

Annex 1: Measurement diagrams 20-1-0060701T55a-C1-A1

Number of pages:	16	Date of Report:	2021-Jul-28
Testing company:	CETECOM GmbH Im Teelbruch 116 45219 Essen Germany Tel. + 49 (0) 20 54 / 95 19-0 Fax: + 49 (0) 20 54 / 95 19-150	Applicant:	VALEO Telematik und Akustik GmbH
Product: Model:	Telematic Device ATM-02-US-R1		
FCC ID:	QWY-ATM2-R-11	IC:	6588A-ATM2R11
Testing has been carried out in accordance with:	Title 47 CFR, Chapter I FCC Regulations, Subchapter B Part 22 Subpart H, Part 24 Subpart E RSS-132, Issue 3; RSS-133, Issue 6 + Amendment RSS-Gen, Issue 5 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

2.01_Magnetic_field_Emission_GSM_850_EUT_laying

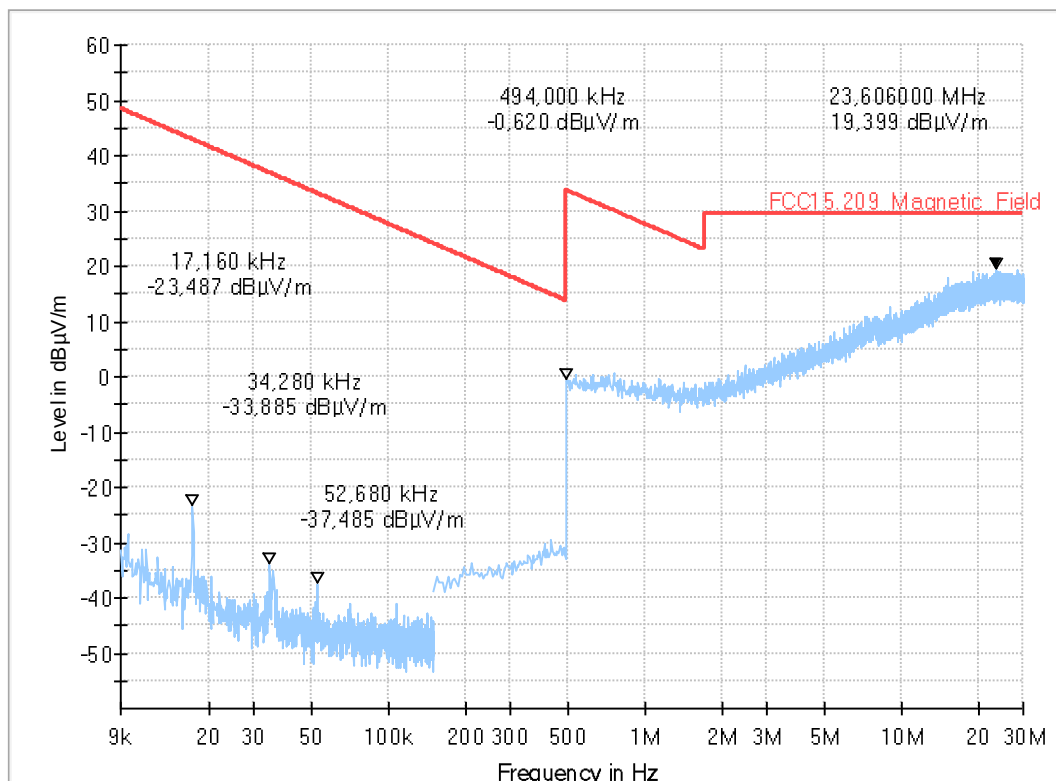
Common Information

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 4
Operator:	TFra
Operating Mode:	GSM850
Environmental Conditions:	Humidity : 45% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	20-1-00607S215_C01
Power Supply:	12 V DC
Comments:	--

