

## Annex 1: Measurement diagrams 20-1-0060701T51a-A1

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<b>Product:</b>	Telematic Device		
<b>Model:</b>	ATM-02-ROW-R1		
<b>FCC ID:</b>	QWY-ATM2-R-13	<b>IC:</b>	--
<b>Testing has been carried out in accordance with:</b>	Title 47 CFR, Chapter I FCC Regulations, Subchapter B Part 22 Subpart H, Part 27 Subpart C Part 15, Subpart C, §15.209  Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".		

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# 1 Measurement diagrams

## 1.1 Conducted RF output power and Peak to Average ratio (PAPR)

LTE-Band 5				QPSK-Modulation			16-QAM-Modulation		
channel bandwidth	ARFCN ch. no.	ARFCN-Frequency [MHz]	Resource block allocation	Peak detektor [dBm]	RMS detektor [dBm]	PAR Faktor [dB]	Peak detektor [dBm]	RMS detektor [dBm]	PAR Faktor [dB]
5 MHz	20425	826.5	1RB low	25.2	21.45	3.75	25.05	21.21	3.84

LTE-Band 7				QPSK-Modulation			16-QAM-Modulation		
channel bandwidth	ARFCN ch. no.	ARFCN-Frequency [MHz]	Resource block allocation	Peak detektor [dBm]	RMS detektor [dBm]	PAR Faktor [dB]	Peak detektor [dBm]	RMS detektor [dBm]	PAR Faktor [dB]
10 MHz	20800		1RB high	21.82	18.03	3.79	21.54	17.92	3.62

## 1.2 2.01\_Magnetic\_field\_Emission\_LTE\_FDD\_Band\_5\_EUT\_laying\_ROW

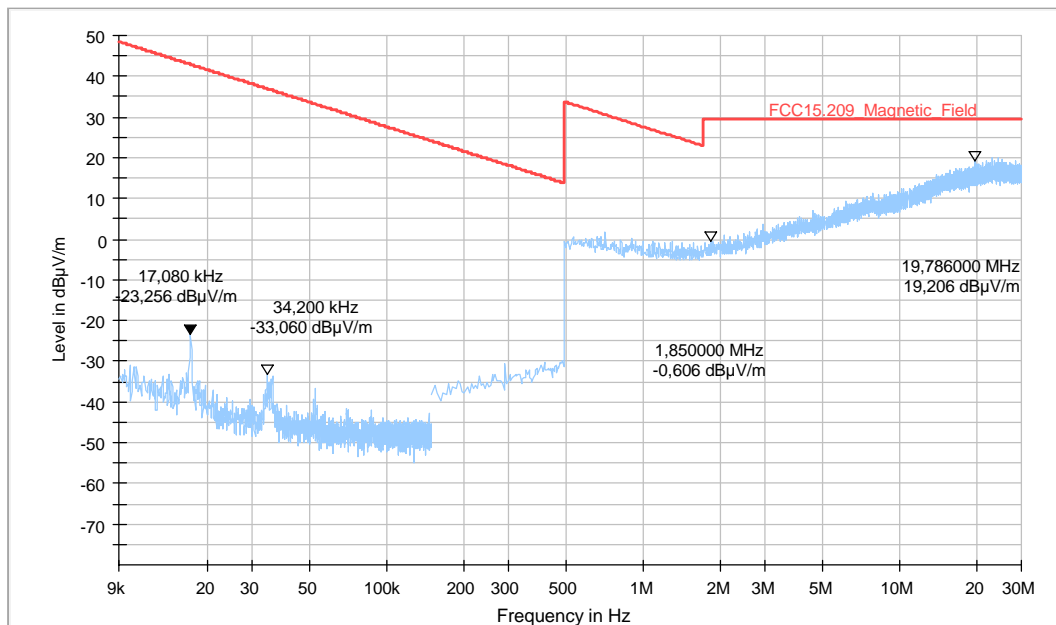
### Common Information

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:	aho
Operating Mode:	Operation mode 1
Environmental Conditions::	Humidity : 45%rH; Temperature: 20°C
EUT Setup:	1
Verdict:	Passed
EUT Position	top, bottom, left, right
Comment	worst case has been found by EUT Laying position

