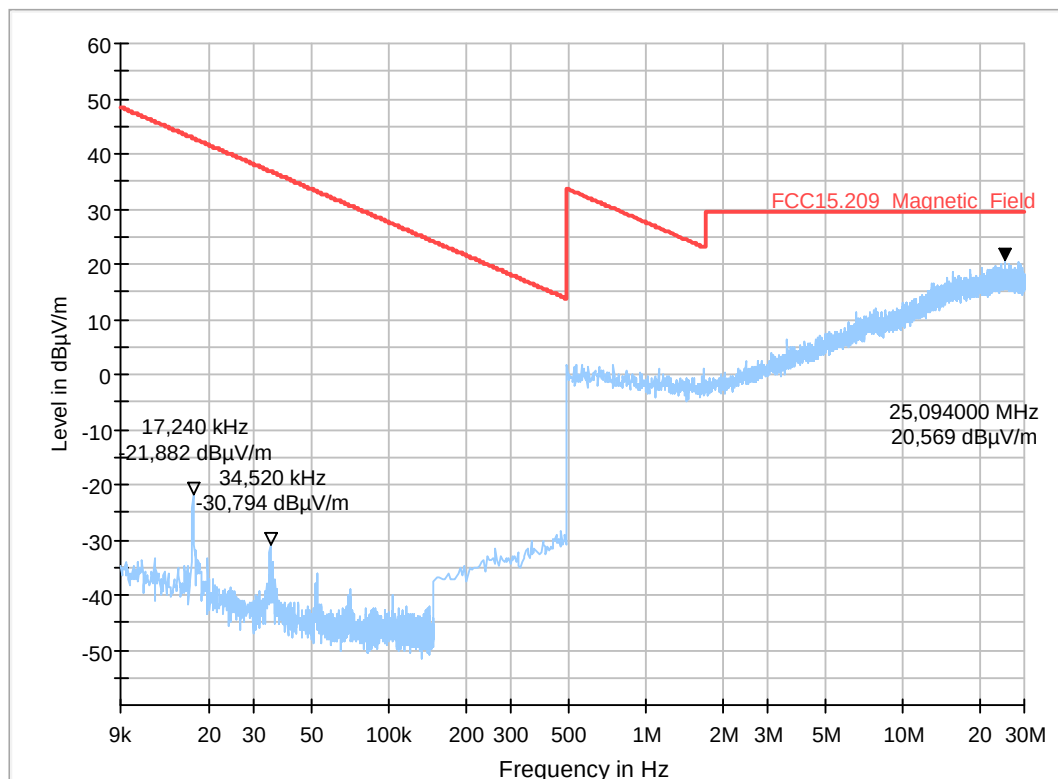
Common Information

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 V10.60.20
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
Operator:	PShin
Operating Mode:	Traffic_mode_LTE_FDD_B04
Comment 1:	Channel mid
Comment 2:	standing
Environmental Conditions:	Humidity: 50 % rH; Temperature: 22.8 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



2.501_Traffic_mode_LTE_FDD_B05

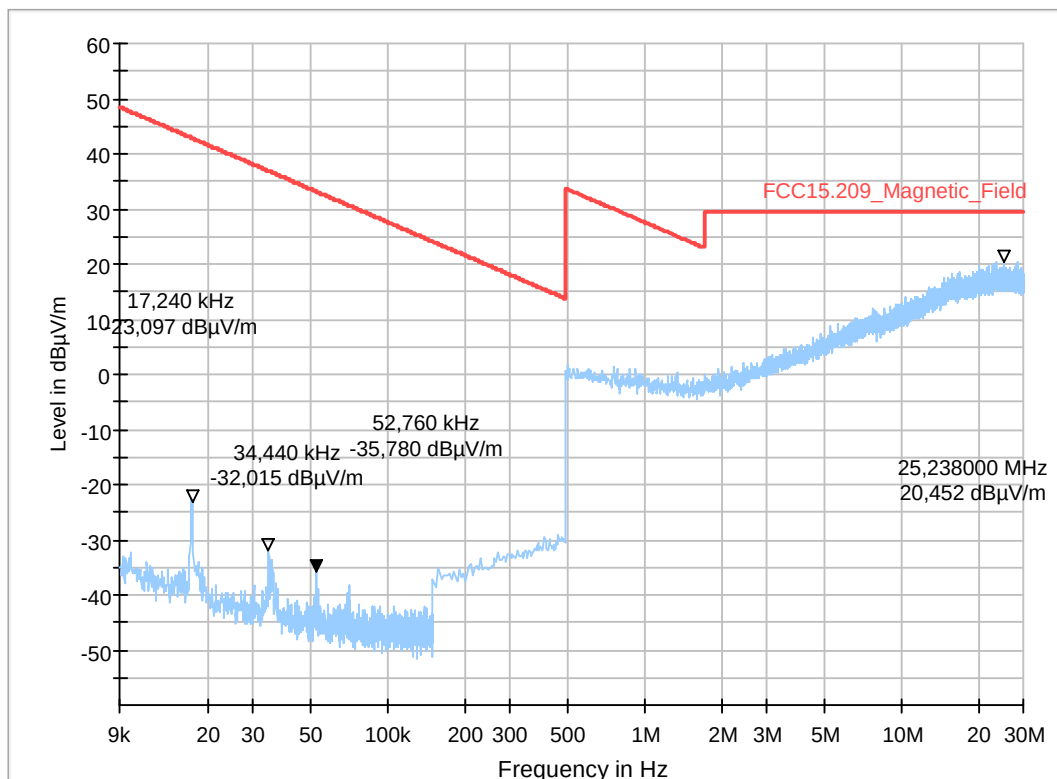
Common Information

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 V10.60.20
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
Operator:	PShin
Operating Mode:	Traffic_mode_LTE_FDD_B05
Comment 1:	Channel mid
Comment 2:	standing
Environmental Conditions:	Humidity: 50 % rH; Temperature: 22.8 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



2.701_H_field_LTE_FDD_B07

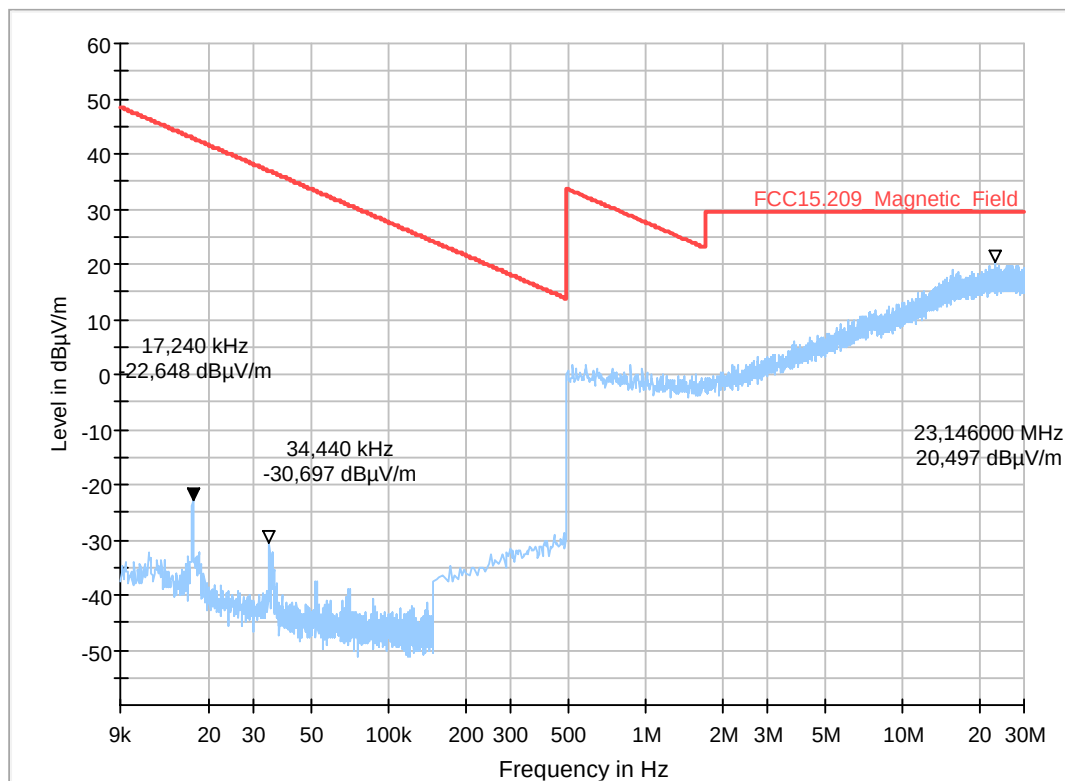
Common Information

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 V10.60.20
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
Operator:	PShin
Operating Mode:	Traffic_mode_LTE_FDD_B07
Comment 1:	Channel mid
Comment 2:	standing
Environmental Conditions:	Humidity: 50 % rH; Temperature: 22.8 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



