

Annex 1: Measurement diagrams
to
TEST REPORT
No.: 6-0754-15-1-3a

According to:
FCC Regulations
Part 22, Part 24

IC-Regulations
RSS-132 Issue 3, RSS-133 Issue 6,
RSS-Gen Issue 4

for

peiker acoustic GmbH & Co. KG
ATM-01 T1-US-4GW
Advanced Telecommunication Module

FCC-ID: QWY-ATM-T-522
IC: 6588A-ATMT522
PMN: ATM trunk version
HVIN ATM-01 T1-US-4GW

Laboratory Accreditation and Listings			
 DAkkS Deutsche Akkreditierungsstelle D-PL-12047-01-01	 FCC MRA US-EU 0003	 Industry Canada Reg. No.: 3462D-1 Reg. No.: 3462D-2 Reg. No.: 3462D-3	 Voluntary Controls for Electromagnetic Emissions Reg. No.: R-2666 C-2914, T-1967, G-301
 WiFi ALLIANCE AUTHORIZED RF LABORATORY	 CTIA Authorized Test Lab LAB CODE 20011130-00		
accredited according to DIN EN ISO/IEC 17025			
CETECOM GmbH Laboratory Radio Communications & Electromagnetic Compatibility Im Teelbruch 116 • 45219 Essen • Germany Registered in Essen, Germany, Reg. No.: HRB Essen 8984 Tel.: + 49 (0) 20 54 / 95 19-954 • Fax: + 49 (0) 20 54 / 95 19-964 E-mail: info@cetecom.com • Internet: www.cetecom.com			

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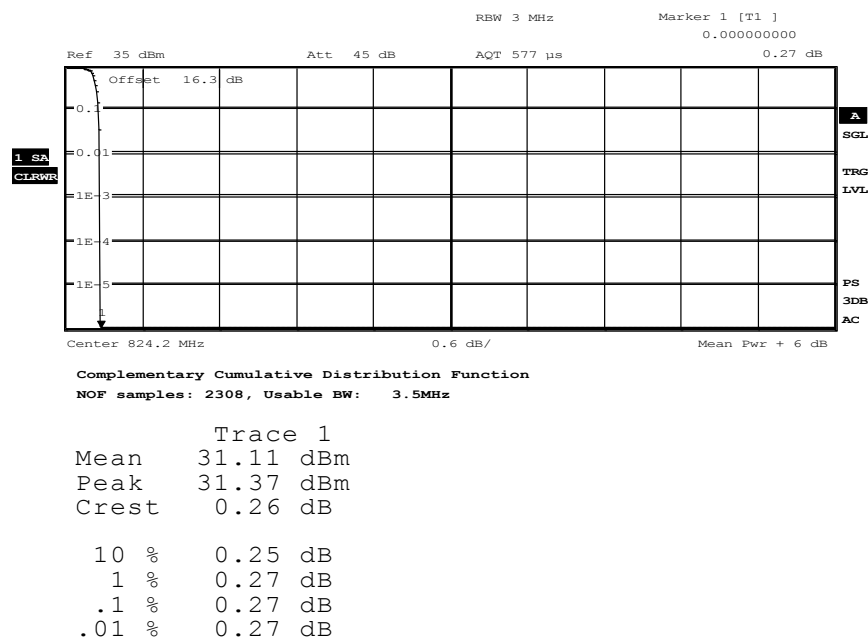
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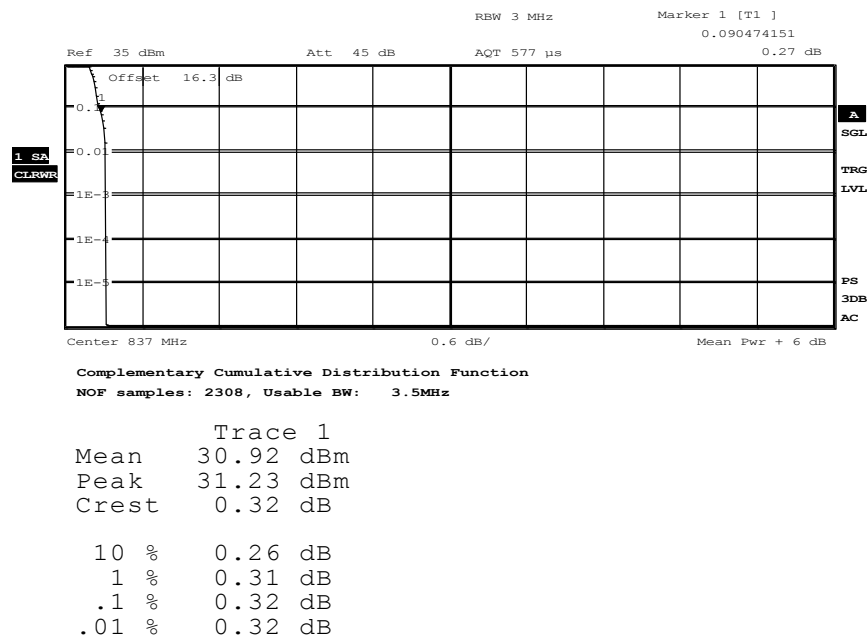
1. Measurement diagrams main antenna

1.1. PAPR-Value



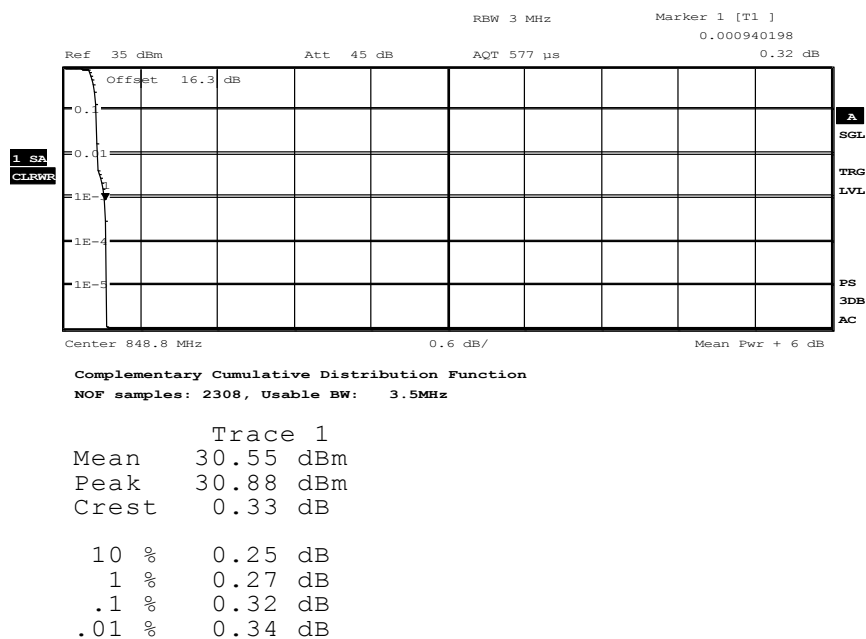
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Diagram Channel 128 (GMSK-modulation)