### EUT Information

PMT number: 20-1-00607S223\_C01

Full Spectrum



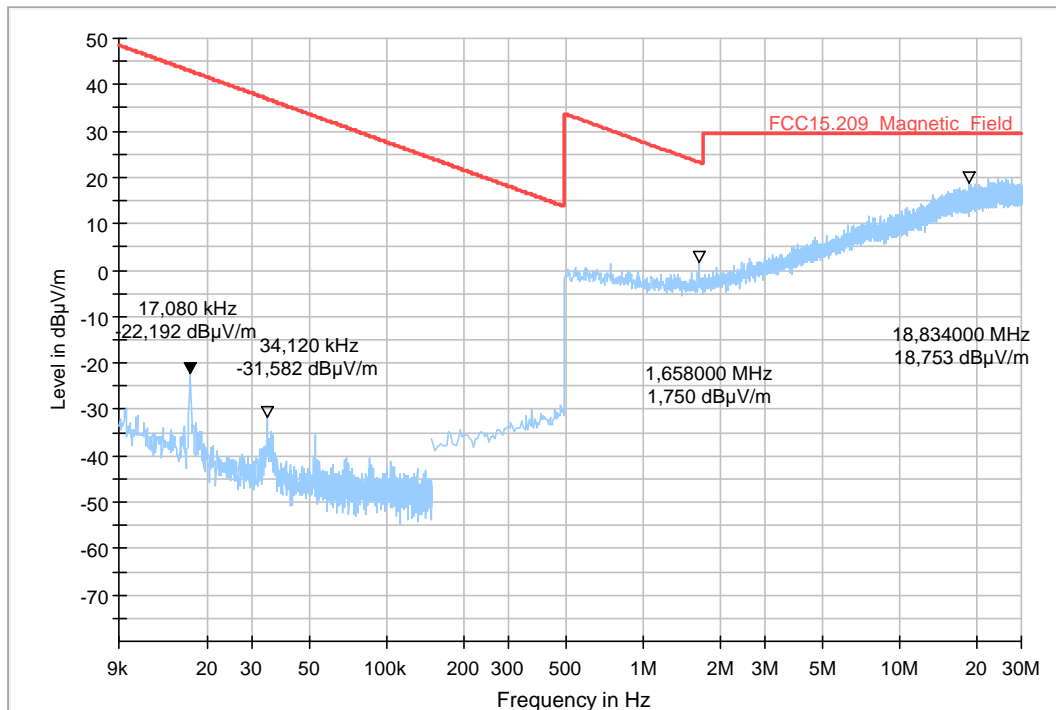
### 1.3 2.02\_Magnetic\_field\_Emission\_LTE\_FDD\_Band\_7\_EUT\_laying\_ROW

#### 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:	aho
Operating Mode:	Operation mode 3
Environmental Conditions:	Humidity : 45%rH; Temperature: 20°C
EUT Setup:	1
Verdict:	Passed
EUT Position	top, bottom, left, right
Comment	worst case has been found by EUT Laying position

#### EUT Information

PMT number:	20-1-00607S223_C01
	Full Spectrum



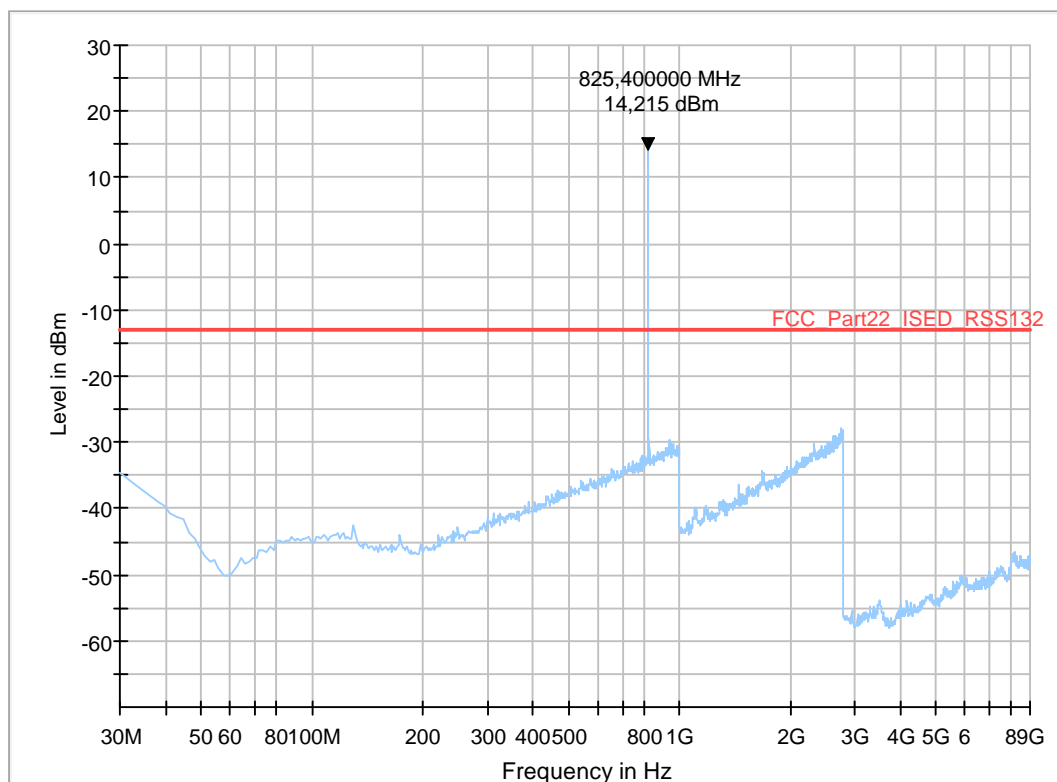
### 1.4 8.01\_Traffic\_mode\_LTE\_FDD\_B05\_CH\_20425

#### Common Information

Test Description:	Radiated emission
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC Part 22.917(a) / RSS-132
Antenna polarisation:	vertical / horizontal
Operating Mode:	LTE B5, BW 5MHz, ch, 20425, 1 RB @Low
Operator:	HEI/WAbdellatif
Environmental Conditions:	Humidity : 39%rH; Temperature: 20°C
EUT Setup:	1
Verdict:	Passed

#### EUT Information

PMT number:	20-1-00607S223_C01
	Full Spectrum



Remark: Emission at 825.4 MHz is uplink frequency of LTE B5 and not related to result.