Full Spectrum



2.02_Magnetic_field_Emission_GSM_850_EUT_standing

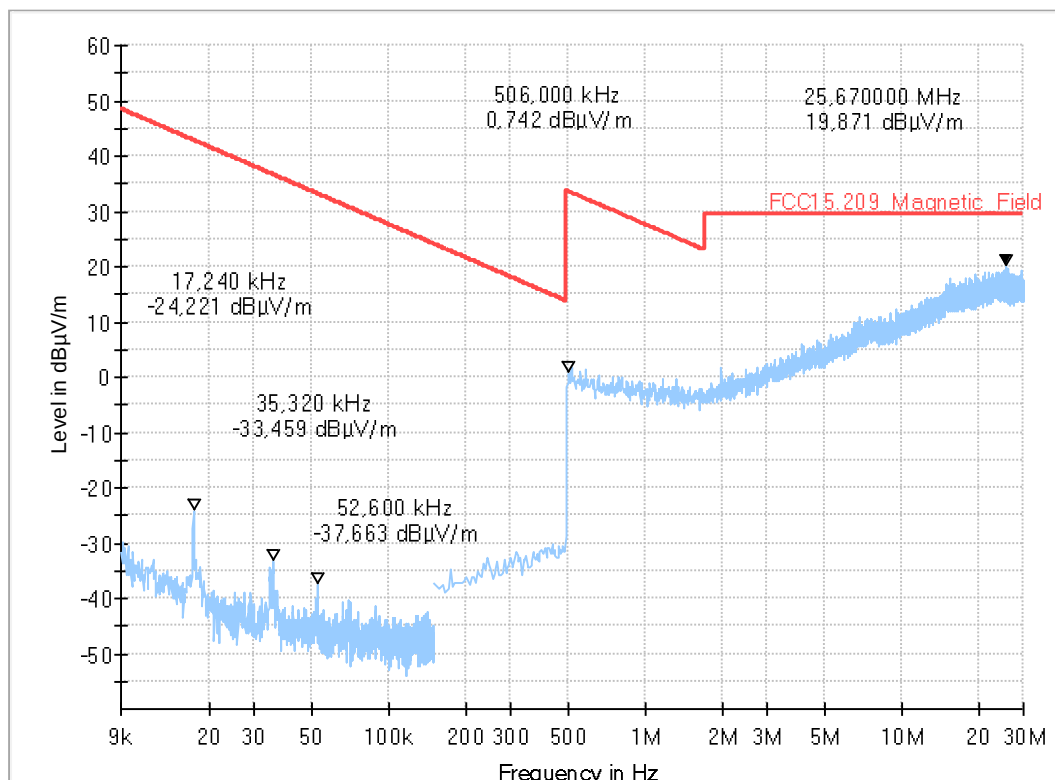
Common Information

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 4
Operator:	TFra
Operating Mode:	GSM850
Environmental Conditions:	Humidity : 45% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	20-1-00607S215_C01
Power Supply:	12 V DC
Comments:	--

Full Spectrum



2.03_Magnetic_field_Emission_GSM_1900_EUT_laying

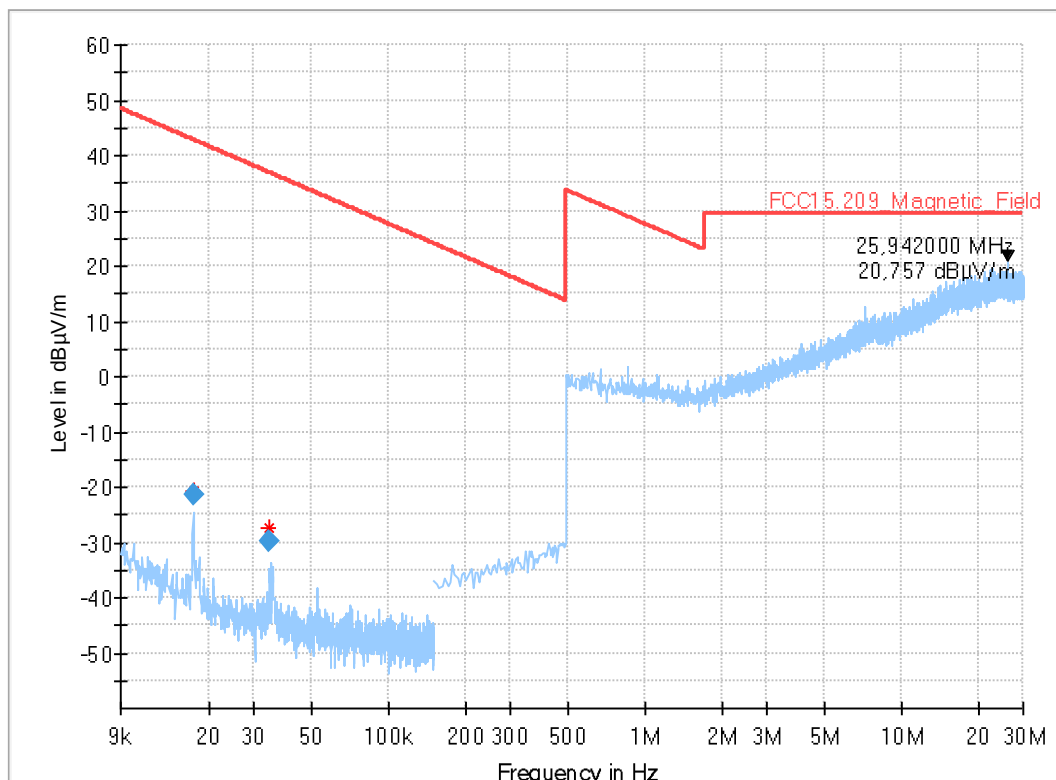
Common Information

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 4
Operator:	HEI
Operating Mode:	15B
Power during tests:	12V DC, 110V/60Hz, full loaded batteries
Comment 1:	Channel low/middle/high
Environmental Conditions:	Humidity : 46% rH; Temperature: 18 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	20-1-00607S215_C01
Power Supply:	12 V DC

Full Spectrum



Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
0.017240	-21.57	42.87	64.43	1000.0	0.200	V	192.0	-59.5	16:27:13 - 12.01.2021
0.034360	-29.71	36.88	66.58	1000.0	0.200	V	59.0	-60.3	16:32:22 - 12.01.2021

