

Annex 1: Measurement diagrams to
TEST REPORT
 No.: 16-1-0001901T17a-A1

According to:
FCC Regulations
 Part 22, Part 24, Part 27

for

peiker acustic GmbH

Telematic Device
 ATM-02-ROW-R1

FCC: QWY-ATM2-R-13







Laboratory Accreditation and Listings			
 <p>DAkks Deutsche Akkreditierungsstelle D-PL-12047-01-01</p>	 <p>FEDERAL COMMUNICATIONS COMMISSION FCC USA MRA US-EU 0003</p>	 <p>Industry Canada Reg. No.: 3462D-1 Reg. No.: 3462D-2 Reg. No.: 3462D-3</p>	 <p>Voluntary Controls for Electromagnetic Emissions Reg. No.: R-2666 C-2914, T-1967, G-301</p>
 <p>WiFi ALLIANCE AUTHORIZED RF LABORATORY</p>	 <p>ctia AuthorizedTM Test Lab Lab Code: 20011130-00</p>		
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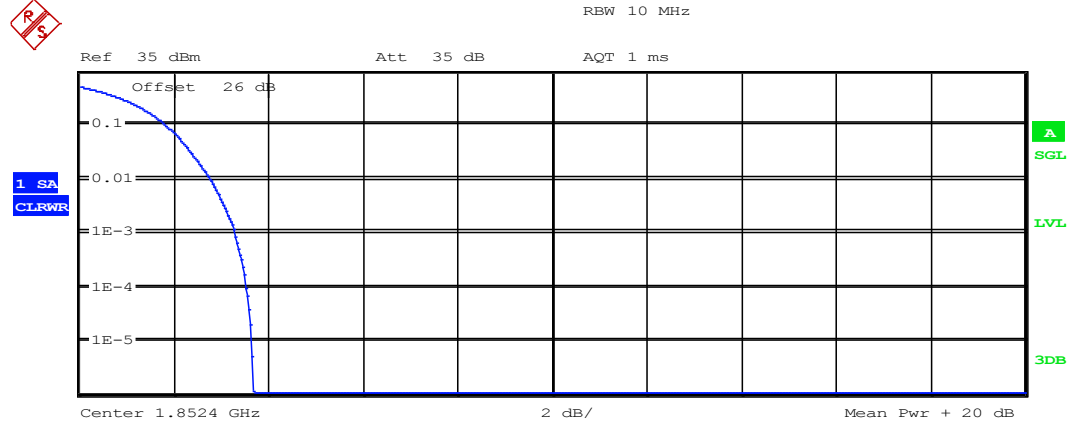
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1. Measurement diagrams

1.1. Peak power output and PAPR-Value

1.1.1. FDD Band II

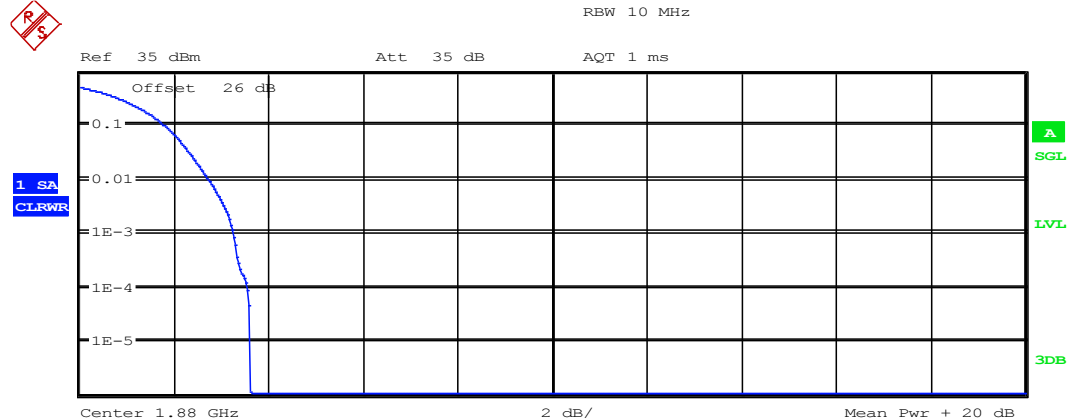
Diagram CCDF_Ch_9262



Complementary Cumulative Distribution Function (32000 samples)

Trace 1	
Mean	21.55 dBm
Peak	25.21 dBm
Crest	3.66 dB
10 %	1.79 dB
1 %	2.76 dB
.1 %	3.27 dB
.01 %	3.53 dB

Diagram CCDF_Ch_9400



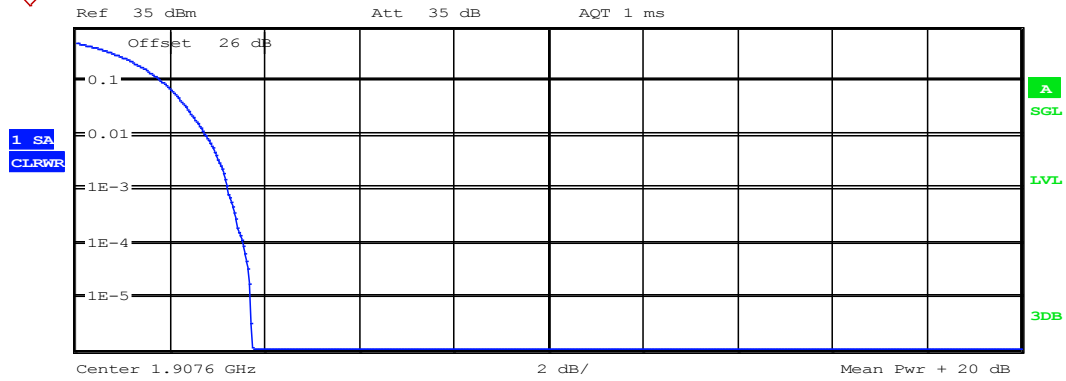
Complementary Cumulative Distribution Function (32000 samples)

Trace 1	
Mean	21.94 dBm
Peak	25.56 dBm
Crest	3.62 dB
10 %	1.79 dB
1 %	2.72 dB
.1 %	3.24 dB
.01 %	3.56 dB

Diagram CCDF_Ch_9538



RBW 10 MHz



Complementary Cumulative Distribution Function (32000 samples)

Trace 1	
Mean	22.26 dBm
Peak	25.98 dBm
Crest	3.72 dB
10 %	1.83 dB
1 %	2.76 dB
.1 %	3.21 dB
.01 %	3.53 dB

