

Annex 1: Measurement diagrams 21-1-0178701T026a-C01-A1

Number of pages:	26	Date of Report:	2023-Apr-28
Testing company:	cetecom advanced GmbH Im Teelbruch 116 45219 Essen Germany Tel. + 49 (0) 20 54 / 95 19-0 Fax: + 49 (0) 20 54 / 95 19-150	Applicant:	Actia Nordic AB
Product:	Telematic Device		
Model:	104760201		
FCC ID:	2AGKK104760201	IC:	20839-104760201

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

ISED-Regulations, Radio Standards Specification

RSS-Gen, Issue 5

General Requirements for Compliance of Radio Apparatus

RSS-132, Issue 4

Cellular Telephone Systems Operating in the Bands 824-849 MHz and 869-894 MHz

RSS-133, Issue 6, Amendment 1

2 GHz Personal Communications Services

RSS-139, Issue 4

Advanced Wireless Services (AWS) Equipment Operating in the Bands 1710-1780 MHz and 2110-2180 MHz

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1 Measurement diagrams

8.02a_Traffic_mode_UMTS_FDD_B02_ CH_9400_lying

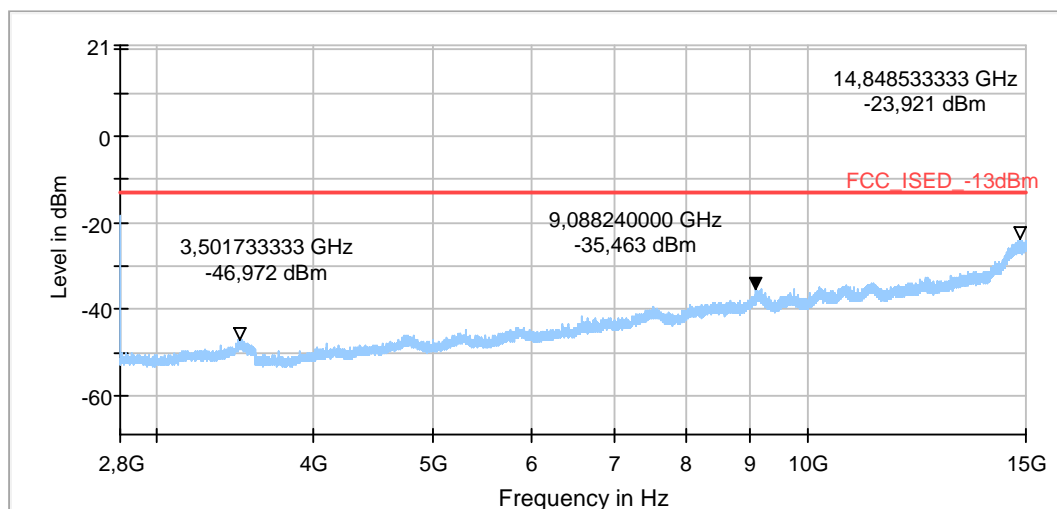
Common Information

Test Description:	Radiated emission
Test Site:	Fully-Anechoic Chamber
Test Standard:	FCC Part 24.238/ RSS-133
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V11.20.0
Operating Mode:	UMTS FDDII
Operator:	TFra
Comment:	--
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number: 21-1-01787550_C01

Full Spectrum



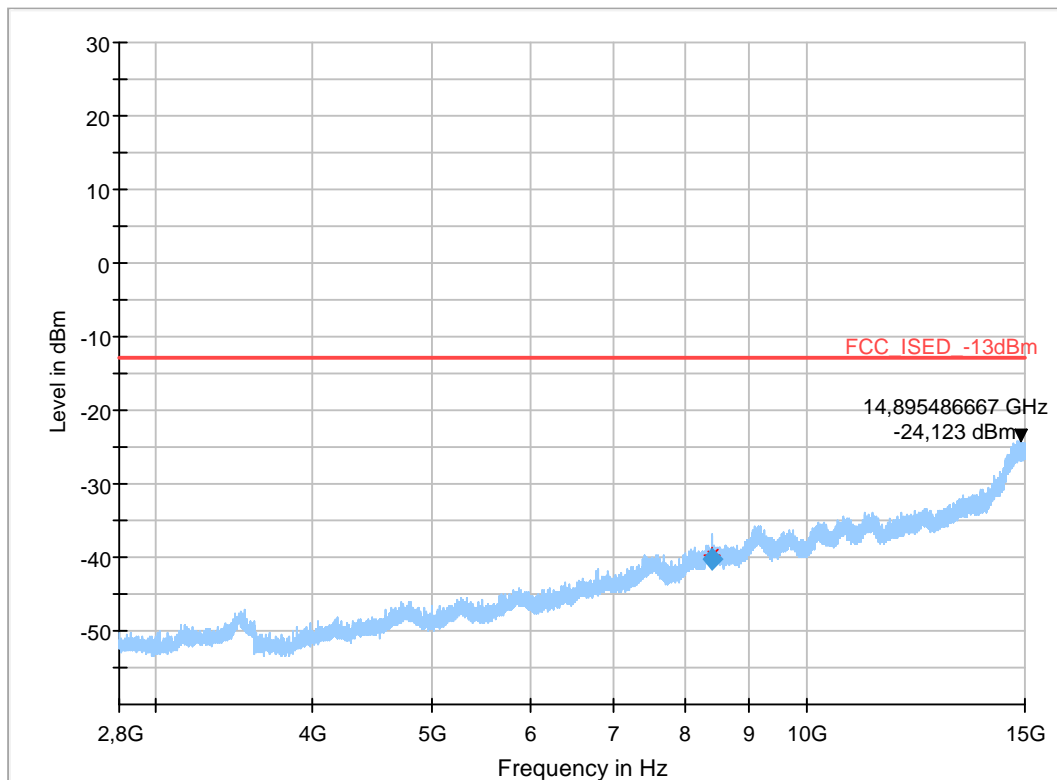
8.02b_Traffic_mode_UMTS_FDD_B02_ CH_9400_standing

Common Information

Test Description:	Radiated emission
Test Site:	Fully-Anechoic Chamber
Test Standard:	FCC Part 24.238/ RS-133
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V10.60.20
Operating Mode:	UMTS FDD2 CH9400 1880MHz BW 5MHz Traffic Mode
Operator:	KTe
Comment:	Environmental Conditions:
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number: 21-1-01787S50_C01
Full Spectrum



Final_Result

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Sig Path (dB)	Preamp (dB)
8399.755000	-40.15	-13.00	27.15	100.0	1000.000	155.0	V	138.0	-75	-20	0

(continuation of the "Final_Result" table from column 18 ...)

Frequency (MHz)	Trd Corr. (dB)	Raw Rec (dBµV)	Comment
8399.755000	-55	35	11:18:58 - 13.01.2023

8.02c_Traffic_mode_UMTS_FDD_B02_ CH_9400_lying

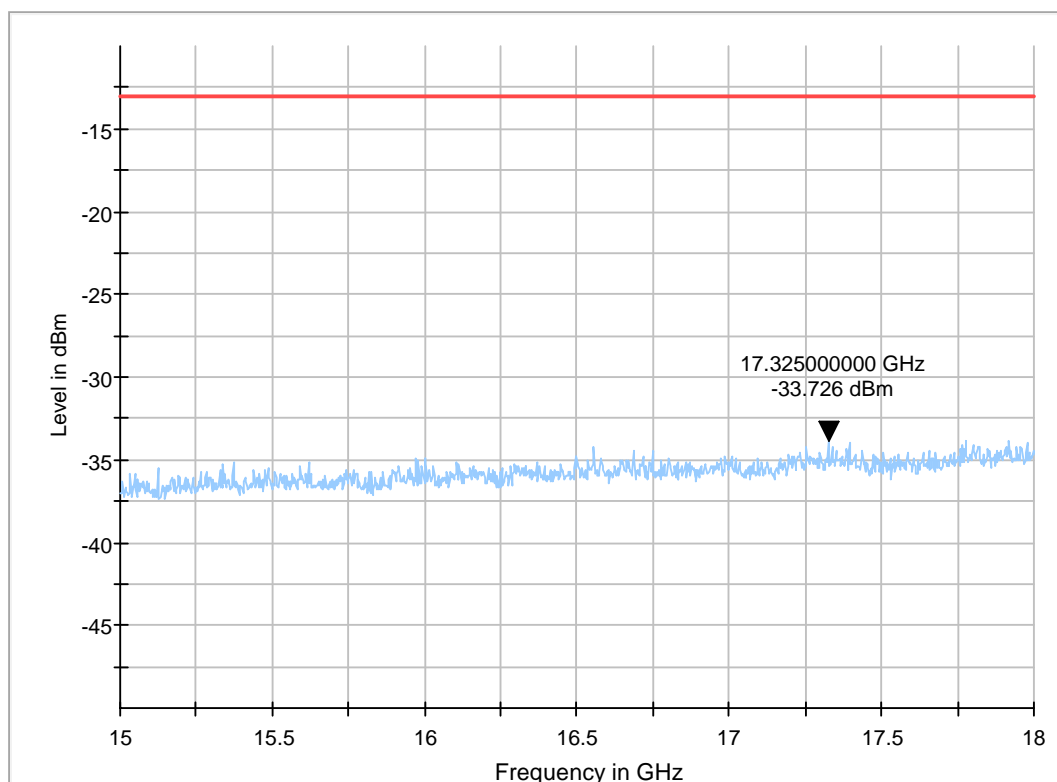
Common Information

Test Description:	Radiated Spurious Emissions WCDMA FDDII
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC Part 24.238/RSS-133
Comm. Link:	WCDMA FDDII
Operating Mode:	MS allocated channel 9400
Environmental Conditions:	Humidity: 40% rH; Temperature: 20.2 °C
Operator:	npe
Set-up:	1
Verdict:	Passed