2.04_Magnetic_field_Emission_GSM_1900_EUT_standing

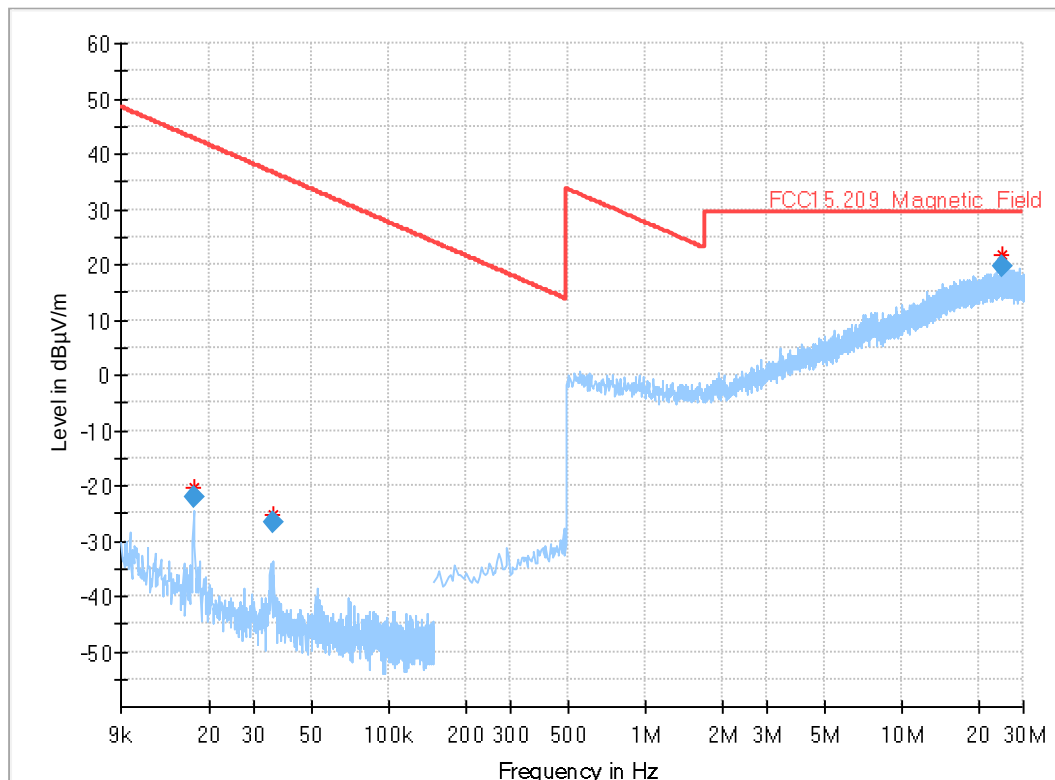
Common Information

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 4
 Operator: TFra
 Operating Mode: GSM1900
 Power during tests: 12 V DC, 110V/60Hz, full loaded batteries
 Comment 1: Channel low/middle/high
 Environmental Conditions: Humidity : 45% rH; Temperature: 20 °C
 EUT Setup: 1
 Verdict: Passed

EUT Information

PMT number: 20-1-00607S215_C01
 Power Supply: 12 V DC

Full Spectrum



Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
0.017320	-22.05	42.83	64.88	1000.0	0.200	V	224.0	-59.5	15:48:07 - 12.01.2021
0.035320	-26.79	36.64	63.43	1000.0	0.200	V	48.0	-60.3	15:44:32 - 12.01.2021
24.842000	19.59	29.54	9.95	1000.0	9.000	H	175.0	1.8	15:41:03 - 12.01.2021

8.01_Traffic_mode_GSM_850_Channel_128_UL_824.2 MHz_Standing

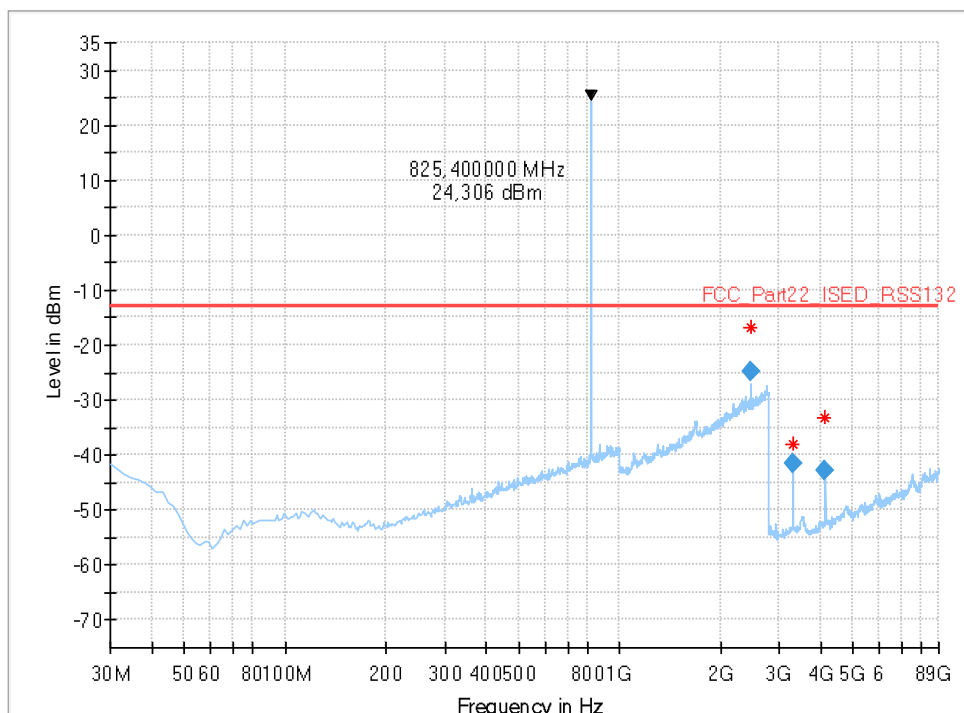
Common Information

Test Description:	Radiated emission related to 1m
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC FCC Part 24.238 Broadband PCS
Antenna polarisation:	vertical / horizontal
Operating Mode:	GSM 850
Operator:	HEI
Environmental Conditions:	Humidity : 70% rH; Temperature: 19 °C
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT number:	20-1-00607S219_C01
Power Supply:	12 V DC

Full Spectrum



Remark: Emission at 825.4 MHz is uplink frequency of GSM 850 and not related to results.

