

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			
 Deutsche Akkreditierungsstelle D-PL-12047-01-01	 Reg. No.: 736496 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-2665, R-2666 C-2914, T-1967, G-301
 AUTHORIZED RF LABORATORY	 LAB CODE 20011130-00		
accredited according to DIN EN ISO/IEC 17025			
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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

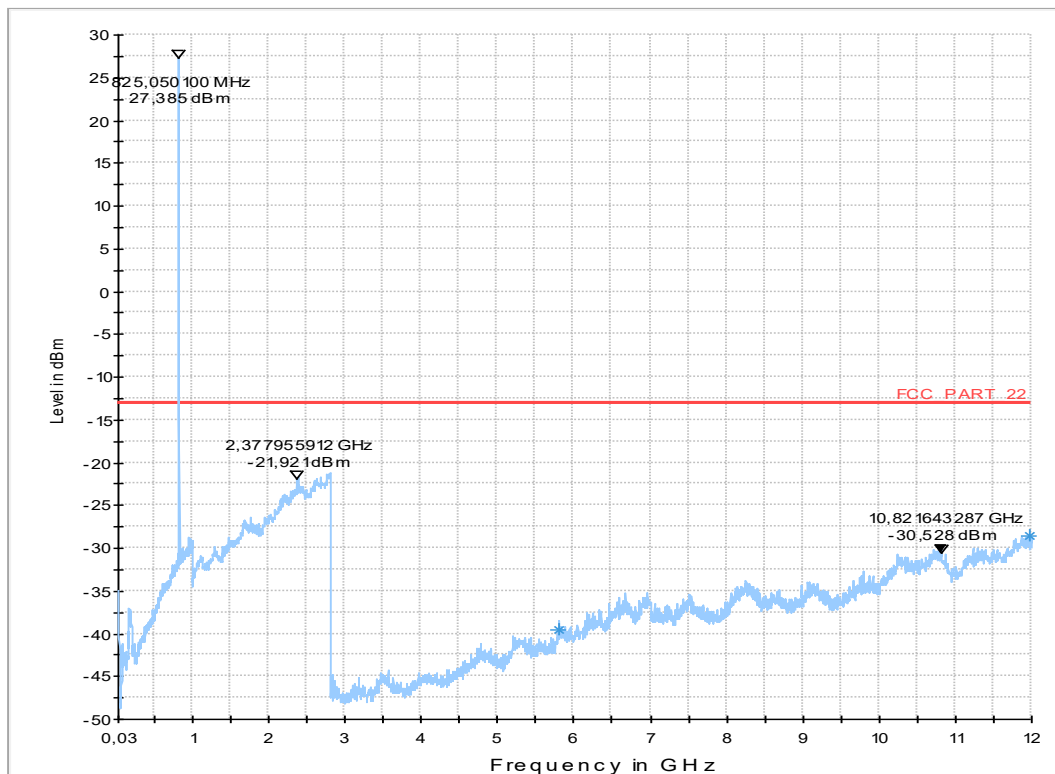
Test Description:	Radiated Emissions GSM850
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part22.917
Test Case:	-
Operating Mode:	MS allocated UL channel 128
Exclusionband:	824 - 849MHz
Environmental Conditions:	Humidity: 22%rH; Temperature: 38°C
Operator: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

