

Annex 4: Measurement diagrams  
to  
**TEST REPORT**  
No.: 6-0147-12-19-6a







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

**IC-Regulations**  
RSS-132 Issue 3  
RSS-133 Issue 6  
RSS-Gen Issue 3

for

**Gemalto M2M GmbH**  
**Wireless Module EHS6**  
(GSM/GPRS/E-GPRS Mode)

**FCC-ID: QIPEHS6**  
**IC-ID: 7830A-EHS6**

Laboratory Accreditation and Listings			
 <b>Deutsche Akkreditierungsstelle</b> D-PL-12047-01-01	 <b>Industry Canada</b> Reg. No.: 736496 MRA US-EU 0003	 <b>Industry Canada</b> Reg. No.: 3462D-1 Reg. No.: 3462D-2 Reg. No.: 3462D-3	 <b>Voluntary Controls for Electromagnetic Emissions</b> Reg. No.: R-2665, R-2666 C-2914, T-1967, G-301
 <b>AUTHORIZED RF LABORATORY</b>	 <b>LAB CODE 20011130-00</b>		
accredited according to DIN EN ISO/IEC 17025			
<p><b>CETECOM GmbH</b>            Laboratory Radio Communications &amp; 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</p>			

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## 1. Renaming of company information

All diagrams contain applicants former company name *Cinterion Wireless Modules GmbH*. The name change was valid from 2013-05-01 on.

## 2. Field strength of spurious radiation

### 2.1. GSM850 Operating Mode

#### 8.01\_RSE\_R\_Ch128\_GSM

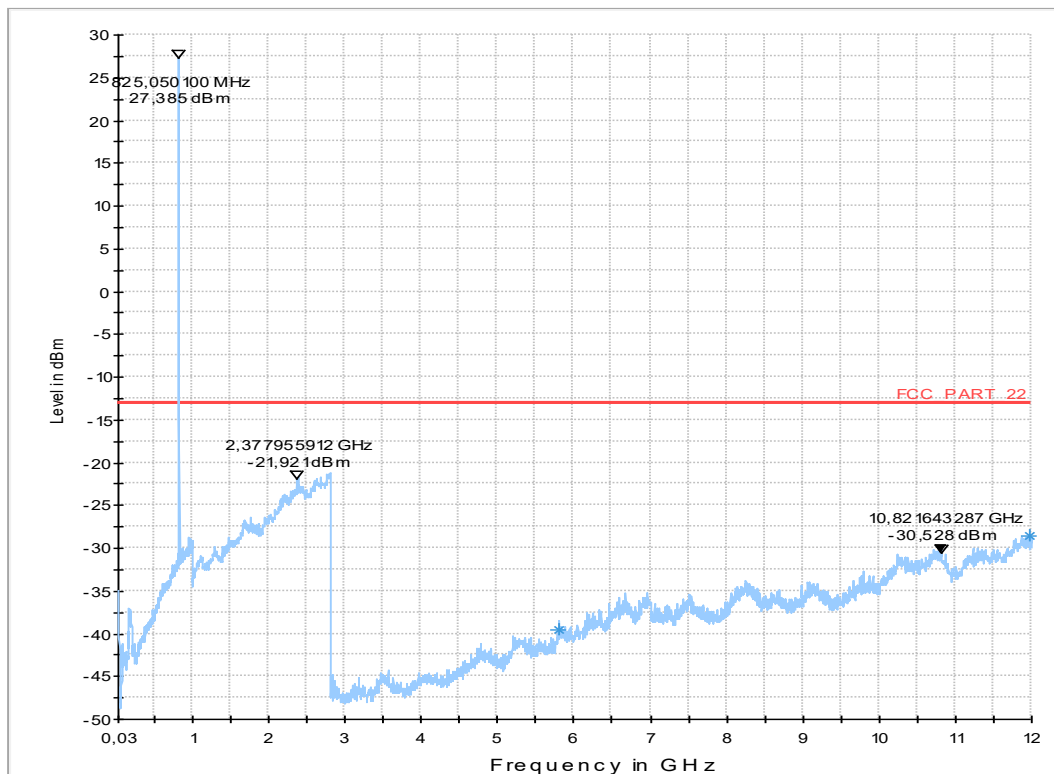
##### Common Information

Test Description:	Radiated Emissions GSM850
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part22.917
Test Case:	-
Operating Mode:	MS allocated UL channel 128
Exclusionband:	824 - 849MHz
Environmental Conditions:	Humidity: 22%rH; Temperature: 38°C
Operator:	Lor

##### EUT Information

Manufacturer:	Cinterion GmbH
Model:	Wireless Module
Type:	GSM/E-GPRS/W-CDMA
-----	
EUT:	EHS6
Serial number:	004401 08 084039 6
Connected Interfaces:	USB/RS-232/Audio
Power Supply:	9V DC to DSB75
Comments:	Accessories: DSB75-Adapter, Handset Votronic, Smarteq MiniMag mount antenna