Final_Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Corr. (dB)
2472.816667	-24.93	-13.00	11.93	1000.0	100.000	H	3.0	-58
3296.533333	-41.44	-13.00	28.44	1000.0	100.000	H	9.0	-93
4121.333334	-42.69	-13.00	29.69	1000.0	100.000	H	304.0	-91

8.02_Traffic_mode_GSM_850_Channel_128_UL_824.2 MHz_Laying

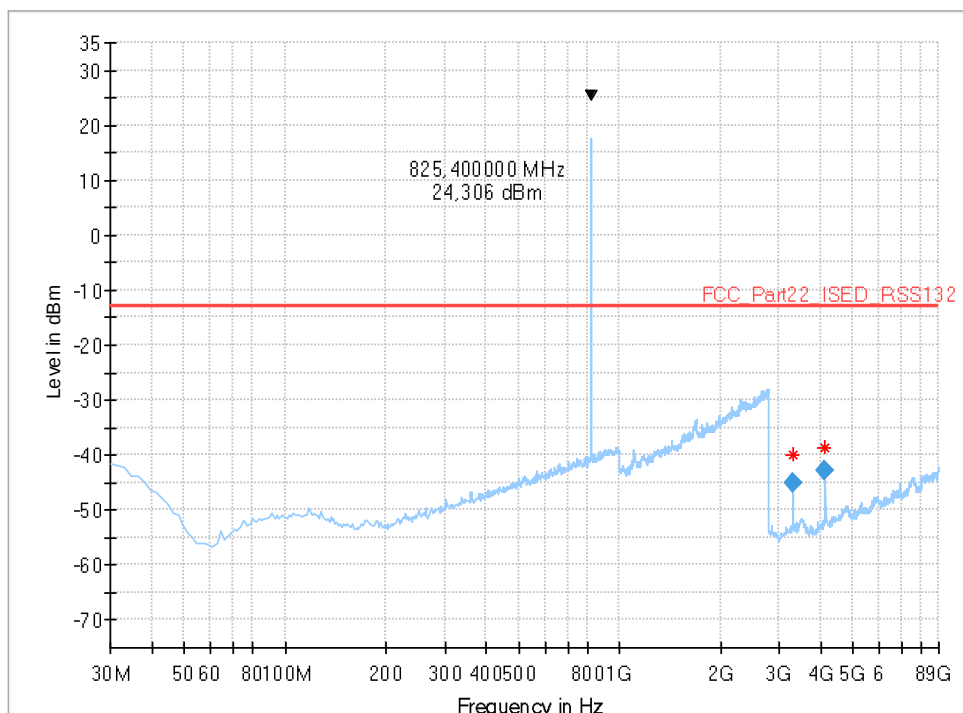
Common Information

Test Description:	Radiated emission related to 1m
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC FCC Part 24.238 Broadband PCS
Antenna polarisation:	vertical / horizontal
Operating Mode:	GSM850 ch128
Operator:	HEI
Environmental Conditions:	Humidity : 69% rH; Temperature: 19 °C
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT number:	20-1-00607S219_C01
Power Supply:	12 V DC

Full Spectrum



Remark: Emission at 825.4 MHz is uplink frequency of GSM 850 and not related to results.

Final_Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Corr. (dB)
3297.066667	-45.02	-13.00	32.02	1000.0	100.000	V	126.0	-93
4121.333334	-42.69	-13.00	29.69	1000.0	100.000	V	308.0	-91

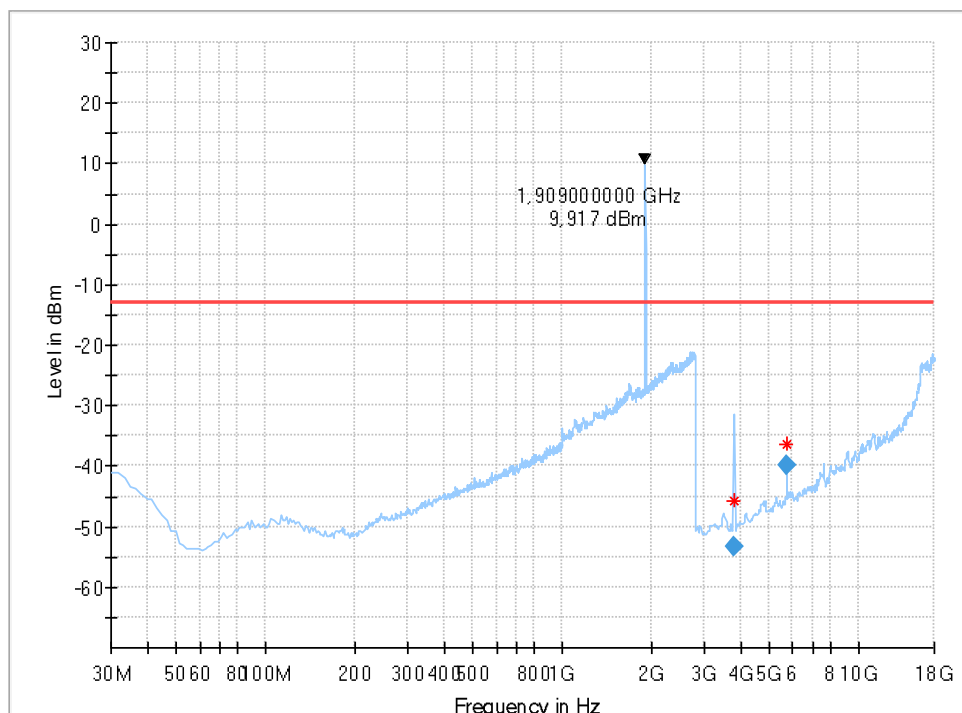
8.03_Traffic_mode_GSM_1900_Channel_512_UL_1850.2MHz_Standing

Common Information

Test Description:	Radiated emission related to 1m
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC FCC Part 24.238 Broadband PCS
Antenna polarisation:	vertical / horizontal
Operating Mode:	GSM1900 ch512
Operator:	HEI
Environmental Conditions:	Humidity : 68% rH; Temperature: 19 °C
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT number	20-1-0060701S219
Comment:	12 V DC
	Full Spectrum



Remark: Emission at 1.909 GHz is uplink frequency of GSM 1900 and not related to results.