1.1.2. FDD Band V

Diagram CCDF_Ch_4132

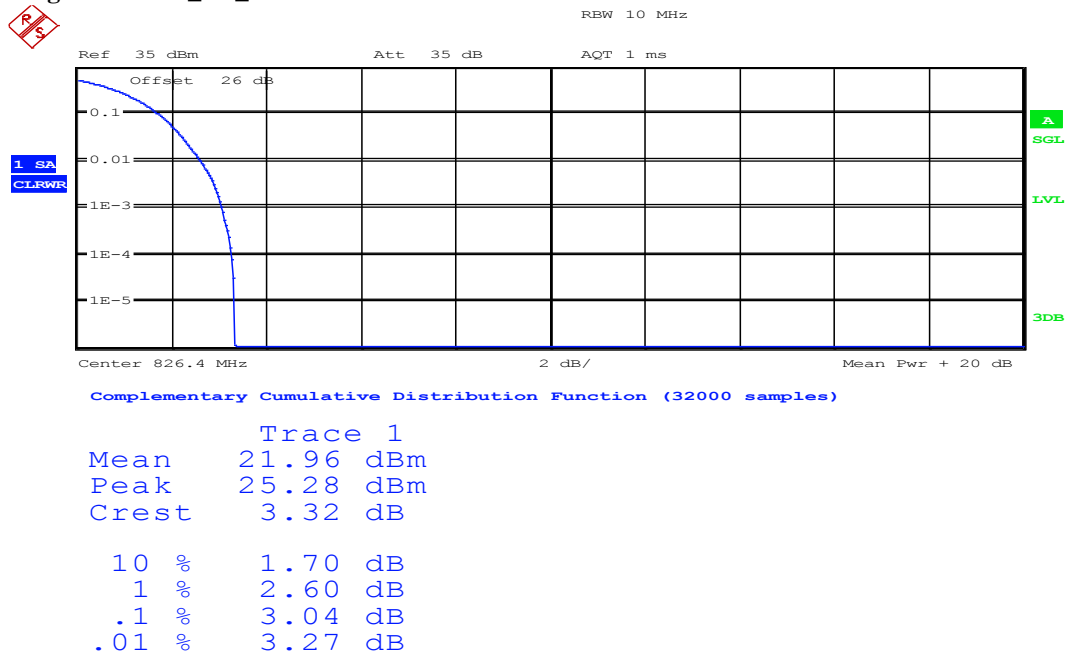


Diagram CCDF_Ch_4185

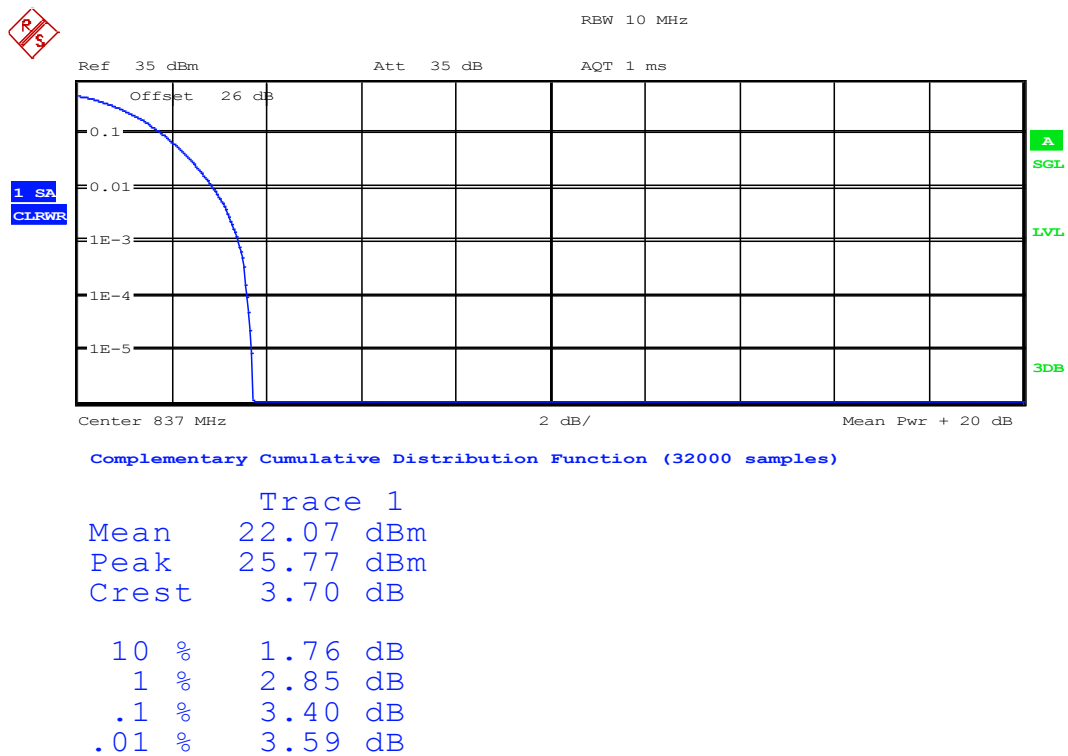
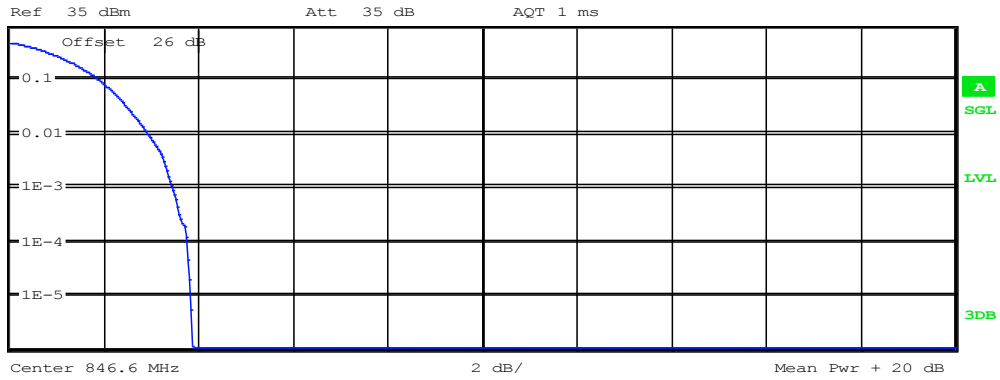


Diagram CCDF_Ch_4233



RBW 10 MHz

1 SA
CLRWR



Complementary Cumulative Distribution Function (32000 samples)

Trace 1	
Mean	22.20 dBm
Peak	26.05 dBm
Crest	3.85 dB
10 %	1.89 dB
1 %	2.92 dB
.1 %	3.43 dB
.01 %	3.75 dB

1.2. Magnetic field emissions radiated (FDD Band II and V transmitting mode)

2.01a_RSE_R_Ch9400_RMC_Standing

Test description:	Date: 22.12.2017 Page 1 of 2
Test site and distance:	Magnetic Field Strength Measurement related to 30/300 m distance
Version of Testsoftware:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Distance correction:	EMC32 V9.25.0
Technical Data:	used accord. table, pls. see test report
Rec. antenna (pre-scan):	Please see page 2 for detailed data of measurement setup
Used filter:	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	bypass
	FCC 15.205 § 15.209; RSS-Gen: Issue 4

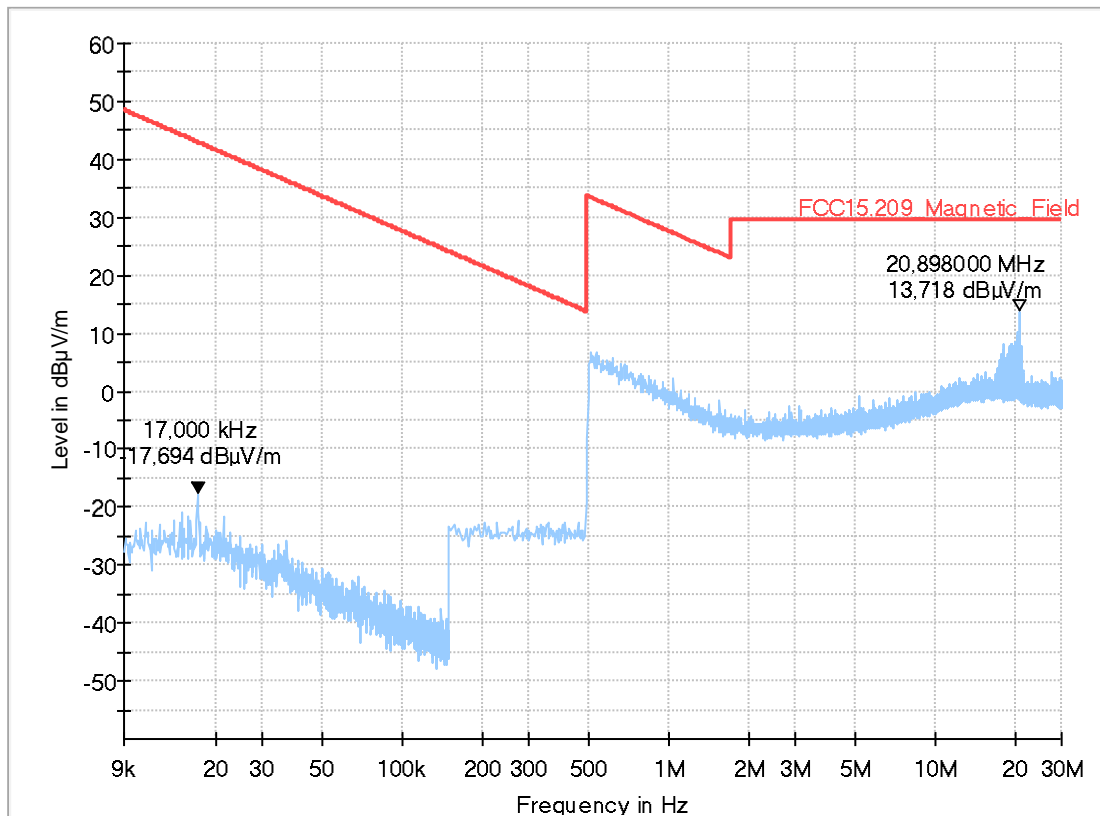
Operator:	MBe
Operating conditions:	Humidity: 48%rH; Temperature: 20°C
Power during tests:	12V DC
Comment 1:	UMTS Band 2 Ch9400
Comment 2:	standing

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG a valeo Brand
EUT:	ATM-02-ROW-R1 (Sample 1030)

HW version:	103.004.004
SW version:	001.009.020
Serial number:	4355
Connected Interfaces:	Antenna (65206826326-03) + EMC Control Unit
Power Supply:	12VDC
Comments:	-