030401\_FCC\_Part22\_GSM850\_TX\_all\_channels\_30M-12G



## 8.02\_RSE\_R\_Ch192\_GSM

### Common Information

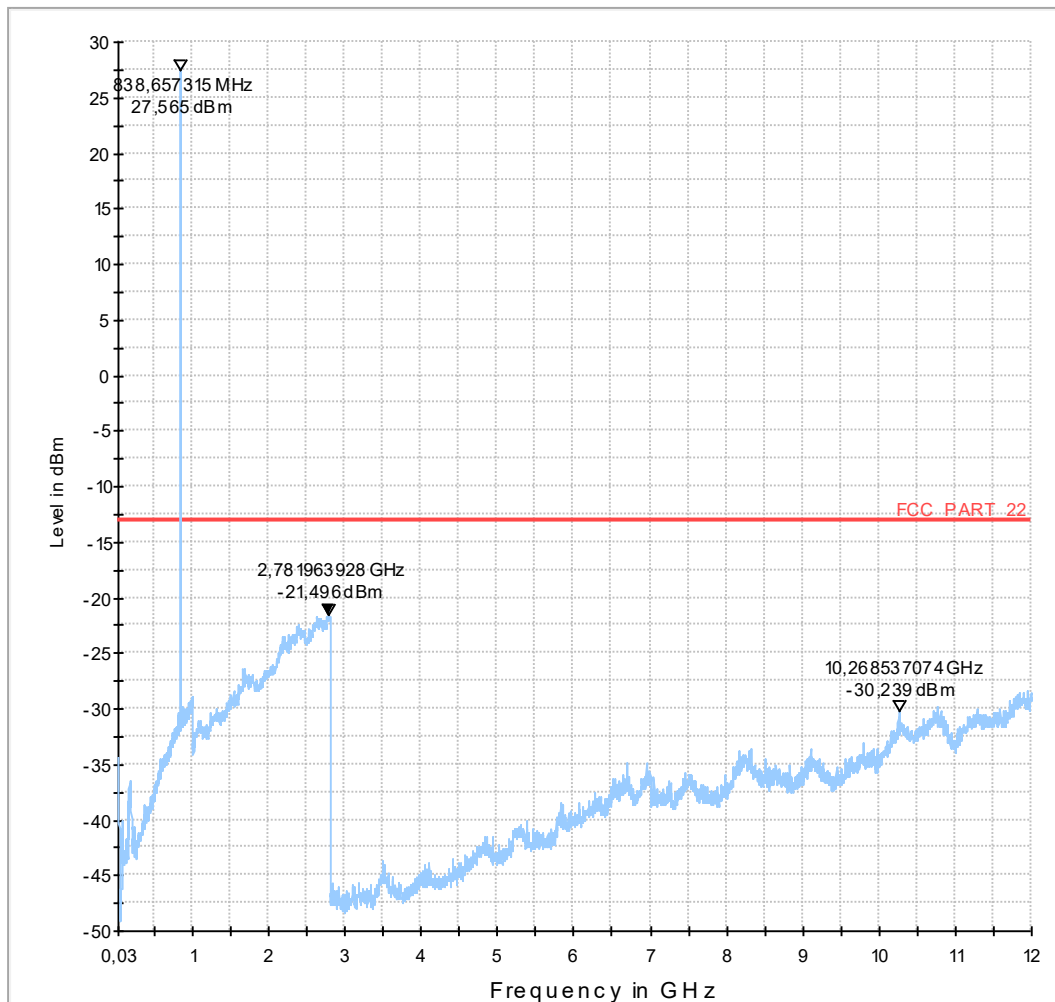
Test Description:	Radiated Emissions GSM850
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part22.917
Test Case:	-
Operating Mode:	MS allocated UL channel 192
Exclusionband:	824 - 849MHz
Environmental Conditions:	Humidity: 22%rH; Temperature: 38°C
Operator:	Lor

### EUT Information

Manufacturer:	Cinterion GmbH
Model:	Wireless Module
Type:	GSM/E-GPRS/W-CDMA

EUT:	EHS6
Serial number:	004401 08 084039 6
Connected Interfaces:	USB/RS-232/Audio
Power Supply:	9V DC to DSB75
Comments:	Accessories: DSB75-Adapter, Handset Votronic, Smarteq MiniMag mount antenna