Final Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3792.233333	-53.34	-13.00	40.34	100.0	1000.000	155.0	H	274.0	-93
5729.200000	-39.79	-13.00	26.79	100.0	1000.000	155.0	H	134.0	-87

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

Frequency (MHz)	Comment
3792.233333	08:04:45 - 11.07.2021
5729.200000	08:02:45 - 11.07.2021

8.03a_Traffic_mode_GSM_1900_Channel_512_UL_1850.2M Hz_Standing

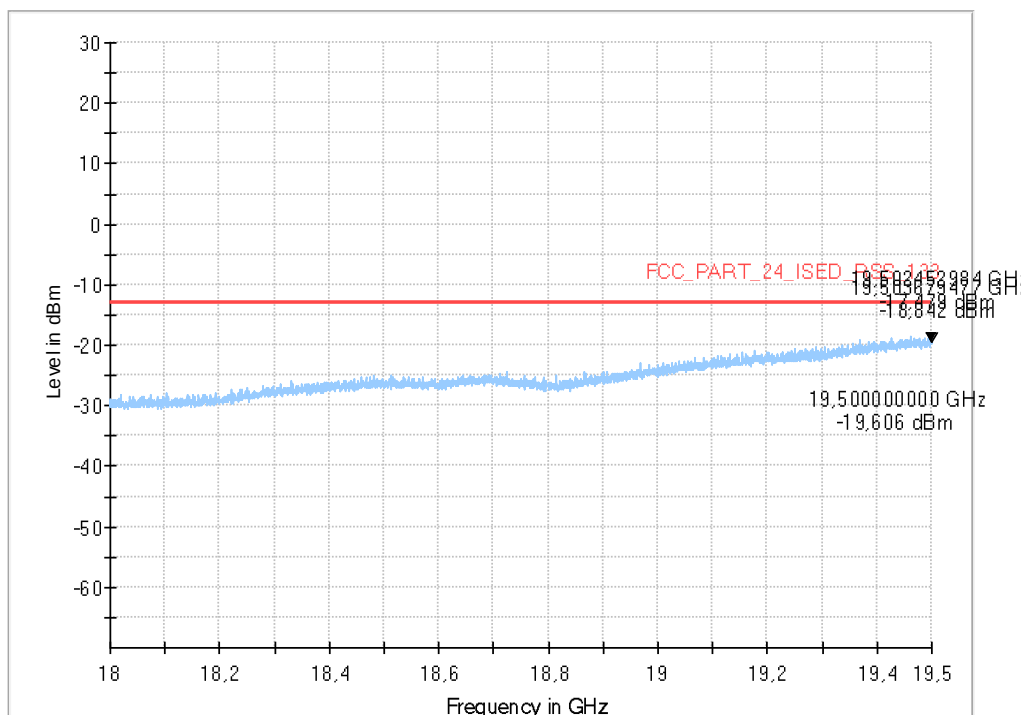
Common Information

Test Description:	Radiated emission
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC FCC Part 24.238 Broadband PCS
Antenna polarisation:	vertical / horizontal
Operating Mode:	GSM1900 ch512
Operator:	SOz
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT number:	20-1-00607S219_C01
Power Supply:	12 V DC

Full Spectrum



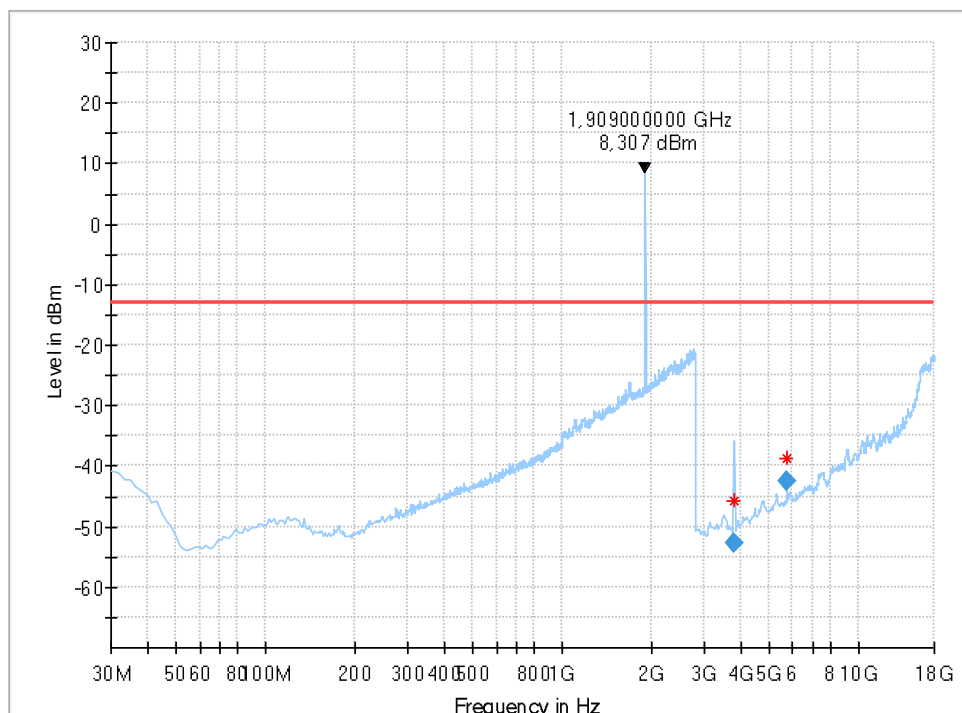
8.04_Traffic_mode_GSM_1900_Channel_512_UL_1850.2MHz_Laying