Full Spectrum



2.01b_RSE_R_Ch9400_RMC_laying

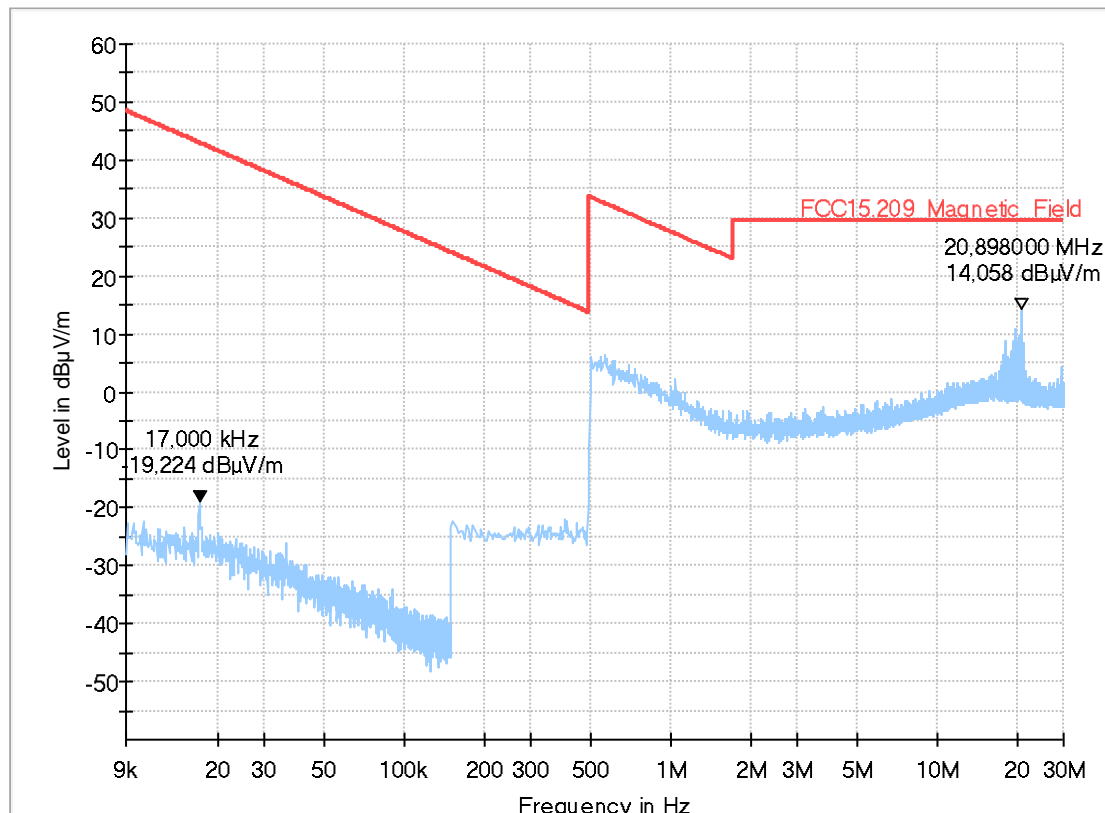
Date: 22.12.2017	Page 1 of 2
Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	used accord. table, pls. see test report
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 specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 4
Operator:	MBe
Operating conditions:	Humidity: 48%rH; Temperature: 20°C
Power during tests:	12V DC
Comment 1:	UMTS Band 2 Ch9400
Comment 2:	laying

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG a valeo Brand
EUT:	ATM-02-ROW-R1 (Sample 1030)

HW version:	103.004.004
SW version:	001.009.020
Serial number:	4355
Connected Interfaces:	Antenna (65206826326-03) + EMC Control Unit
Power Supply:	12VDC
Comments:	-

Full Spectrum



2.02a_RSE_R_Ch4185_RMC_Standing

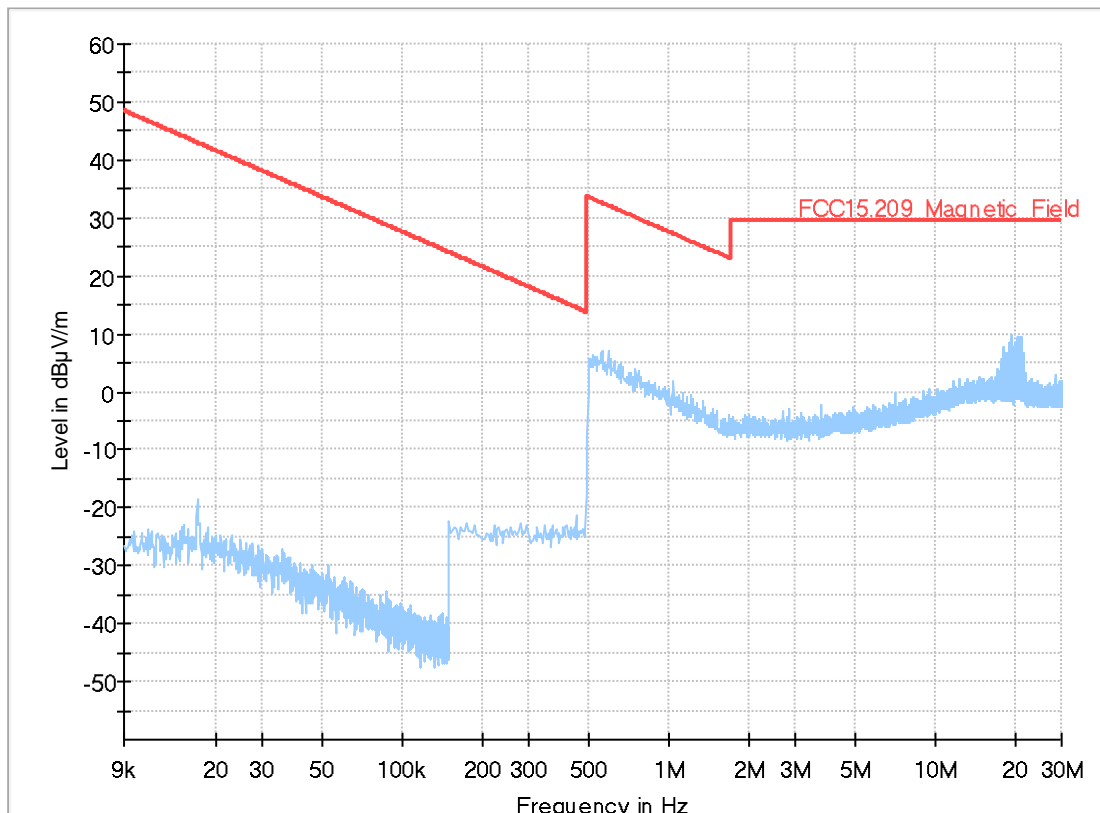
Date:	22.12.2017	Page 1 of 2
Test description:	Magnetic Field Strength Measurement related to 30/300 m distance	
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance	
Version of Testsoftware:	EMC32 V9.25.0	
Distance correction:	used accord. table, pls. see test 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 specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 4	
Operator:	MBe	
Operating conditions:	Humidity: 48%rH; Temperature: 20°C	
Power during tests:	12V DC	
Comment 1:	UMTS Band 5	
Comment 2:	standing	

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG a valeo Brand
EUT:	ATM-02-ROW-R1 (Sample 1030)

HW version:	103.004.004
SW version:	001.009.020
Serial number:	4355
Connected Interfaces:	Antenna (65206826326-03) + EMC Control Unit
Power Supply:	12VDC
Comments:	-

Full Spectrum



2.02b_RSE_R_Ch4185_RMC_Laying

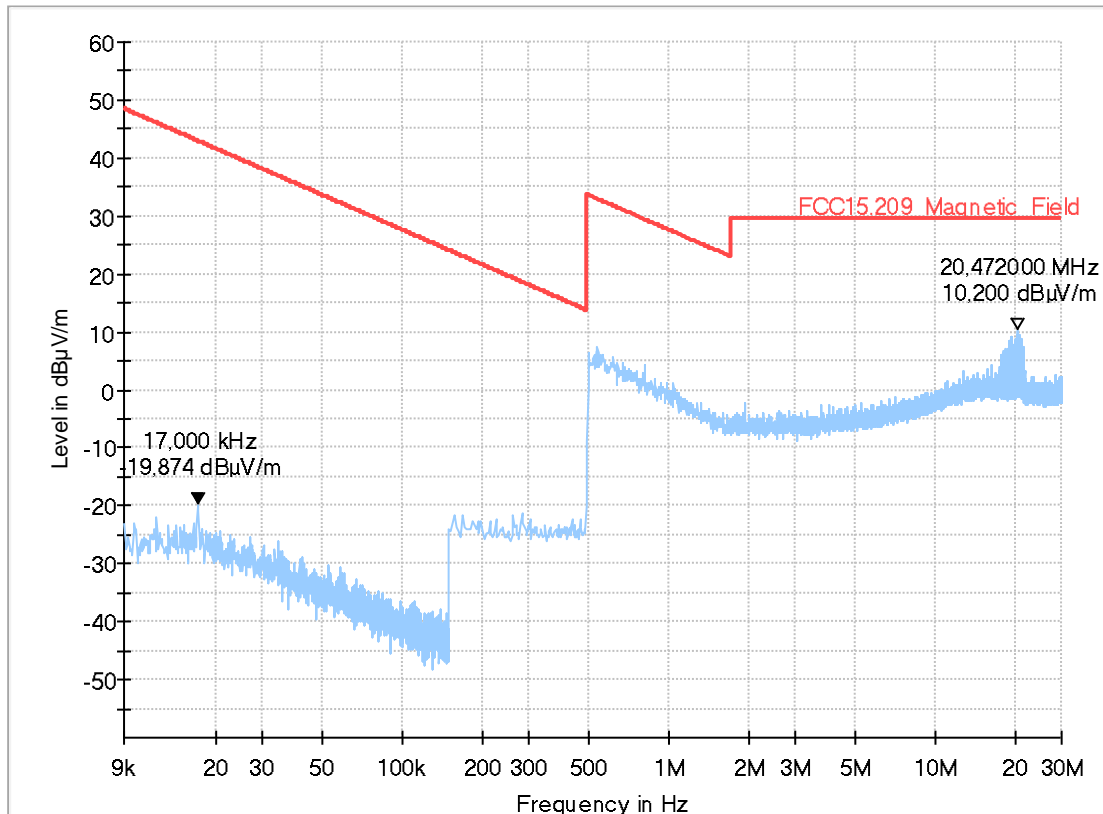
Date:	22.12.2017	Page 1 of 2
Test description:	Magnetic Field Strength Measurement related to 30/300 m distance	
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance	
Version of Testsoftware:	EMC32 V9.25.0	
Distance correction:	used accord. table, pls. see test 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 specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 4	
Operator:	MBe	
Operating conditions:	Humidity: 48%rH; Temperature: 20°C	
Power during tests:	12V DC	
Comment 1:	UMTS Band 5	
Comment 2:	laying	