030401\_FCC\_Part22\_GSM850\_TX\_all\_channels\_30M-12G



### 8.03\_RSE\_R\_Ch251\_GSM

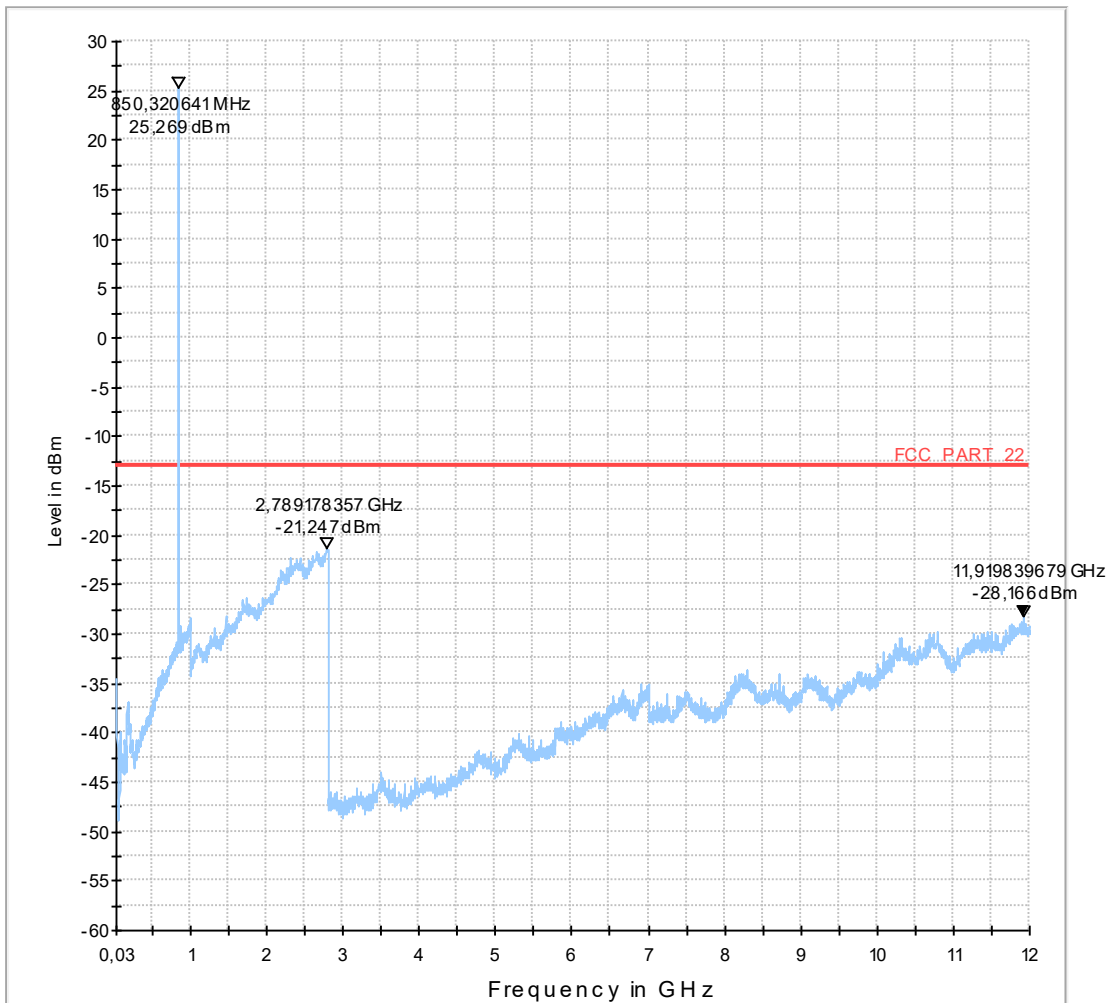
#### Common Information

Test Description:	Radiated Emissions GSM850
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part22.917
Test Case:	-
Operating Mode:	MS allocated UL channel 251
Exclusionband:	824 - 849MHz
Environmental Conditions:	Humidity: 22%rH; Temperature: 38°C
Operator:	Lor

#### EUT Information

Manufacturer:	Cinterion GmbH
Model:	Wireless Module
Type:	GSM/E-GPRS/W-CDMA
-----	
EUT:	EHS6
Serial number:	004401 08 084039 6
Connected Interfaces:	USB/RS-232/Audio
Power Supply:	9V DC to DSB75
Comments:	Accessories: DSB75-Adapter, Handset Votronic, Smarteq MiniMag mount antenna