### 1.5 8.02a\_Traffic\_mode\_LTE\_FDD\_B07\_CH\_20800

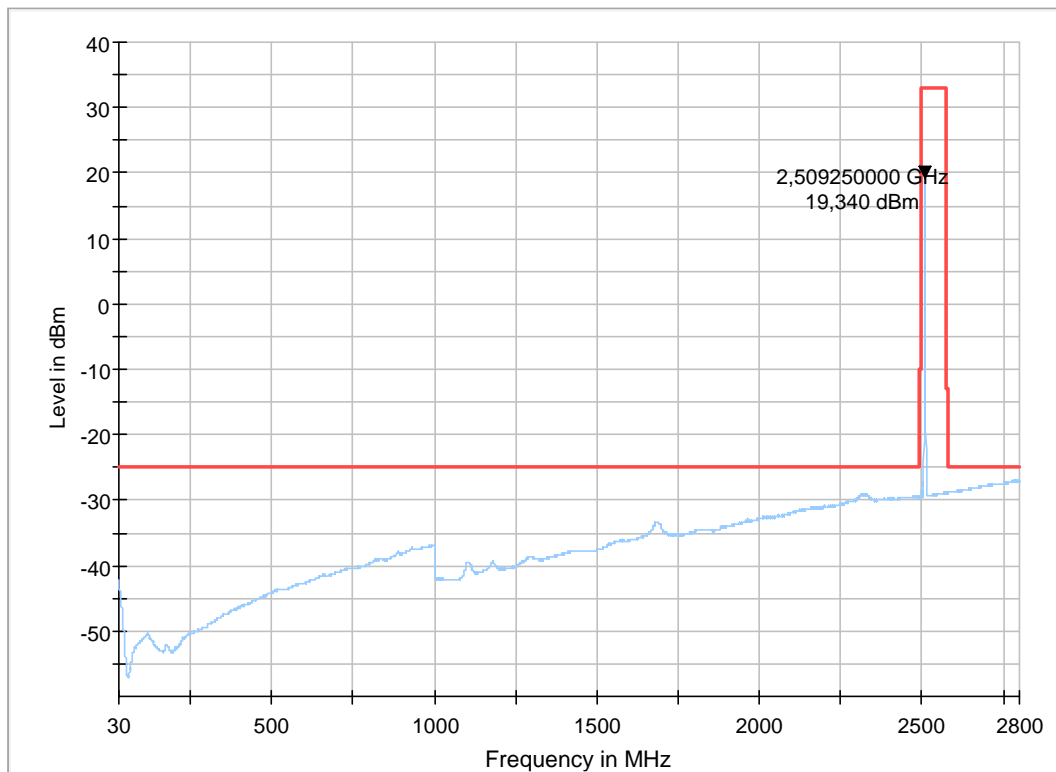
#### Common Information

Test Description:	Radiated Spurious Emissions LTE Band 7
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC Part 27.53(l)(4) / RSS-130 Mobile stations limits
Operating Mode:	LTE B7, BW 10MHz, ch, 2800, 1 RB @High
Environmental Conditions:	Humidity : 40%rH; Temperature: 20°C
Test SW Version:	EMC32 V10.50.0
Operator:	HEI/WAbdellatif
Remarks:	EUT - laying/standing position
EUT Setup:	1
Verdict:	Passed

#### EUT Information

PMT number: 20-1-00607S223\_C01

Full Spectrum



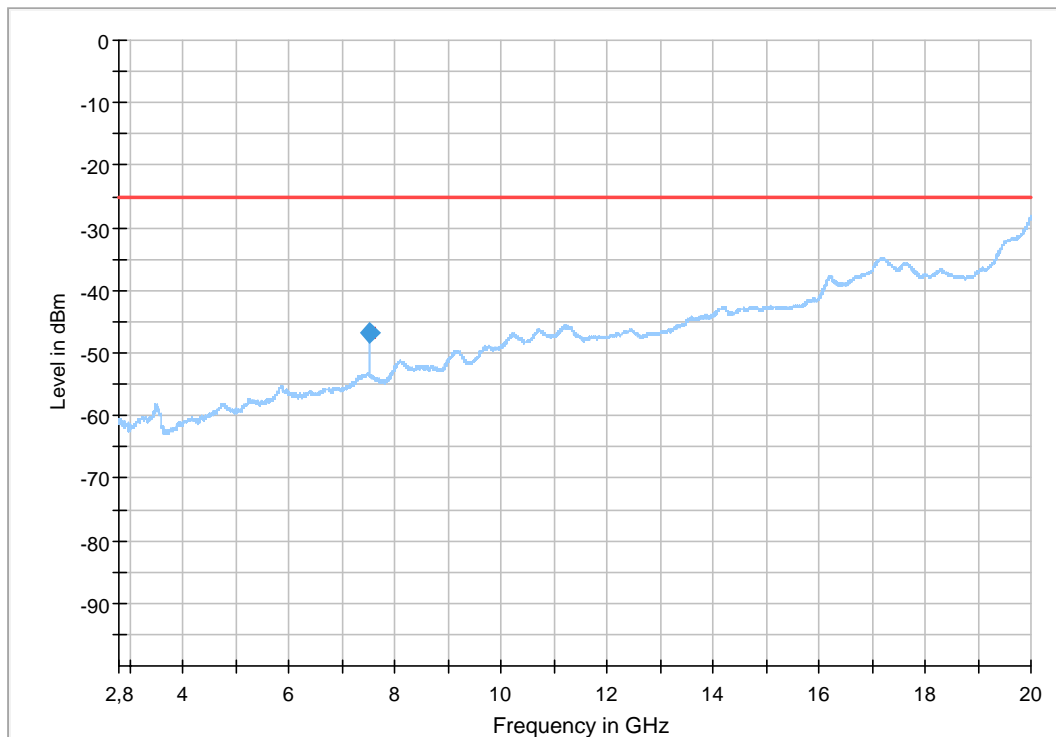
### 1.6 8.02b\_Traffic\_mode\_LTE\_FDD\_B07\_CH\_20800