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG a valeo Brand
EUT:	ATM-02-ROW-R1 (Sample 1030)

HW version:	103.004.004
SW version:	001.009.020
Serial number:	4355
Connected Interfaces:	Antenna (65206826326-03) + EMC Control Unit
Power Supply:	12VDC
Comments:	-

Full Spectrum



1.3. Spurious emissions radiated (FDD Band II transmitting mode)

1.3.1. Radiated emissions on FDD Band II - Main Antenna

8.01_RSE_R_Ch9400RMC

Common Information

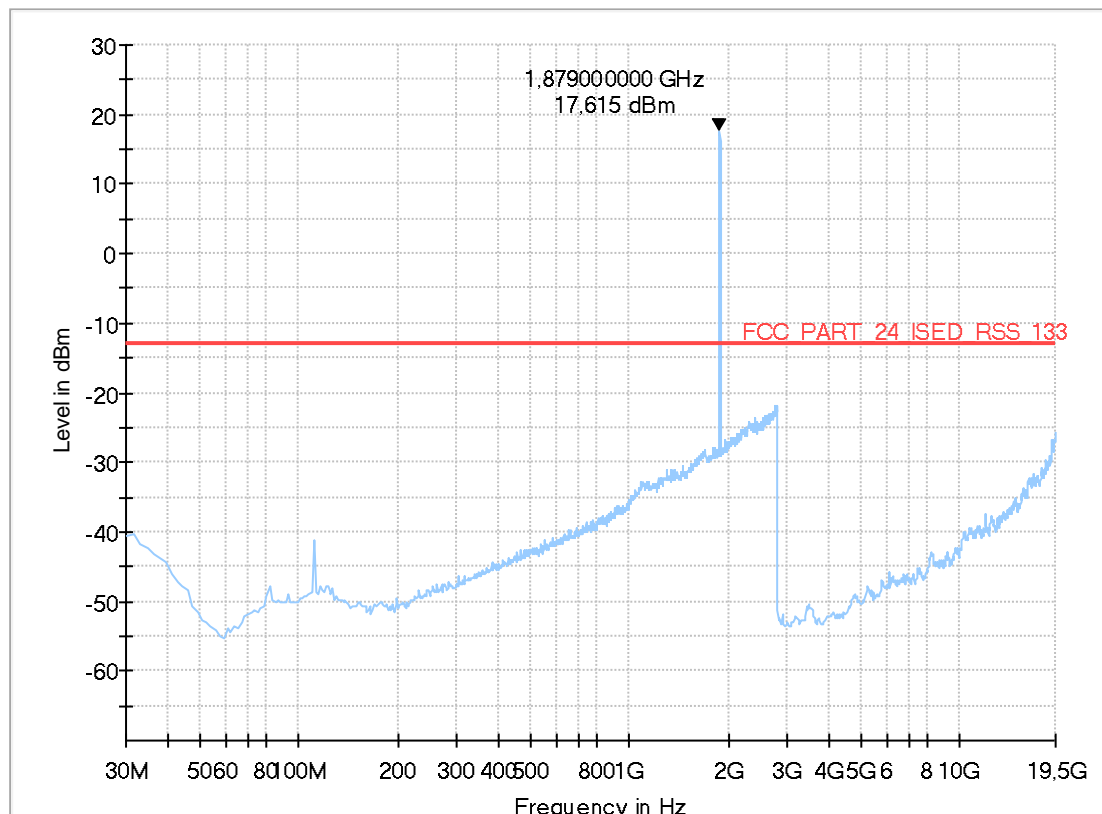
Test Description:	Radiated emission related to 1m
Test Site:	FAR
Test Standard:	FCC FCC Part 24.238 Broadband PCS
Antenna polarisation:	vertical / horizontal
Operating conditions:	Humidity: 40%rH; Temperature: 20°C
Operation mode:	UMTS_Band:2_CH 9400
Operator Name:	HEI

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG a valeo Brand
EUT:	ATM-02-ROW-R1 (Sample 1030)

HW version:	103.004.004
SW version:	001.009.020
Serial number:	4355
Connected Interfaces:	Antenna (65206826326-03) + EMC Control Unit
Power Supply:	12VDC
Comments:	-

Full Spectrum



1.3.2. Radiated emissions on FDD Band II- Backup Antenna

8.02_RSE_R_Ch9262RMC

Common Information

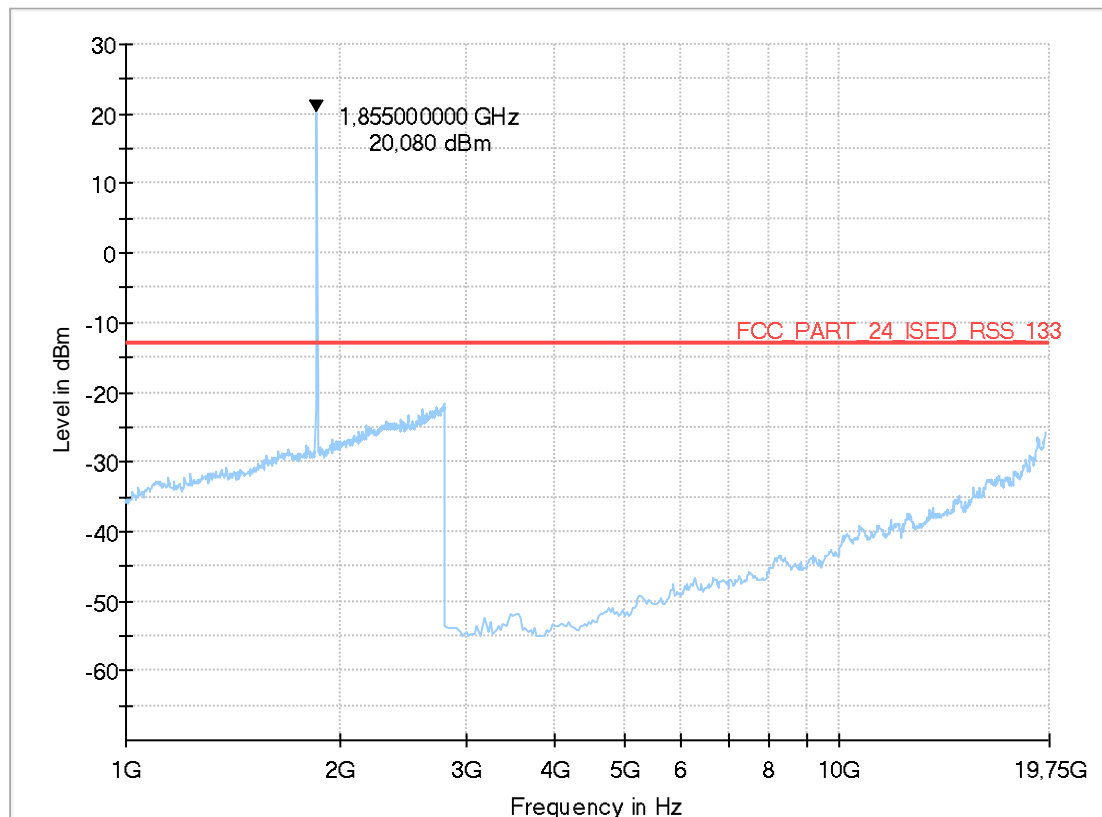
Test Description:	Radiated emission related to 1m
Test Site:	FAR
Test Standard:	FCC FCC Part 24.238 Broadband PCS
Antenna polarisation:	vertical / horizontal
EUT:	ATM02_ROW_R1
Operation mode:	UMTSFDDII CH. 9262
Operating conditions:	Humidity: 30%rH; Temperature: 20°C
Operator Name:	HEI
Comment:	Backup Antenna