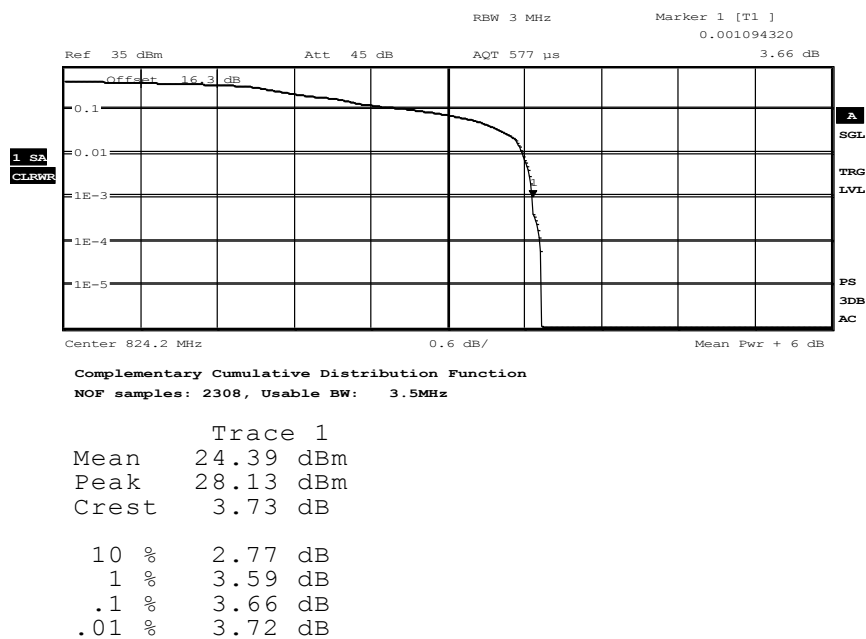


Date: 30.SEP.2015 15:13:03

Diagram Channel 192 (GMSK-modulation)

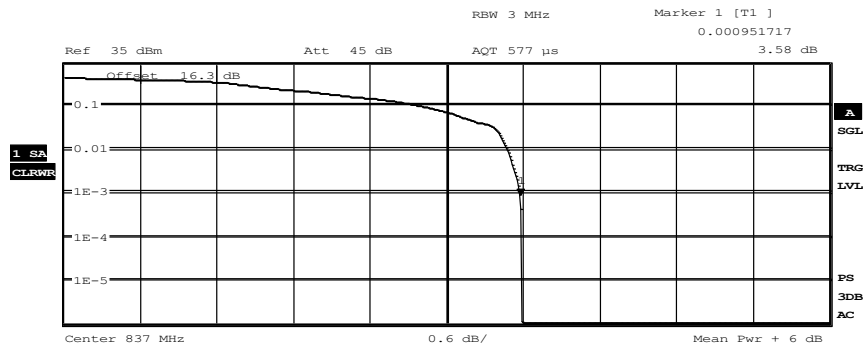


Date: 30.SEP.2015 15:15:39

Diagram Channel 251 (GMSK-modulation)

Date: 30.SEP.2015 15:22:46

Diagram Channel 128 (8-PSK modulation)



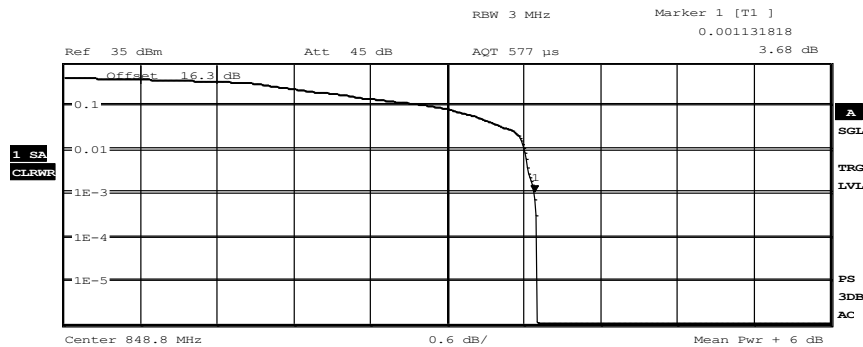
Complementary Cumulative Distribution Function
NOF samples: 2308, Usable BW: 3.5MHz

Trace 1
Mean 24.54 dBm
Peak 28.13 dBm
Crest 3.59 dB

10 % 2.83 dB
1 % 3.48 dB
.1 % 3.58 dB
.01 % 3.60 dB

Date: 30.SEP.2015 15:22:03

Diagram Channel 192 (8-PSK modulation)



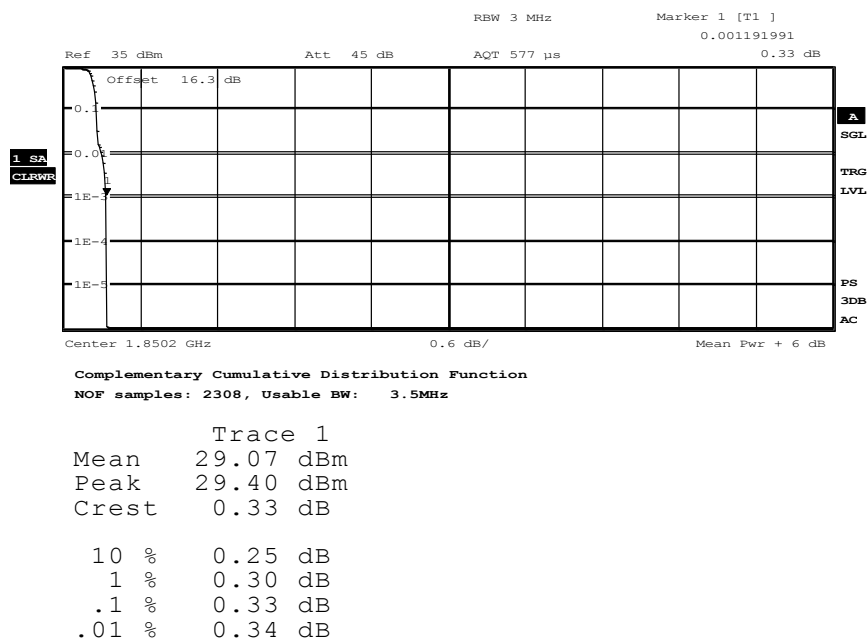
Complementary Cumulative Distribution Function
NOF samples: 2308, Usable BW: 3.5MHz

Trace 1
Mean 25.55 dBm
Peak 29.26 dBm
Crest 3.70 dB

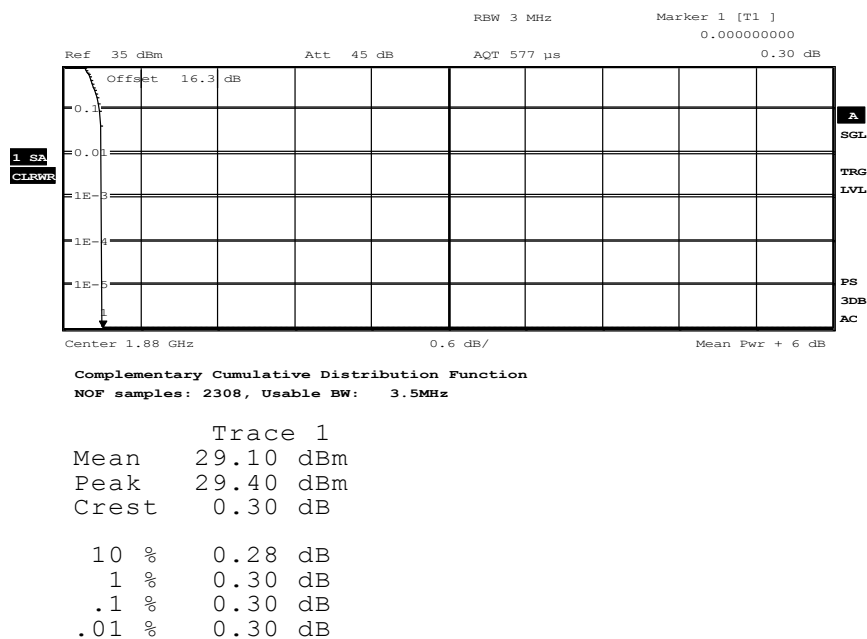
10 % 2.92 dB
1 % 3.61 dB
.1 % 3.68 dB
.01 % 3.71 dB