#### Common Information

Test Description: Radiated  
 Test Site Location: CETECOM GmbH Essen  
 Test Site: Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0  
 Test Standard: FCC Part 27.53(l)(4) / RSS-130 Mobile stations limits  
 Test Case: -  
 Operating Mode: LTE B7, BW 10MHz, ch, 2800, 1 RB @High  
 Environmental Conditions: Humidity : 40%rH; Temperature: 20°C  
 Operator: HEI/WAbdellatif  
 EUT Setup: 1  
 Verdict: Passed  
 Comment:

#### EUT Information

PMT number: 20-1-00607S223\_C01  
 Full Spectrum



#### Final Result

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
7528.340000	-46.76	-25.00	21.76	1000.0	1000.000	H	229.0	90.0	-82



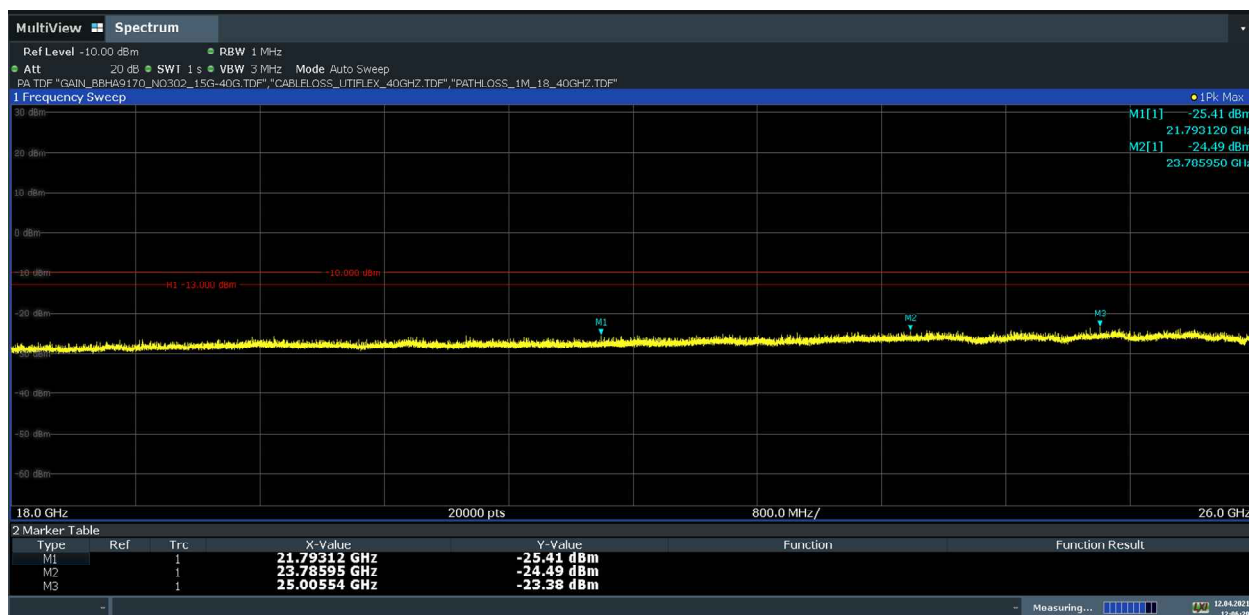
### 1.7 8.02c\_Traffic\_mode\_LTE\_FDD\_B07\_CH\_20800

#### Common Information

Test Description: Radiated  
 Test Site Location: CETECOM GmbH Essen  
 Test Site: Fully Anechoic Chamber (FAC2) - EMC32 V10.50.0  
 Test Standard: FCC Part 27.53(l)(4) / RSS-130 Mobile stations limits  
 Test Case: -  
 Operating Mode: LTE B7, BW 10MHz, ch, 2800, 1 RB @High  
 Environmental Conditions: Humidity : 40%rH; Temperature: 20°C  
 Operator: HEI/WAbdellatif  
 EUT Setup: 1  
 Verdict: Passed  
 Comment:

#### EUT Information

PMT number: 20-1-00607S223\_C01



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### 1.8 9.501\_Bandedge\_low\_LTE\_FDD\_B05\_CH\_low