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG a valeo Brand
EUT:	ATM-02-ROW-R1 (Sample 1030)

HW version:	103.004.004
SW version:	001.009.020
Serial number:	4355
Connected Interfaces:	Antenna (65206826326-03) + EMC Control Unit
Power Supply:	12VDC
Comments:	-

Full Spectrum



1.4. Spurious emissions radiated (FDD Band V transmitting mode)

1.4.1. Radiated emissions on FDD Band V - Main Antenna

8.03_RSE_R_Ch4185_RMC

Common Information

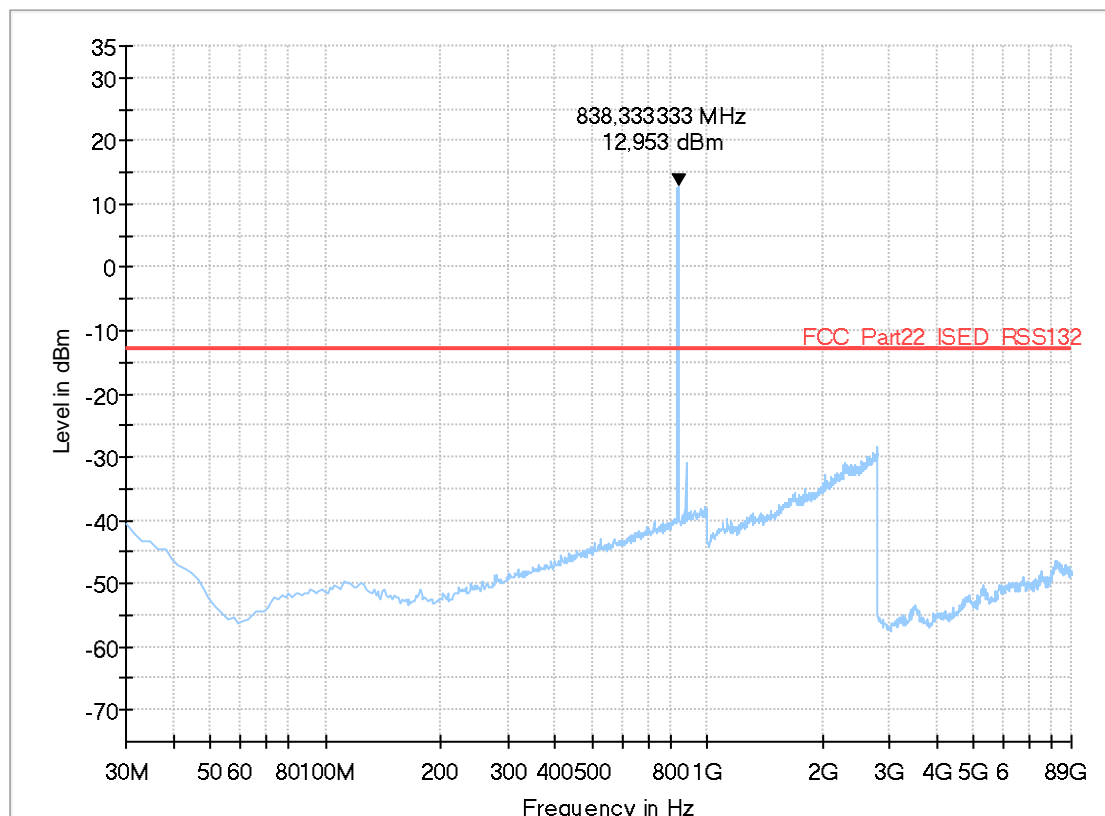
Test Description:	Radiated emission related to 1m
Test Site:	FAR
Test Standard:	FCC FCC Part 24.238 Broadband PCS
Antenna polarisation:	vertical / horizontal
Operation mode:	UMTS_Band 5_CH:4185
Operating conditions:	Humidity: 40%rH; Temperature: 20°C
Operator Name:	HEI

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG a valeo Brand
EUT:	ATM-02-ROW-R1 (Sample 1030)

HW version:	103.004.004
SW version:	001.009.020
Serial number:	4355
Connected Interfaces:	Antenna (65206826326-03) + EMC Control Unit
Power Supply:	12VDC
Comments:	-

Full Spectrum



1.4.2. Radiated emissions on FDD Band V - Backup Antenna

8.04_RSE_R_Ch4233_RMC

Common Information

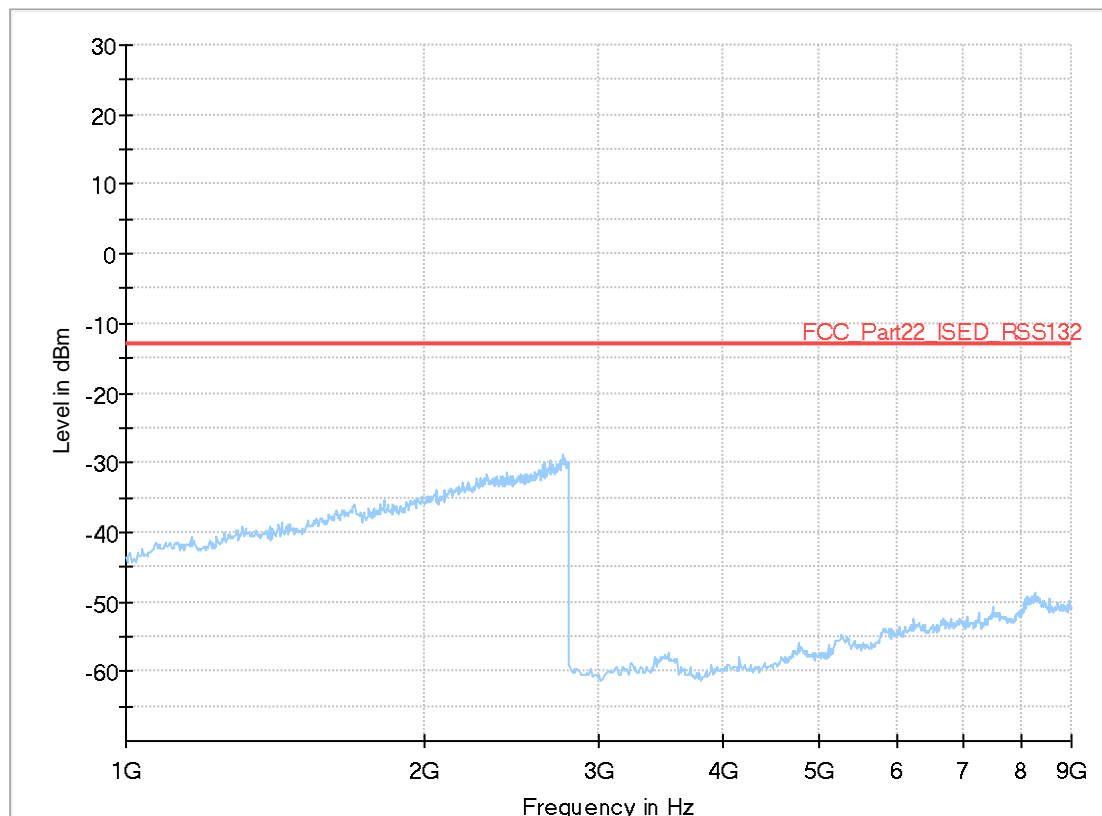
Test Description:	Radiated emission related to 1m
Test Site:	FAR
Test Standard:	FCC FCC Part 24.238 Broadband PCS
Antenna polarisation:	vertical / horizontal
Operating conditions:	Humidity: 50%rH; Temperature: 20°C
Operation mode:	UMTS_Bnd:5_Channel:4233
Operator Name:	HEI
Comment:	Backup Antenna

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG a valeo Brand
EUT:	ATM-02-ROW-R1 (Sample 1030)

HW version:	103.004.004
SW version:	001.009.020
Serial number:	4355
Connected Interfaces:	Antenna (65206826326-03) + EMC Control Unit
Power Supply:	12VDC
Comments:	-