EUT Information

PMT number:	21-1-01787S50_C01
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Full Spectrum



8.02d_Traffic_mode_UMTS_FDD_B02_ CH_9400_standing

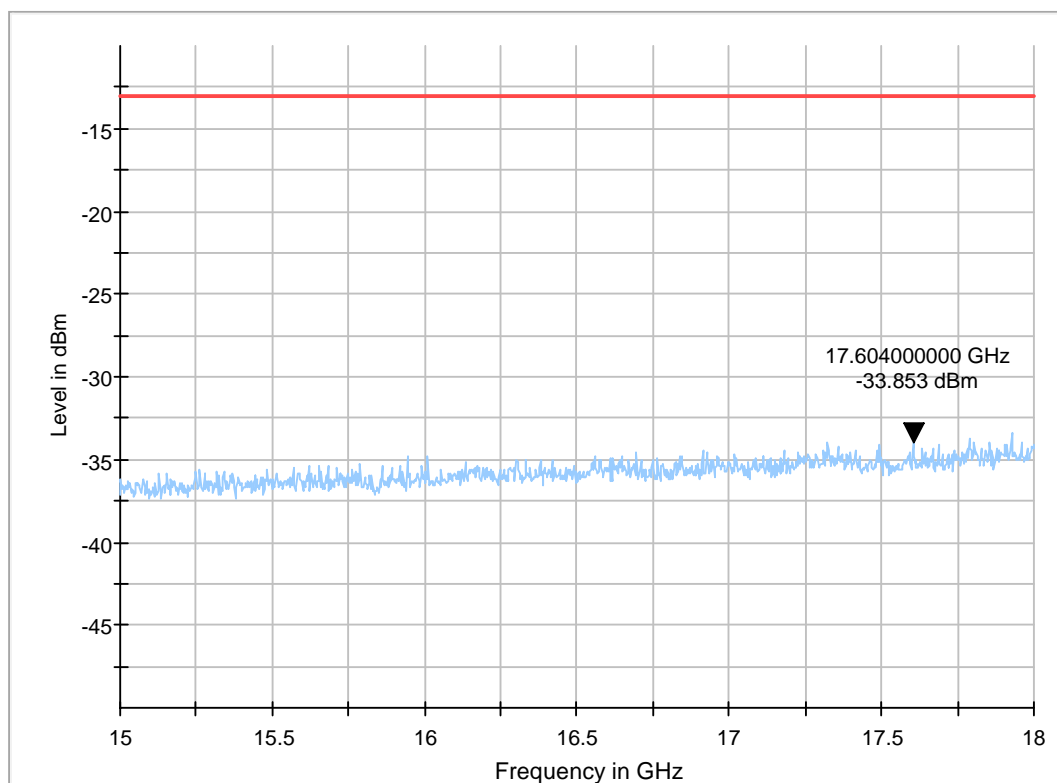
Common Information

Test Description:	Radiated Spurious Emissions WCDMA FDDII
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC Part 24.238/RSS-133
Comm. Link:	WCDMA FDD2
Operating Mode:	MS allocated channel 9400
Environmental Conditions:	Humidity: 40% rH; Temperature: 20.2 °C
Operator:	npe
Set-up:	1
Verdict:	Passed

EUT Information

PMT number: 21-1-01787S50_C01

Full Spectrum



8.02e_Traffic_mode_UMTS_FDD_B02_ CH_9400_lying

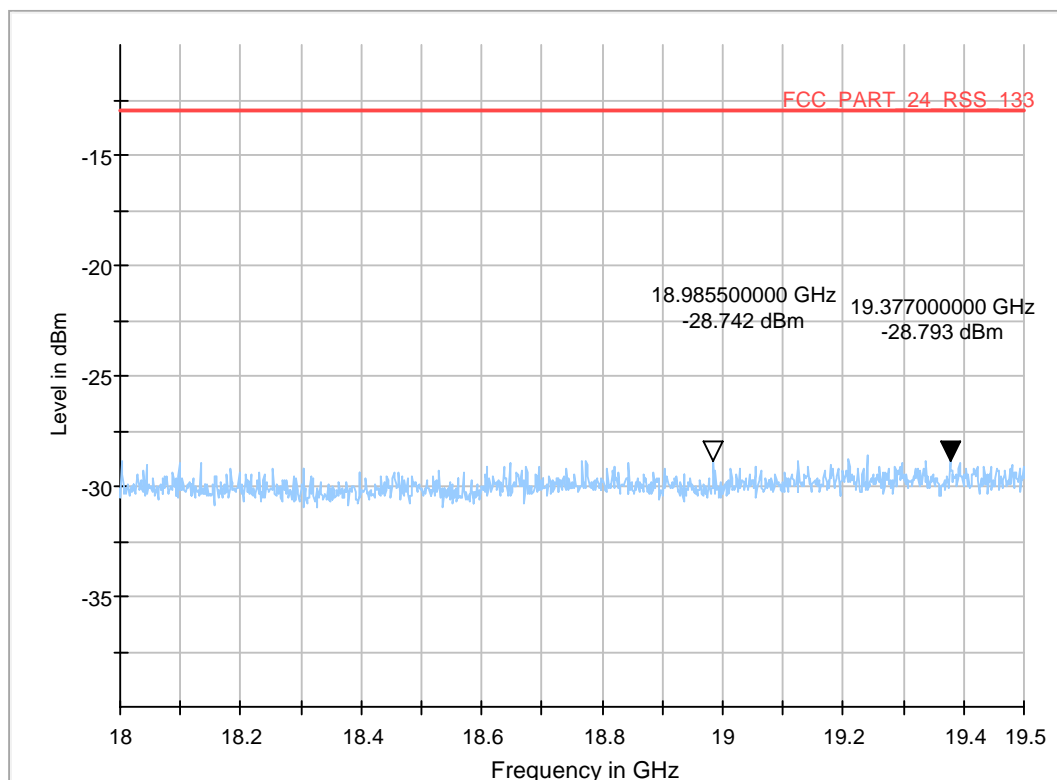
Common Information

Test Description:	Radiated Spurious Emissions WCDMA FDDII
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC Part 24.238 / RSS-133
Comm. Link:	WCDMA FDD2
Operating Mode:	MS allocated channel 9400
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 40% rH; Temperature: 19.8 °C
Operator:	npe
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT Sample Nr. 20-1-00182S40_C01

Full Spectrum



8.02f_Traffic_mode_UMTS_FDD_B02_ CH_9400_standing

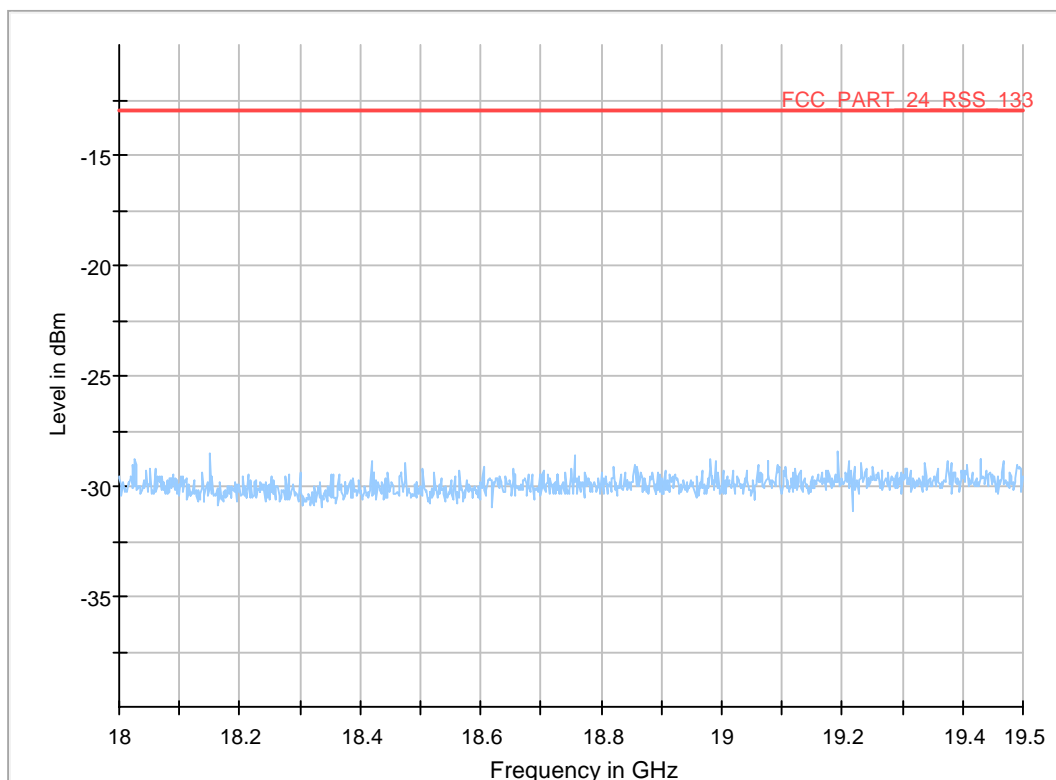
Common Information

Test Description:	Radiated Spurious Emissions WCDMA FDDII
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC Part 24.238 / RSS-133
Comm. Link:	WCDMA FDD2
Operating Mode:	MS allocated channel 9400
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 40% rH; Temperature: 20 °C
Operator:	npe
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT Sample Nr. 21-1-01787S50_C01