2.1201_H_field_LTE_FDD_B12

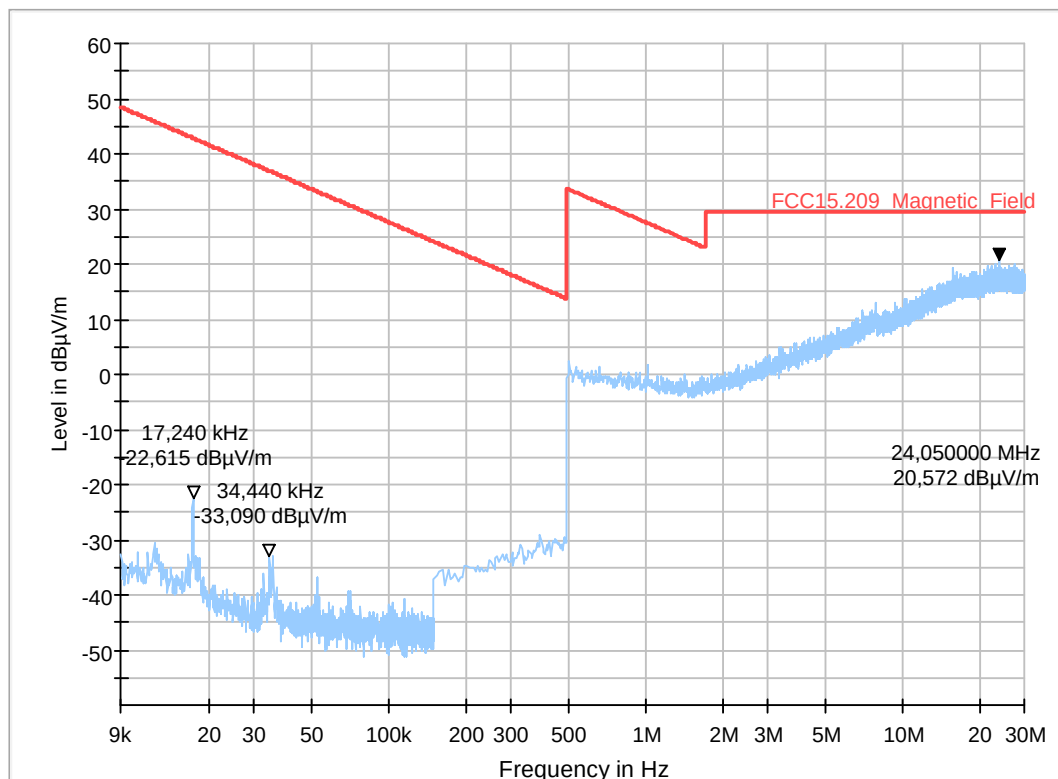
Common Information

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 V10.60.20
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
Operator:	PShin
Operating Mode:	Traffic_mode_LTE_FDD_B12
Comment 1:	Channel mid
Comment 2:	standing
Environmental Conditions:	Humidity: 50 % rH; Temperature: 22.8 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



2.1301_H_field_LTE_FDD_B13

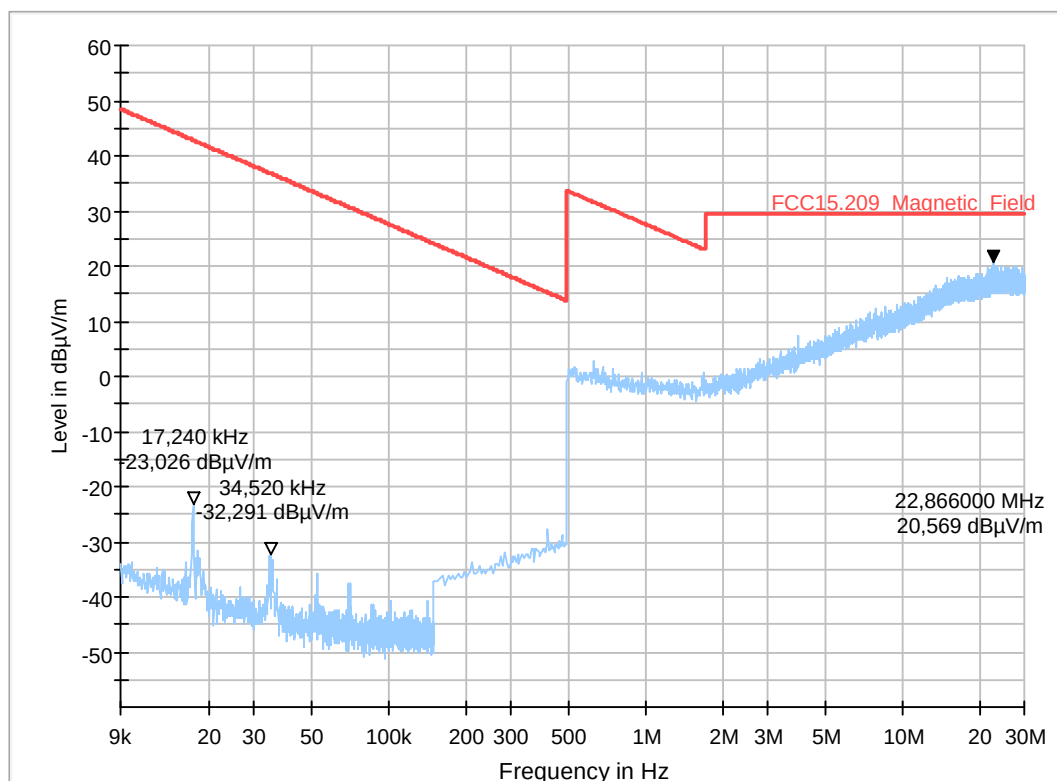
Common Information

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 V10.60.20
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
Operator:	PShin
Operating Mode:	Traffic_mode_LTE_FDD_B13
Comment 1:	Channel mid
Comment 2:	standing
Environmental Conditions:	Humidity: 50 % rH; Temperature: 22.8 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



2.4101_H_field_LTE_TDD_B41

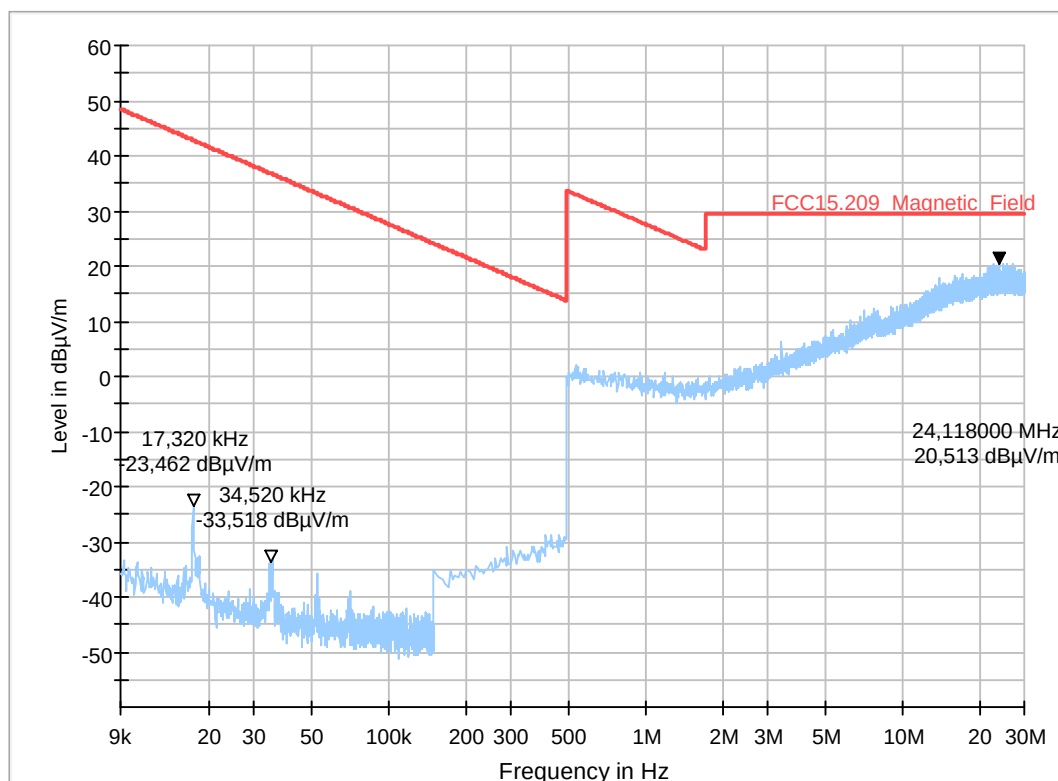
Common Information

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 V10.60.20
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
Operator:	PShin
Operating Mode:	Traffic_mode_LTE_TDD_B41
Comment 1:	Channel mid
Comment 2:	standing
Environmental Conditions:	Humidity: 50 % rH; Temperature: 22.8 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