Date: 1.OCT.2015 10:13:09

Diagram Channel 251 (8-PSK modulation)

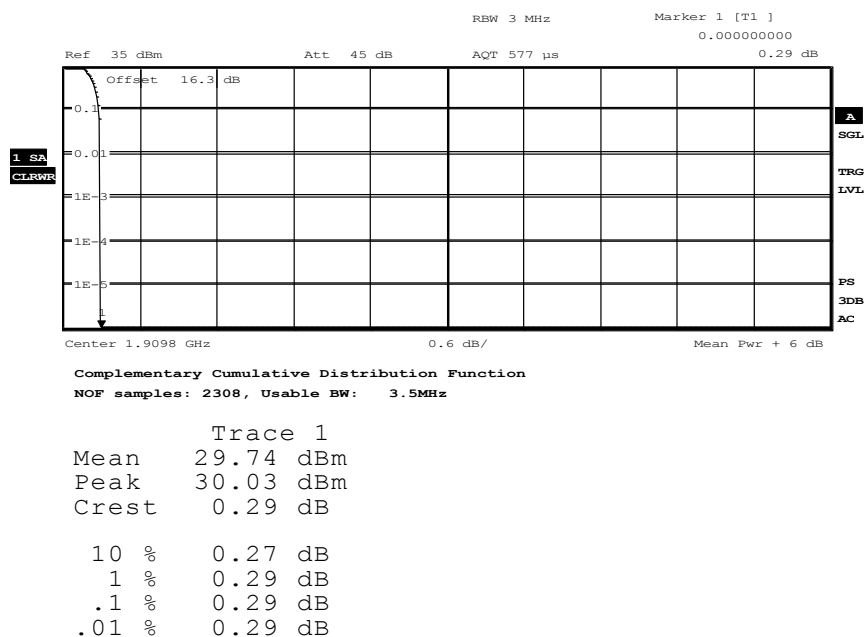


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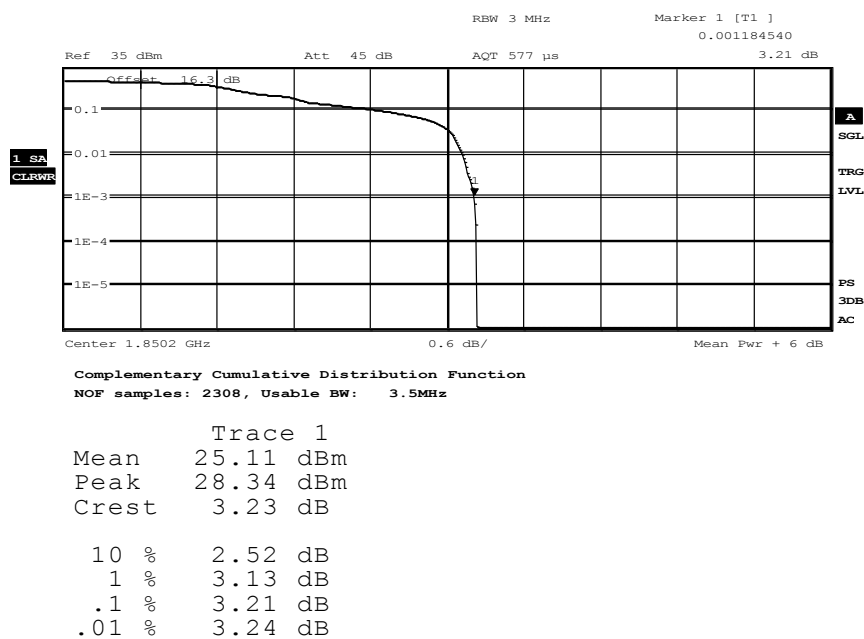
Diagram Channel 512 (GMSK-modulation)

Date: 30.SEP.2015 15:27:13

Diagram Channel 661 (GMSK-modulation)

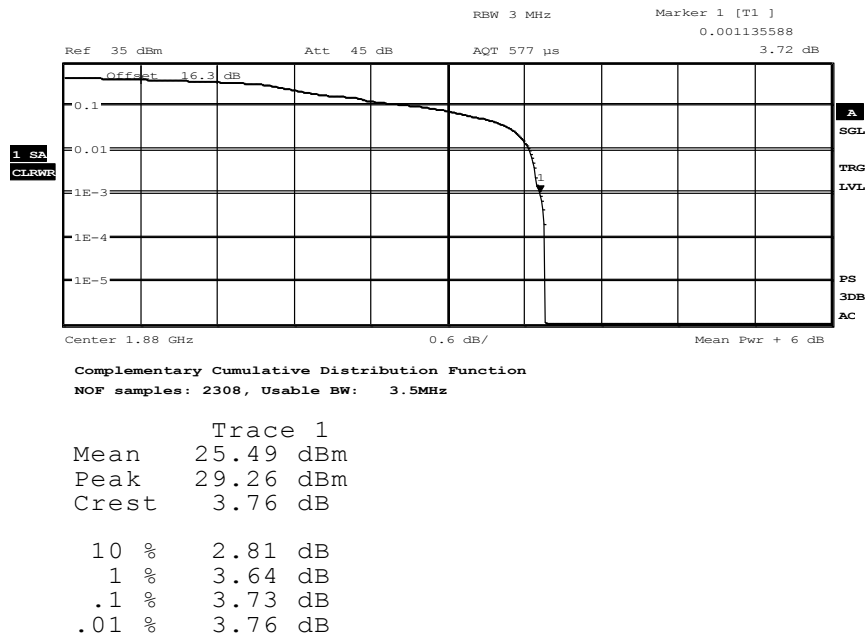


Date: 1.OCT.2015 09:17:59

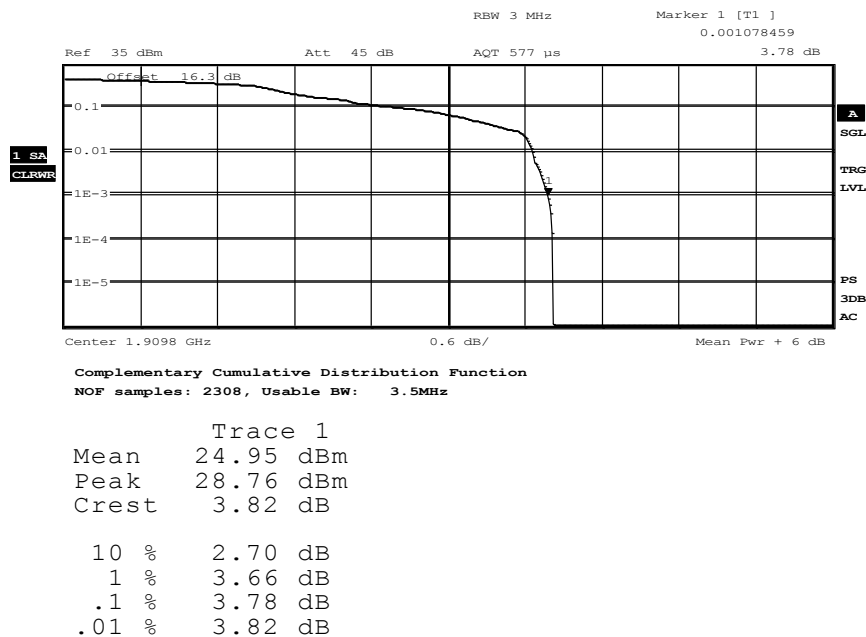
Diagram Channel 810 (GMSK-modulation)

Date: 1.OCT.2015 09:50:48

Diagram Channel 512 (8-PSK modulation)