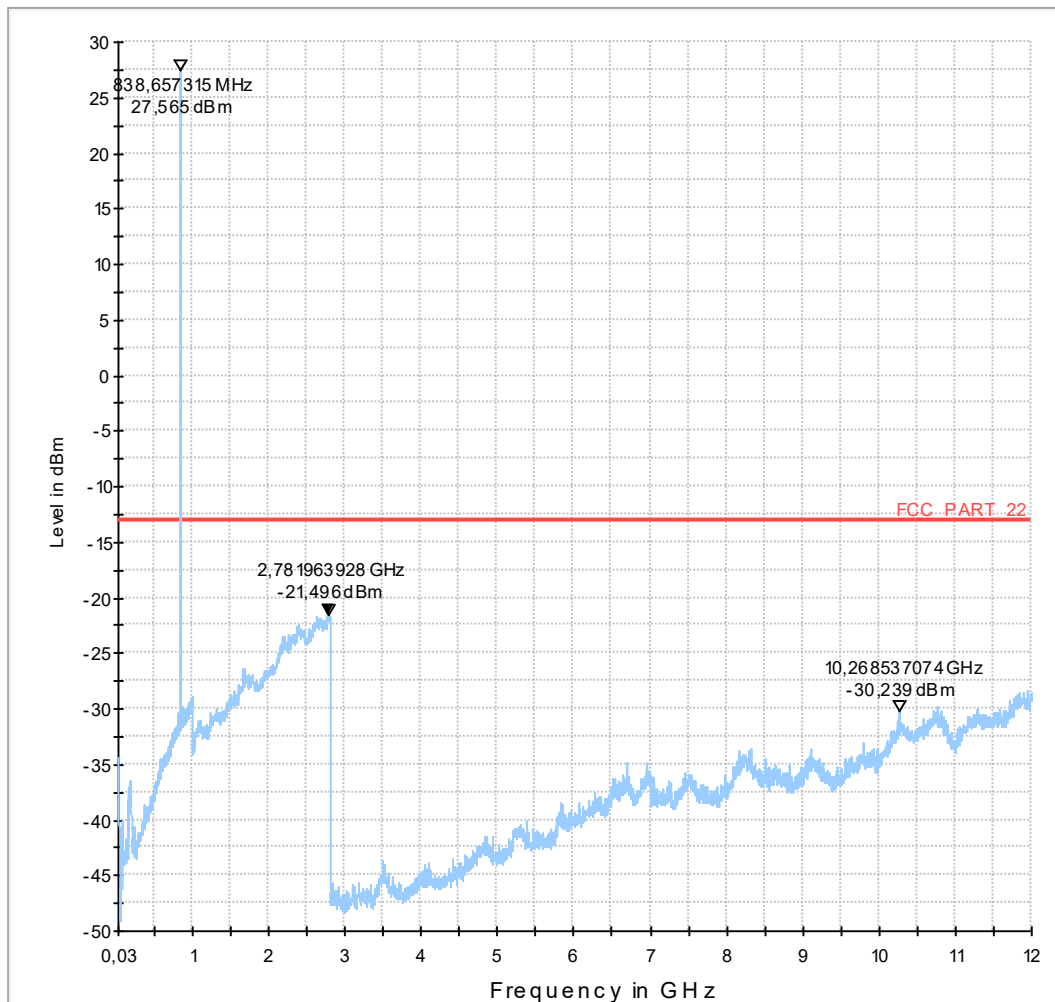
Test Description:	Radiated Emissions GSM850
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part22.917
Test Case:	-
Operating Mode:	MS allocated UL channel 192
Exclusionband:	824 - 849MHz
Environmental Conditions:	Humidity: 22%rH; Temperature: 38°C
Operator: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