Full Spectrum



1.5. Radiated emissions on FDD Band II band-edge

1.5.1. Radiated emissions on FDD Band II band-edge - Main Antenna

9.01_BE_R_Ch9262_RMC

Common Information

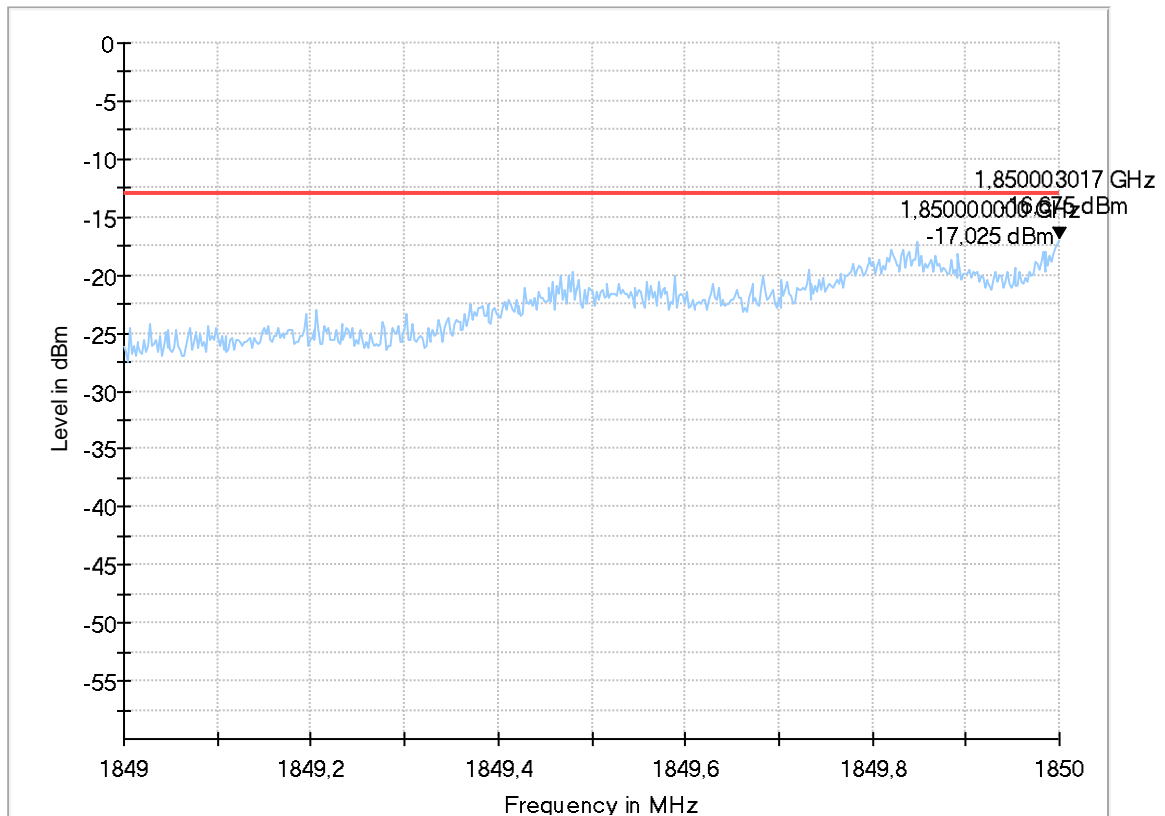
Test Description:	Radiated Band Edge Compliance UMTS-FDDII
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238
Operating Mode:	UMTS Band 2 Ch 9262
Environmental Conditions:	Humidity: 30%rH; Temperature: 20°C
Operator:	MBe

EUT Information

Manufacturer:	peiker acustic GmbH & Co. KG a valeo Brand
EUT:	ATM-02-ROW-R1 (Sample 1030)

HW version:	103.004.004
SW version:	001.009.020
Serial number:	4355
Connected Interfaces:	Antenna (65206826326-03) + EMC Control Unit
Power Supply:	12VDC
Comments:	-

Full Spectrum



+

9.02b_BE_R_Ch9538_RMC

Common Information

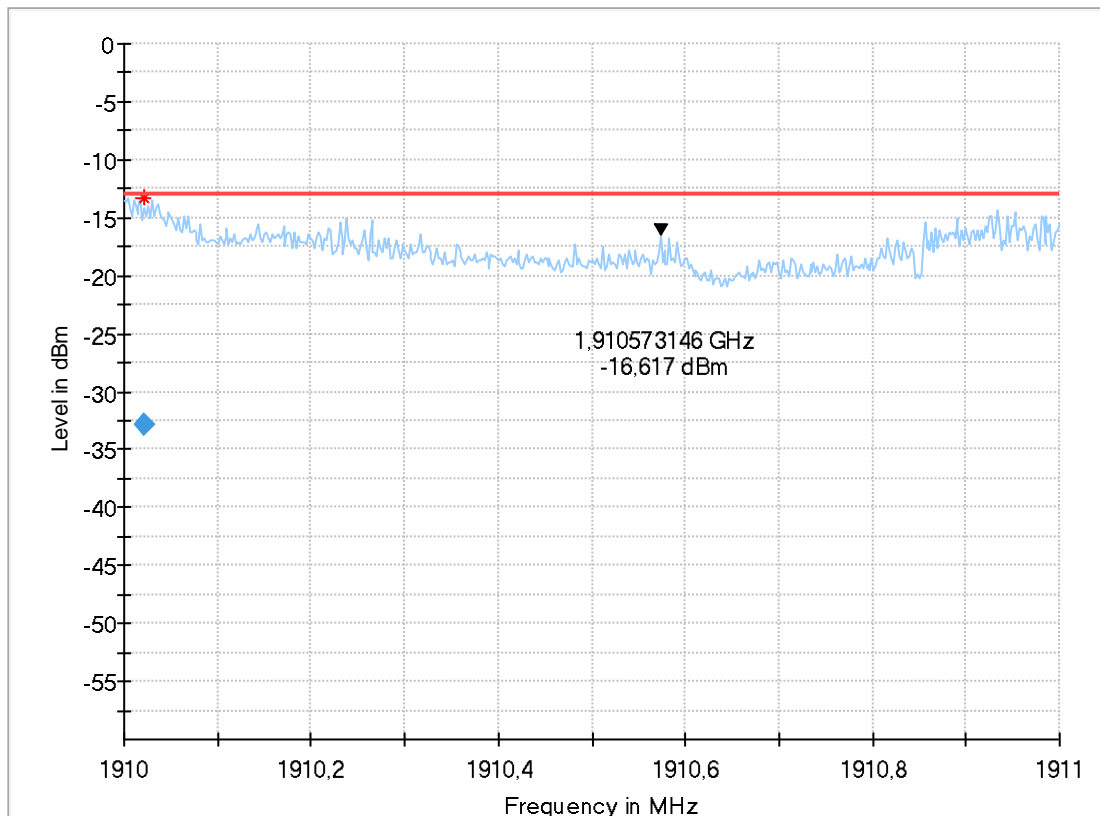
Test Description:	Band-Edge low - Radiated Spurious Emissions UMTS FDDII
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917(a)
Operating Mode:	UMTS_Band 2 _CH: 9538
Environmental Conditions:	Humidity: 40%rH; Temperature: 20°C
Operator:	HEI

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG a valeo Brand
EUT:	ATM-02-ROW-R1 (Sample 1010)

HW version:	103.004.004
SW version:	001.009.015
Serial number:	4326
Connected Interfaces:	Antenna (65206826326-03) + EMC Control Unit
Power Supply:	12VDC
Comments:	-

Full Spectrum



Final Result

Frequency (MHz)	Average (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
1910.022044	-32.84	-13.00	19.84	10000.0	5.000	V	348.0	0.0	-62.8