2 Radiated spurious emissions

8.02_Traffic_mode_LTE_FDD_B02

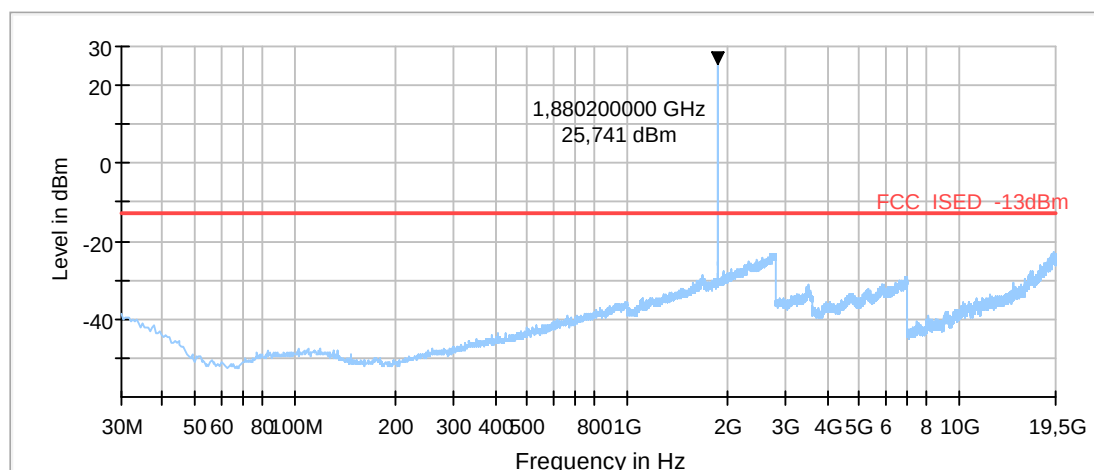
Common Information

Test Description:	Radiated emission
Test Site:	Fully-Anechoic Chamber
Test Standard:	FCC Part 24
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V10.60.20
Operating Mode:	LTE Band 2
Operator:	TFra
Environmental Conditions:	Humidity: 50% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



Remark: emissions at 1880 MHz is the uplink of LTE FDD 2 and not relevant to the limit

8.04_Traffic_mode_LTE_FDD_B04

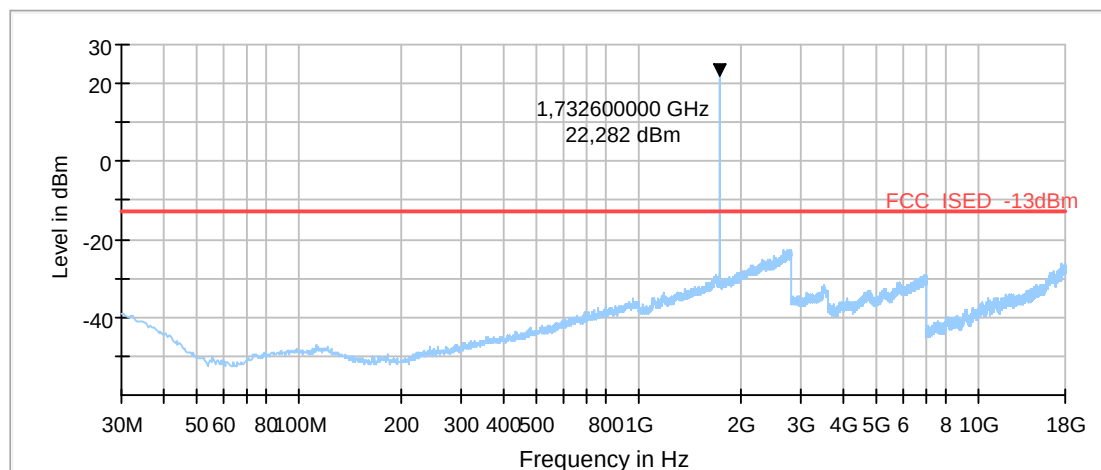
Common Information

Test Description:	Radiated emission
Test Site:	Fully-Anechoic Chamber
Test Standard:	FCC Part 27
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V10.60.20
Operating Mode:	LTE Band 4
Operator:	TFra
Environmental Conditions:	Humidity: 50% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



Remark: emissions at 1732 MHz is the downlink of LTE FDD 4 and not relevant to the limit

8.05a_Traffic_mode_LTE_FDD_B05

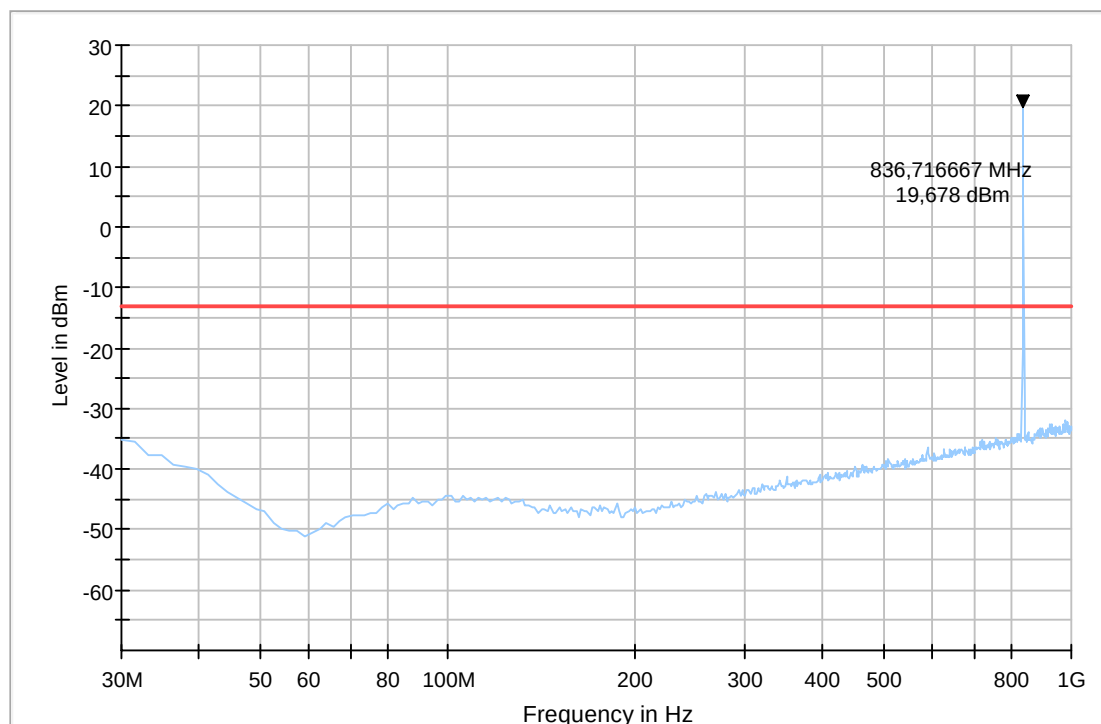
Common Information

Test Description:	Radiated Spurious Emissions LTE FDD5
Test Site:	cetecom advanced GmbH Essen
Antenna polarisation:	vertical / horizontal
Test Standard:	FCC Part 22
Operating Mode:	UE allocated channel 20525 (fc = 836.5 MHz); Channel Bandwidth: 10 MHz; # RB: 1; RB Pos: 26; Modulation: QPSK
Operator:	Aho/Leic
Environmental Conditions:	Humidity: 50% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	pass

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



Remark: emissions at 836 MHz is the uplink of LTE FDD 5 and not relevant to the limit