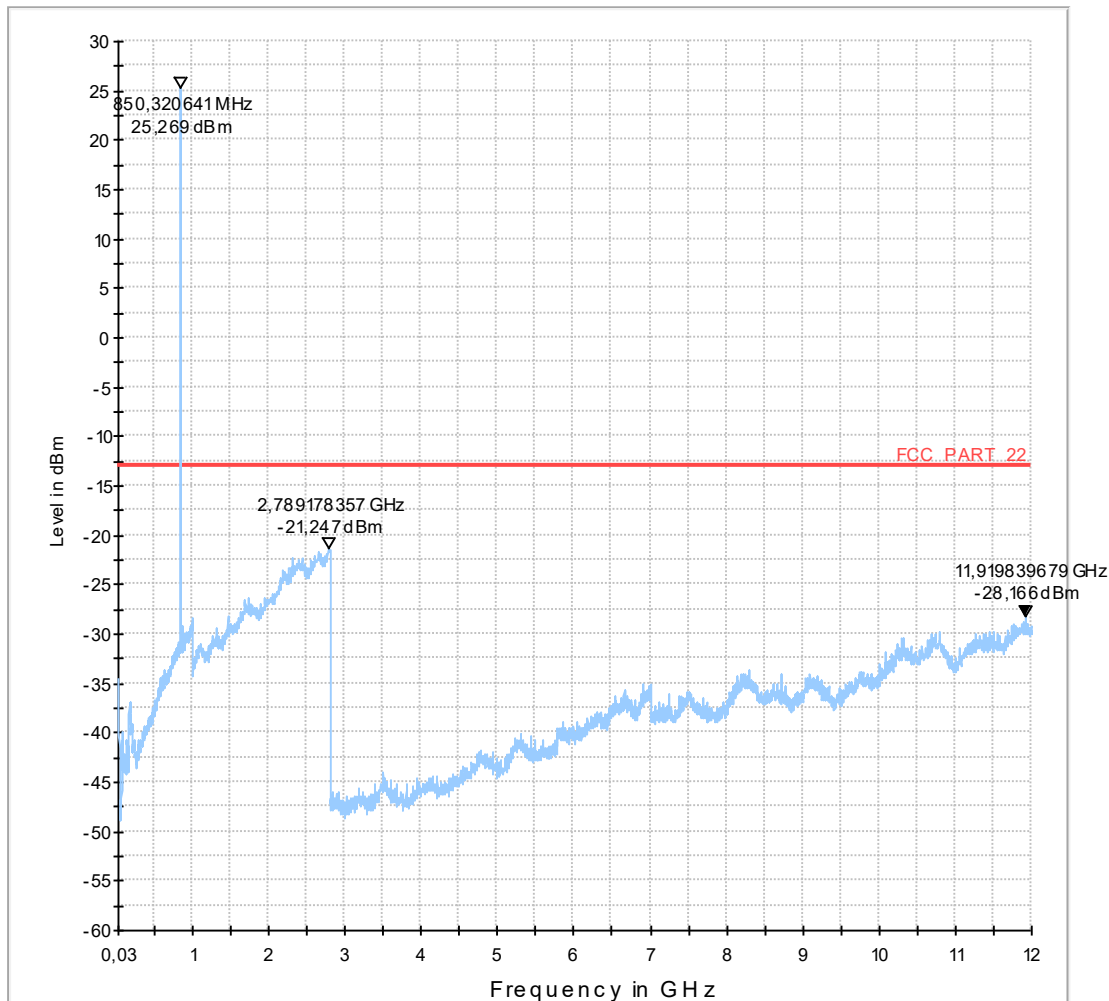
Common Information

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

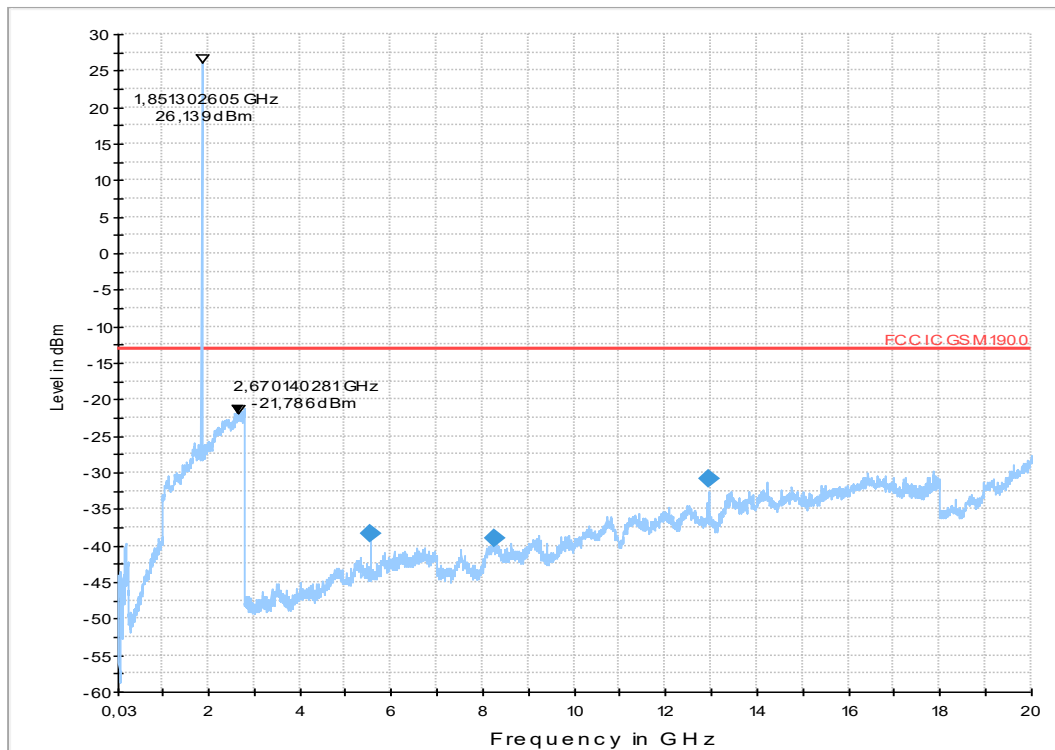
Test Description:	Radiated Spurious Emissions GSM1900
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238
Comm. Link:	GSM1900, Voice
Operating Mode:	MS allocated channel 512 (UL = 1850.2MHz)
Exclusionband:	1850- 1910MHz