1.5.2. Radiated emissions on FDD Band II band-edge - Backup Antenna

9.03_BE_R_Ch9262_RMC

Common Information

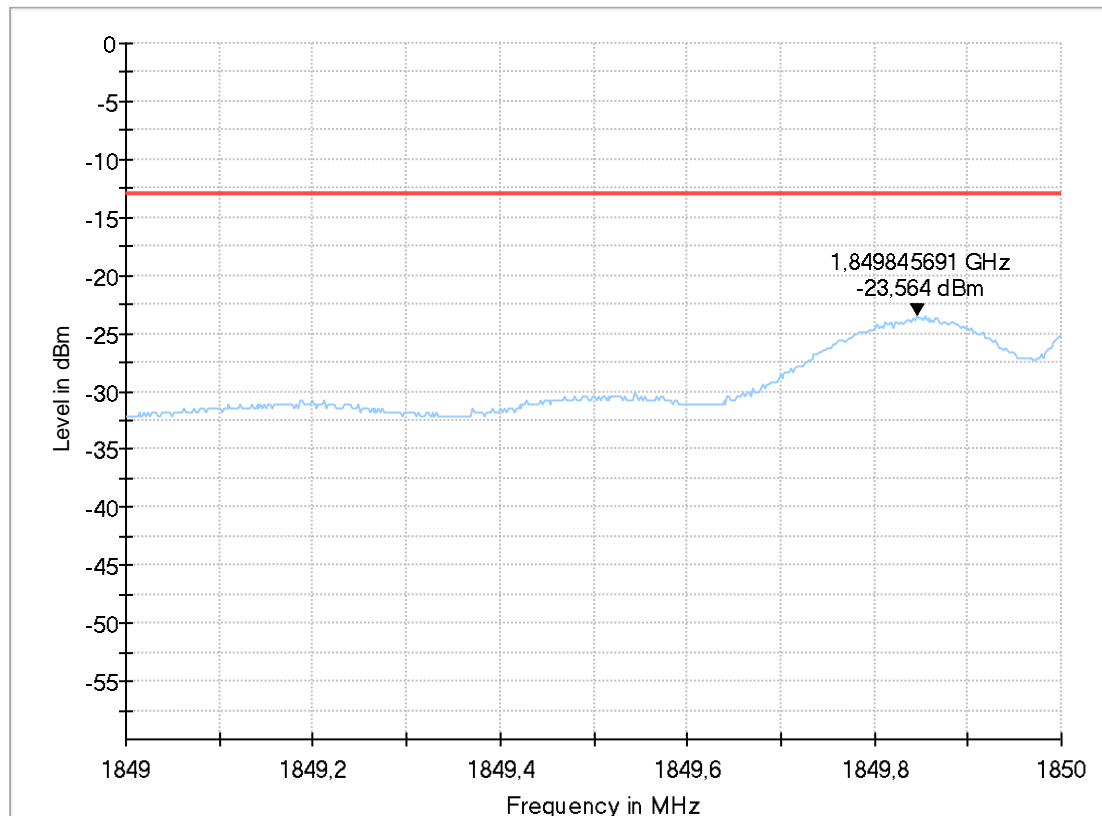
Test Description:	Radiated Band Edge Compliance UMTS-FDDII
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238
Operating Mode:	UMTS_Band 2_CH: 9262
Environmental Conditions:	Humidity: 30%rH; Temperature: 20°C
Operator:	HEI
Comment:	Backup Antenna

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG a valeo Brand
EUT:	ATM-02-ROW-R1 (Sample 1030)

HW version:	103.004.004
SW version:	001.009.020
Serial number:	4355
Connected Interfaces:	Antenna (65206826326-03) + EMC Control Unit
Power Supply:	12VDC
Comments:	-

Full Spectrum



9.04_BE_R_Ch9538_RMC

Common Information

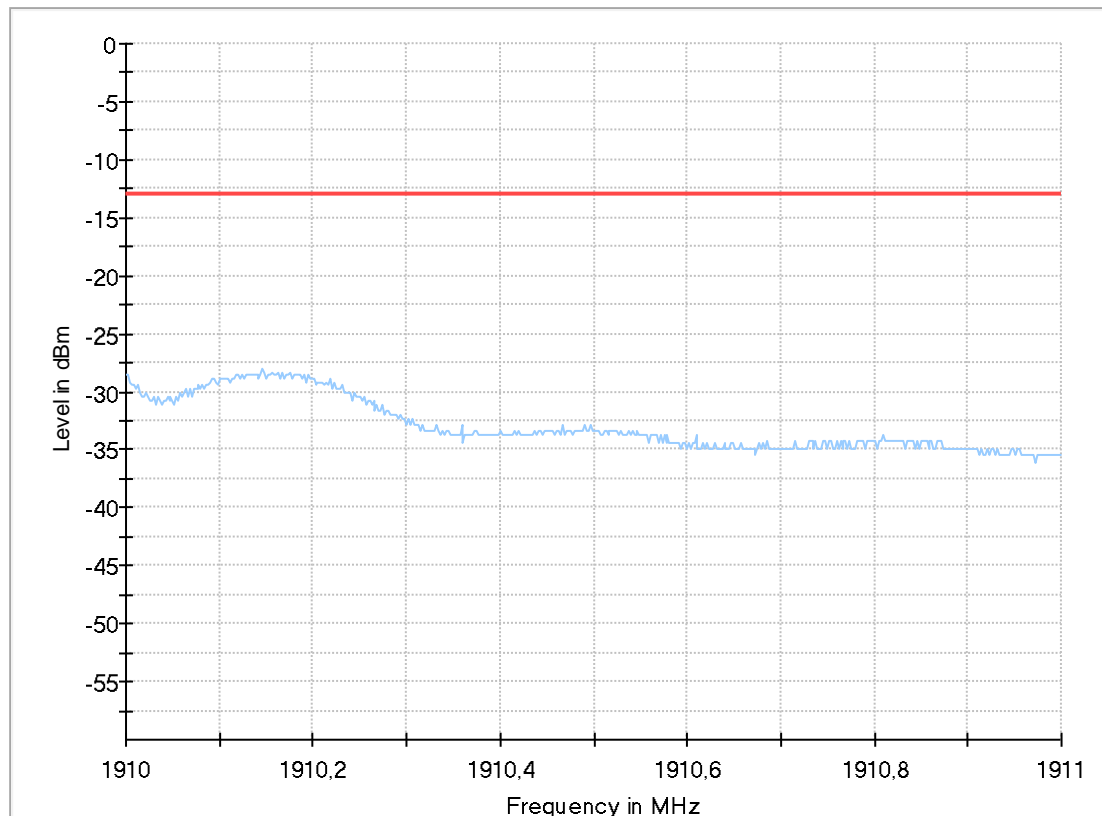
Test Description:	Radiated Band Edge Compliance UMTS-FDDII
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238
Operating Mode:	UMTS_Band 2_CH: 9538
Environmental Conditions:	Humidity: 30%rH; Temperature: 20°C
Operator:	HEI
Comment:	Backup Antenna

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG a valeo Brand
EUT:	ATM-02-ROW-R1 (Sample 1030)

HW version:	103.004.004
SW version:	001.009.020
Serial number:	4355
Connected Interfaces:	Antenna (65206826326-03) + EMC Control Unit
Power Supply:	12VDC
Comments:	-

Full Spectrum



1.6. Radiated emissions on FDD Band V band-edge

1.6.1. Radiated emissions on FDD Band V band-edge - Main Antenna

9.05_BE_R_Ch4132_RMC

Common Information

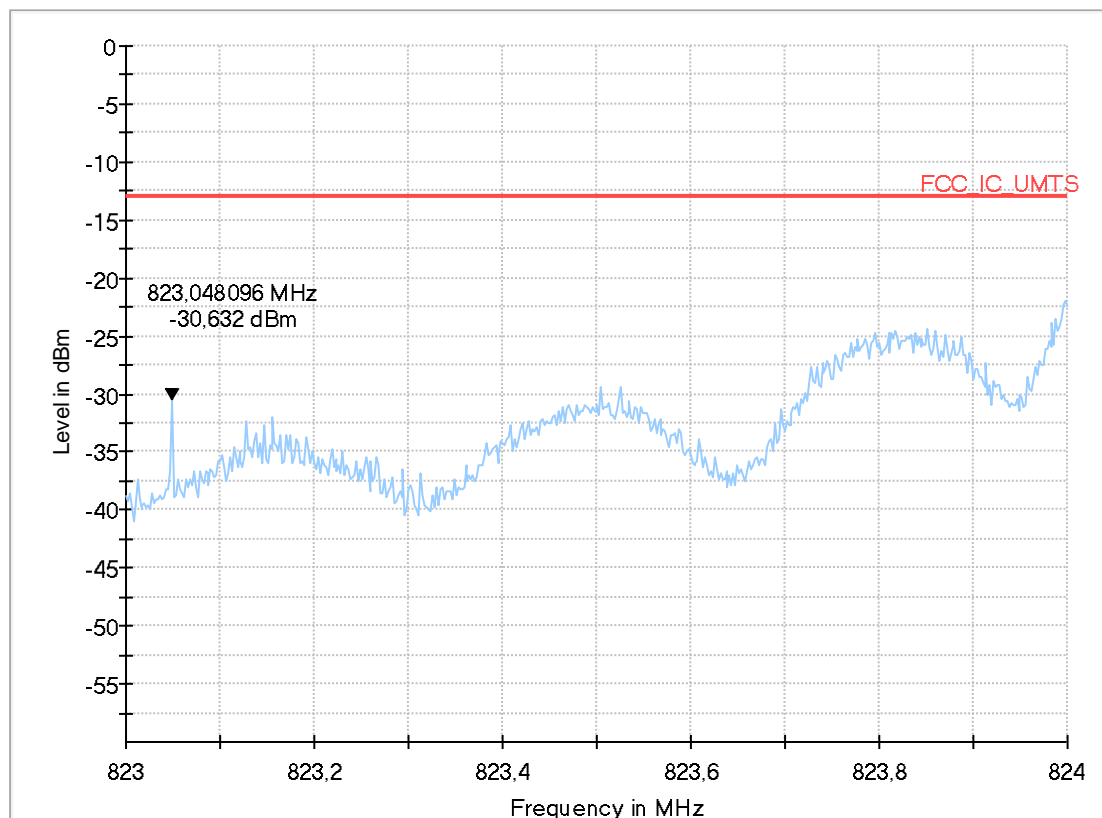
Test Description:	Band-Edge low - Radiated Spurious Emissions UMTS FDDV
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917(a)
Operating Mode:	UE allocated channel 4132
Environmental Conditions:	Humidity: 40%rH; Temperature: 20°C
Operator:	HEI