030401\_FCC\_Part22\_GSM850\_TX\_all\_channels\_30M-12G



## 2.2. GSM1900 Operating Mode

### 8.10\_RSE\_R\_Ch512\_GSM

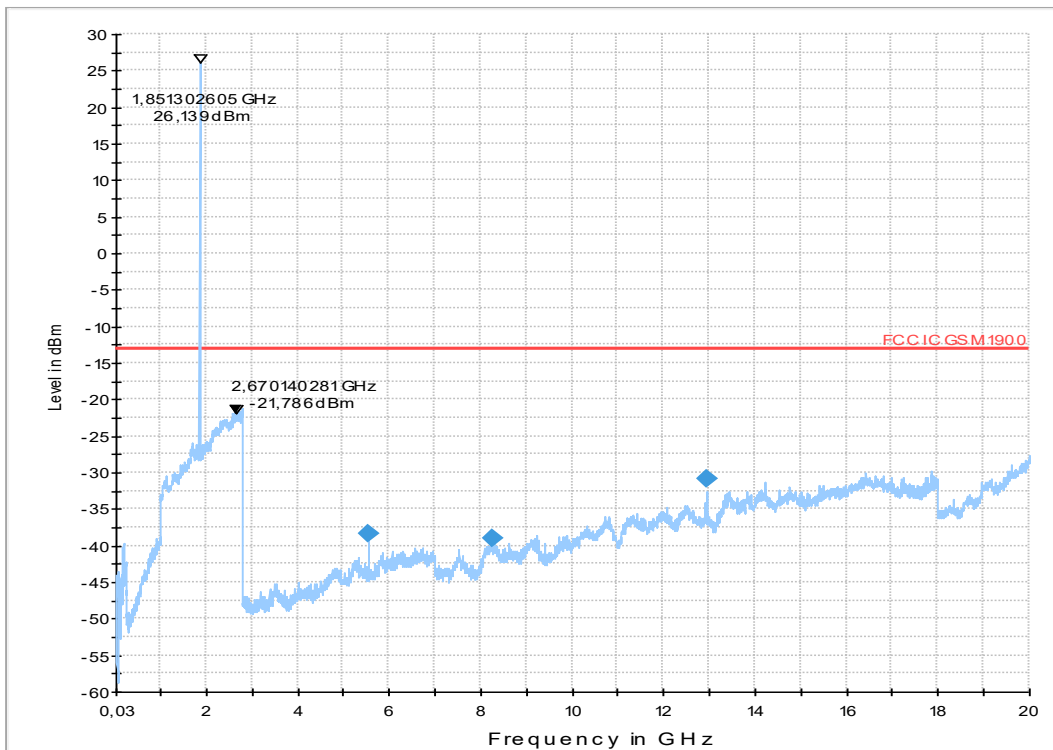
#### Common Information

Test Description:	Radiated Spurious Emissions GSM1900
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238
Comm. Link:	GSM1900, Voice
Operating Mode:	MS allocated channel 512 (UL = 1850.2MHz)
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 22%RH; Temperature: 38°C
Operator:	Lor

#### EUT Information

Manufacturer:	Cinterion GmbH
Model:	Wireless Module
Type:	GSM/E-GPRS/W-CDMA
-----	
EUT:	EHS6
Serial number:	004401 08 084039 6
Hardware Rev.	B1.2/1
Software Rev.	rev 01.001
Connected Interfaces:	USB/RS-232/Audio
Power Supply:	9V DC to DSB75
Comments:	Accessories: DSB75-Adapter, Handset Votronic, Smarteq MiniMag mount antenna

030404\_FCC\_Part24\_GSM1900\_TX\_all\_channels\_30M-20G



#### Final Result 1

Frequency (MHz)	MaxPeak (dBm)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)	Limit (dBm)
5550.005010	-38.3	5000.0	3000.000	H	169.0	90.0	-89.9	25.3	-13.0
8254.313627	-39.0	5000.0	3000.000	V	77.0	90.0	-81.2	26.0	-13.0
12951.057115	-30.9	5000.0	3000.000	H	169.0	90.0	-76.6	17.9	-13.0