Full Spectrum



8.04a_Traffic_mode_UMTS_FDD_B04_ CH_1412_lying

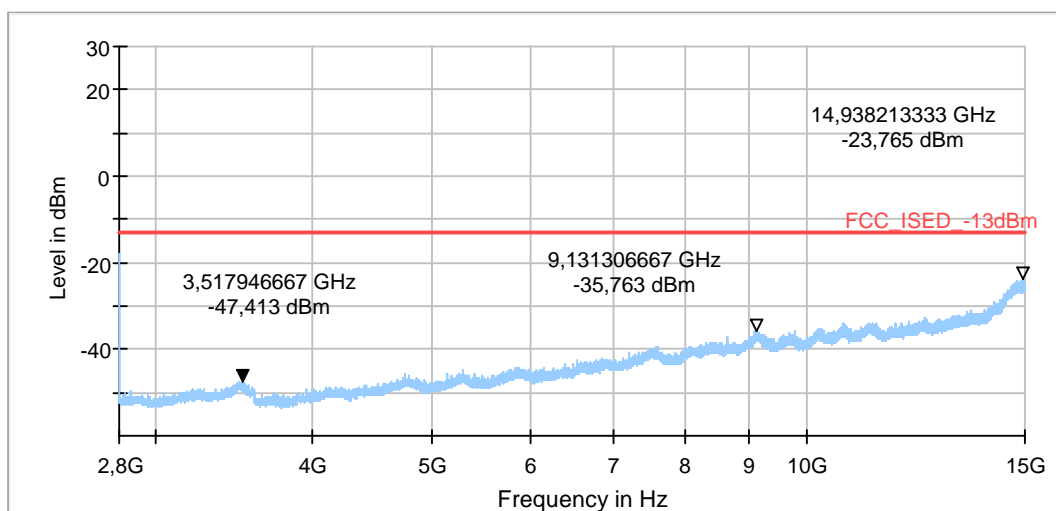
Common Information

Test Description:	Radiated emission
Test Site:	Fully-Anechoic Chamber
Test Standard:	FCC Part 27.53(h) AWS emission limits / RSS-139, Issue 4
Antenna polarisation:	vertical / horizontal
Measurement software version	EMC32 V11.20.0
Operating Mode:	UMTS FDD4
Operator:	TFra
Comment:	--
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number: 21-1-01787S50_C01

Full Spectrum



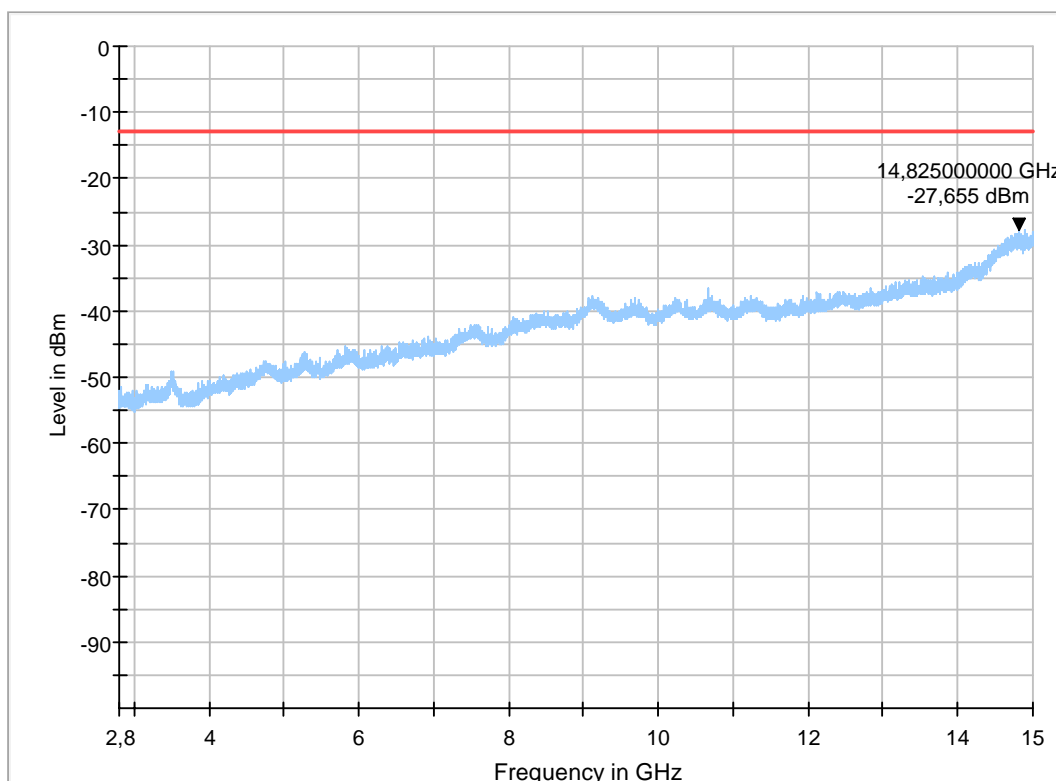
8.04b_Traffic_mode_UMTS_FDD_B04_ CH_1412_standing

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	-
Test Case:	-
Operating Mode:	UMTS FDD4 CH1412 1732.4MHz BW 5MHz Traffic Mode
Environmental Conditions::	Humidity : 42% rH; Temperature: 19 °C
Operator:	KTe
EUT Setup:	1
Verdict:	Passed
Comment:	--

EUT Information

PMT number:	21-1-01787S50_C01
	Full Spectrum



8.04c_Traffic_mode_UMTS_FDD_B04_ CH_1412_lying

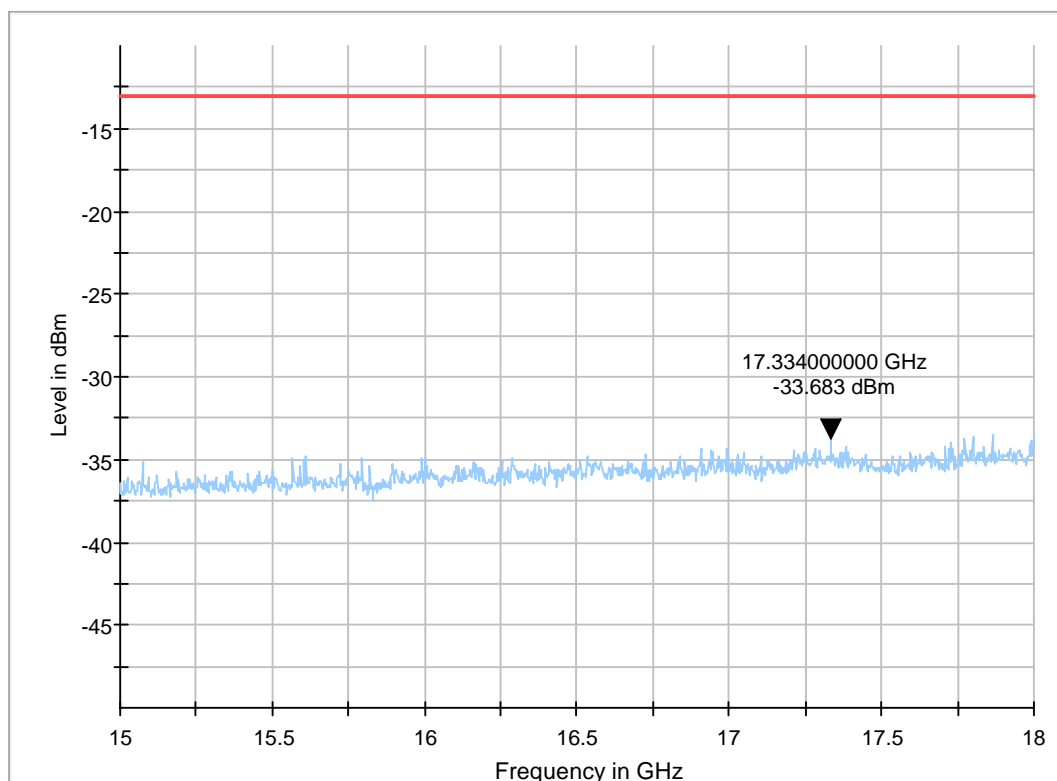
Common Information

Test Description:	Radiated Spurious Emissions WCDMA FDDIV
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC Part 27
Comm. Link:	WCDMA FDDIV
Operating Mode:	MS allocated channel 1412
Environmental Conditions:	Humidity: 40% rH; Temperature: 20.2 °C
Operator:	npe
Set-up:	1
Verdict:	Passed

EUT Information

PMT number:	21-1-01787S50_C01
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Full Spectrum