8.05b_Traffic_mode_LTE_FDD_B05

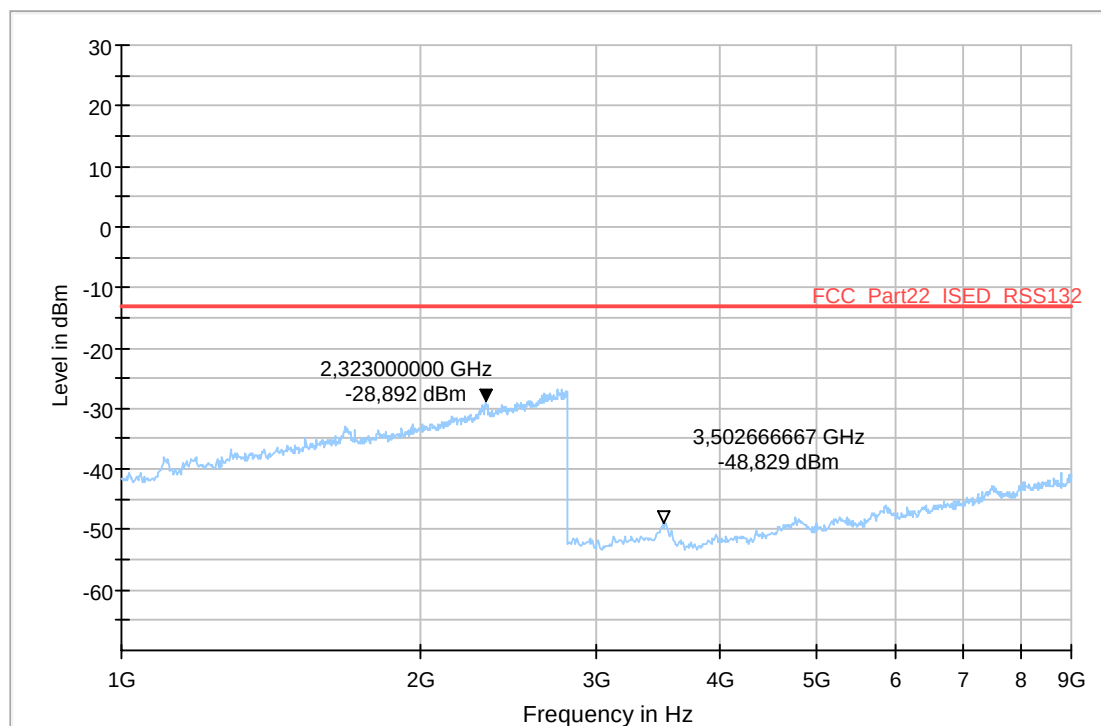
Common Information

Test Description:	Radiated Spurious Emissions LTE FDD5
Test Site:	cetecom advanced GmbH Essen
Antenna polarisation:	vertical / horizontal
Test Standard:	FCC Part 22
Operating Mode:	UE allocated channel 20525 (fc = 836.5 MHz); Channel Bandwidth: 10 MHz; # RB: 1; RB Pos: 26; Modulation: QPSK
Operator:	Aho/Leic
Environmental Conditions:	Humidity: 50% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



8.07a_Traffic_mode_LTE_FDD_B07

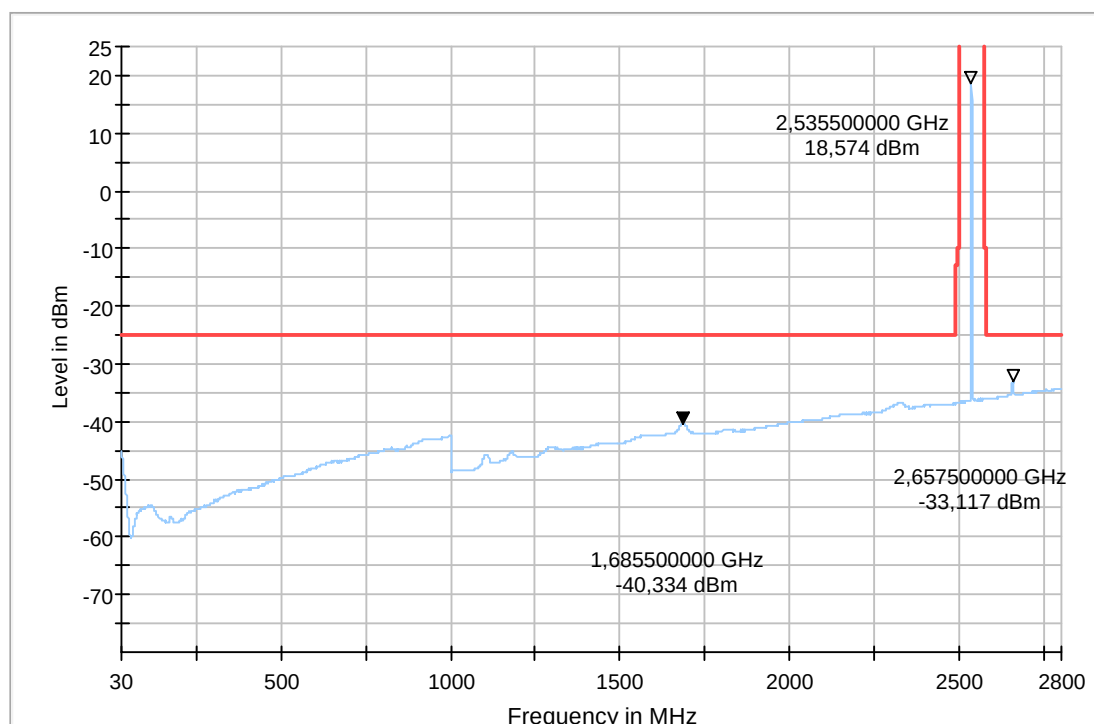
Common Information

Test Description:	Radiated Spurious Emissions LTE FDD7
Test Site Location:	cetecom advanced GmbH
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part 27
Operating Mode:	UE allocated channel 21100 (fc = 2535 MHz); Channel Bandwidth: 10 MHz; # RB: 1; RB Pos: 26; Modulation: QPSK
Environmental Conditions:	Humidity: 50% rH; Temperature: 20 °C
Test SW Version:	EMC32 V10.60.20
Operator:	Aho/Leic
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



Remark: emissions at 2535 MHz is the uplink of LTE FDD 7 and not relevant to the limit

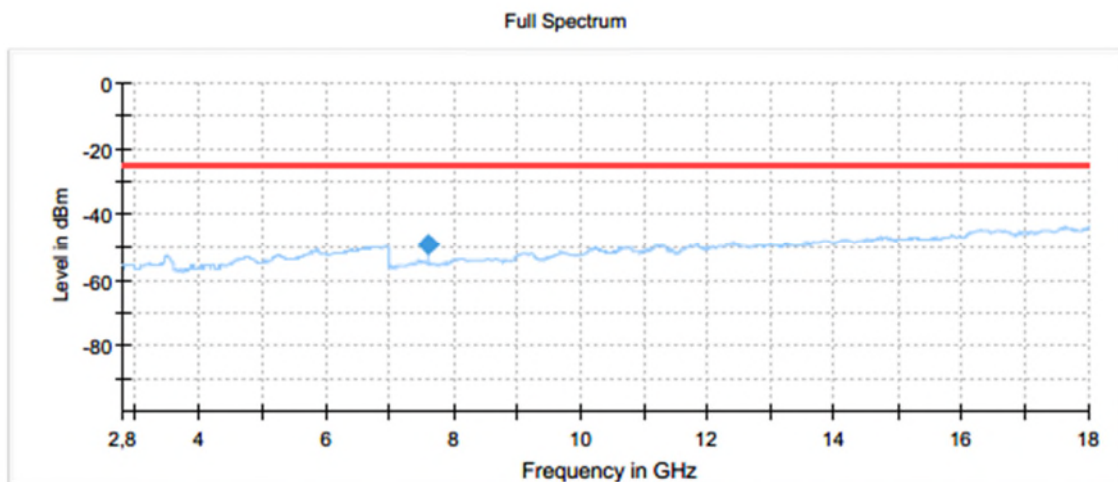
8.07b_Traffic_mode_LTE_FDD_B07

Common Information

Test Description:	Radiated Spurious Emissions LTE FDD7
Test Site Location:	cetecom advanced GmbH
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part 27
Operating Mode:	UE allocated channel 21100 (fc = 2535 MHz); Channel Bandwidth: 10 MHz; # RB: 1; RB Pos: 26; Modulation: QPSK
Environmental Conditions:	Humidity: 50% rH; Temperature: 20 °C
Test SW Version:	EMC32 V10.60.20
Operator:	Aho/Leic
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC



Final_Result

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
7605.793333	-49.17	-25.00	24.17	1000.0	1000.000	V	171.0	0.0	-95

