

Annex 1: Measurement diagrams to TEST REPORT No.: 16-1-0116301T02a-C1

According to:
FCC Regulations
Part 22, Part 24

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

for

WAGO Kontakttechnik GmbH & Co. KG

SPS Controller 750-8207/025-001

FCC-ID: 2AKUEPFC200
IC: 22322-07508207
PMN: PFC200 CS 2ETH RS 3G Telecontrol/T
HVIN: 750-8207/025-001

Laboratory Accreditation and Listings			
 DAkkS Deutsche Akkreditierungsstelle D-PL-12047-01-01	 FEDERAL COMMUNICATIONS COMMISSION FCC USA MRA US-EU 0003	 Industry Canada 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 TM 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			

Table of contents

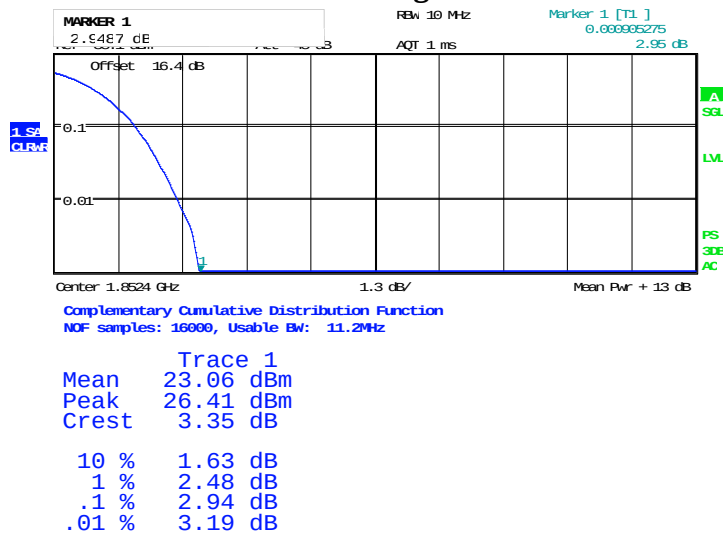
1. SUMMARY OF TEST RESULTS.....	3
2. CONDUCTED POWER MEASUREMENTS ON RF-PORT	3
3. PAPR-MEASUREMENTS (CCDF-PLOTS).....	3
3.1. FDD Band II transmitting mode	3
3.2. FDD Band V transmitting mode	5
4. RADIATED EMISSION MEASUREMENTS	7
4.1. Magnetic field emission measurements §15.209 (FDD Band II transmitting mode).....	7
4.2. Magnetic field emission measurements §15.209 (FDD Band V transmitting mode)	11
4.3. Spurious emissions radiated (FDD Band II transmitting mode).....	12
4.4. Spurious emissions radiated (FDD Band V transmitting mode).....	15
4.5. Radiated emissions on FDD Band II band-edge.....	18
4.6. Radiated emissions on FDD Band V band-edge.....	20

1. Summary of test results

2. Conducted power measurements on RF-port

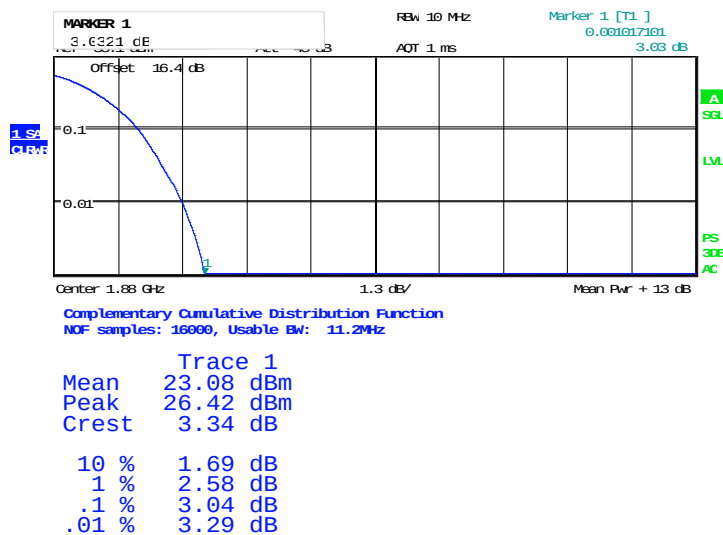
3. PAPR-Measurements (CCDF-plots)