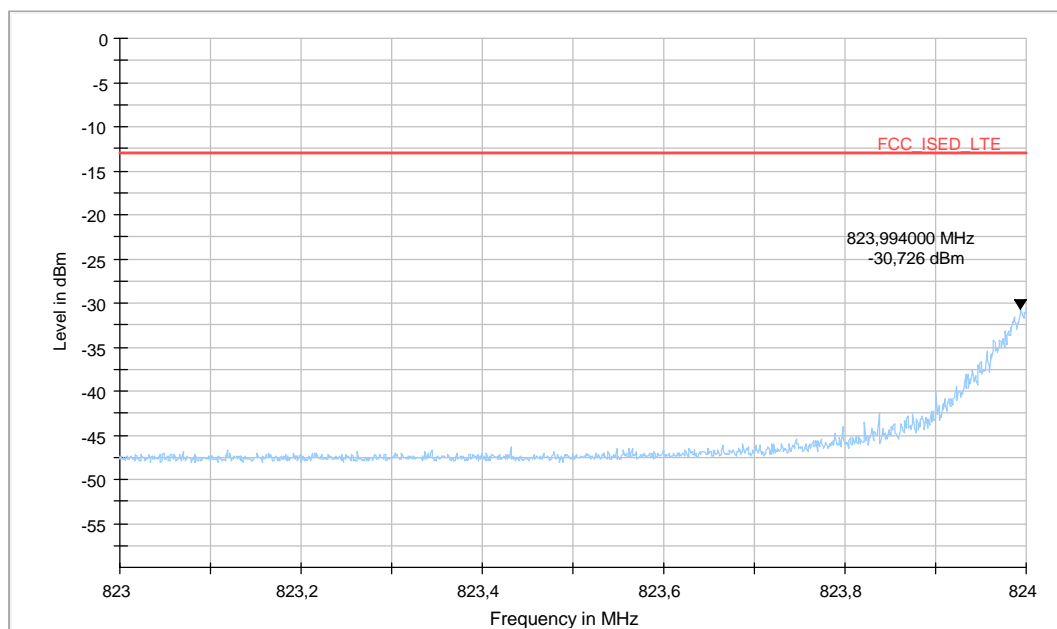
#### Common Information

Test Description:	Band-Edge low - Radiated Spurious Emissions LTE Band V
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC Part 22.917(a) / RSS-132
Operating Mode:	LTE B5, BW 5MHz, ch, 20425, 1RB low
Environmental Conditions:	Humidity : 40%rH; Temperature: 20°C
Test SW Version:	EMC32 V10.50.0
Operator:	Aho
Remarks:	EUT - laying/standing position
EUT Setup:	1
Verdict:	Passed

#### EUT Information

PMT number: 20-1-00607S223\_C01

Full Spectrum



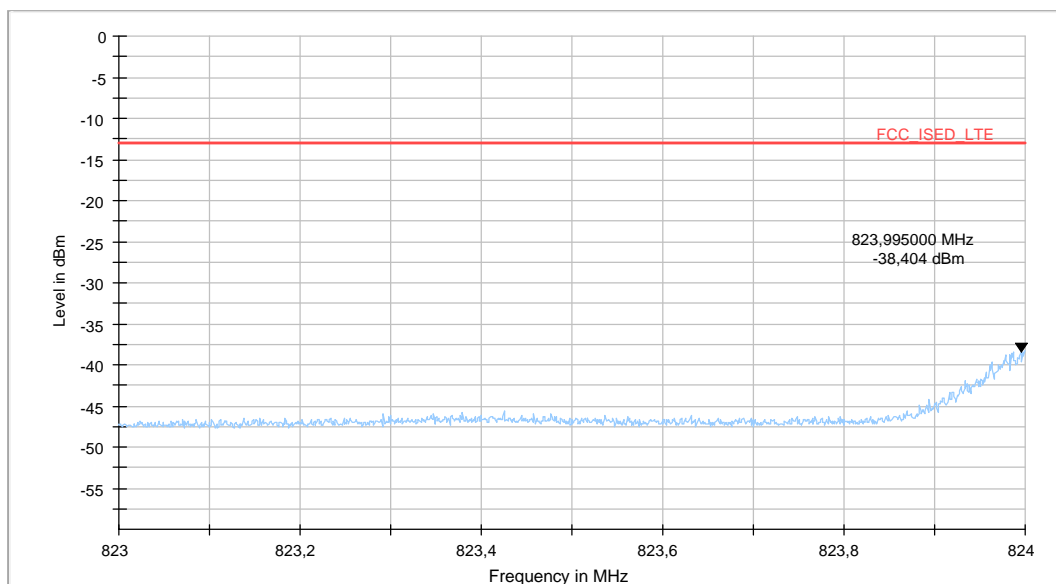
### 1.9 9.502\_Bandedge\_low\_LTE\_FDD\_B05\_CH\_low

#### Common Information

Test Description:	Band-Edge low - Radiated Spurious Emissions LTE Band V
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC Part 22.917(a) / RSS-132
Operating Mode:	LTE B5, BW 5MHz, ch, 20425, RB 100%
Environmental Conditions::	Humidity : 40%rH; Temperature: 20°C
Test SW Version:	EMC32 V10.50.0
Operator:	Aho
Remarks:	EUT - laying/standing position
EUT Setup:	1
Verdict:	Passed