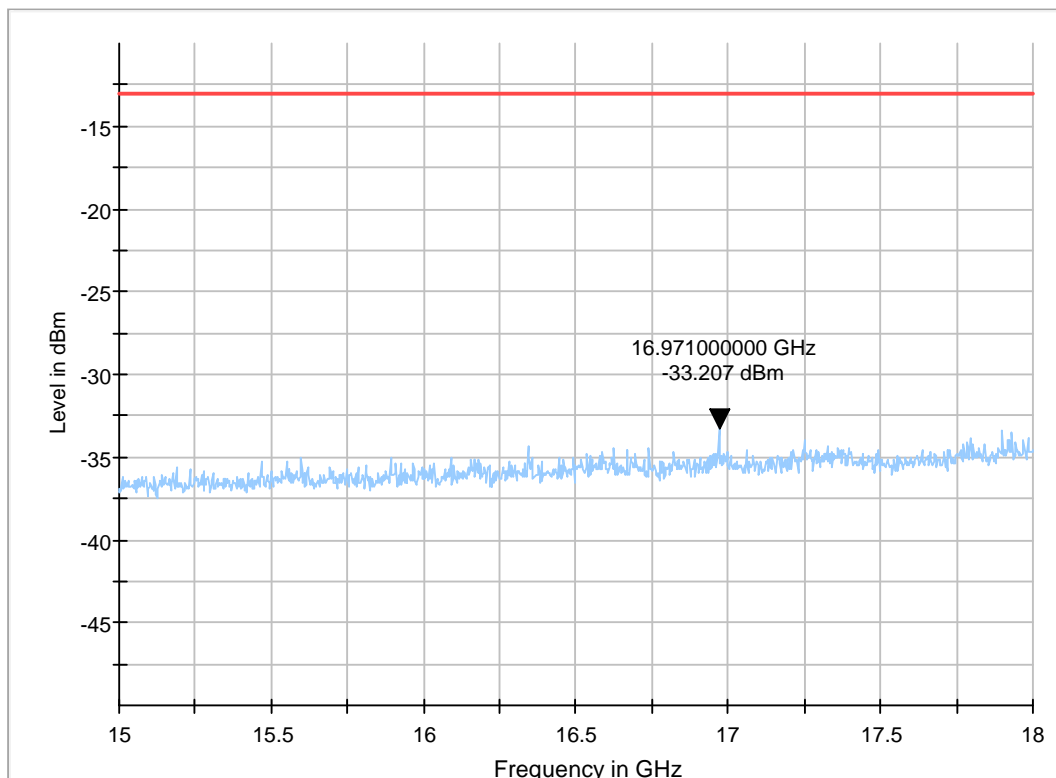


8.04d_Traffic_mode_UMTS_FDD_B04_ CH_1412_standing

Common Information

Test Description:	Radiated Spurious Emissions WCDMA FDDIV
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC Part 27
Comm. Link:	WCDMA FDDIV
Operating Mode:	MS allocated channel 1412
Environmental Conditions:	Humidity: 40% rH; Temperature: 20.2 °C
Operator:	npe
Set-up:	1
Verdict:	Passed

Full Spectrum

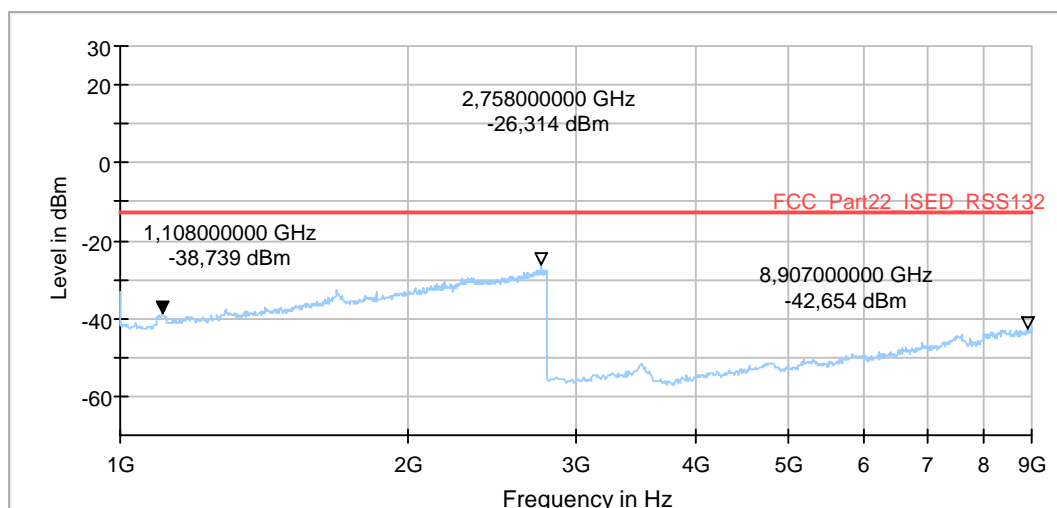


8.05a_Traffic_mode_UMTS_FDD_B05_CH_4233_lying

Common Information

Test Description:	Radiated emission related to 1m
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part 22.917 Broadband PCS
Antenna polarisation:	vertical / horizontal
Operating Mode:	UMTS FDDIV
Operator:	TFra
Comment:	--
Environmental Conditions::	Humidity : 44% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

Full Spectrum



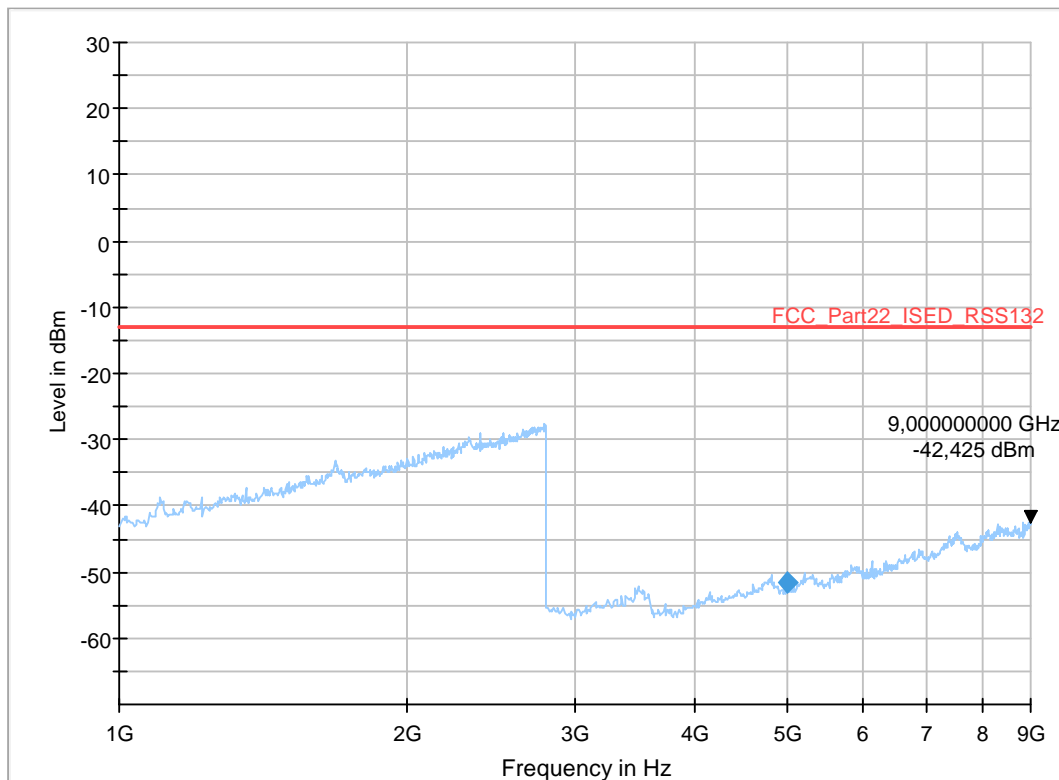
8.05b_Traffic_mode_UMTS_FDD_B05_ CH_4233_standing

Common Information

Test Description:	Radiated emission related to 3m
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part 22.917 Broadband PCS
Antenna polarisation:	vertical / horizontal
Operating Mode:	UMTS FDD5 CH4233 846.6MHz BW 5MHz Traffic Mode
Operator:	KTe
Comment:	--
Environmental Conditions::	Humidity : 42% rH; Temperature: 19 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number: 21-1-01787S50_C01
Full Spectrum



Final_Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4999.400000	-51.51	-13.00	38.51	100.0	100.000	155.0	H	40.0	-86

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Comment
4999.400000	13:57:43 - 13.01.2023