## 8.11\_RSE\_R\_Ch661\_GSM

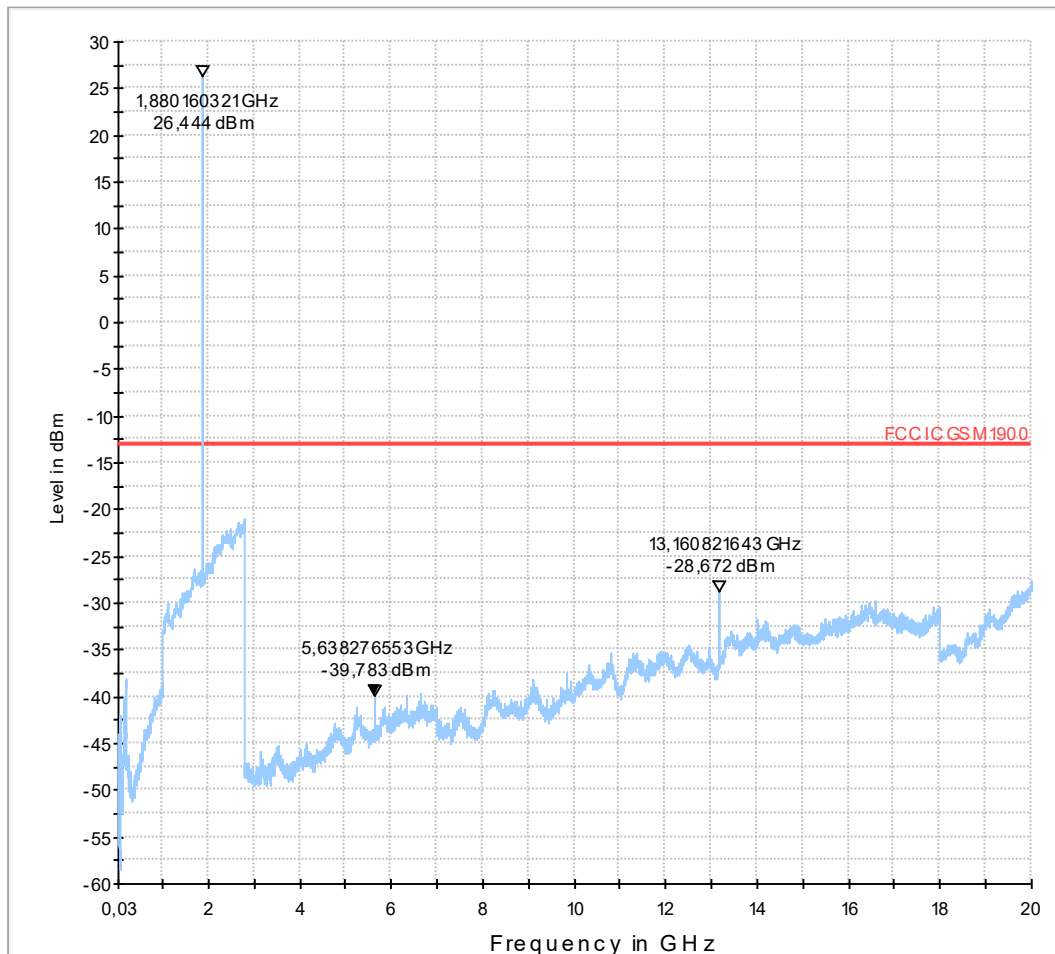
### Common Information

Test Description:	Radiated Spurious Emissions GSM1900
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238
Comm. Link:	GSM1900, Voice
Operating Mode:	MS allocated channel 661(UL = 1880.0MHz)
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 22%rH; Temperature: 38°C
Operator:	Lor

### EUT Information

Manufacturer:	Cinterion GmbH
Model:	Wireless Module
Type:	GSM/E-GPRS/W-CDMA
-----	
EUT:	EHS6
Serial number:	004401 08 084039 6
Hardware Rev.	B1.2/1
Software Rev.	rev 01.001
Connected Interfaces:	USB/RS-232/Audio
Power Supply:	9V DC to DSB75
Comments:	Accessories: DSB75-Adapter, Handset Votronic, Smarteq MiniMag mount antenna

030404\_FCC\_Part24\_GSM1900\_TX\_all\_channels\_30M-20G



## 8.12\_RSE\_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  
 Comm. Link: GSM1900, Voice  
 Operating Mode: MS allocated channel 810 (UL = 1909.8MHz)  
 Exclusionband: 1850- 1910MHz  
 Environmental Conditions: Humidity: 22%rH; Temperature: 38°C  
 Operator: Lor

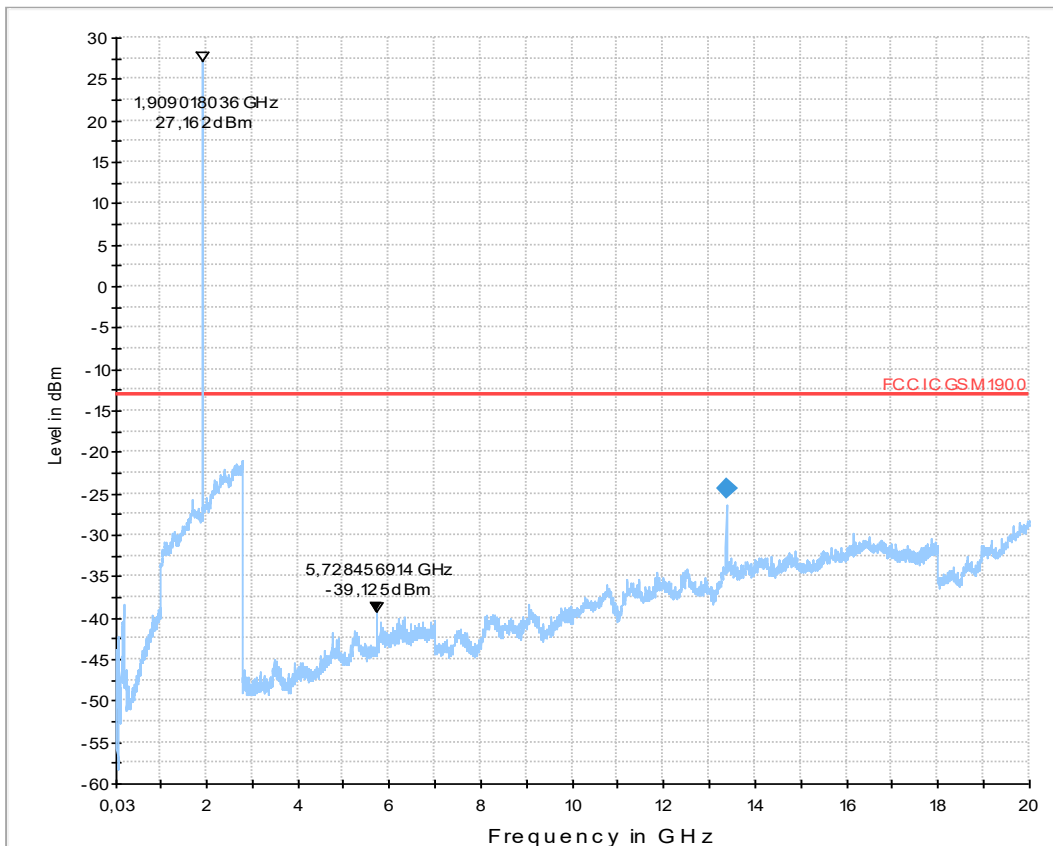
### EUT Information

Manufacturer: Cinterion GmbH  
 Model: Wireless Module  
 Type: GSM/E-GPRS/W-CDMA