Date: 1.OCT.2015 09:54:27

Diagram Channel 661 (8-PSK modulation)

Date: 1.OCT.2015 09:57:54

Diagram Channel 810 (8-PSK modulation)

1.2. Spurious emissions radiated (850 MHz transmitting mode)

8.04_RSE_R_CH128_GPRS

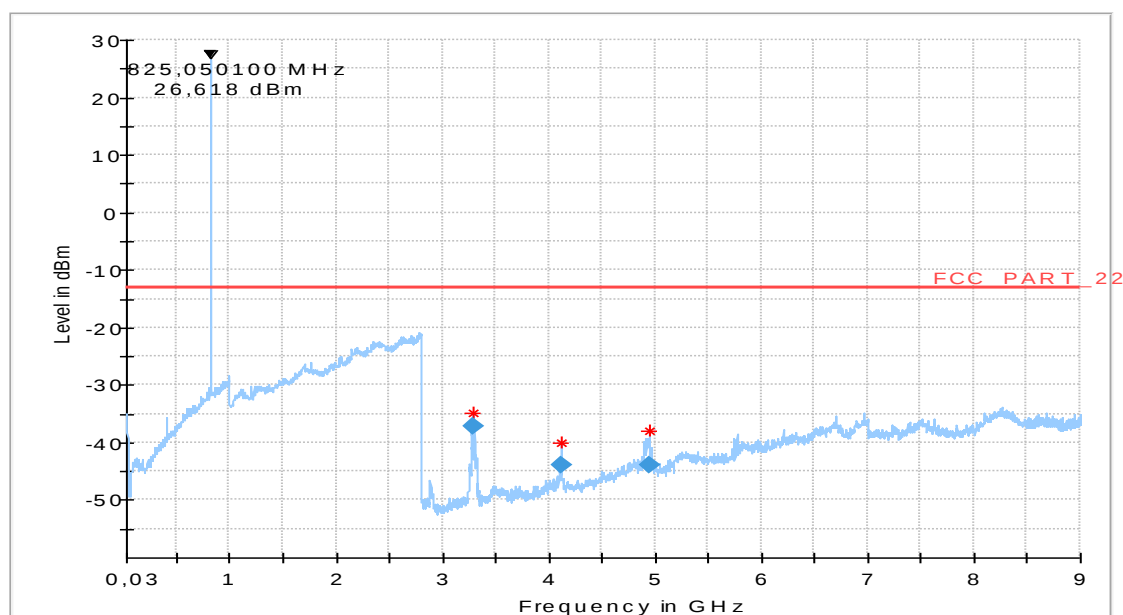
Common Information

Test Description:	Radiated Emissions GSM850
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917 / RSS-132, Issue 3
Test Case:	-
Operating Mode:	MS allocated UL channel 128
Exclusionband:	824 - 849MHz
Environmental Conditions:	Humidity: 56%rH; Temperature: 21,8°C
Operator:	Lor

EUT Information

Manufacturer:	peiker acustic GmbH & Co. KG
EuT:	ATM-01 T1-US-4GW
HW Version:	212.007.007
SW Version:	001.018.103
Serial Number:	0000595569
Connected Interfaces:	Microphone, loudspeaker, GPS, Diversity RX
Power Supply:	14 VDC
Comments:	--

Full Spectrum



Final Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
3296.102205	-	24.11	5000.0	V	225.0	0.0	-95.7
4121.713427	-	30.99	5000.0	V	192.0	0.0	-93.3
4939.509018	-	30.90	5000.0	V	176.0	0.0	-90.9

1.3. Spurious emissions radiated (1900 MHz transmitting mode)

8.11_RSE_R_CH661_GSM

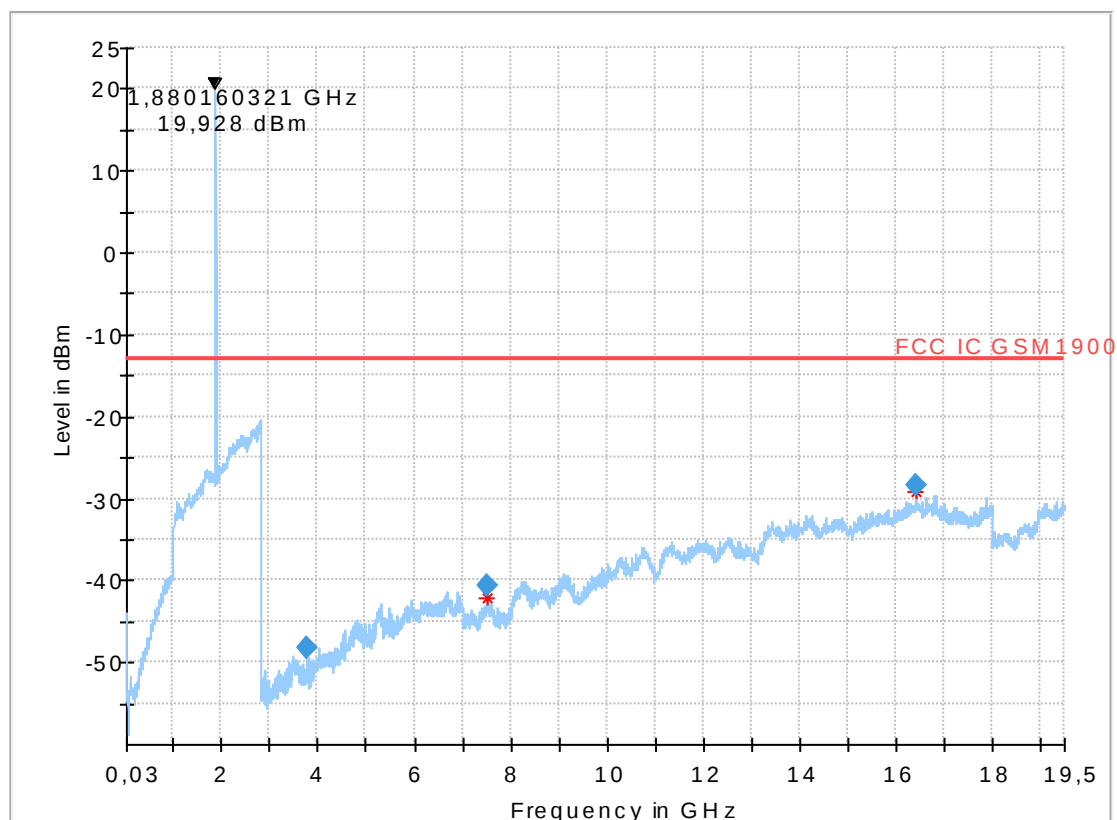
Common Information

Test Description:	Radiated Spurious Emissions GSM1900
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238 / RSS-133, Issue 6
Comm. Link:	GSM1900, Voice
Operating Mode:	MS allocated channel 512 (UL = 1850.2MHz), 661 (UL = 1880.0MHz), 810 (UL = 1909.8MHz)
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 56%rH; Temperature: 21,8°C
Operator:	

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG
EuT:	ATM-01 T1-US-4GW
HW Version:	212.007.007
SW Version:	001.018.103
Serial Number:	0000595569
Connected Interfaces:	
Power Supply:	14 VDC
Comments:	

Full Spectrum



Final Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
3760.115231	-	35.22	1000.0	V	-8.0	90.0	-95.1
7517.650300	-	27.73	1000.0	V	-27.0	90.0	-83.3
16424.904809	-	15.32	1000.0	H	164.0	90.0	-69.6