Common Information

Test Description:	Radiated emission related to 1m
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC FCC Part 24.238 Broadband PCS
Antenna polarisation:	vertical / horizontal
Operating Mode:	GSM1900 ch512
Operator:	HEI
Environmental Conditions:	Humidity : 70% rH; Temperature: 19 °C
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT number	20-1-0060701S219_C01
Comment:	12 V DC
	Full Spectrum



Remark: Emission at 1.909 GHz is uplink frequency of GSM 1900 and not related to results.

Final_Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3803.666667	-52.73	-13.00	39.73	100.0	1000.000	155.0	V	55.0	-93
5729.633333	-42.61	-13.00	29.61	100.0	1000.000	155.0	V	210.0	-87

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

Frequency (MHz)	Comment
3803.666667	15:22:35 - 11.07.2021
5729.633333	15:24:35 - 11.07.2021

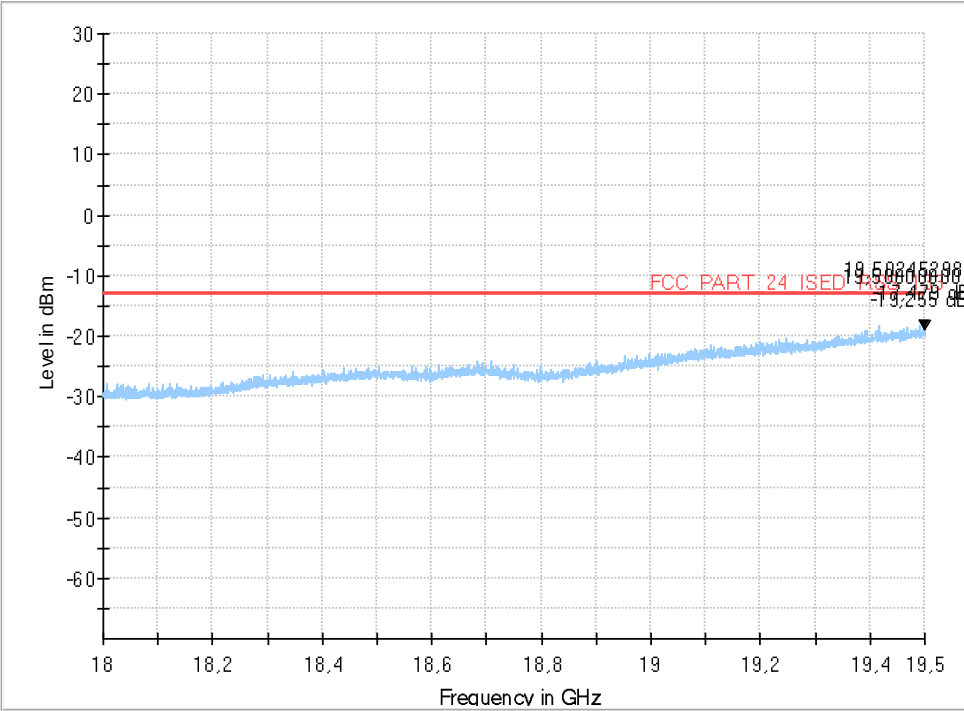
8.04a_Traffic_mode_GSM_1900_Channel_512_UL_1850.2M Hz_Laying

Common Information

Test Description:	Radiated emission
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC FCC Part 24.238 Broadband PCS
Antenna polarisation:	vertical / horizontal
Operating Mode:	GSM1900 ch512
Operator:	SOz
Environmental Conditions::	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	2
Verdict:	Passed