9.201a_Bandedge_low_Channel_9262_ UL_1852.4_lying

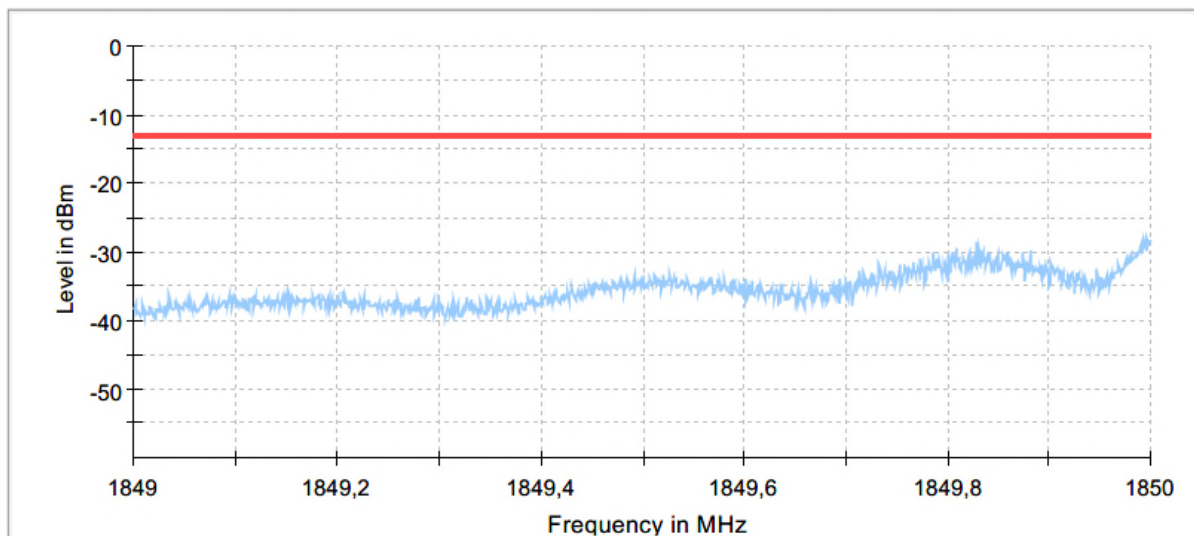
Common Information

Test Description:	-
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part24
Test Case:	-
Operating Mode:	UMTS FDD2 CH9262 1852.4MHz BW 5MHz Traffic Mode
Environmental Conditions:	Humidity : 44% rH; Temperature: 20 °C
Operator:	TFra
EUT Setup:	1
Verdict:	Passed
Comment:	--

EUT Information

PMT number:	21-1-01787S50_C01
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Full Spectrum



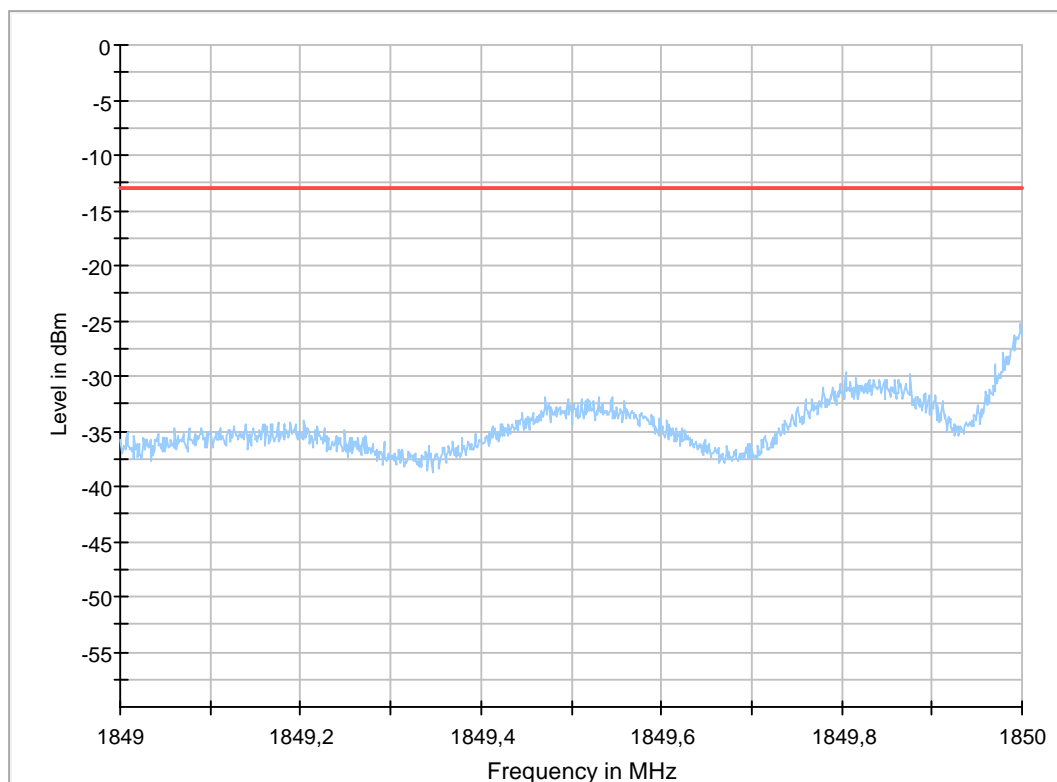
9.201b_Bandedge_low_Channel_9262_ UL_1852.4_standing

Common Information

Test Description:	Band-Edge low - Radiated Spurious Emissions
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part24
Test Case:	-
Operating Mode:	UMTS FDD2 CH9262 1852.4MHz BW 5MHz Traffic Mode
Environmental Conditions::	Humidity : 42% rH; Temperature: 19 °C
Operator:	KTe
EUT Setup:	1
Verdict:	Passed
Comment:	--

EUT Information

PMT number:	21-1-01787550_C01
	Full Spectrum



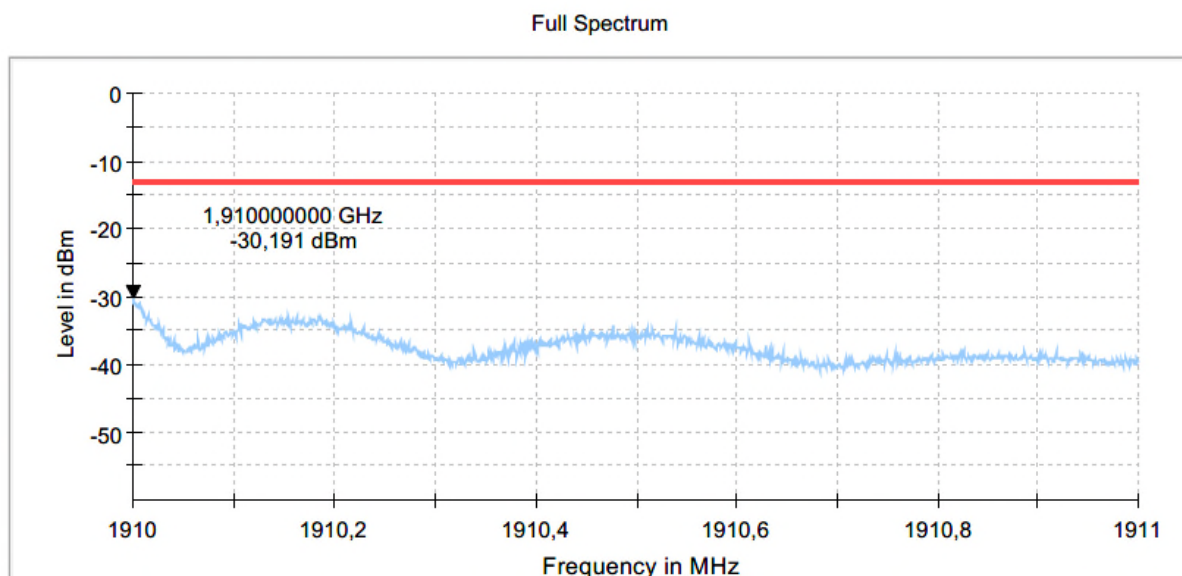
9.202a_Bandedge_high_Channel_9538_ UL_1907.6_lying

Common Information

Test Description:	Band-Edge Emissions
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part24
Test Case:	-
Operating Mode:	UMTS FDD2 CH9538 1907.6MHz BW 5MHz Traffic Mode
Environmental Conditions::	Humidity : 44% rH; Temperature: 20 °C
Operator:	TFra
EUT Setup:	1
Verdict:	Passed
Comment:	--

EUT Information

PMT number: 21-1-01787550_C01



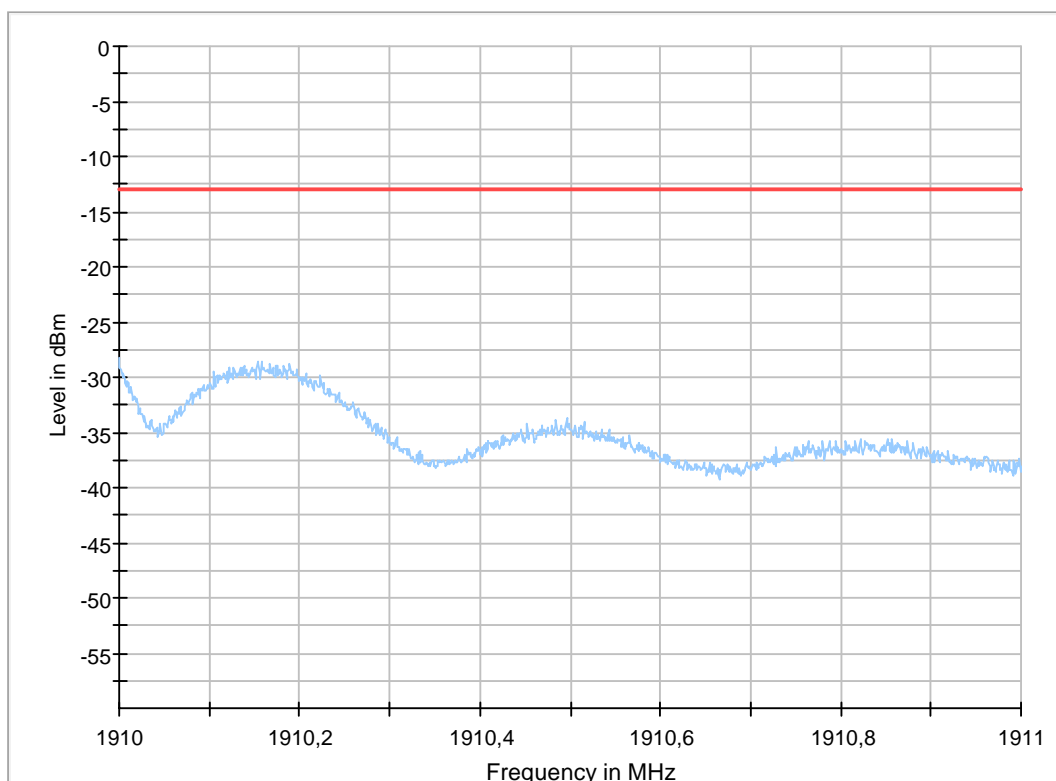
9.202b_Bandedge_high_Channel_9538_ UL_1907.6_standing