#### EUT Information

PMT number: 20-1-00607S223\_C01  
 Full Spectrum



### 1.10 9.503\_Bandedge\_LTE\_FDD\_B05\_CH\_high

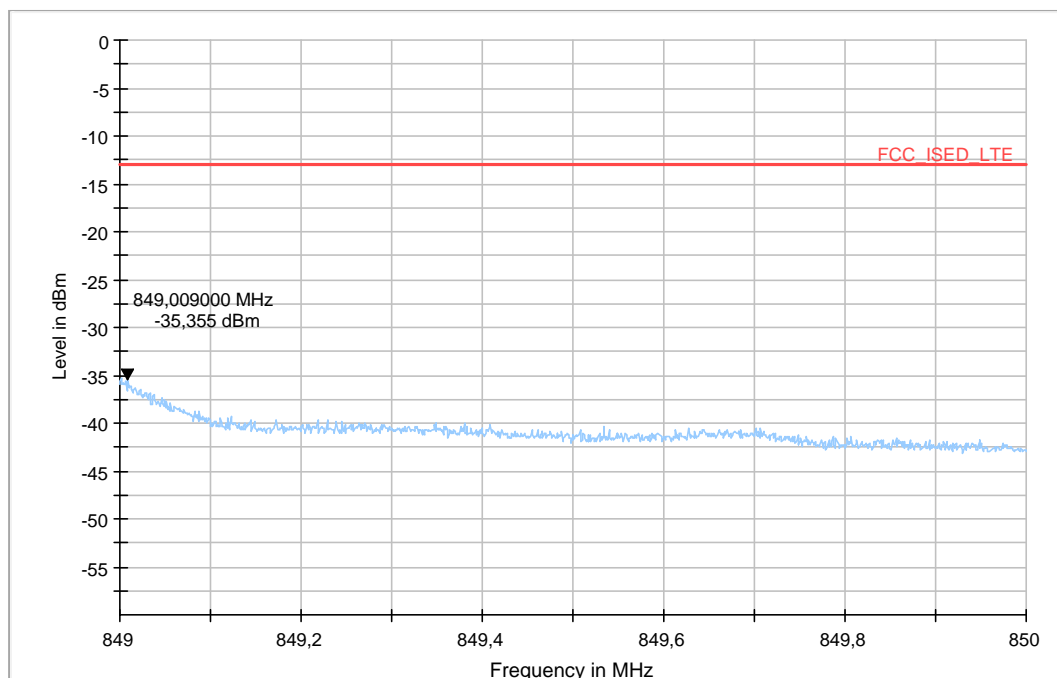
#### Common Information

Test Description:	Band-Edge low - Radiated Spurious Emissions LTE Band V
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC Part 22.917(a) / RSS-132
Operating Mode:	LTE B5, BW 5MHz, ch, 20625, RB 100%
Environmental Conditions:	Humidity : 40%rH; Temperature: 20°C
Test SW Version:	EMC32 V10.50.0
Operator:	Aho
Remarks:	EUT - laying/standing position
EUT Setup:	1
Verdict:	Passed

#### EUT Information

PMT number: 20-1-00607S223\_C01

Full Spectrum



### 1.11 9.504\_Bandedge\_LTE\_FDD\_B05\_CH\_high\_1RB\_high

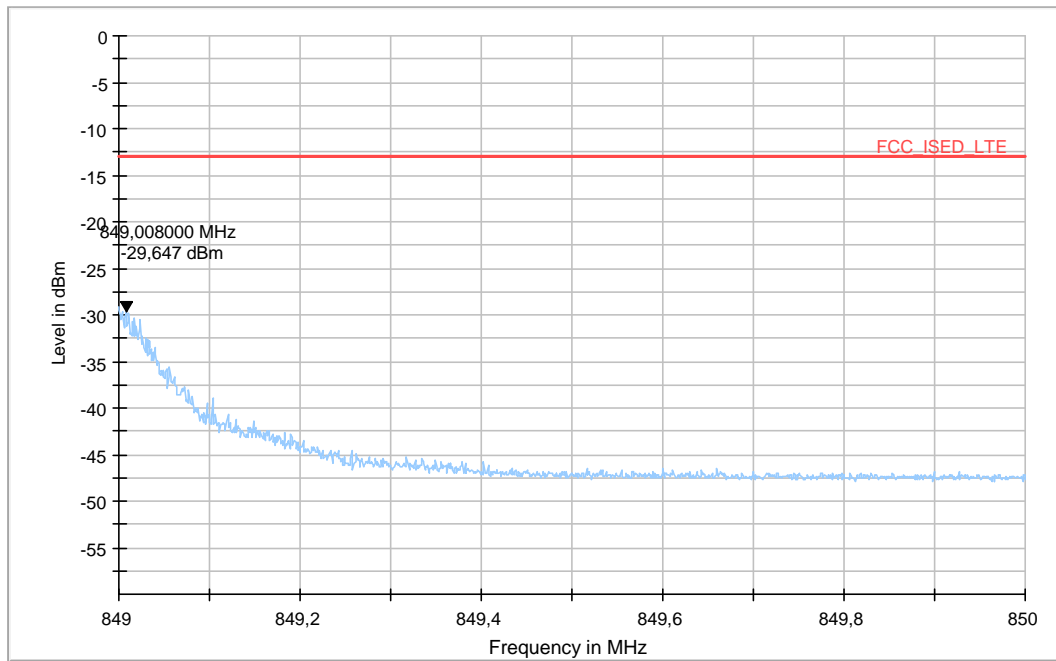
#### Common Information

Test Description:	Band-Edge low - Radiated Spurious Emissions LTE Band V
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC Part 22.917(a) / RSS-132
Operating Mode:	LTE B5, BW 5MHz, ch, 20625, 1RB high
Environmental Conditions:	Humidity : 40%rH; Temperature: 20°C
Test SW Version:	EMC32 V10.50.0
Operator:	Aho
Remarks:	EUT - laying/standing position
EUT Setup:	1
Verdict:	Passed