3.1. FDD Band II transmitting mode



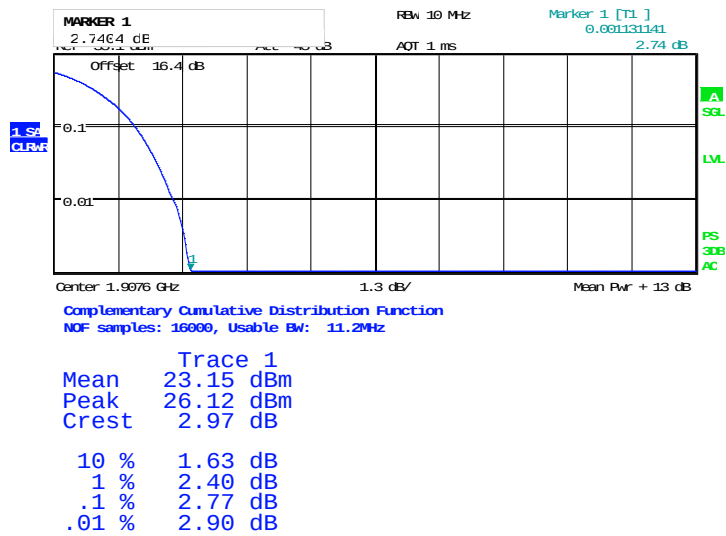
Date: 8.FEB.2017 11:47:12

Diagram 1: Channel 9262



Date: 8.FEB.2017 11:48:43

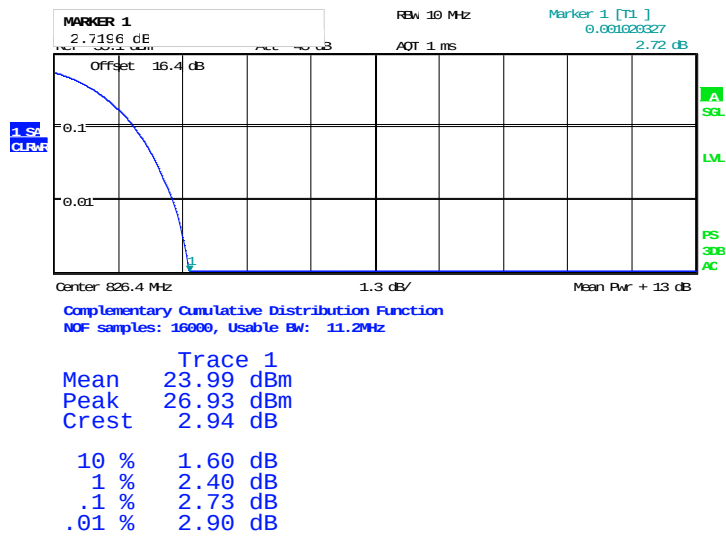
Diagram 2: Channel 9400



Date: 8.FEB.2017 11:50:46

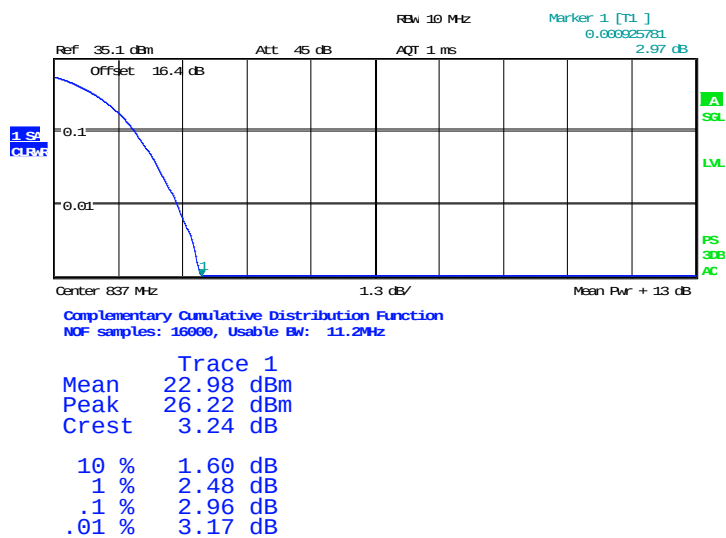
Diagram 3: Channel 9538

3.2. FDD Band V transmitting mode



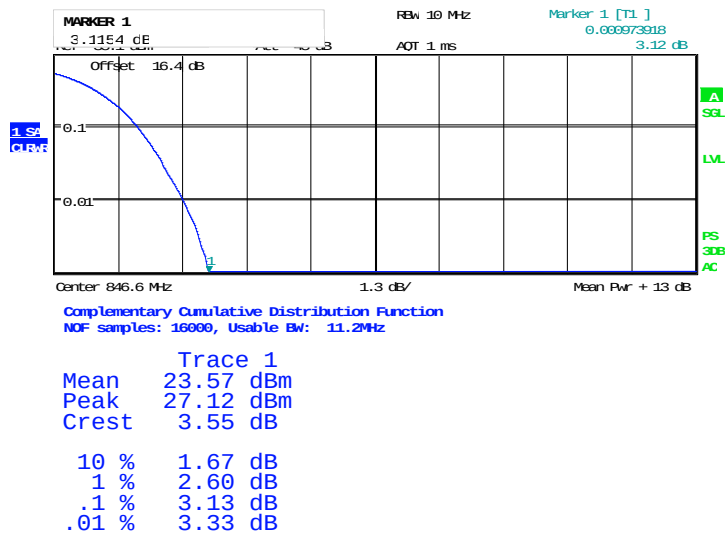
Date: 8.FEB.2017 11:44:30

Diagram 4: Channel 4132



Date: 8.FEB.2017 11:39:06

Diagram 5: Channel 4185



Date: 8.FEB.2017 11:35:39

Diagram 6: Channel 4233

4. Radiated emission measurements

4.1. Magnetic field emission measurements §15.209 (FDD Band II transmitting mode)

Diagram 2.01_RSE_R_Ch9262_RMC

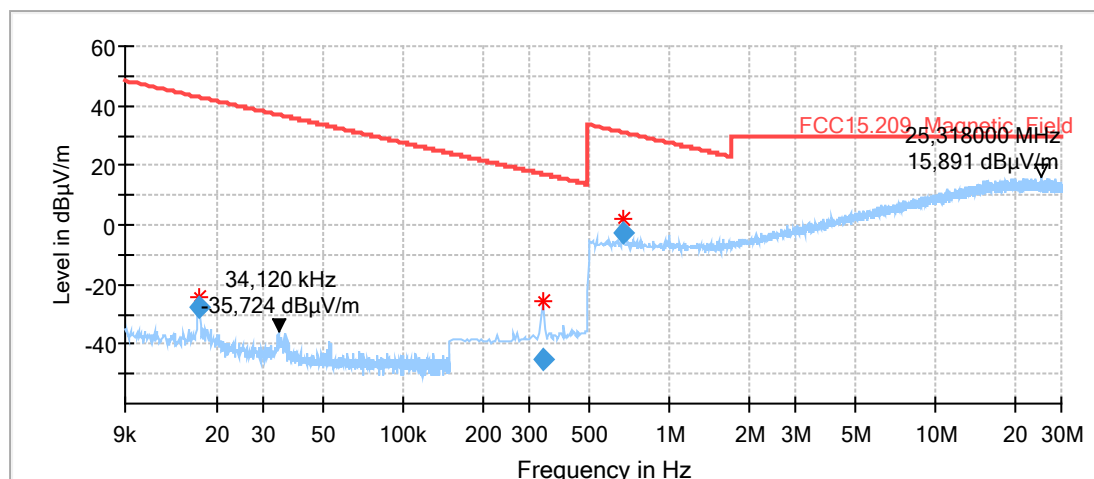
Common Information

Test description:	Magnetic Field Strength Measurement related to 30 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.00
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
Test specification:	FCC 15.209; RSS-Gen: Issue 4
Operator:	RI's
Operating conditions:	TX-on - nominal channel, continuous, modulation on
Power during tests:	24V DC
Comment 1:	

EUT Information

Manufacturer:	WAGO Kontakttechnik GmbH
Model: Serie750	-
ITEM-NO:	750-8207/025-001
HW version:	06
SW version:	02
Serial number:	MAC-ID: 00:30:DE:41_2A:23
Connected Interfaces:	LAN Cable+WAGO-USB-Kommunikationskabel+Magnetic food antenna
Power Supply:24V DC	-
Comments:	-

Full Spectrum



Final Result

Frequency (MHz)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
0.017000	-27.52	42.99	70.51	1000.0	0.200	100.0	V	222.0	0.0	-58.7
0.334000	-45.30	17.13	62.43	1000.0	10.000	100.0	H	49.0	90.0	-53.7
0.670000	-2.84	31.09	33.93	1000.0	10.000	100.0	H	304.0	90.0	-20.1

(continuation of the "Final_Result" table from column 17 ...)