8.07c_Traffic_mode_LTE_FDD_B07_AnH

Common Information

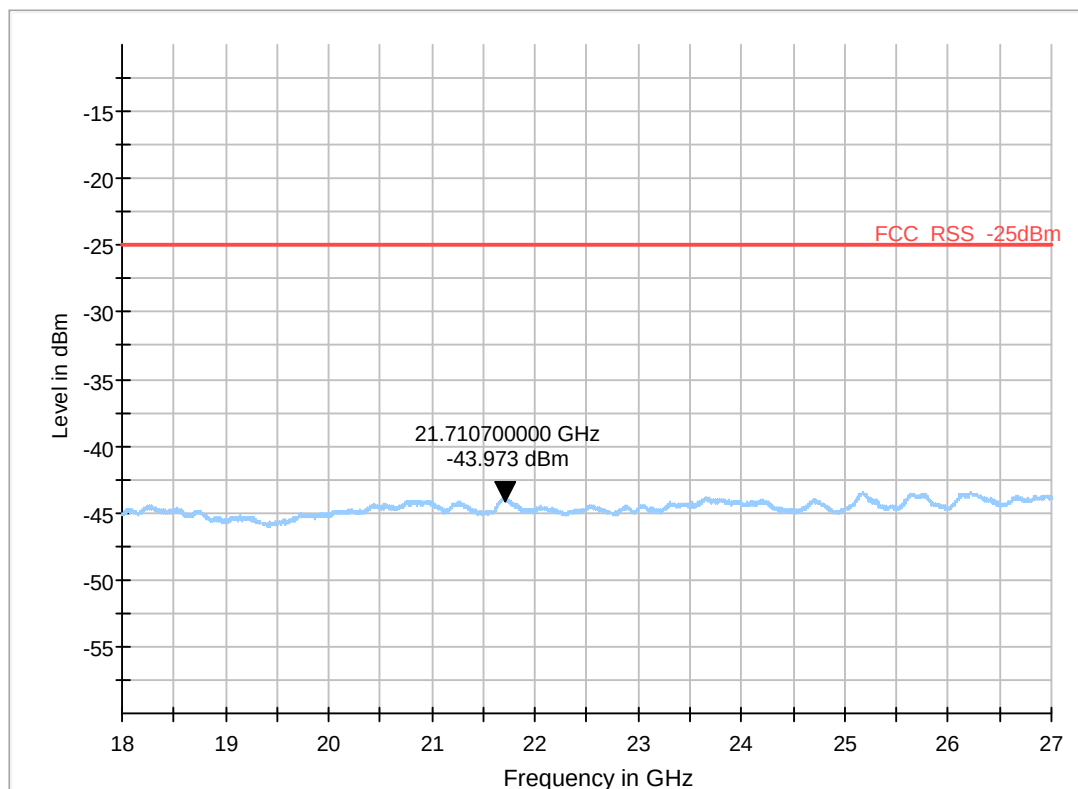
Test Description:	Radiated Spurious Emissions LTE Band 7
Test Site Location:	cetekom advanced GmbH (Location Essen)
Test Site:	Fully Anechoic Room (FAC2)
Test Standard:	FCC Part 27
Comm. Link:	LTE Band 7
Operating Mode:	MS allocated channel 21100 (UL = 2535MHz) / BW:10/1RB@26/QPSK

Exclusionband:	2500 to 2690 MHz
Environmental Conditions:	Humidity: 58%rH; Temperature: 19.8°C
Operator:	Lor
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



8.07c_Traffic_mode_LTE_FDD_B07_AntV

Common Information

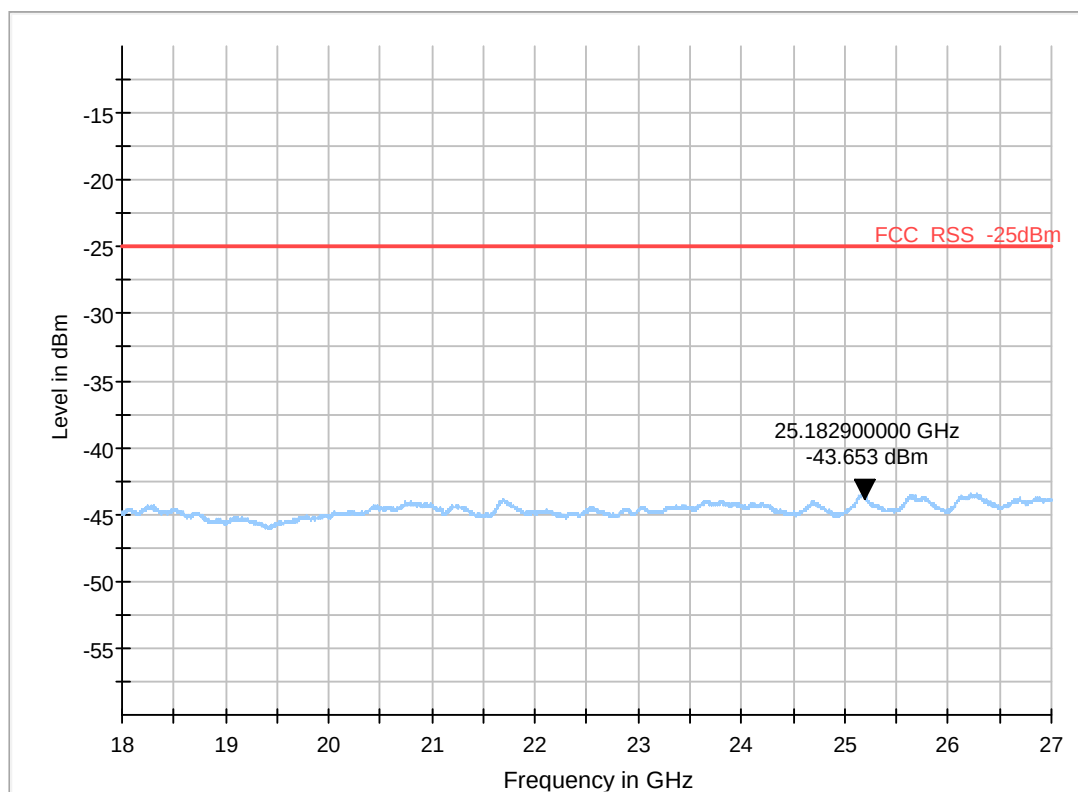
Test Description:	Radiated Spurious Emissions LTE Band 7
Test Site Location:	cetecom advanced GmbH (Location Essen)
Test Site:	Fully Anechoic Room (FAC2)
Test Standard:	FCC Part 27
Comm. Link:	LTE Band 7
Operating Mode:	MS allocated channel 21100 (UL = 2535MHz) / BW:10/1RB@26/QPSK

Exclusionband:	--
Environmental Conditions:	Humidity: 58%rH; Temperature: 19.8°C
Operator:	Lor
Set-up:	#36.472
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



8.12_Traffic_mode_LTE_FDD_B12

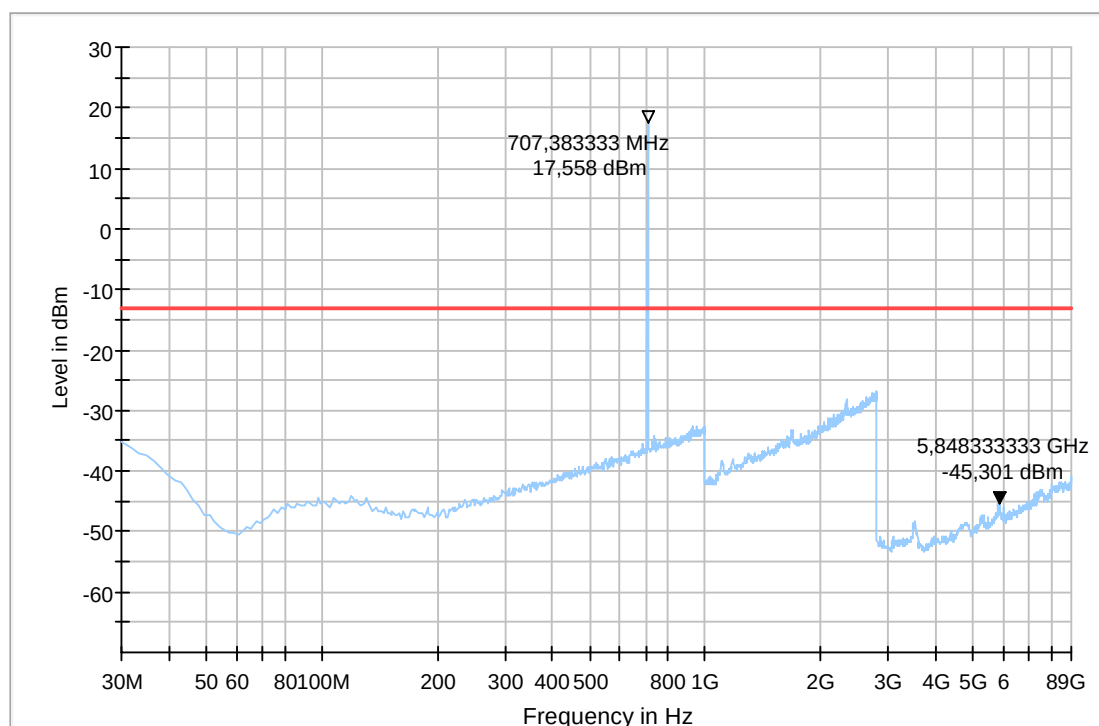
Common Information

Test Description:	Radiated Spurious Emissions LTE FDD12
Test Site:	cetecom advanced GmbH Essen
Antenna polarisation:	vertical / horizontal
Test Standard:	FCC Part 27
Operating Mode:	UE allocated channel 23095 (fc = 707.5 MHz); Channel Bandwidth: 10 MHz; # RB: 1; RB Pos: 26; Modulation: QPSK
Operator:	Aho/Leic
Environmental Conditions:	Humidity: 50% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power Supply :	12 V DC