1.4. Radiated emissions on 850 MHz transmitting band-edge

9.01_BE_R_CH128_GSM

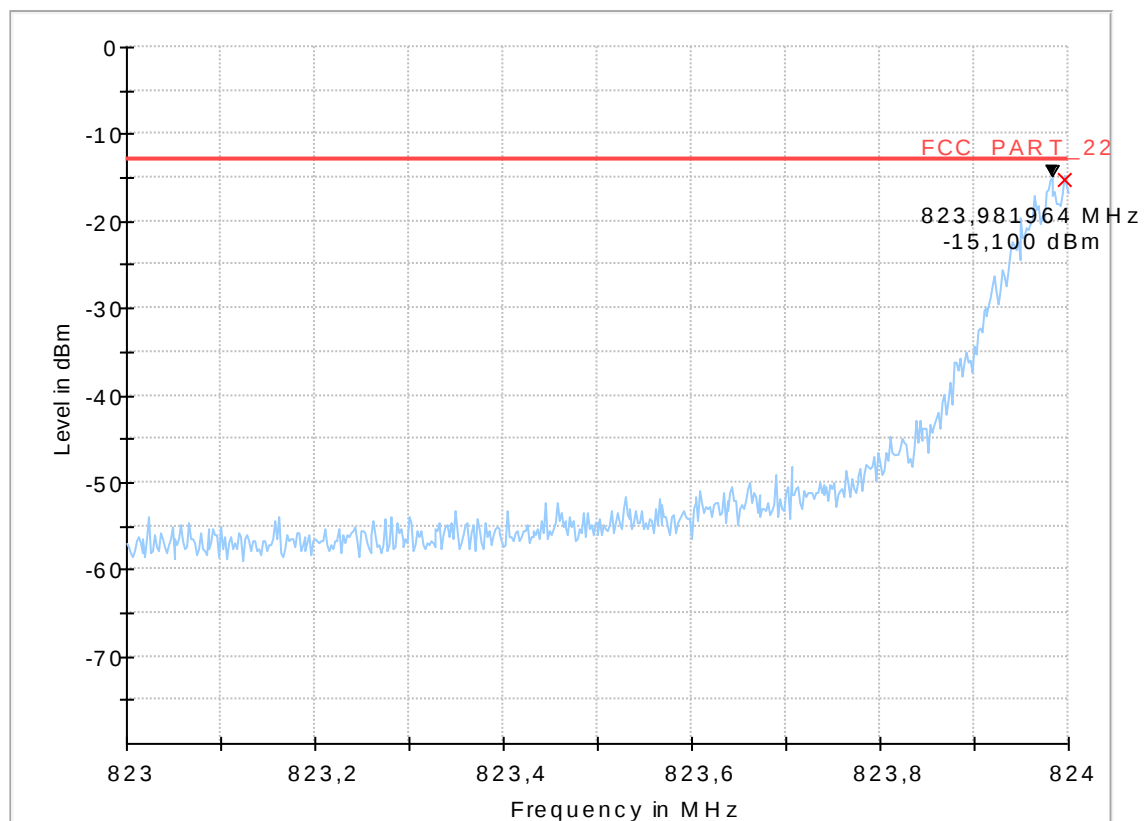
Common Information

Test Description:	Radiated Band Edge Compliance GSM850
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917 / RSS-132
Operating Mode:	MS allocated channel 128 (fc = 824.2MHz), Voice, PCL5 (+33dBm)
Exclusionband:	824 - 849MHz
Environmental Conditions:	Humidity: 53%rH; Temperature: 22°C
Operator:	MRa

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG
EuT:	ATM-01 T1-US-4GW
-----	-----
HW Version:	212.007.007
SW Version:	001.018.103
Serial Number:	0000595569
Connected Interfaces:	
Power Supply:	14 VDC
Comments:	

Full Spectrum



9.02_BE_R_CH251_GSM

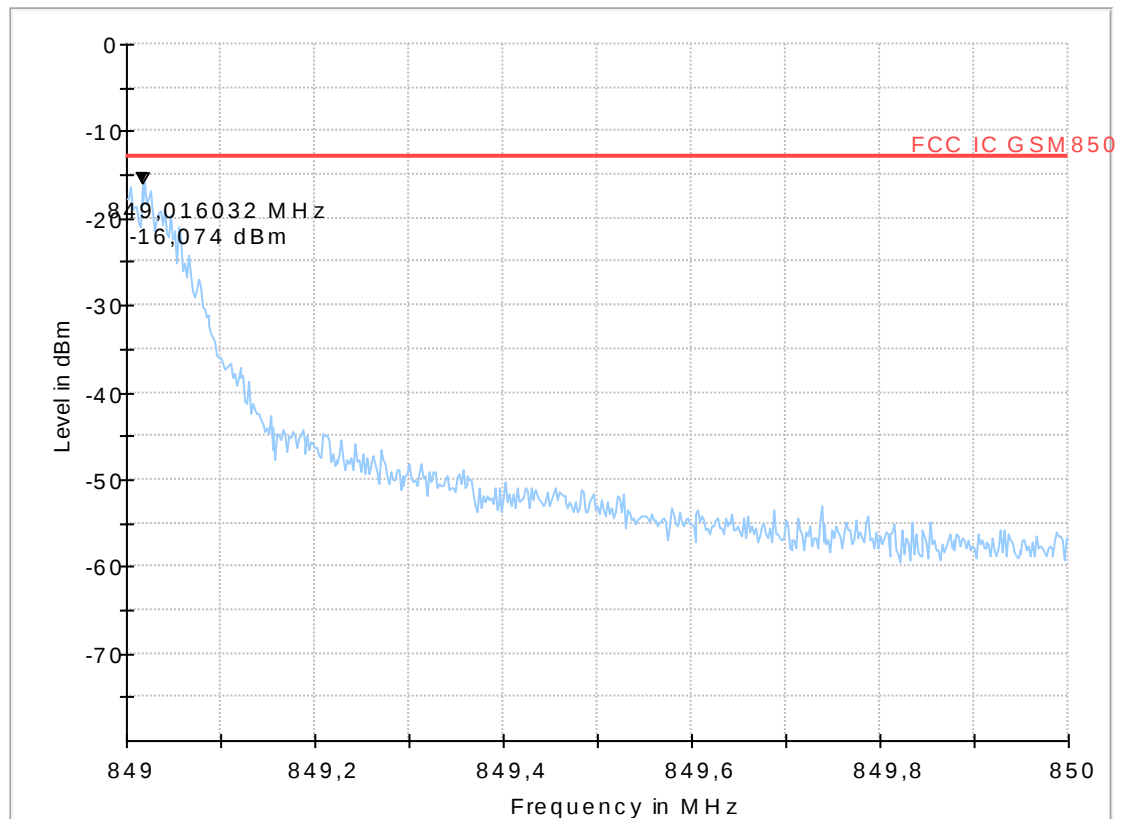
Common Information

Test Description:	Radiated Band Edge Compliance GSM850
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917 / RSS-132
Operating Mode:	MS allocated channel 251 (fc = 848.8MHz), Voice, PCL0 (+33dBm)
Exclusionband:	824 - 849MHz
Environmental Conditions:	Humidity: 53%rH; Temperature: 22°C
Operator:	MRA

EUT Information

Manufacturer:	peiker acustic GmbH & Co. KG
EuT:	ATM-01 T1-US-4GW
-----	-----
HW Version:	212.007.007
SW Version:	001.018.103
Serial Number:	0000595569
Connected Interfaces:	
Power Supply:	14 VDC
Comments:	