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EUT: EHS6  
 Serial number: 004401 08 084039 6  
 Hardware Rev. B1.2/1  
 Software Rev. rev 01.001  
 Connected Interfaces: USB/RS-232/Audio  
 Power Supply: 9V DC to DSB75  
 Comments: Accessories: DSB75-Adapter, Handset Votronic, Smarteq MiniMag mount antenna

030404\_FCC\_Part24\_GSM1900\_TX\_all\_channels\_30M-20G



### Final Result 1

Frequency (MHz)	MaxPeak (dBm)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)	Limit (dBm)
13368.582164	-24.3	5000.0	3000.000	H	164.0	90.0	-75.3	11.3	-13.0



## 2.3. Band-Edge compliance for GSM850 operation (outside frequency block)

### Diagram No.: 9.01\_RSE\_Ch128\_GSM

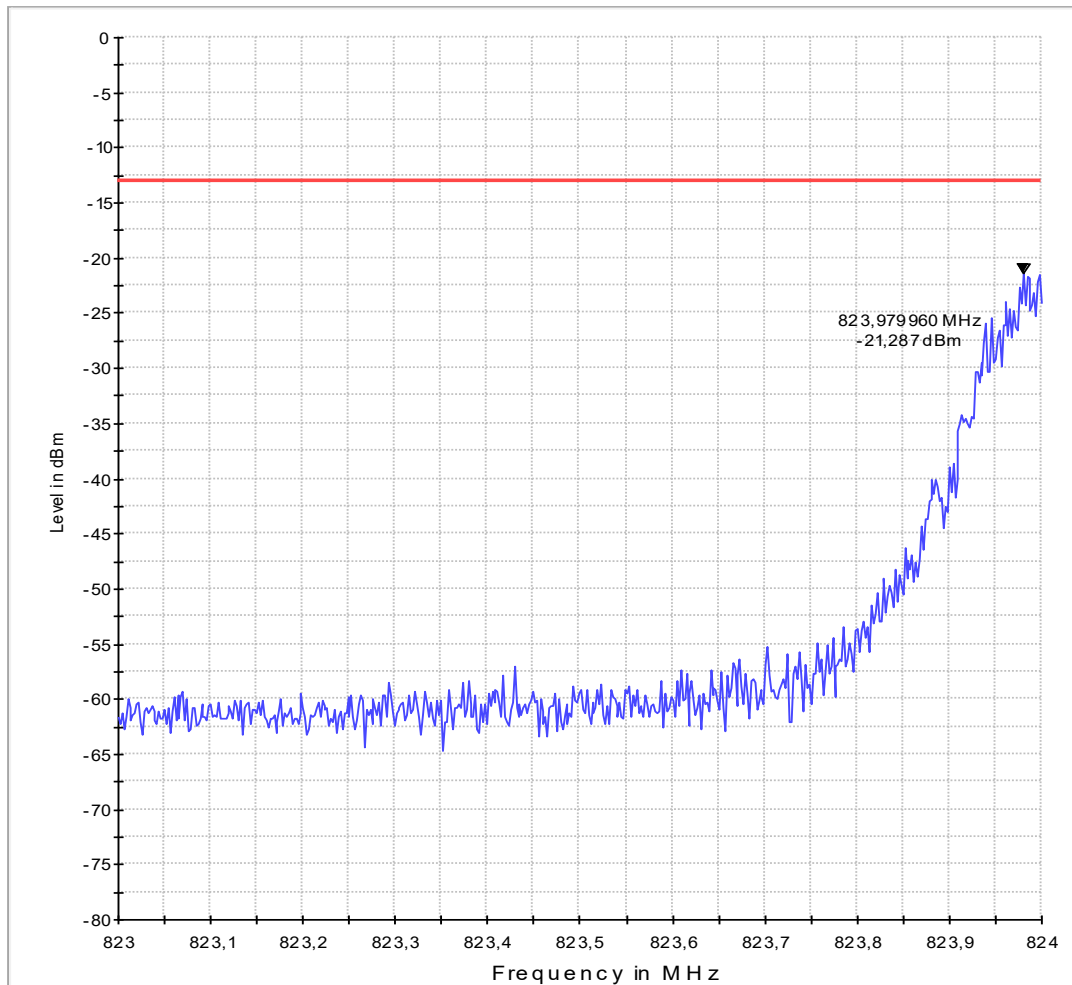
#### Common Information

Test Description:	Band-Edge Radiated - G850
Test Site:	FAR
Test Standard:	FCC Part 22, RSS-133
Antenna polarisation:	vertical / horizontal
Operation mode:	MS allocated channel 128 (fc = 824,2 MHz); Voice, PCL0 (+33 dBm)
Operator Name:	Tas
Comment:	6-0147-12-19

#### EUT Information

EUT Name:	EHS6
Manufacturer:	Cinterion
Serial Number:	004401080840396
Hardware Rev:	B1.2 /1
Software Rev:	rev 01.001
Comment:	Interface R232 used for connection with Laptop#7
Accessories:	Power supply (12V DC), Mounting Ant. 1140.26 SMA, Handset HH-SI30.3/v3.0/0