Full Spectrum



Remark: emissions at 707 MHz is the uplink of LTE FDD 12 and not relevant to the limit

8.13_Traffic_mode_LTE_FDD_B13

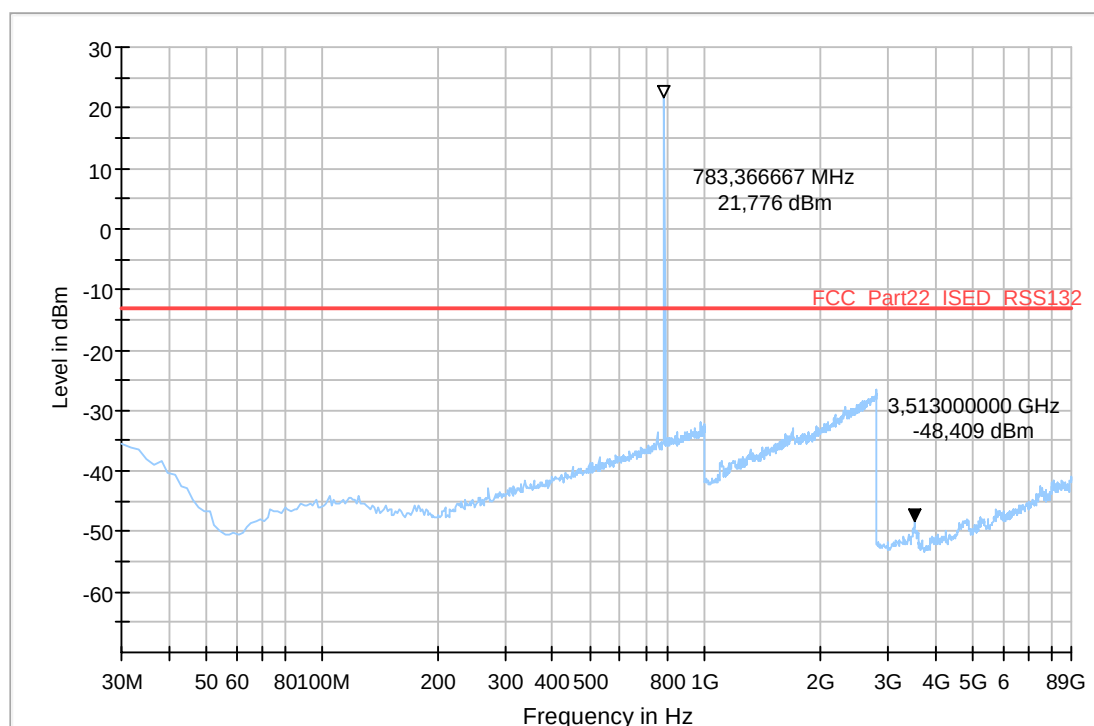
Common Information

Test Description:	Radiated Spurious Emissions LTE FDD13
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Antenna polarisation:	vertical / horizontal
Test Standard:	FCC Part 27
Operating Mode:	UE allocated channel 23230 (fc = 782 MHz); Channel Bandwidth: 10 MHz; # RB: 1; RB Pos: 26; Modulation: QPSK
Operator:	Aho/Leic
Environmental Conditions:	Humidity: 50% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power Supply :	12 V DC

Full Spectrum



Remark: emissions at 783 MHz is the uplink of LTE FDD 13 and not relevant to the limit

8.13a_Traffic_mode_LTE_FDD_B13_CH_23230_GPS_Band

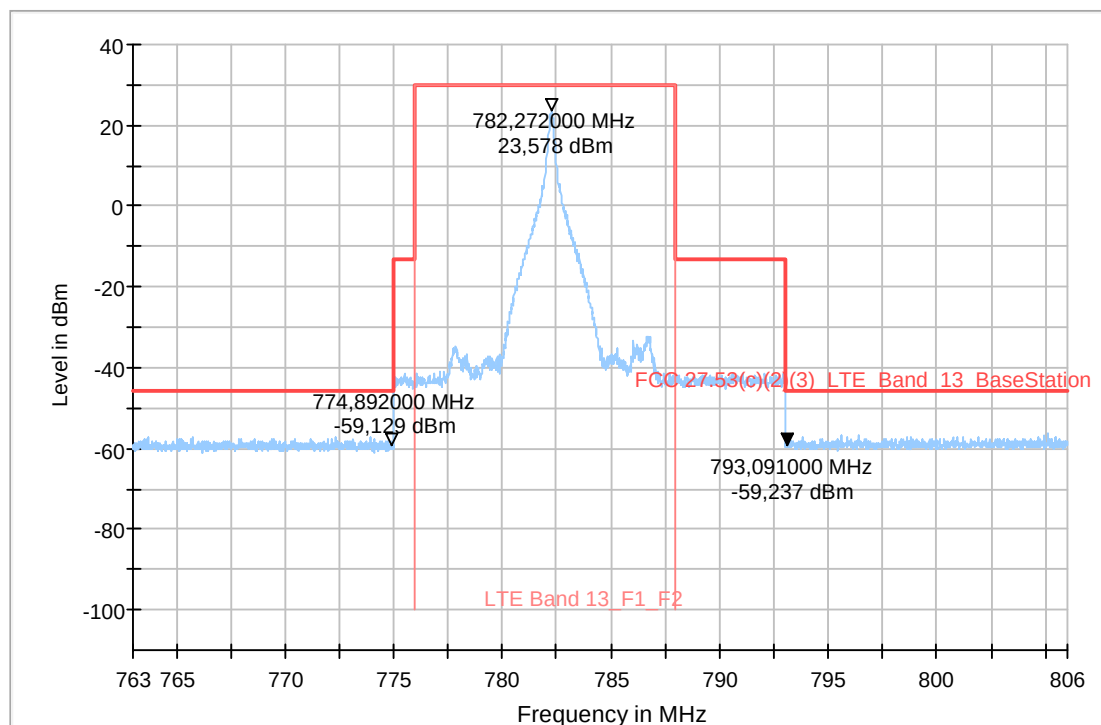
Common Information

Test Description:	Radiated Spurious Emissions LTE Band 13
Test Site Location:	cetecom advanced GmbH
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part 27
Comm. Link:	LTE Band 13
Operating Mode:	MS allocated channel 23230 (UL = 782MHz)
Exclusionband:	Uplink: 776-787MHz Downlink: -31MHz Offset
Environmental Conditions:	Humidity: 58% rH; Temperature: 21 °C
Operator:	Lor
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power Supply :	12 V DC