Full Spectrum



1.5. Radiated emissions on 1900 MHz transmitting band-edge

9.07_BE_R_Ch512_GSM

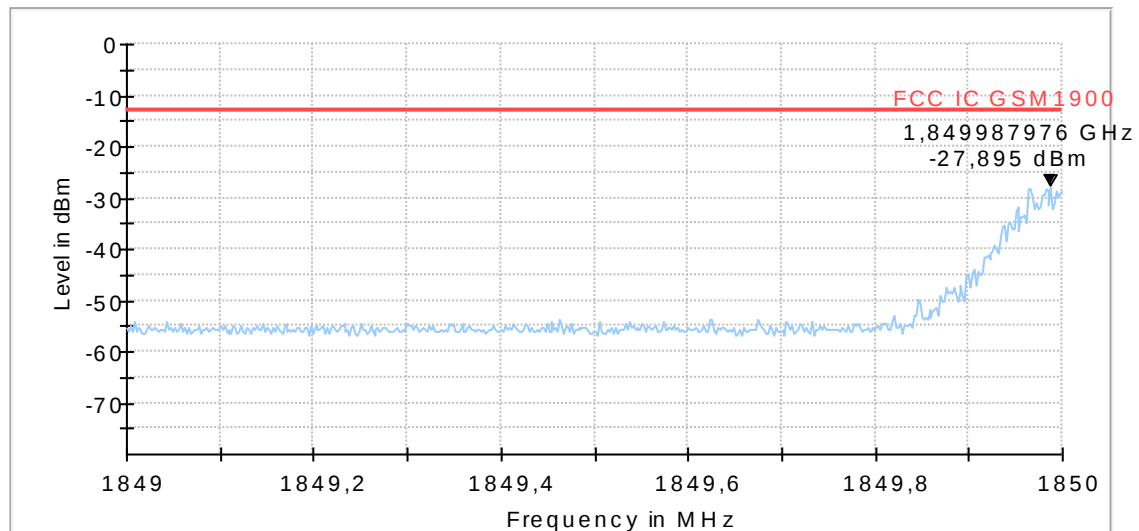
Common Information

Test Description:	Radiated Spurious Emissions GSM1900
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238 / RSS-133, Issue 6
Comm. Link:	GSM1900, Voice
Operating Mode:	MS allocated channel 512 (UL = 1850.2MHz)
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 55%rH; Temperature: 21,5°C
Operator:	Mra

EUT Information

Manufacturer:	peiker acustic GmbH & Co. KG
EuT:	ATM-01 T1-US-4GW
-----	-----
HW Version:	212.007.007
SW Version:	001.018.103
Serial Number:	0000595569
Connected Interfaces:	
Power Supply:	14 VDC
Comments:	

Full Spectrum



9.08_BE_R_Ch810_GSM

Common Information

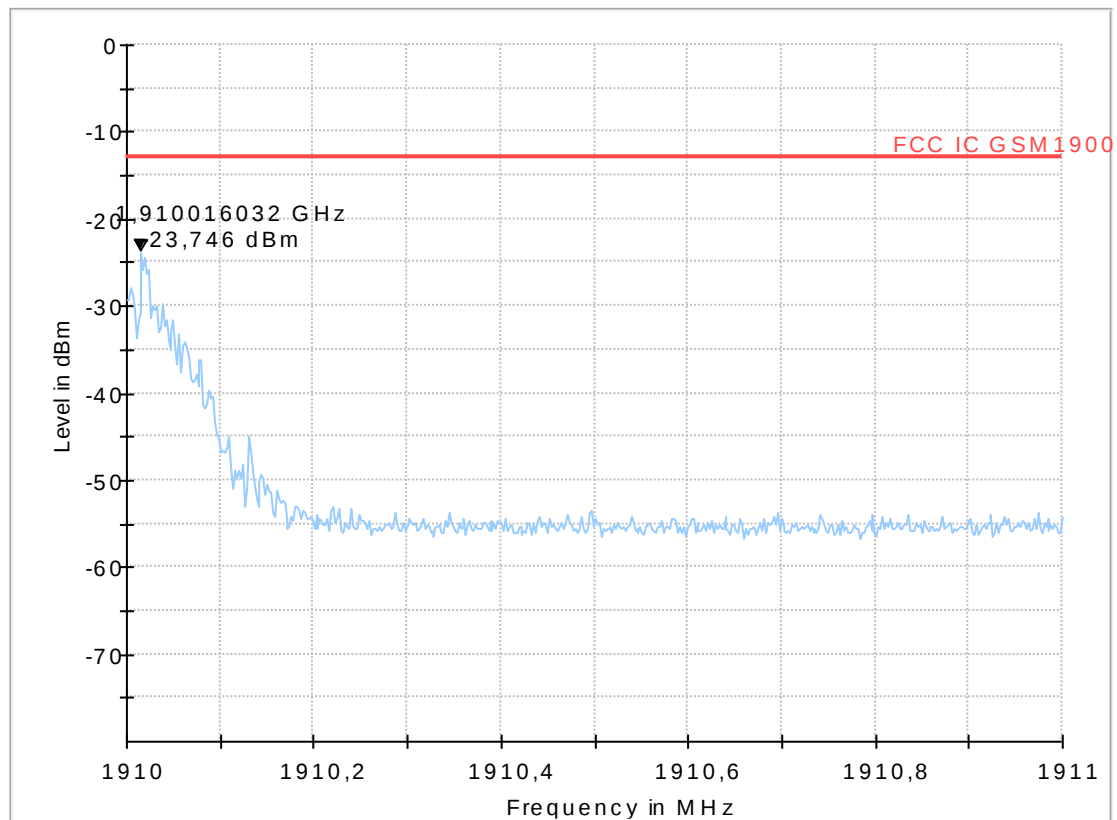
Test Description:	Radiated Spurious Emissions GSM1900
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238 / RSS-133, Issue 6
Comm. Link:	GSM1900, Voice/EDGE
Operating Mode:	MS allocated channel 810 (UL = 1909.8MHz)
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 55%rH; Temperature: 21,5°C
Operator:	MRa

EUT Information

Manufacturer:	peiker acustic GmbH & Co. KG
EuT:	ATM-01 T1-US-4GW

HW Version:	212.007.007
SW Version:	001.018.103
Serial Number:	0000595569
Connected Interfaces:	
Power Supply:	14 VDC
Comments:	