Common Information

Test Description:	Band-Edge high - Radiated Spurious Emissions
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part24
Test Case:	-
Operating Mode:	UMTS FDD2 CH9538 1907.6MHz BW 5MHz Traffic Mode
Environmental Conditions:	Humidity : 42% rH; Temperature: 19 °C
Operator:	KTe
EUT Setup:	1
Verdict:	Passed
Comment:	--

EUT Information

PMT number:	21-1-01787S50_C01
	Full Spectrum



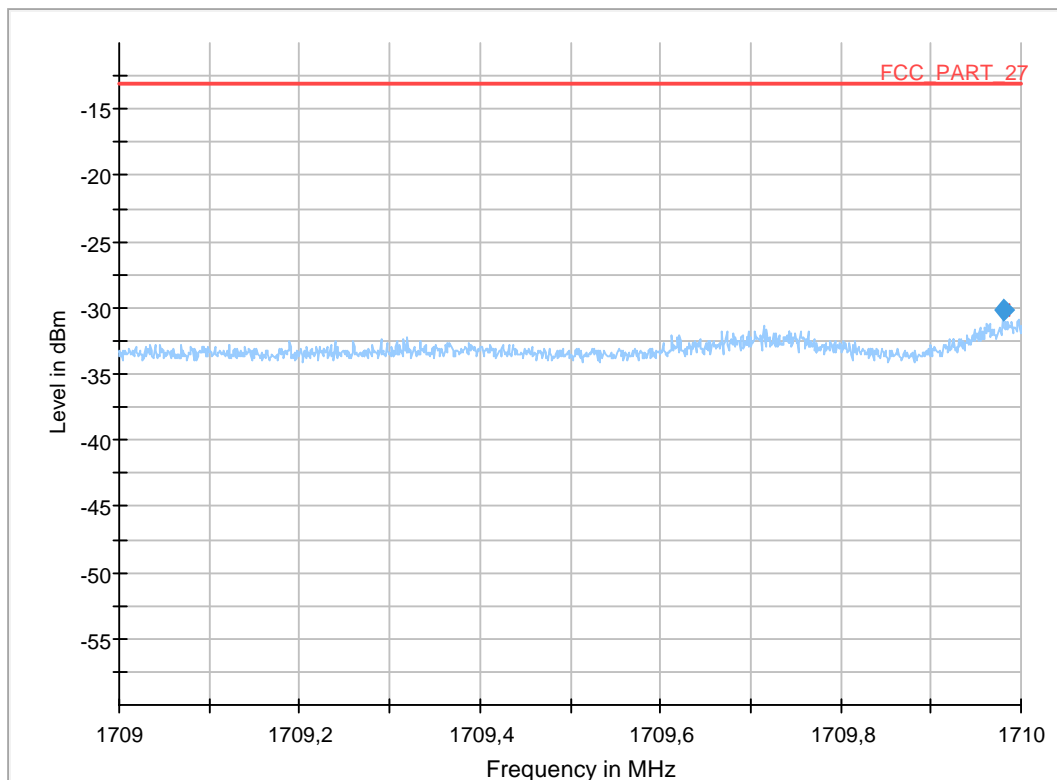
9.401a_Bandedge_low_Channel_1312_UL_1712.6_lying

Common Information

Test Description: Band-Edge low - Radiated Spurious Emissions
 Test Site Location: CETECOM GmbH Essen
 Test Site: Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
 Test Standard: FCC Part24
 Test Case: -
 Operating Mode: UMTS FDD4 | CH1312 | 1712.6MHz | BW 5MHz | Traffic Mode
 Environmental Conditions: Humidity : 43% rH; Temperature: 19 °C
 Operator: KTe
 EUT Setup: 1
 Verdict: Passed
 Comment: --

EUT Information

PMT number: 21-1-01787550_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)
1709.980000	-30.24	-13.00	17.24	700.0	50.000	V	282.0	0.0	-62

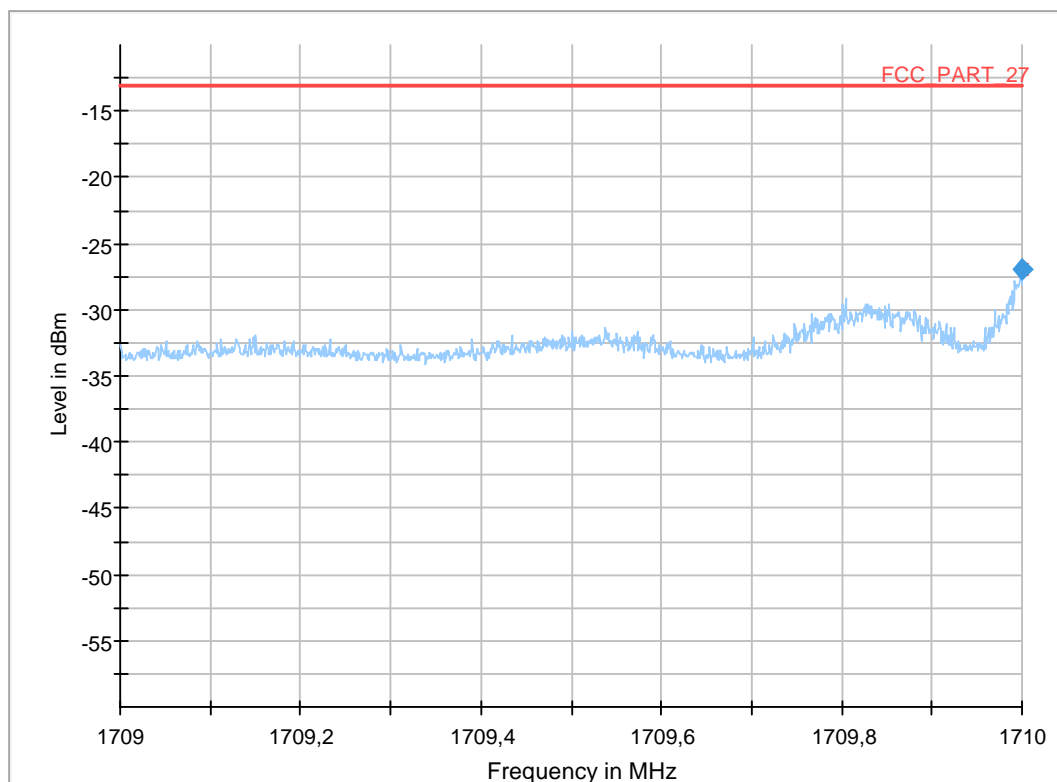
9.401b_Bandedge_low_Channel_1312_ UL_1712.6_standing

Common Information

Test Description:	Band-Edge low - Radiated Spurious Emissions
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part24
Test Case:	-
Operating Mode:	UMTS FDD4 CH1312 1712.6MHz BW 5MHz Traffic Mode
Environmental Conditions::	Humidity : 42% rH; Temperature: 19 °C
Operator:	KTe
EUT Setup:	1
Verdict:	Passed
Comment:	--

EUT Information

PMT number: 21-1-01787550_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)
1709.999000	-26.96	-13.00	13.96	700.0	50.000	V	29.0	0.0	-62