Full Spectrum



8.13b_Traffic_Mode_LTE_FDD_B13_Ch23230_GPS_Band

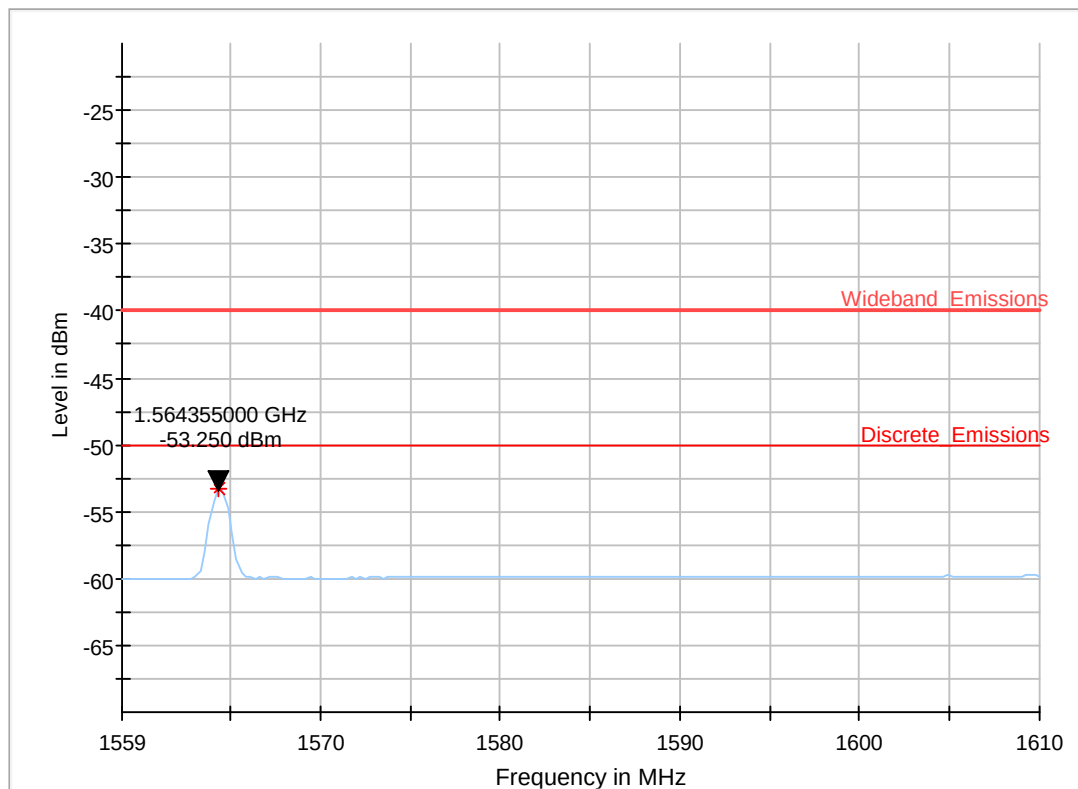
Common Information

Test Description:	Radiated Spurious Emissions LTE Band 13
Test Site Location:	cetecom advanced GmbH (Location Essen)
Test Site:	Fully Anechoic Room (FAC2)
Test Standard:	FCC Part 27
Comm. Link:	LTE FDD Band 13
Operating Mode:	MS allocated channel 23230 (UL = 782MHz) / BW:10/1RB@26/QPSK
Exclusionband:	Uplink: 776-787MHz Downlink: -31MHz Offset
Environmental Conditions:	Humidity: 58%rH; Temperature: 19.8°C
Operator:	Lor
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



8.41a_Traffic_mode_LTE_TDD_B41

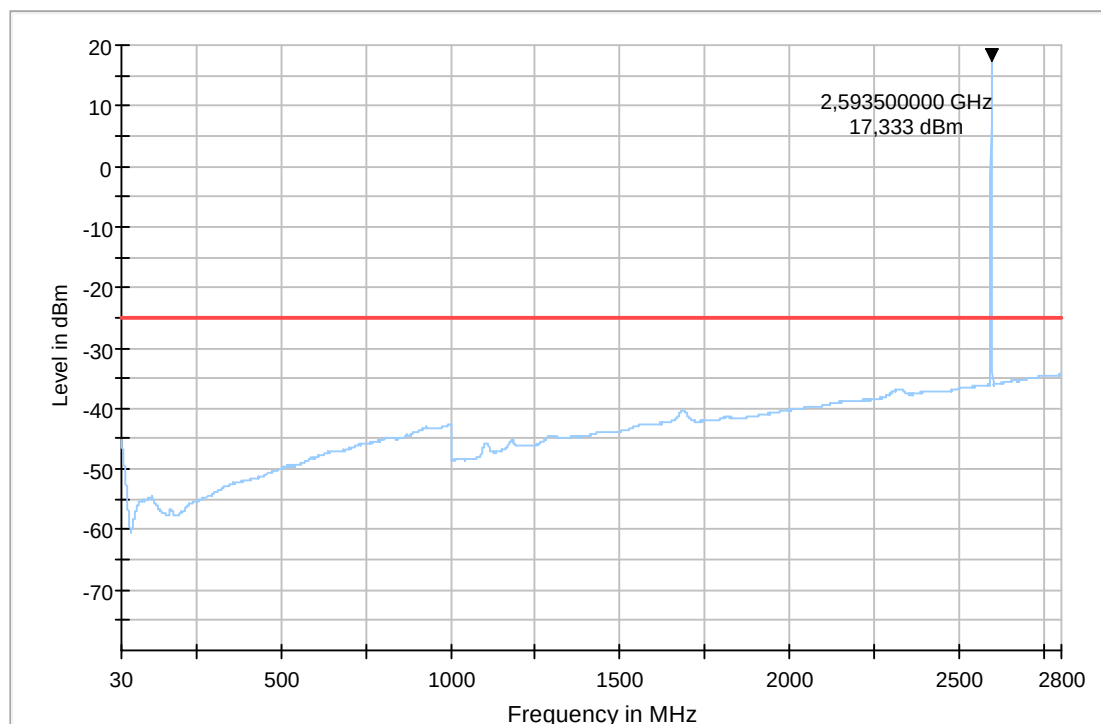
Common Information

Test Description:	Radiated Spurious Emissions LTE Band 41
Test Site Location:	cetecom advanced GmbH
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part 27
Operating Mode:	UE allocated channel 40620/ BW: 10 MHz/ RB: 1/ Position: 26
Environmental Conditions:	Humidity: 51%rH; Temperature: 21°C
Test SW Version:	EMC32 V10.60.20
Operator:	Aho
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
Power Supply :	12 V DC

Full Spectrum



Remark: emissions at 2593 MHz is the downlink of LTE TDD 41 and not relevant to the limit

8.41b_Traffic_mode_LTE_TDD_B41

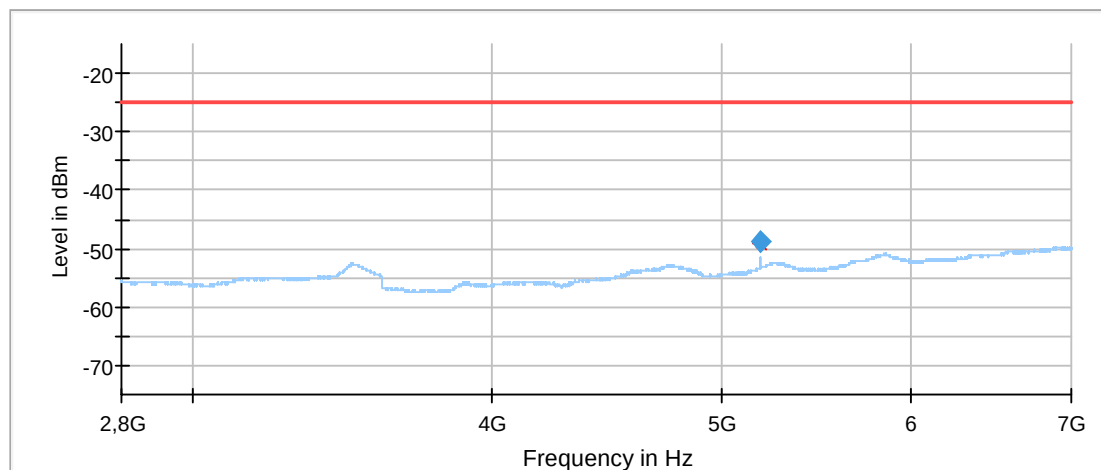
Common Information

Test Description:	Radiated Spurious Emissions LTE Band 41
Test Site Location:	cetekom advanced GmbH
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part 27
Comm. Link:	LTE TDD Band 41
Operating Mode:	MS allocated channel 40620
Exclusionband:	2496-2690 MHz
Environmental Conditions:	Humidity: 58% rH; Temperature: 21 °C
Operator:	Lor
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
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)
5186.590000	-48.90	-25.00	23.90	1000.0	1000.000	V	300.0	90.0	-82