#### EUT Information

PMT number: 20-1-00607S223\_C01

Full Spectrum



### 1.12 9.701\_Bandedge\_low\_LTE\_FDD\_B07\_CH\_low

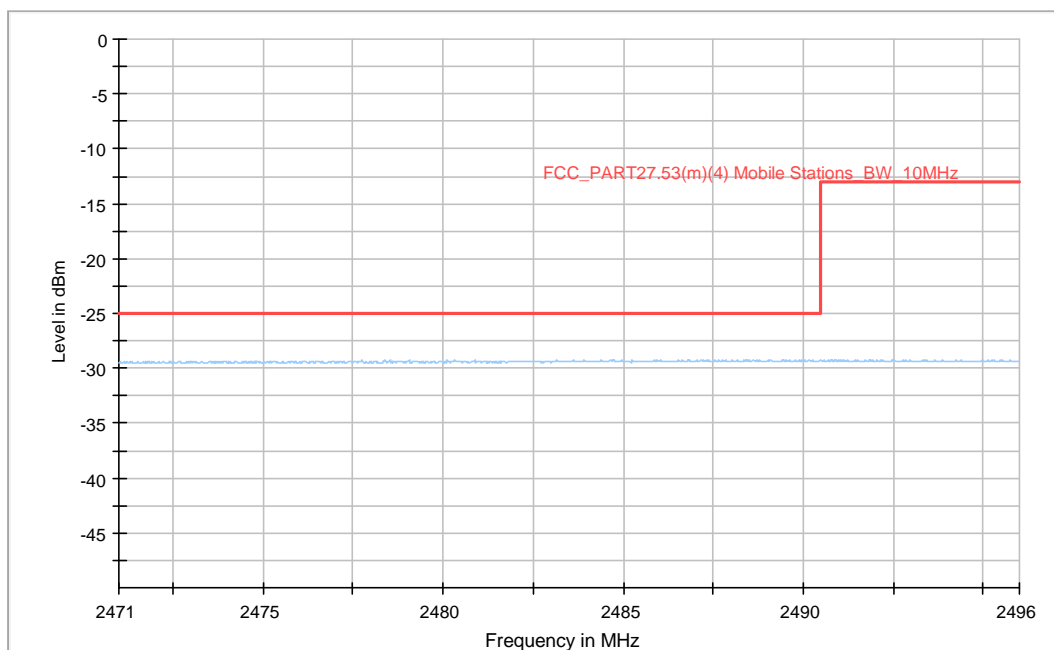
#### Common Information

Test Description:	Band-Edge low - Radiated Spurious Emissions LTE Band 7
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC Part 27.53(l)(4) / RSS-130 Mobile stations limits
Operating Mode:	LTE B7, BW 10MHz, ch, 2800, 1 RB @low
Environmental Conditions::	Humidity : 39%rH; Temperature: 20°C
Test SW Version:	EMC32 V10.50.0
Operator:	Aho
Remarks:	EUT - laying/standing position
EUT Setup:	1
Verdict:	Passed

#### EUT Information

PMT number: 20-1-00607S223\_C01

Full Spectrum



### 1.13 9.702\_Bandedge\_low\_LTE\_FDD\_B07\_CH\_low

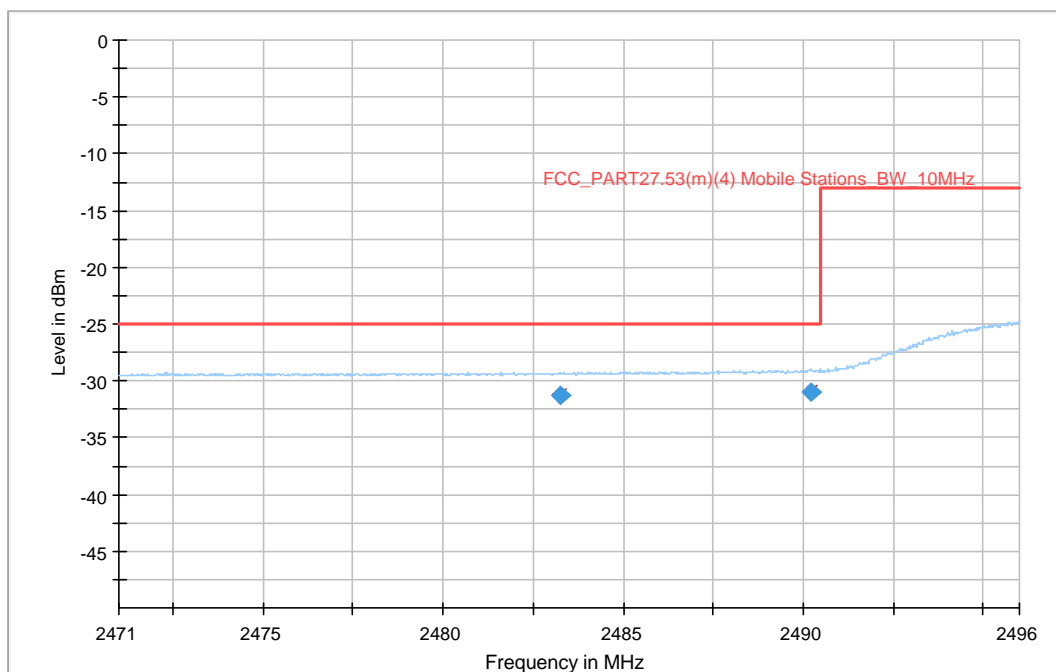
#### Common Information

Test Description:	Band-Edge low - Radiated Spurious Emissions LTE Band 7
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC Part 27.53(l)(4) / RSS-130 Mobile stations limits
Operating Mode:	LTE B7, BW 10MHz, ch, 2800, 100% RB
Environmental Conditions:	Humidity : 39%rH; Temperature: 20°C
Test SW Version:	EMC32 V10.50.0
Operator:	Aho
Remarks:	EUT - laying/standing position
EUT Setup:	1
Verdict:	Passed