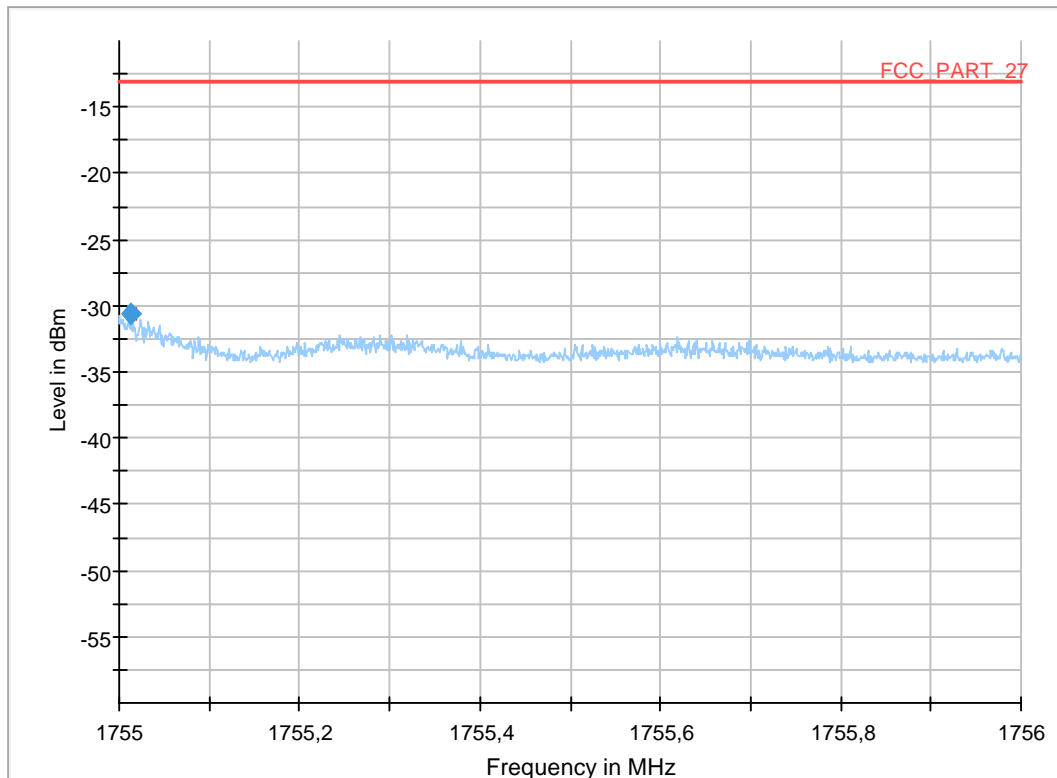
9.402a_Bandedge_high_Channel_1513_ UL_1752.4_lying

Common Information

Test Description:	Band-Edge high - Radiated Spurious Emissions
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part24
Test Case:	-
Operating Mode:	UMTS FDD4 CH1513 1752.4MHz BW 5MHz Traffic Mode
Environmental Conditions::	Humidity : 43% rH; Temperature: 19 °C
Operator:	KTe
EUT Setup:	1
Verdict:	Passed
Comment:	--

EUT Information

PMT number: 21-1-01787550_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)
1755.013000	-30.68	-13.00	17.68	700.0	50.000	V	279.0	0.0	-62

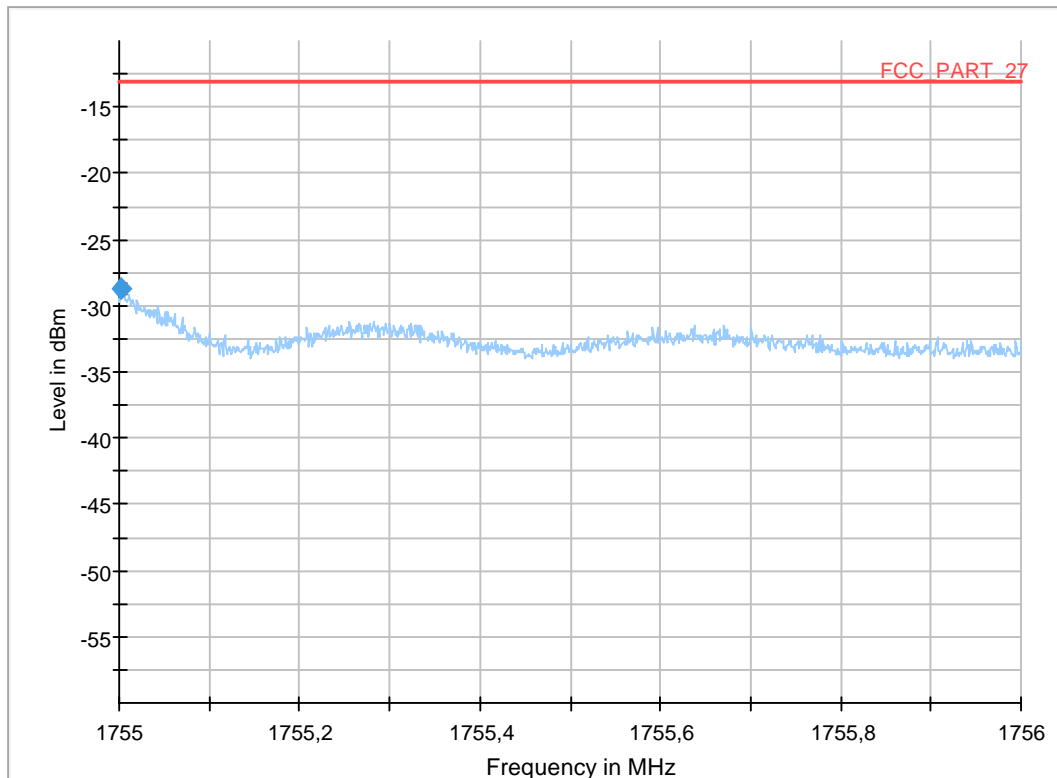
9.402b_Bandedge_high_Channel_1513_ UL_1752.4_standing

Common Information

Test Description:	Band-Edge high - Radiated Spurious Emissions
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part24
Test Case:	-
Operating Mode:	UMTS FDD4 CH1513 1752.4MHz BW 5MHz Traffic Mode
Environmental Conditions::	Humidity : 42% rH; Temperature: 19 °C
Operator:	KTe
EUT Setup:	1
Verdict:	Passed
Comment:	--

EUT Information

PMT number: 21-1-01787550_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)
1755.002000	-28.70	-13.00	15.70	700.0	50.000	V	7.0	0.0	-62

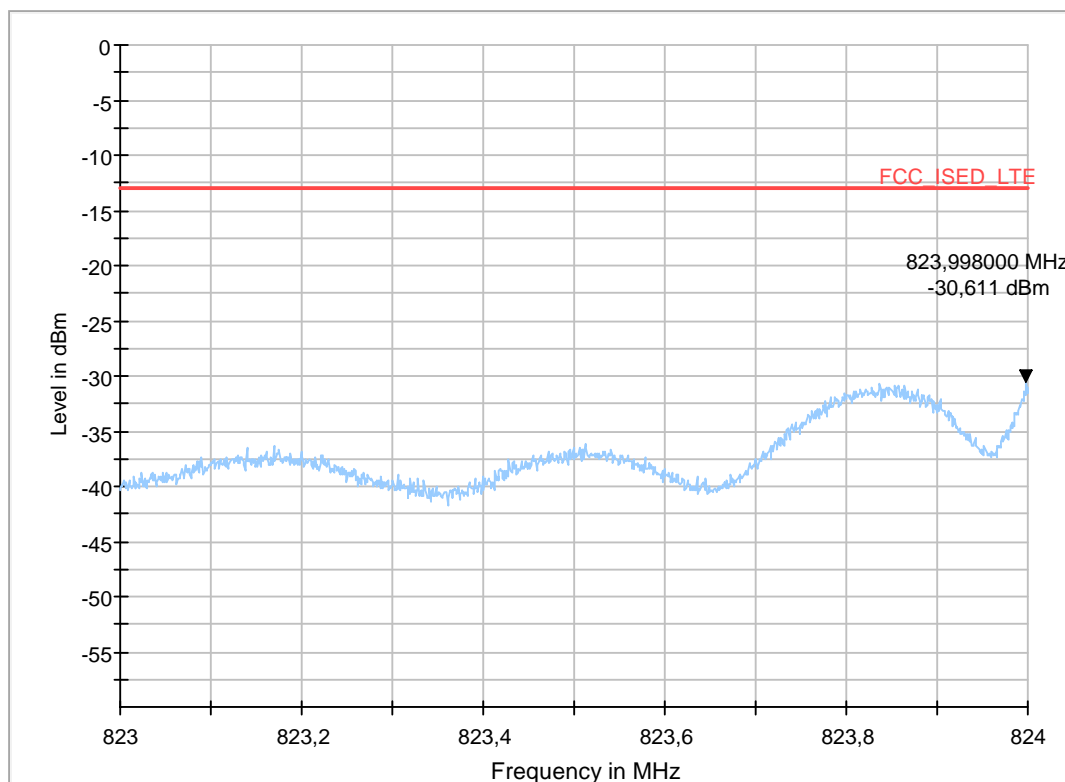
9.501a_Bandedge_low_Channel_4132_UL_826.4_lying

Common Information

Test Description:	Band-Edge low - Radiated Spurious Emissions
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part 22.917(a) / RSS-132
Operating Mode:	UMTS FDD5 CH4132 826.4MHz BW 5MHz Traffic Mode
Environmental Conditions::	Humidity : 43% rH; Temperature: 19 °C
Test SW Version:	EMC32 V10.60.20
Operator:	KTe
Remarks:	EUT - laying position
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number: 21-1-01787550_C01
Full Spectrum