8.41c_Traffic_mode_LTE_TDD_B41

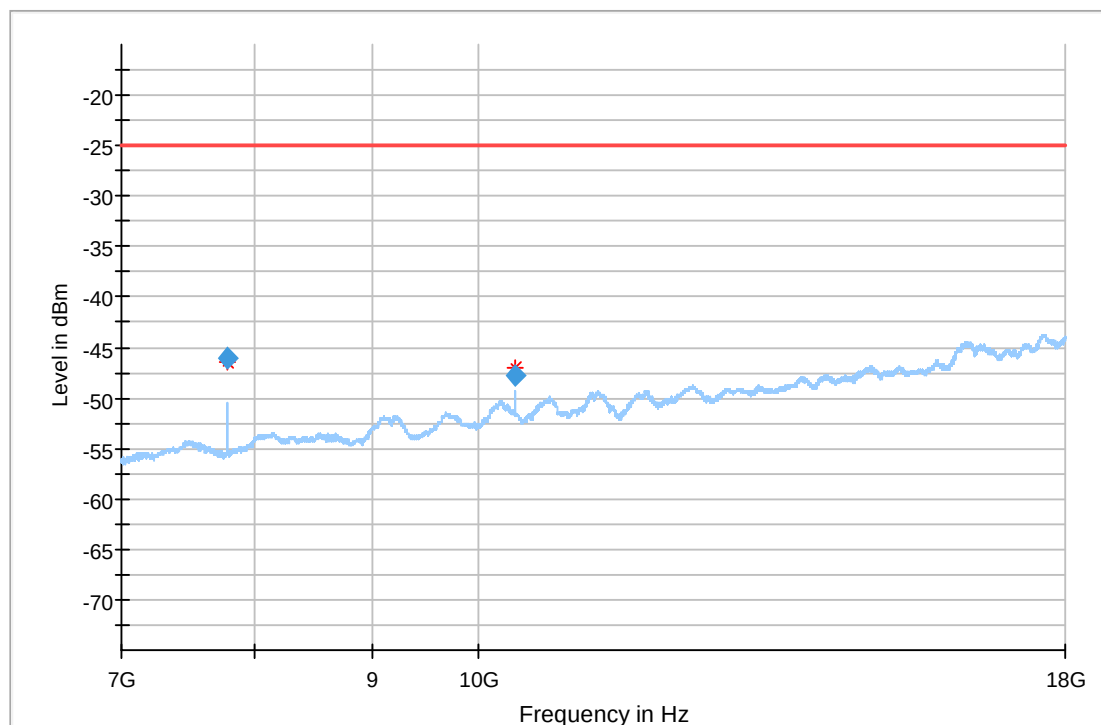
Common Information

Test Description:	Radiated Spurious Emissions LTE Band 41
Test Site Location:	cetecom advanced GmbH
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part 27
Comm. Link:	LTE TDD Band 41
Operating Mode:	UE allocated channel 40620 (fc = 2593 MHz); Channel Bandwidth: 10 MHz; # RB: 1; RB Pos: 26; Modulation: QPSK
Environmental Conditions:	Humidity: 50% rH; Temperature: 20 °C
Operator:	Aho
EUT Setup:	1
Verdict:	Passed

EUT Information

Sample:	36.472
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)
7779.803333	-46.01	-25.00	21.01	1000.0	1000.000	V	170.0	0.0	-96
10372.996667	-47.69	-25.00	22.69	1000.0	1000.000	V	179.0	90.0	-90

8.41d_Traffic_Mode_LTE_TDD_B41_Anth

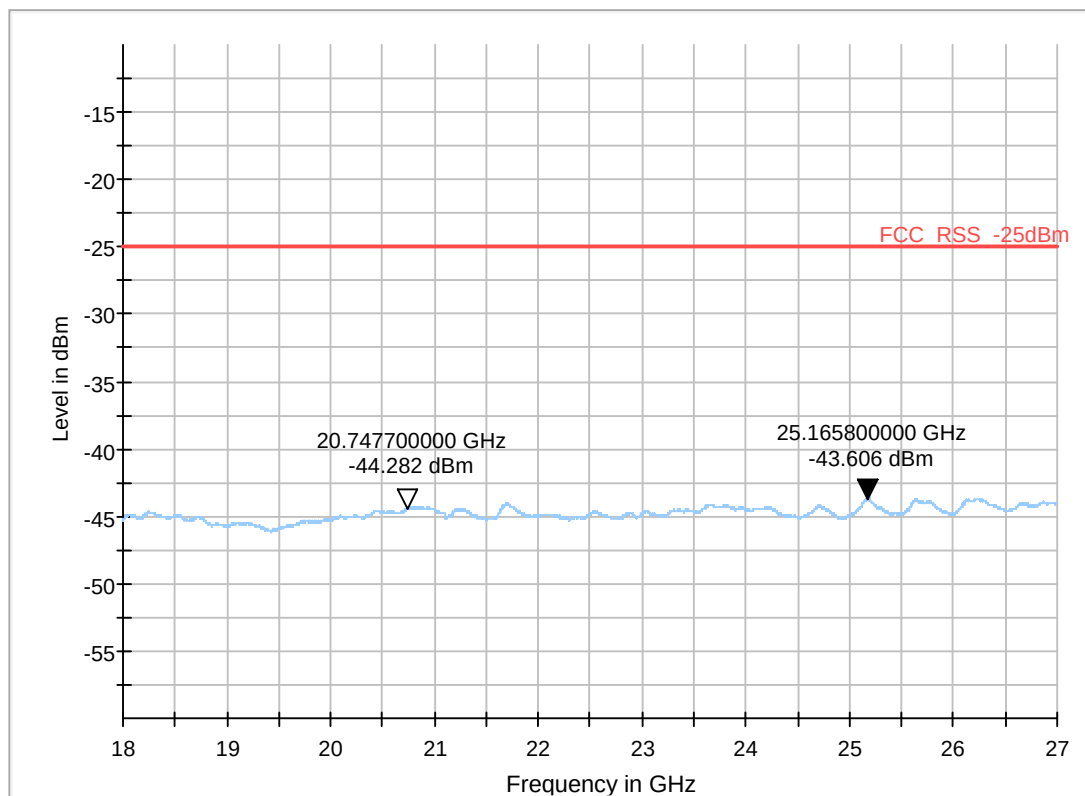
Common Information

Test Description:	Radiated Spurious Emissions LTE Band 41
Test Site Location:	cetekom advanced GmbH (Location Essen)
Test Site:	Fully Anechoic Room (FAC2)
Test Standard:	FCC Part 27
Comm. Link:	LTE Band 41
Operating Mode:	MS allocated channel 40620 / BW=10M/QPSK/1RB@26
Exclusionband:	2496 to 2690 MHz
Environmental Conditions:	Humidity: 58%rH; Temperature: 19.8°C
Operator:	Lor
Verdict:	Passed

EUT Information

Sample:	36.472
Power supply:	12 V DC

Full Spectrum



8.41d_Traffic_Mode_LTE_TDD_B41_AntV

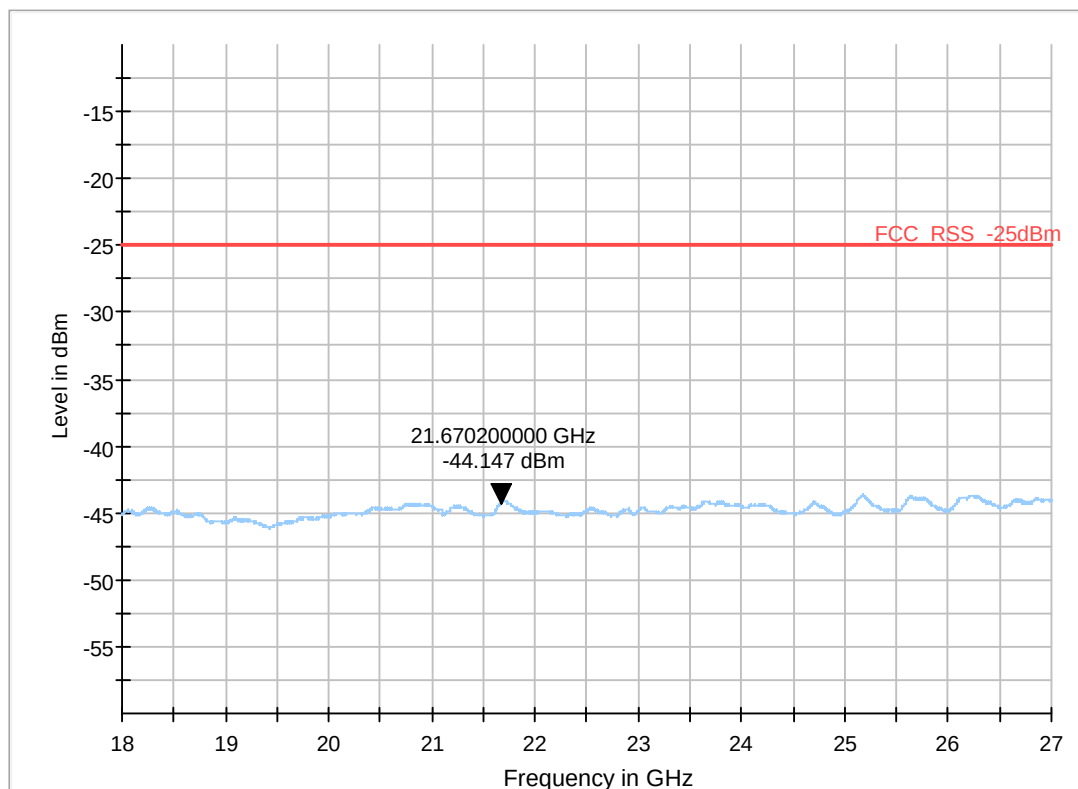
Common Information

Test Description:	Radiated Spurious Emissions LTE Band 41
Test Site Location:	cetekom advanced GmbH (Location Essen)
Test Site:	Fully Anechoic Room (FAC2)
Test Standard:	FCC Part 27
Comm. Link:	LTE Band 41
Operating Mode:	MS allocated channel 40620 / BW=10M/QPSK/1RB@26
Exclusionband:	2496 to 2690 MHz
Environmental Conditions:	Humidity: 58%rH; Temperature: 19.8°C
Operator:	Lor
Verdict:	Passed

EUT Information

Sample:	36.472
Power Supply :	12 V DC

Full Spectrum



End Of Annex 1