Full Spectrum



2. Measurement diagrams secondary antenna

2.1. Spurious emissions radiated (850 MHz transmitting mode)

8.04_Backup_RSE_R_Ch128_GPRS

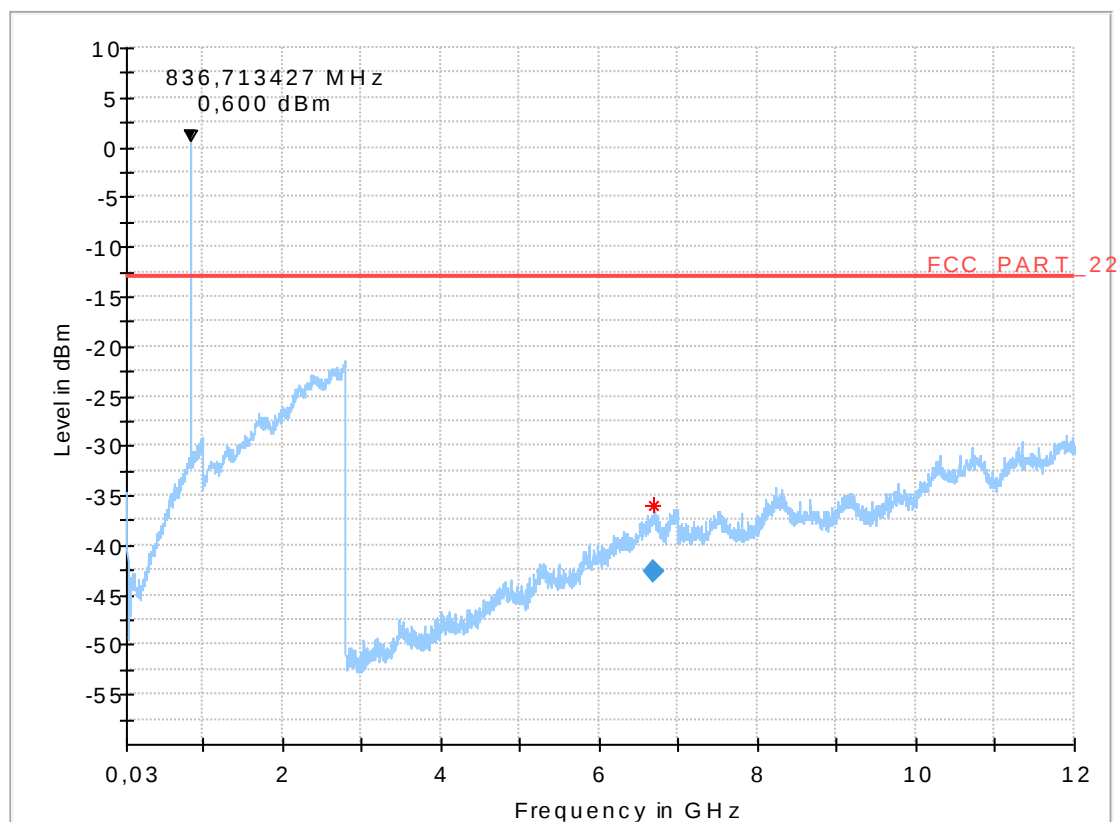
Common Information

Test Description:	Radiated Emissions GSM850
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part22.917 / RSS-132
Test Case:	-
Operating Mode:	MS allocated UL channel 128
Exclusionband:	824 - 849MHz
Environmental Conditions:	Humidity: 55%rH; Temperature: 21,5°C
Operator:	MFr

EUT Information

Manufacturer:	peiker acustic GmbH & Co. KG
EuT:	ATM-01 T1-US-4GW
HW Version:	212.007.007
SW Version:	001.018.103
Serial Number:	0000595569
Connected Interfaces:	
Power Supply:	14 VDC
Comments:	

Full Spectrum



Final Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
6694.258517	-	29.61	5000.0	V	259.0	0.0	-85.3

2.2. Spurious emissions radiated (1900 MHz transmitting mode)

8.11_Backup_RSE_R_Ch661_GSM1900

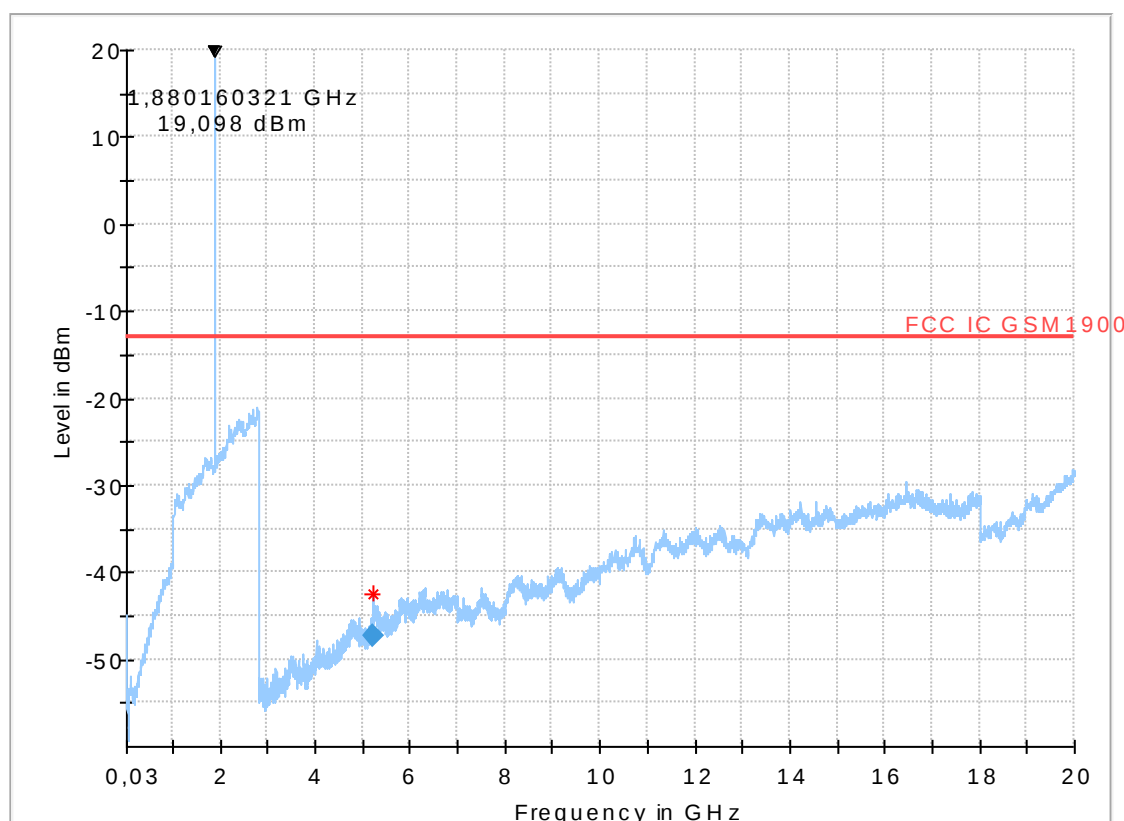
Common Information

Test Description:	Radiated Spurious Emissions GSM1900
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238 // RSS-133, Issue 6
Comm. Link:	GSM1900, Voice
Operating Mode:	MS allocated channel 661(UL = 1880.0MHz)
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 55%rH; Temperature: 21,5°C
Operator:	MFr

EUT Information

Manufacturer:	peiker acustic GmbH & Co. KG
EuT:	ATM-01 T1-US-4GW
HW Version:	212.007.007
SW Version:	001.018.103
Serial Number:	0000595569
Connected Interfaces:	
Power Supply:	14 VDC
Comments:	

Full Spectrum



Final Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
5228.712425	-	34.29	1000.0	V	126.0	0.0	-88.7

2.3. Radiated emissions on 850 MHz transmitting band-edge

9.01_Backup_BE_R_Ch128_GPR850

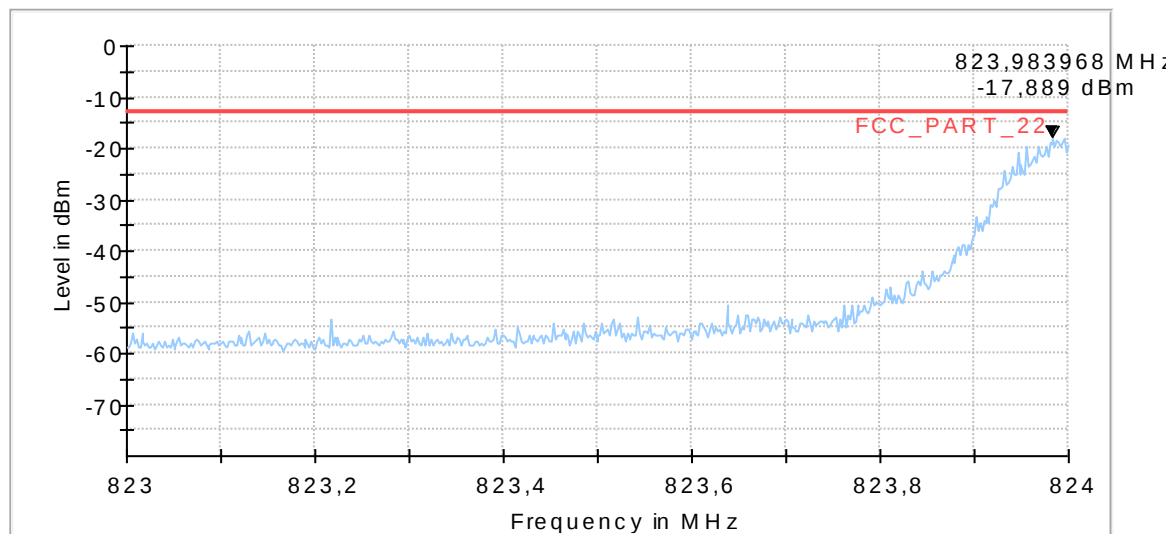
Common Information

Test Description:	Radiated Band Edge Compliance GSM850
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917 / RSS-132, Issue 3
Operating Mode:	MS allocated channel 128 (fc = 824.2MHz), Voice, PCL5 (+33dBm)
Exclusionband:	824 - 849MHz
Environmental Conditions:	Humidity: 53%rH; Temperature: 22°C
Operator:	MFr