#### EUT Information

PMT number: 20-1-00607S223\_C01

Full Spectrum



### 1.14 9.703\_Bandedge\_high\_LTE\_FDD\_B07\_CH\_high\_1RB\_high

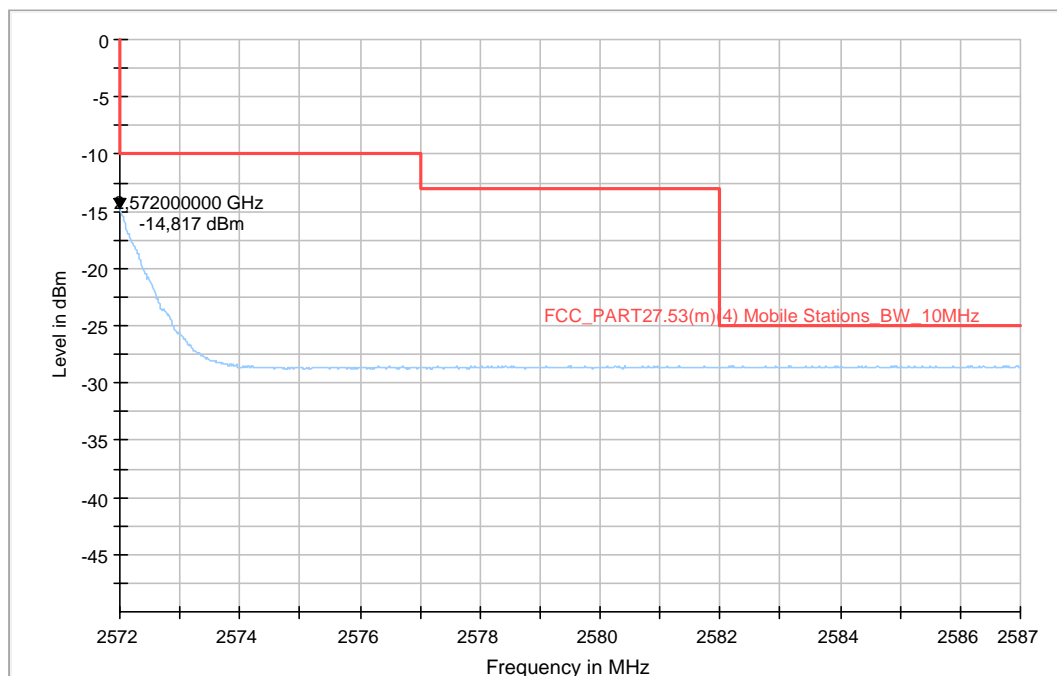
#### Common Information

Test Description:	Band-Edge low - Radiated Spurious Emissions LTE Band 7
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC Part 27.53(l)(4) / RSS-130 Mobile stations limits
Operating Mode:	LTE B7, BW 10MHz, ch, 21400, 1RB high
Environmental Conditions:	Humidity : 40%rH; Temperature: 20°C
Test SW Version:	EMC32 V10.50.0
Operator:	Aho
Remarks:	EUT - laying/standing position
EUT Setup:	1
Verdict:	Passed

#### EUT Information

PMT number: 20-1-00607S223\_C01

Full Spectrum





### 1.15 9.704\_Bandedge\_high\_LTE\_FDD\_B07\_CH\_high

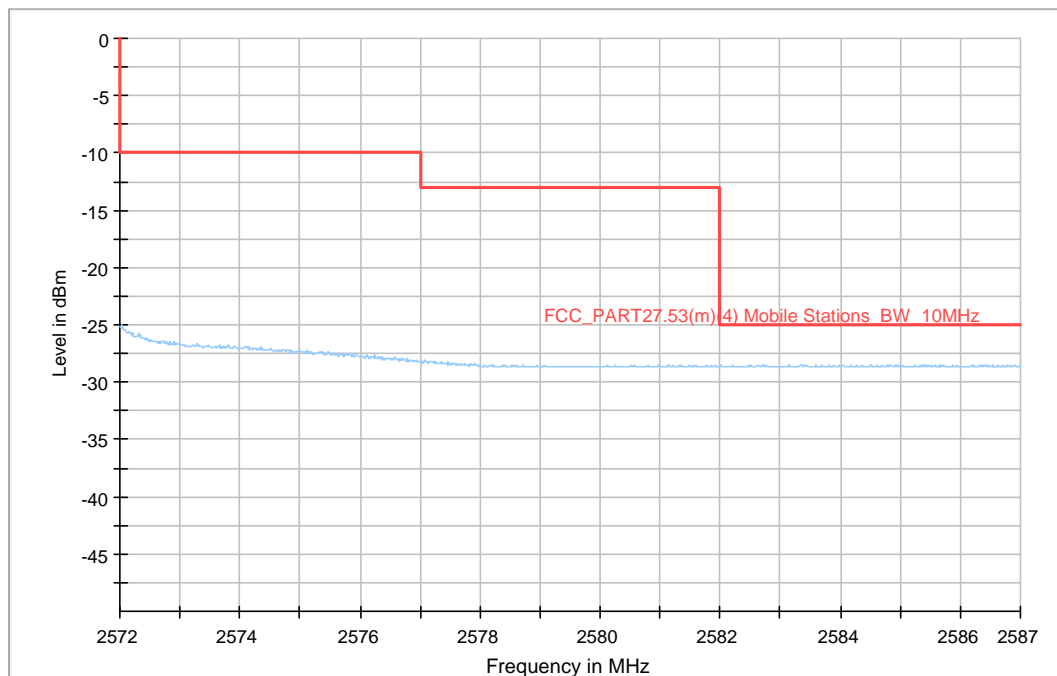
#### Common Information

Test Description:	Band-Edge low - Radiated Spurious Emissions LTE Band 7
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC Part 27.53(l)(4) / RSS-130 Mobile stations limits
Operating Mode:	LTE B7, BW 10MHz, ch, 21400, 100% RB
Environmental Conditions::	Humidity : 40%rH; Temperature: 20°C
Test SW Version:	EMC32 V10.50.0
Operator:	Aho
Remarks:	EUT - laying/standing position
EUT Setup:	1
Verdict:	Passed

#### EUT Information

PMT number: 20-1-00607S223\_C01

Full Spectrum



**End Of Annex 1**