EUT Information

PMT number:	20-1-00607S219_C01
Power Supply:	12 V DC
	Full Spectrum



9.01_GSM850_ch128

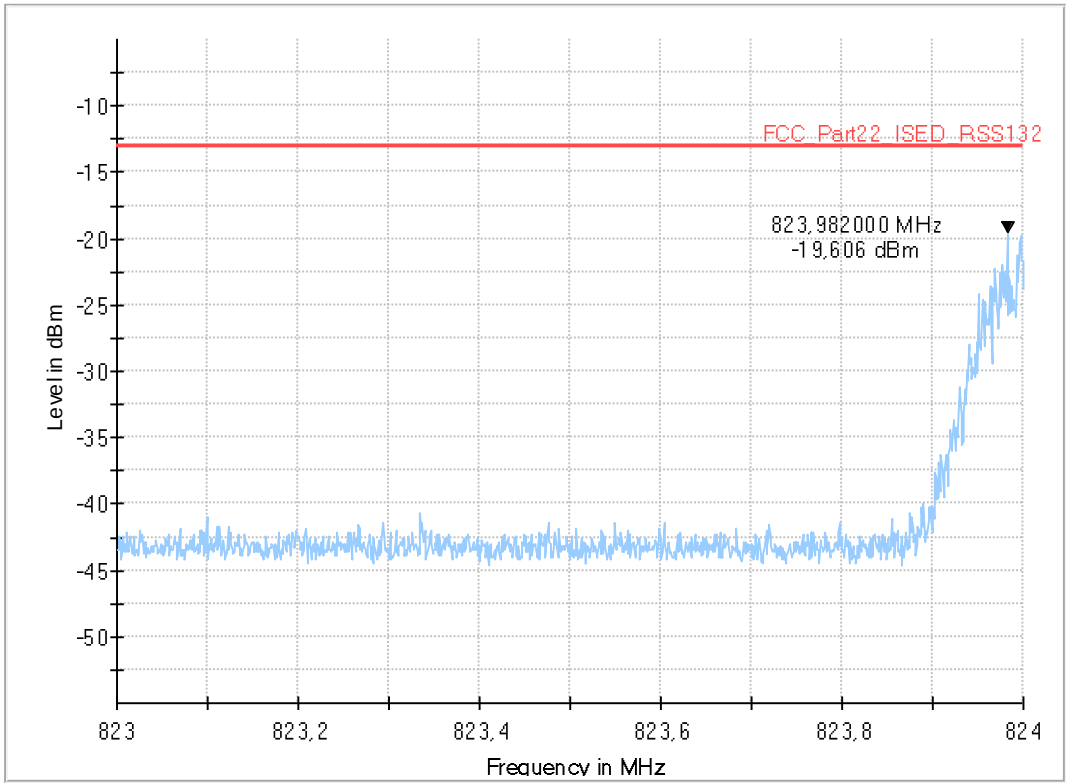
Common Information

Test Description:	Radiated emission related to 1m
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC FCC Part 24.238 Broadband PCS
Antenna polarisation:	vertical / horizontal
Operating Mode:	GSM850
Operator:	TFra
Environmental Conditions::	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	20-1-00607S215_C01
Power Supply:	12 V DC
Comments:	--

Full Spectrum



Final_Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
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9.02_GSM850_ch251

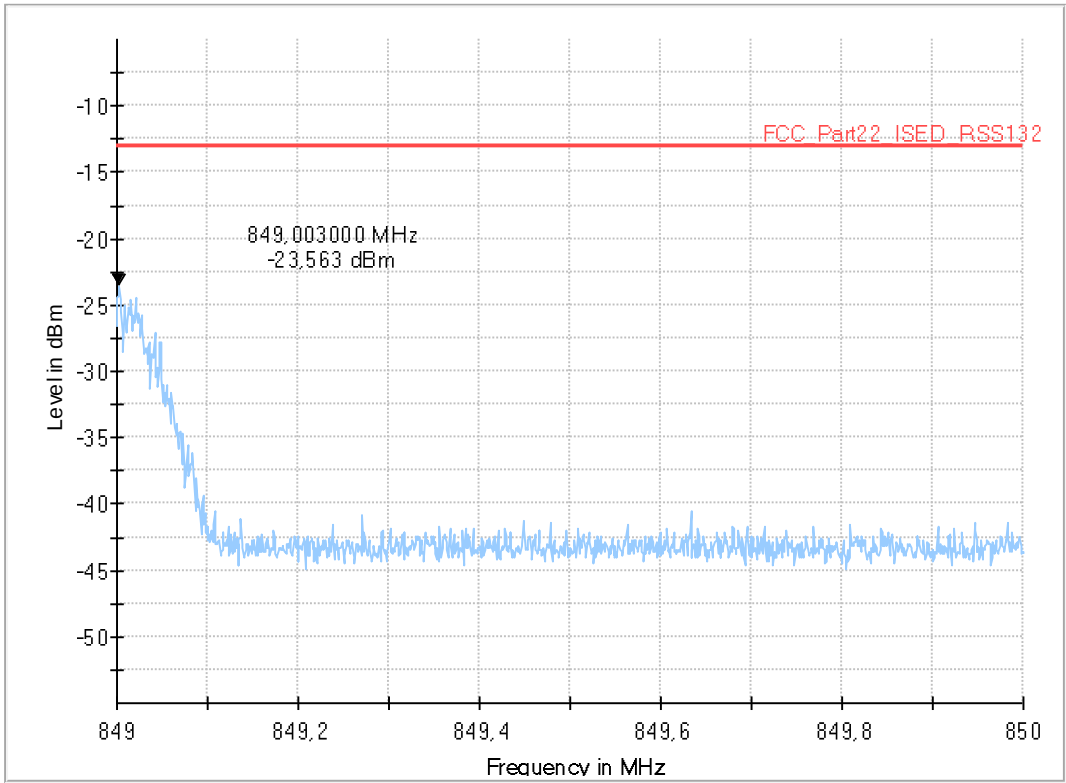
Common Information

Test Description:	Radiated emission related to 1m
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC FCC Part 24.238 Broadband PCS
Antenna polarisation:	vertical / horizontal
Operating Mode:	GSM850
Operator:	TFra
Environmental Conditions::	Humidity : 50% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	20-1-00607S215_C01
Power Supply:	12 V DC
Comments:	--

Full Spectrum



Final_Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
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9.1900_Band-Edge_Channel_512_UL_1850.2MHz