Environmental Conditions:	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

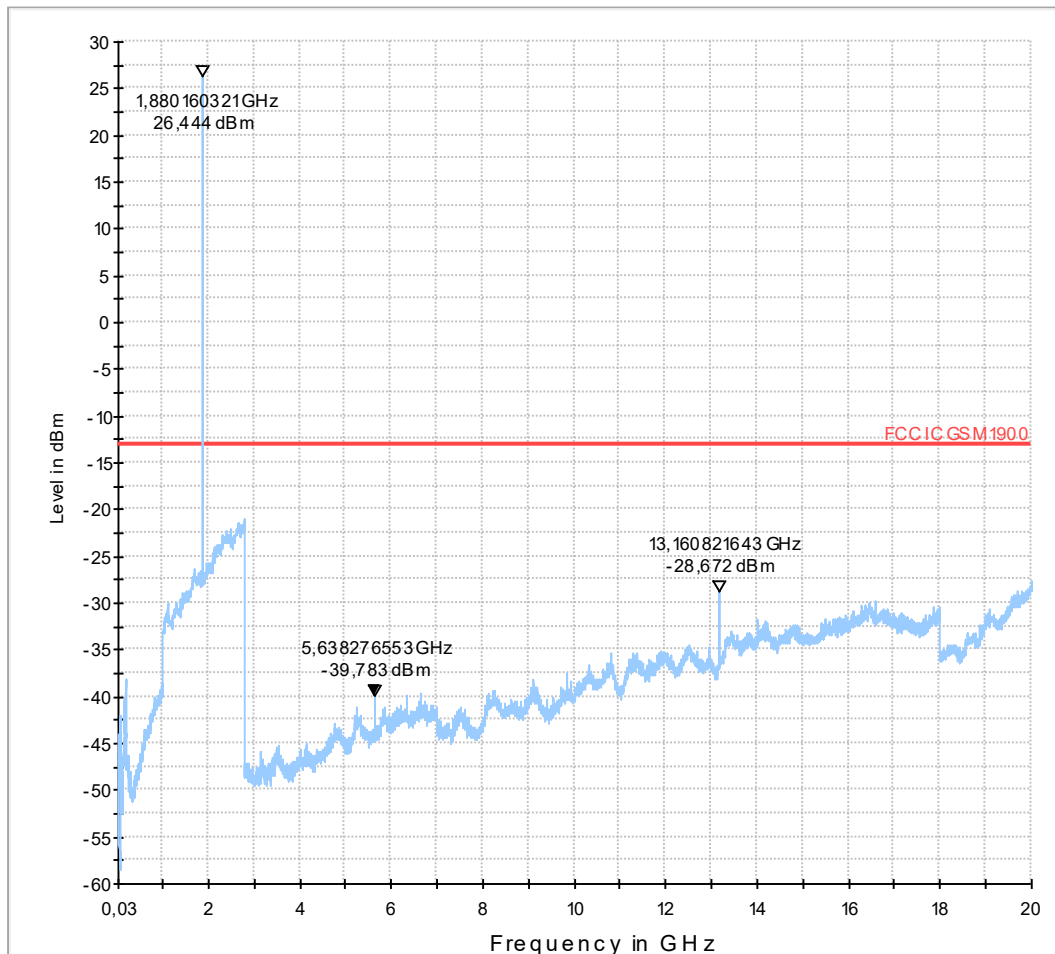
Test Description:	Radiated Spurious Emissions GSM1900
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238
Comm. Link:	GSM1900, Voice
Operating Mode:	MS allocated channel 661(UL = 1880.0MHz)
Exclusionband:	1850- 1910MHz
Environmental Conditions:	Humidity: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