010402\_FCC\_Part22\_GSM850\_TX\_channel\_128\_band\_edge



## Diagram No.: 9.02\_BE\_ch251\_GSM

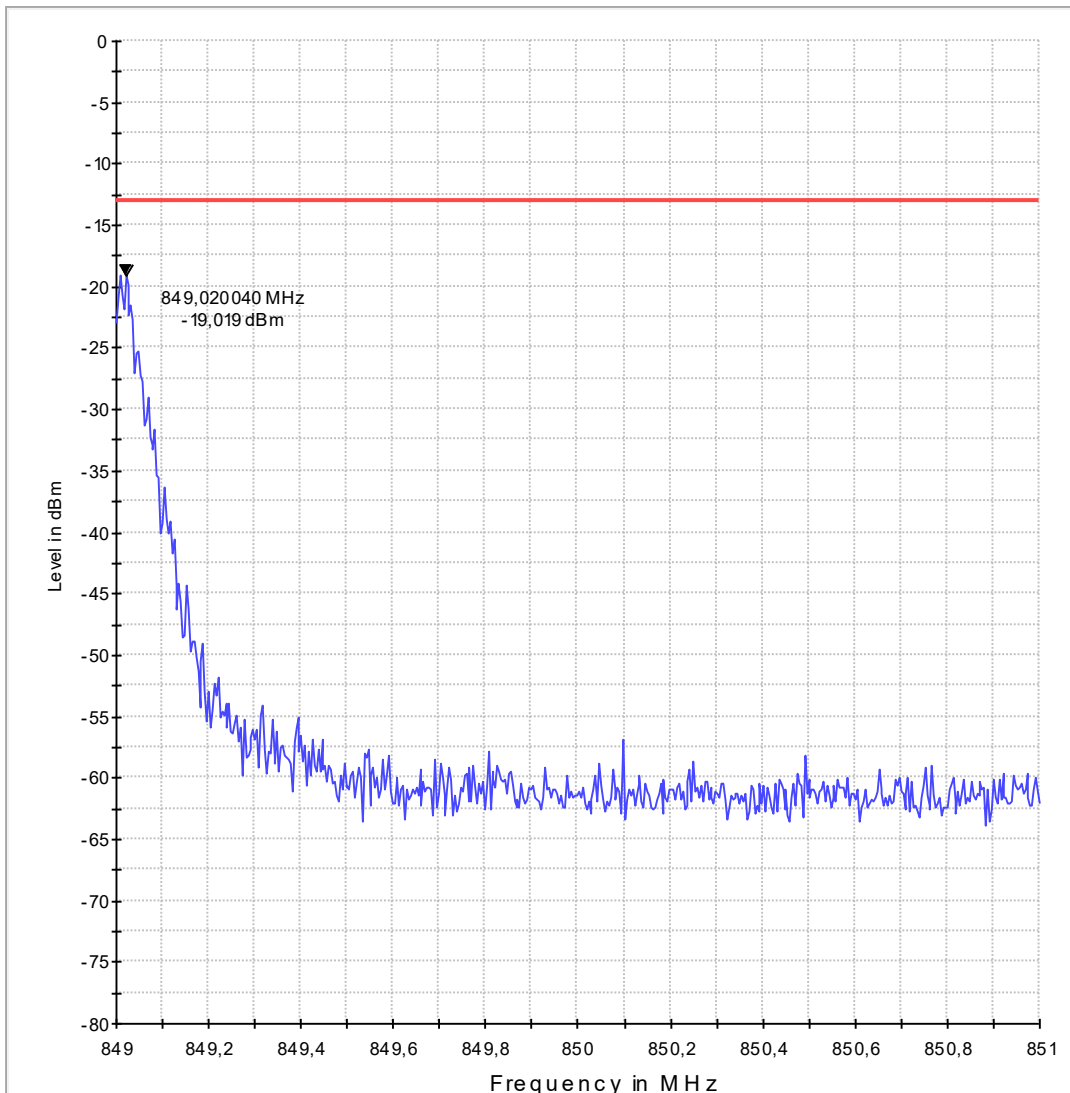
### Common Information

Test Description:	Band-Edge Radiated - G850
Test Site:	FAR
Test Standard:	FCC Part 22, RSS-132
Antenna polarisation:	vertical / horizontal
Operation mode:	MS allocated channel 251 (fc = 848.8 MHz); Voice, PCL5 (+33dBm)
Operator Name:	Tas
Comment:	6-0147-12-19

### EUT Information

EUT Name:	EHS6
Manufacturer:	Cinterion
Serial Number:	004401080840396
Hardware Rev:	B1.2 /1
Software Rev:	rev 01.001
Comment:	Interface R232 used for connection with Laptop#7
Accessories:	Power supply (12V DC), Mounting Ant. 1140.26 SMA, Handset HH-SI30.3/v3.0/0