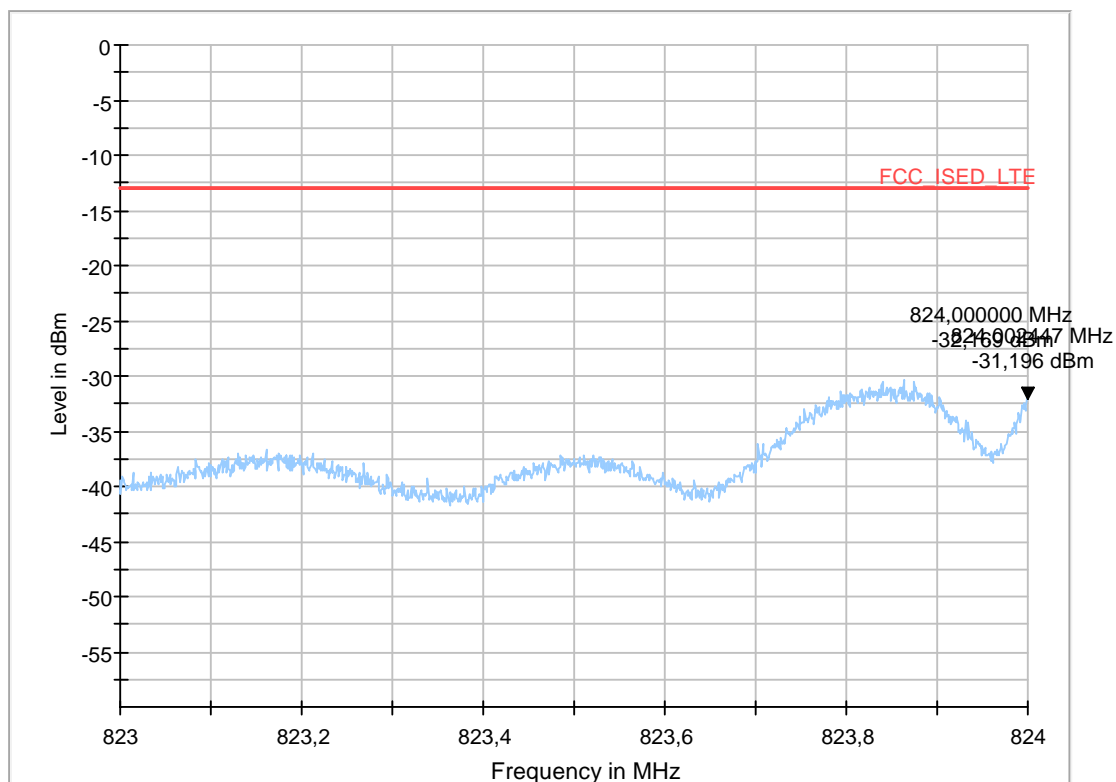
9.501b_Bandedge_low_Channel_4132_ UL_826.4_standing

Common Information

Test Description:	Band-Edge low - Radiated Spurious Emissions
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part 22.917(a) / RSS-132
Operating Mode:	UMTS FDD5 CH4132 826.4MHz BW 5MHz Traffic Mode
Environmental Conditions:	Humidity : 42% rH; Temperature: 19 °C
Test SW Version:	EMC32 V10.60.20
Operator:	KTe
Remarks:	EUT - standing position
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	21-1-01787550_C01
	Full Spectrum



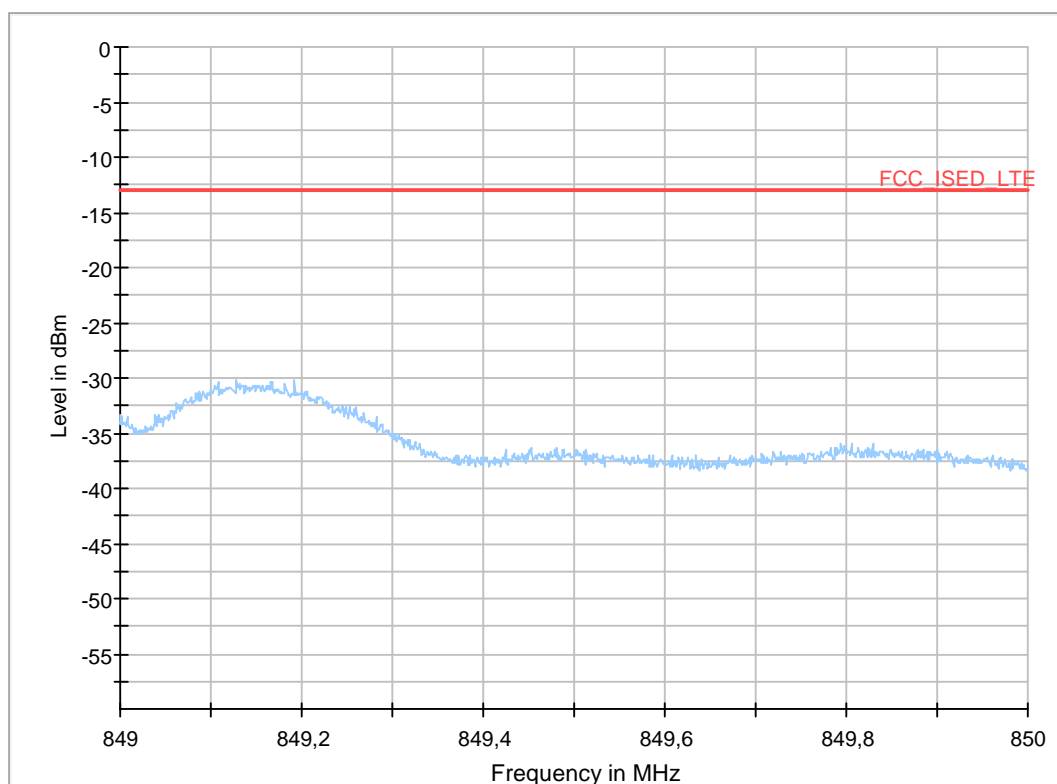
9.502a_Bandedge_high_Channel_4233_UL_846.6_lying

Common Information

Test Description:	Band-Edge low - Radiated Spurious Emissions
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part 22.917(a) / RSS-132
Operating Mode:	UMTS FDD5 CH4233 846.6MHz BW 5MHz Traffic Mode
Environmental Conditions::	Humidity : 43% rH; Temperature: 19 °C
Test SW Version:	EMC32 V10.60.20
Operator:	KTe
Remarks:	EUT – laying position
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	21-1-01787550_C01
	Full Spectrum



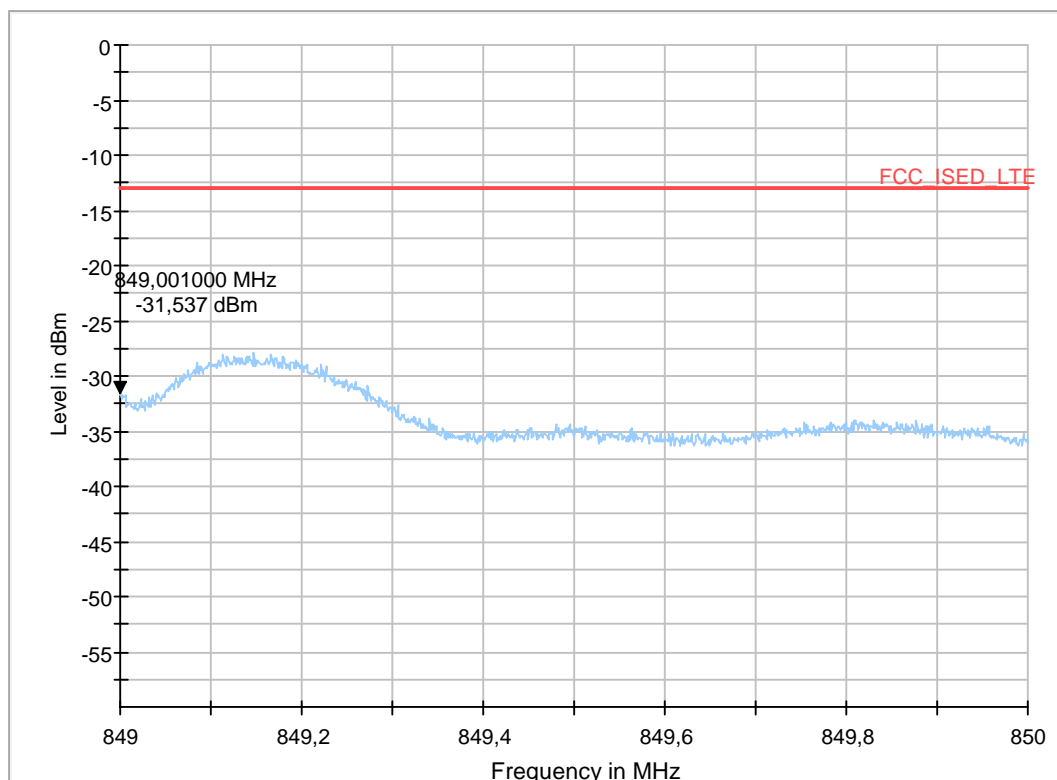
9.502b_Bandedge_high_Channel_4233_UL_846.6_standing

Common Information

Test Description:	Band-Edge high - Radiated Spurious Emissions
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC Part 22.917(a) / RSS-132
Operating Mode:	UMTS FDD5 CH4233 846.4MHz BW 5MHz Traffic Mode
Environmental Conditions:	Humidity : 42% rH; Temperature: 19 °C
Test SW Version:	EMC32 V10.60.20
Operator:	KTe
Remarks:	EUT standing position
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	21-1-01787550_C01
	Full Spectrum



End Of Annex 1