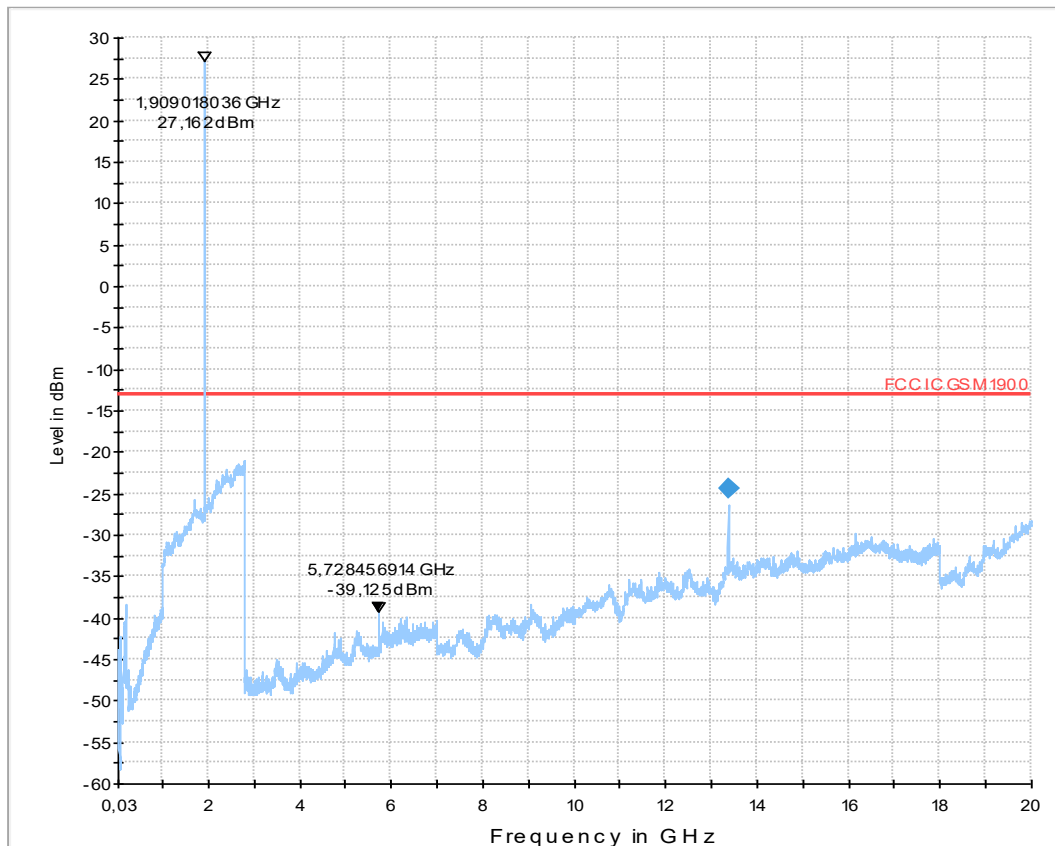
Test Description: Radiated Spurious Emissions GSM1900
 Test Site Location: CETECOM GmbH Essen
 Test Site: Fully Anechoic Room (FAR)
 Test Standard: FCC Part 24.238
 Comm. Link: GSM1900, Voice
 Operating Mode: MS allocated channel 810 (UL = 1909.8MHz)
 Exclusionband: 1850- 1910MHz
 Environmental Conditions: Humidity: 22%rH; Temperature: 38°C
 Operator: Lor