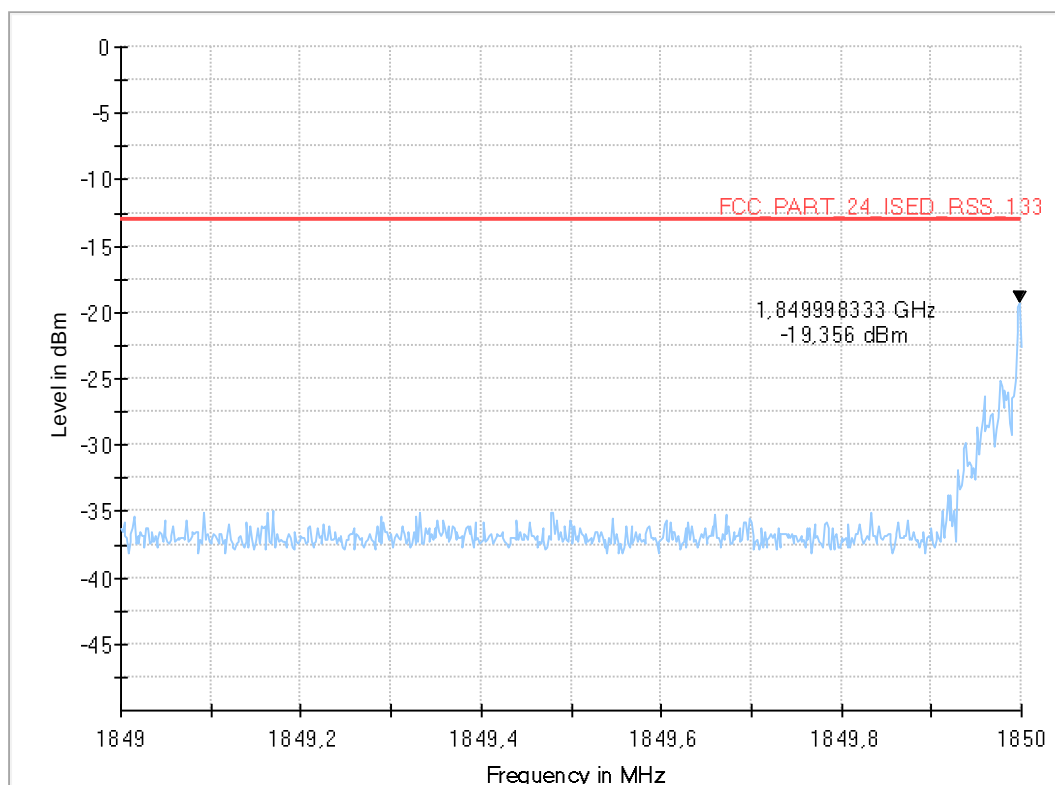
Common Information

Test Description: Radiated Spurious Emissions GSM1900
 Test Site Location: CETECOM GmbH Essen
 Test Site: Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
 Test Standard: FCC FCC Part 24.238 Broadband PCS
 Antenna polarisation: vertical / horizontal
 Test Description: Radiated emission related to 1m
 Operating Mode: GSM 1900TCH ch 512
 Environmental Conditions: Humidity : 60% rH; Temperature: 20 °C
 Operator: TFra
 EUT Setup:
 Verdict: Passed

EUT Information

PMT number: 20-1-00607S215_C01
 Power Supply: 12 V DC
 Comments: --

Full Spectrum



Final Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
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9.1901_Band-Edge_Channel_810_UL_1909.8MHz

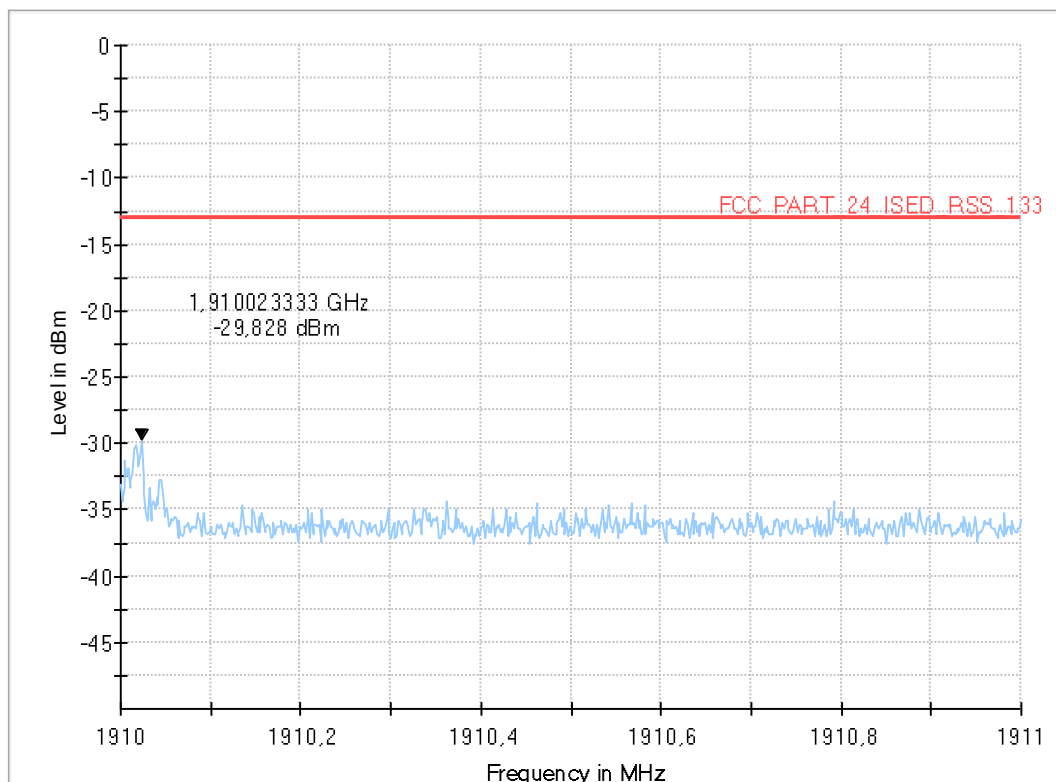
Common Information

Test Description:	Radiated Spurious Emissions GSM1900
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC FCC Part 24.238 Broadband PCS
Antenna polarisation:	vertical / horizontal
Test Description:	Radiated emission related to 1m
Operating Mode:	GSM1900 ch 810
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
Operator:	TFra
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	20-1-00607S215_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)
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End of Annex 1