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG
EuT:	ATM-01 T1-US-4GW
-----	-----
HW Version:	212.007.007
SW Version:	001.018.103
Serial Number:	0000595569
Connected Interfaces:	
Power Supply:	14 VDC
Comments:	

Full Spectrum



9.02_Backup_BE_R_Ch251_GPR850

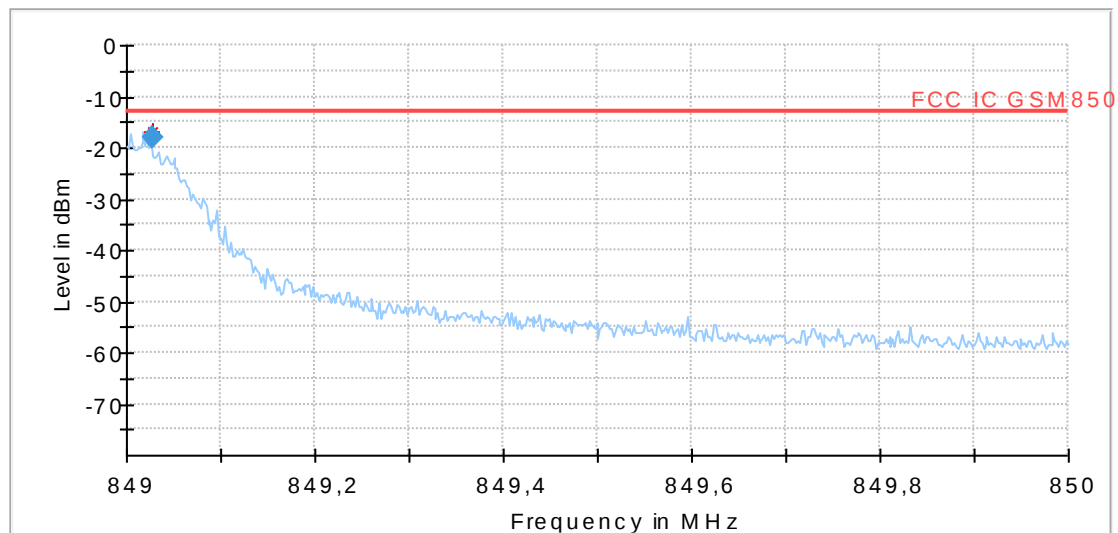
Common Information

Test Description:	Radiated Band Edge Compliance GSM850
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917 / RSS-132, Issue 3
Operating Mode:	MS allocated channel 251 (fc = 848.8MHz), Voice, PCL0 (+33dBm)
Exclusionband:	824 - 849MHz
Environmental Conditions:	Humidity: 53%rH; Temperature: 22°C
Operator:	MFr

EUT Information

Manufacturer:	peiker acustic GmbH & Co. KG
EuT:	ATM-01 T1-US-4GW
-----	-----
HW Version:	212.007.007
SW Version:	001.018.103
Serial Number:	0000595569
Connected Interfaces:	
Power Supply:	14 VDC
Comments:	

Full Spectrum



2.4. Radiated emissions on 1900 MHz transmitting band-edge

9.07_Backup_BE_R_Ch512_GPRS1900

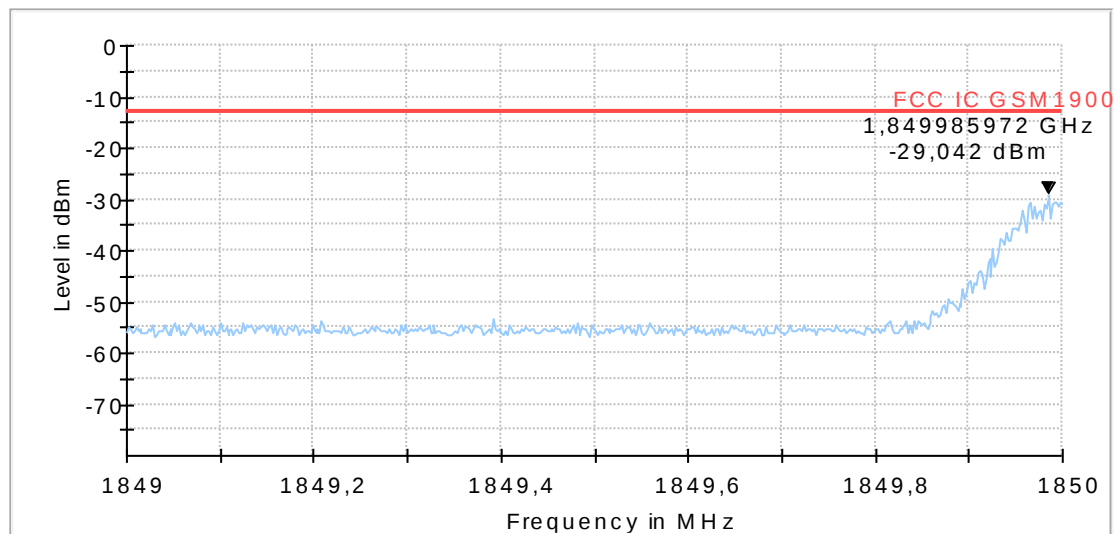
Common Information

Test Description:	Radiated Spurious Emissions GSM1900
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238 / RSS-133, Issue 6
Comm. Link:	GSM1900, Voice/EDGE
Operating Mode:	MS allocated channel 512 (UL = 1850.2MHz), 661 (UL = 1880.0MHz), 810 (UL = 1909.8MHz)
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 53%rH; Temperature: 24.6°C
Operator:	MFr

EUT Information

Manufacturer:	peiker acustic GmbH & Co. KG
EuT:	ATM-01 T1-US-4GW
HW Version:	212.007.007
SW Version:	001.018.103
Serial Number:	0000595569
Connected Interfaces:	
Power Supply:	14 VDC
Comments:	

Full Spectrum



9.08_Backup_BE_R_Ch810_GPRS1900

Common Information

Test Description:	Radiated Spurious Emissions GSM1900
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238 / RSS-133, Issue 6
Comm. Link:	GSM1900, Voice/EDGE
Operating Mode:	MS allocated channel 512 (UL = 1850.2MHz), 661 (UL = 1880.0MHz), 810 (UL = 1909.8MHz)
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 53%rH; Temperature: 24.6°C
Operator:	MFr

EUT Information

Manufacturer:	peiker acustic GmbH & Co. KG
EuT:	ATM-01 T1-US-4GW
-----	-----
HW Version:	212.007.007
SW Version:	001.018.103
Serial Number:	0000595569
Connected Interfaces:	
Power Supply:	14 VDC
Comments:	

Full Spectrum