EUT Information

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

 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

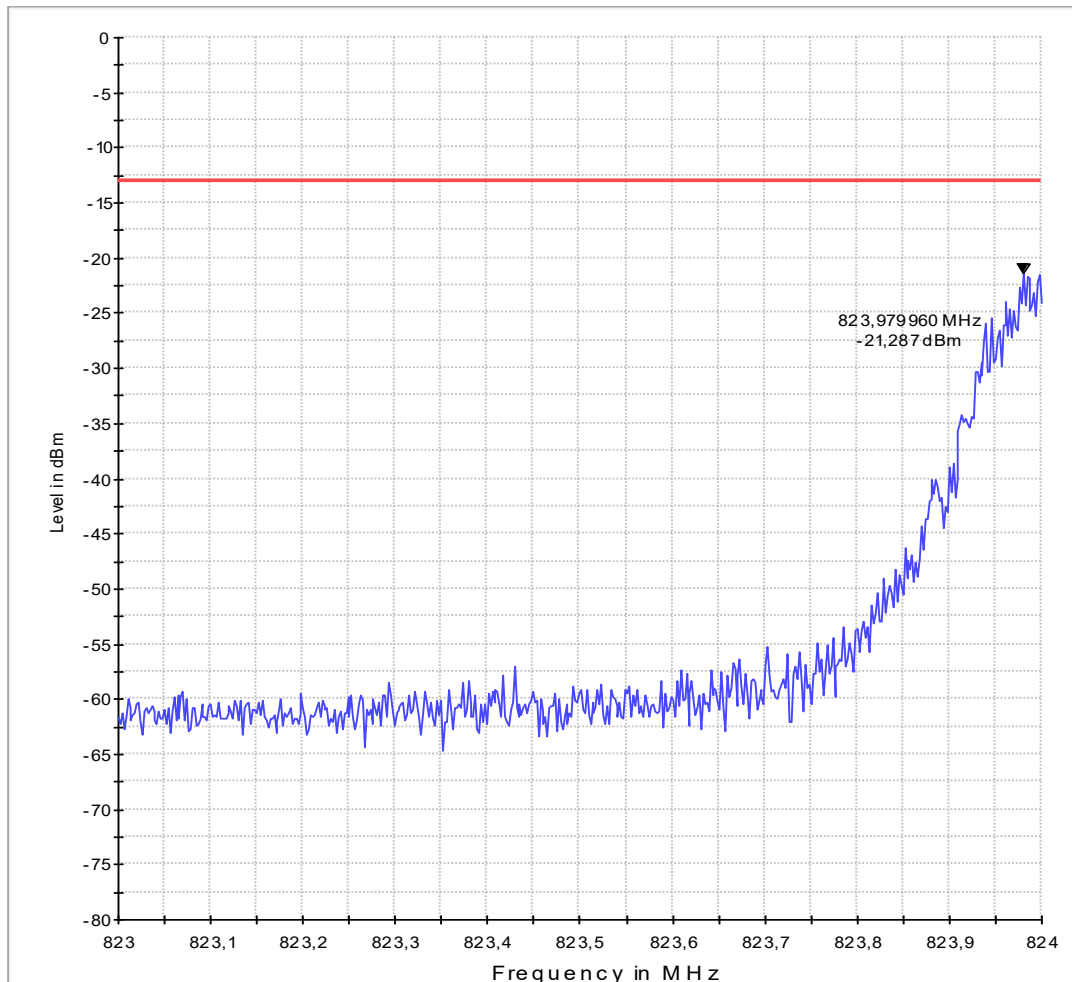


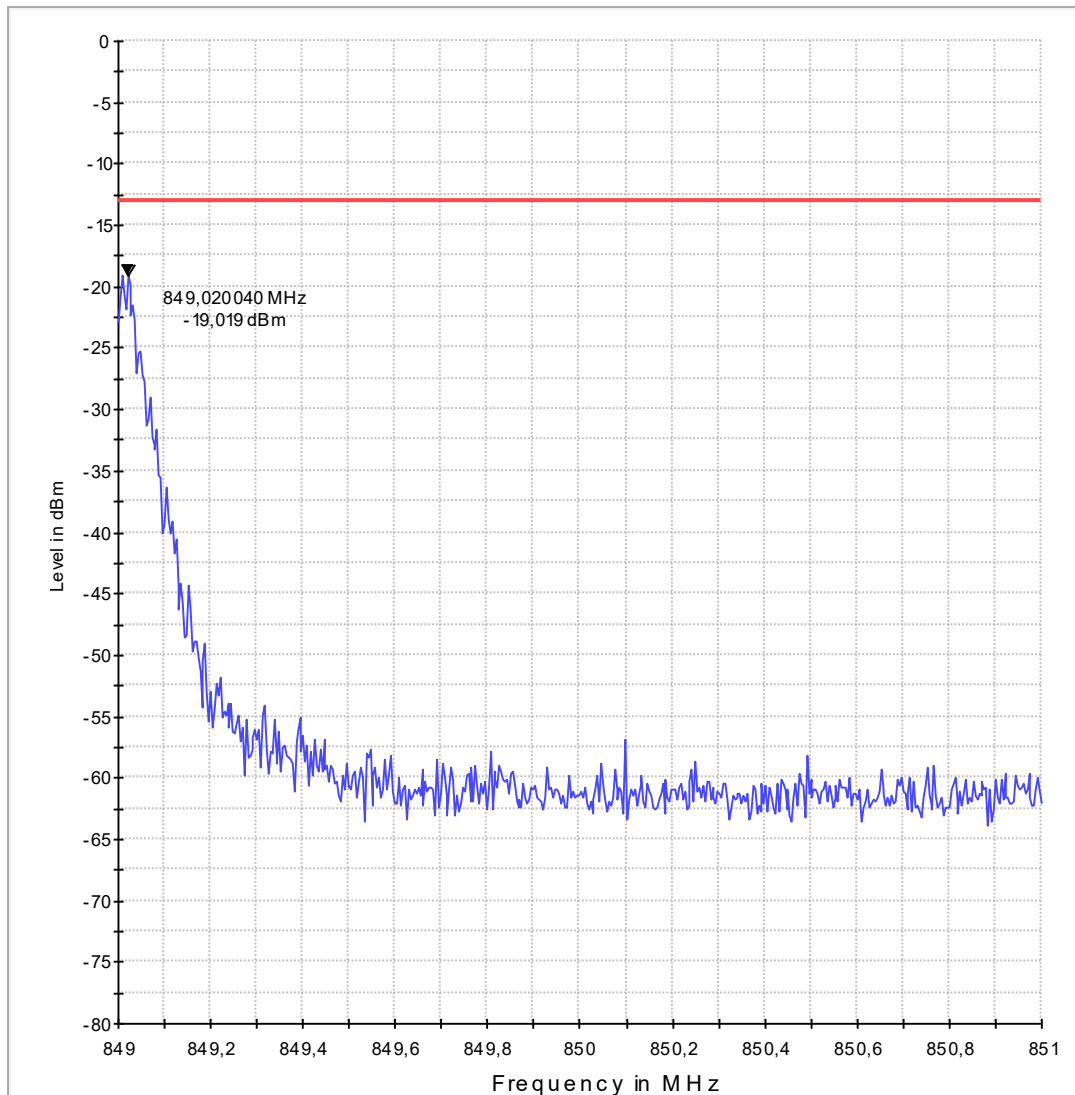
Diagram No.: 9.02_BE_ch251_GSM**Common Information**