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG a valeo Brand
EUT:	ATM-02-ROW-T1 (Sample 1035)

HW version:	202.009.004
SW version:	001.009.020
Serial number:	4363
Connected Interfaces:	Antenna (65206826326-03) + EMC Control Unit
Power Supply:	12VDC
Comments:	-

Full Spectrum



9.06_BE_R_Ch4233_RMC

Common Information

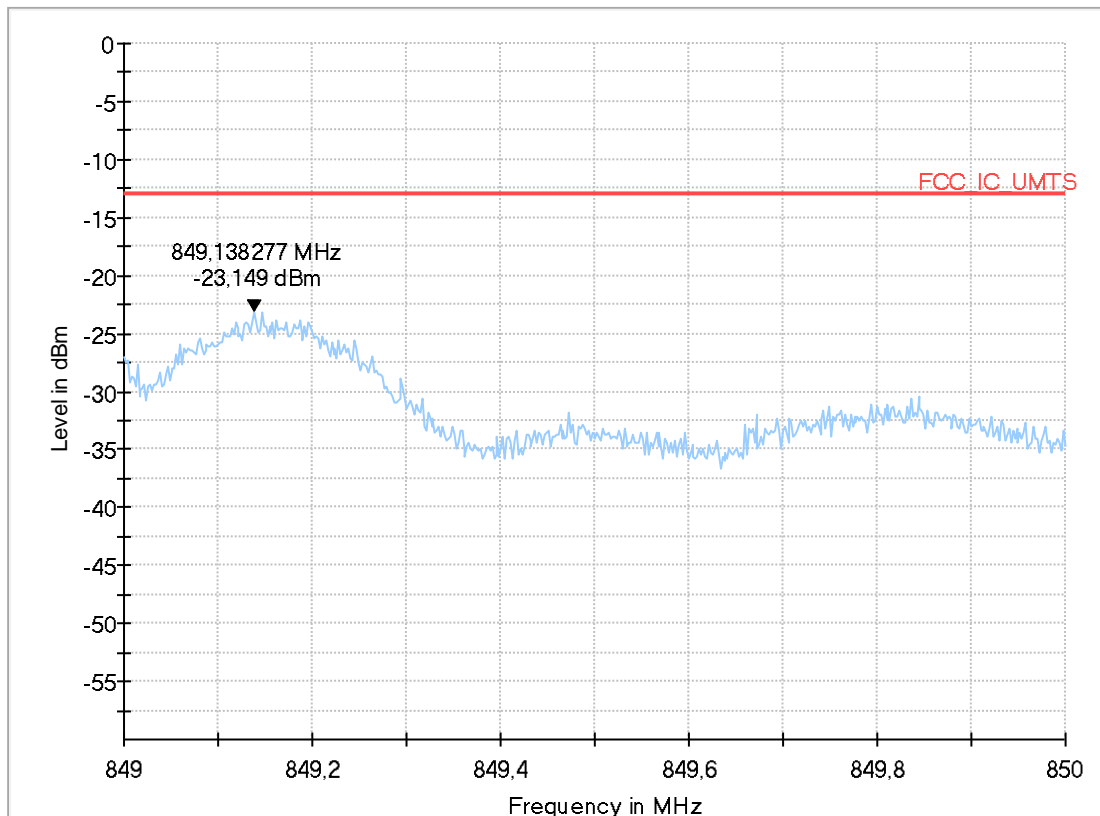
Test Description:	Band-Edge low - Radiated Spurious Emissions UMTS FDDV
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917(a)
Operating Mode:	UE allocated channel 4233
Environmental Conditions:	Humidity: 40%rH; Temperature: 20°C
Operator:	HEI

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG a valeo Brand
EUT:	ATM-02-ROW-R1 (Sample 1035)

HW version:	202.009.004
SW version:	001.009.020
Serial number:	4363
Connected Interfaces:	Antenna (65206826326-03) + EMC Control Unit
Power Supply:	12VDC
Comments:	-

Full Spectrum



1.6.2. Radiated emissions on FDD Band V band-edge - Backup Antenna

9.07_BE_R_Ch4132_RMC

Common Information

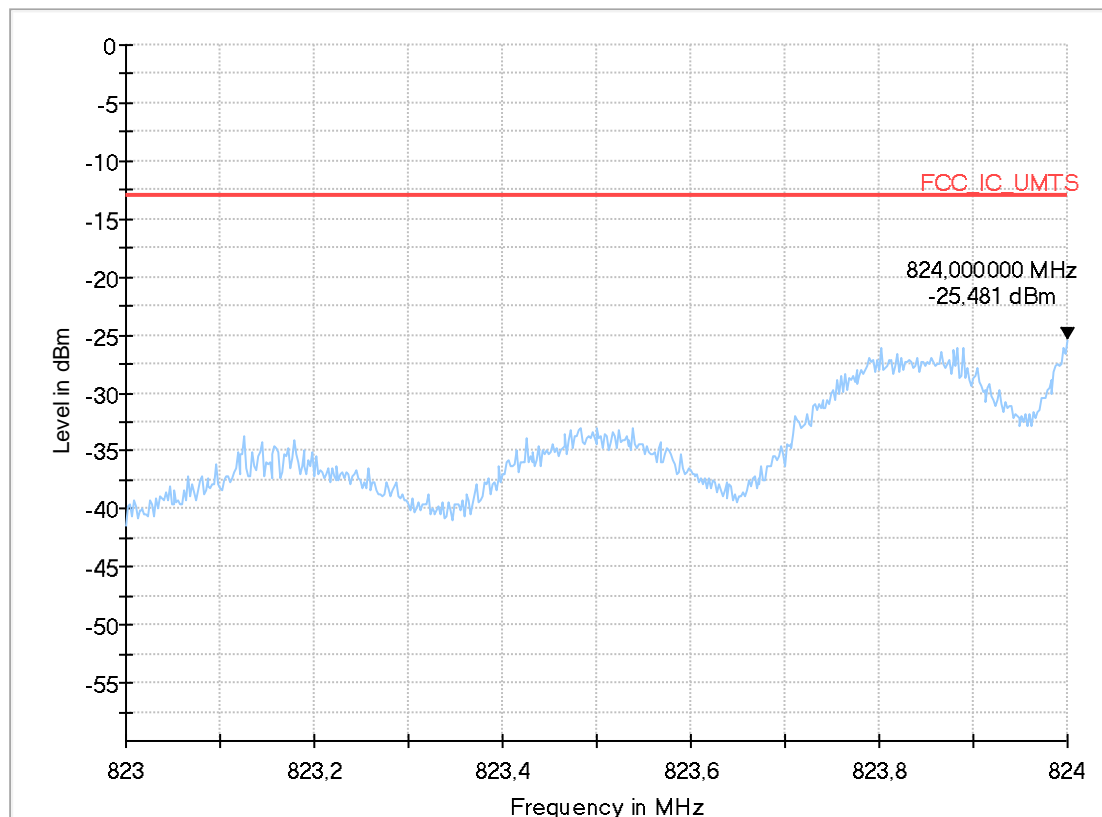
Test Description:	Band-Edge low - Radiated Spurious Emissions UMTS FDDV
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917(a)
Operating Mode:	UE allocated channel 4132
Environmental Conditions:	Humidity: 50%rH; Temperature: 20°C
Operator:	HEI
Remarks:	Backup Antenna

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG a valeo Brand
EUT:	ATM-02-ROW-R1 (Sample 1030)

HW version:	103.004.004
SW version:	001.009.020
Serial number:	4355
Connected Interfaces:	Antenna (65206826326-03) + EMC Control Unit
Power Supply:	12VDC
Comments:	-

Full Spectrum



9.08_BE_R_Ch4233_RMC

Common Information

Test Description:	Band-Edge low - Radiated Spurious Emissions UMTS FDDV
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917(a)
Operating Mode:	UE allocated channel 4233
Environmental Conditions:	Humidity: 40%rH; Temperature: 20°C
Operator:	HEI
Remarks:	Backup Antenna

EUT Information

Manufacturer:	peiker acoustic GmbH & Co. KG a valeo Brand
EUT:	ATM-02-ROW-R1 (Sample 1030)

HW version:	103.004.004
SW version:	001.009.020
Serial number:	4355
Connected Interfaces:	Antenna (65206826326-03) + EMC Control Unit
Power Supply:	12VDC
Comments:	-

Full Spectrum