010403\_FCC\_Part22\_GSM850\_TX\_channel\_251\_band\_edge



## 2.4. Band-Edge compliance for GSM 1900 operation (outside frequency block)

### 9.07\_BE\_R\_Ch512\_GSM

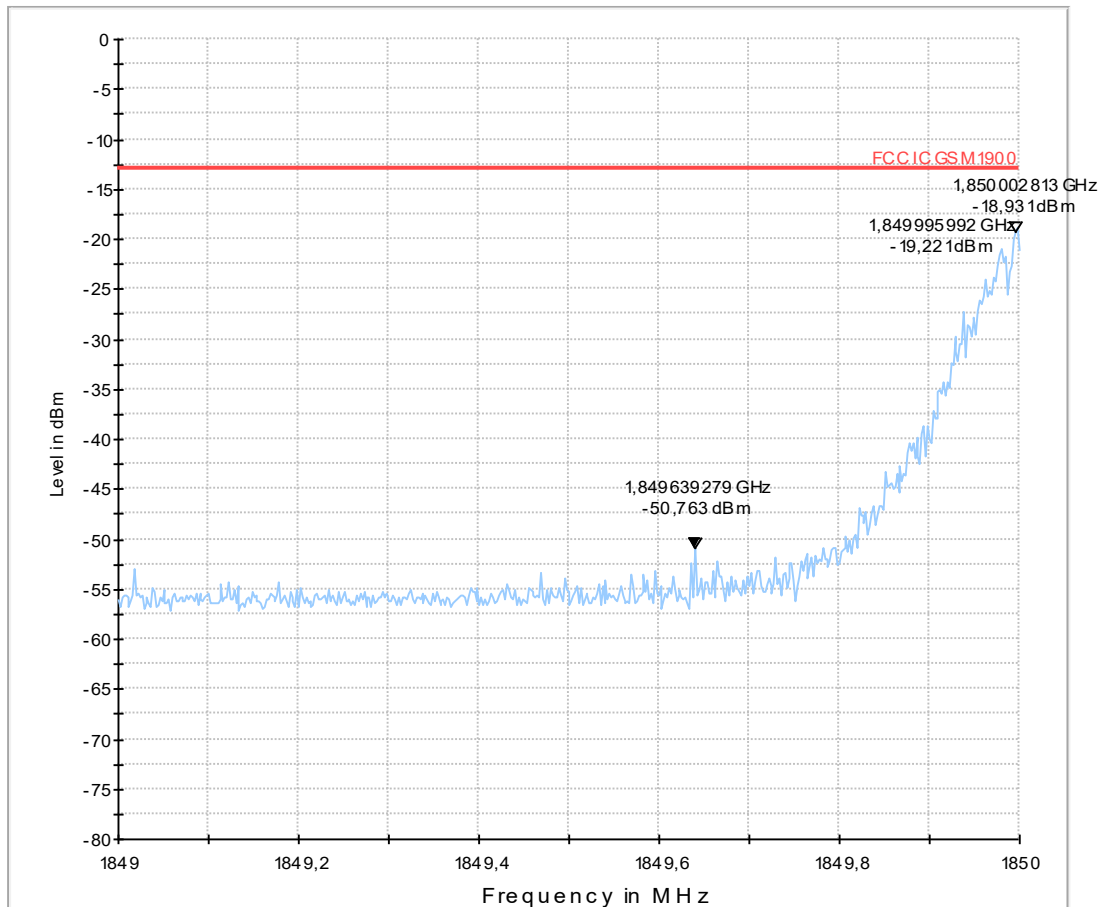
#### Common Information

Test Description:	Radiated Spurious Emissions GSM1900
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238
Comm. Link:	GSM1900, Voice
Operating Mode:	MS allocated channel 512 (UL = 1850.2MHz)
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 22%rH; Temperature: 38°C
Operator:	Lor

#### EUT Information

Manufacturer:	Cinterion GmbH
Model:	Wireless Module
Type:	GSM/E-GPRS/W-CDMA
-----	
EUT:	EHS6
Serial number:	004401 08 084039 6
Hardware Rev.	B1.2/1
Software Rev.	rev 01.001
Connected Interfaces:	USB/RS-232/Audio
Power Supply:	9V DC to DSB75
Comments:	Accessories: DSB75-Adapter, Handset Votronic, Smarteq MiniMag mount antenna

030405\_FCC\_Part24\_GSM1900\_TX\_low\_ch\_band\_edge



## 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
Comm. Link:	GSM1900, Voice
Operating Mode:	MS allocated channel 810 (UL = 1909.8MHz)
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: 22%rH; Temperature: 38°C
Operator:	Lor

### EUT Information

Manufacturer:	Cinterion GmbH
Model:	Wireless Module
Type:	GSM/E-GPRS/W-CDMA
-----	
EUT:	EHS6
Serial number:	004401 08 084039 6
Hardware Rev.	B1.2/1
Software Rev.	rev 01.001
Connected Interfaces:	USB/RS-232/Audio
Power Supply:	9V DC to DSB75
Comments:	Accessories: DSB75-Adapter, Handset Votronic, Smarteq MiniMag mounbt antenna

030406\_FCC\_Part24\_GSM1900\_TX\_high\_ch\_band\_edge