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

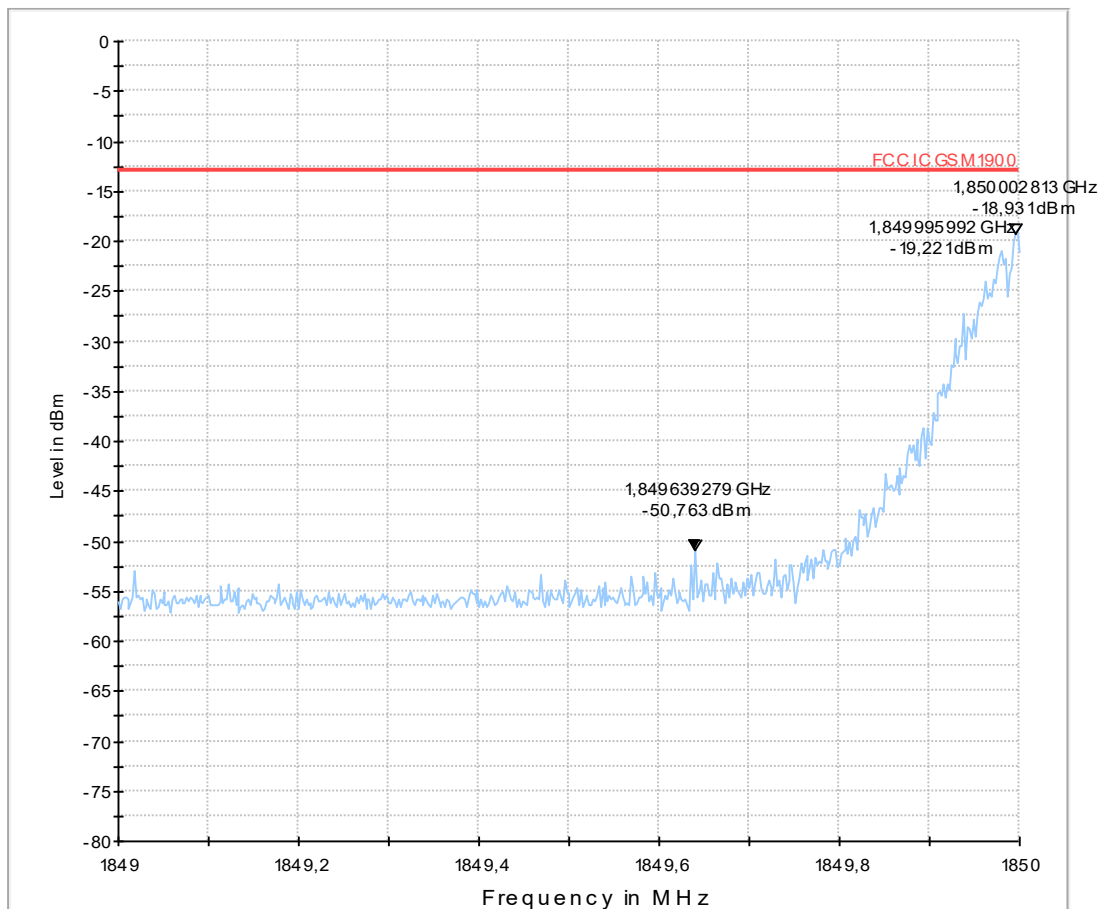
Test Description:	Radiated Spurious Emissions GSM1900
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24.238
Comm. Link:	GSM1900, Voice
Operating Mode:	MS allocated channel 512 (UL = 1850.2MHz)
Exclusionband:	1850- 1910MHz
Environmental Conditions:	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 mount antenna

030406_FCC_Part24_GSM1900_TX_high_ch_band_edge