Frequency (MHz)	Comment
0.017000	19:58:28 - 28.11.2016
0.334000	20:06:20 - 28.11.2016
0.670000	20:14:46 - 28.11.2016

Diagram 2.02_RSE_R_Ch9400_RMC

Common Information

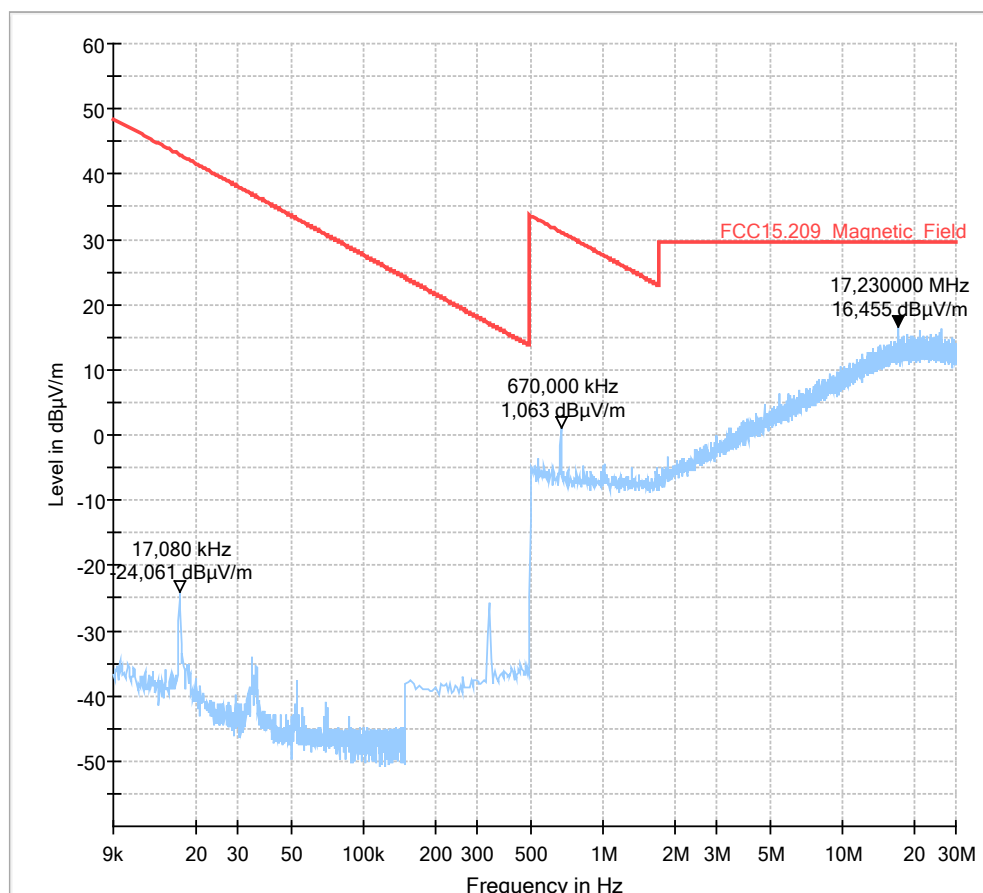
Test description:	Magnetic Field Strength Measurement related to 30 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.00
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	FCC 15.209; RSS-Gen: Issue 4
Operator:	RLS
Operating conditions:	TX-on - nominal channel, continuous, modulation on
Power during tests:	24V DC
Comment 1:	

EUT Information

Manufacturer:	WAGO Kontakttechnik GmbH
Model: Serie750	-
ITEM-NO:	750-8207/025-001

HW version:	06
SW version:	02
Serial number:	MAC-ID: 00:30:DE:41_2A:23
Connected Interfaces:	LAN Cable+WAGO-USB-Kommunikationskabel+Magnetic food antenna
Power Supply:24V DC	-
Comments:	-

Full Spectrum



2.03_mgn_ch9538_Laying_Position

Common Information

Test description:	Magnetic Field Strength Measurement related to 30 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.00
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
Test specification:	FCC 15.209; RSS-Gen: Issue 4
Operator:	DLe
Operating conditions:	TX-on - CH_9538
Power during tests:	24V DC
Comment 1:	

EUT Information

Manufacturer:	WAGO Kontakttechnik GmbH
Model: Serie750	-
ITEM-NO:	750-8207/025-001
HW version:	06
SW version:	02
Serial number:	MAC-ID: 00:30:DE:41_2A:23
Connected Interfaces:	LAN Cable+WAGO-USB-Kommunikationskabel+Magnetic food antenna
Power Supply:24V DC	-
Comments:	-

Full Spectrum

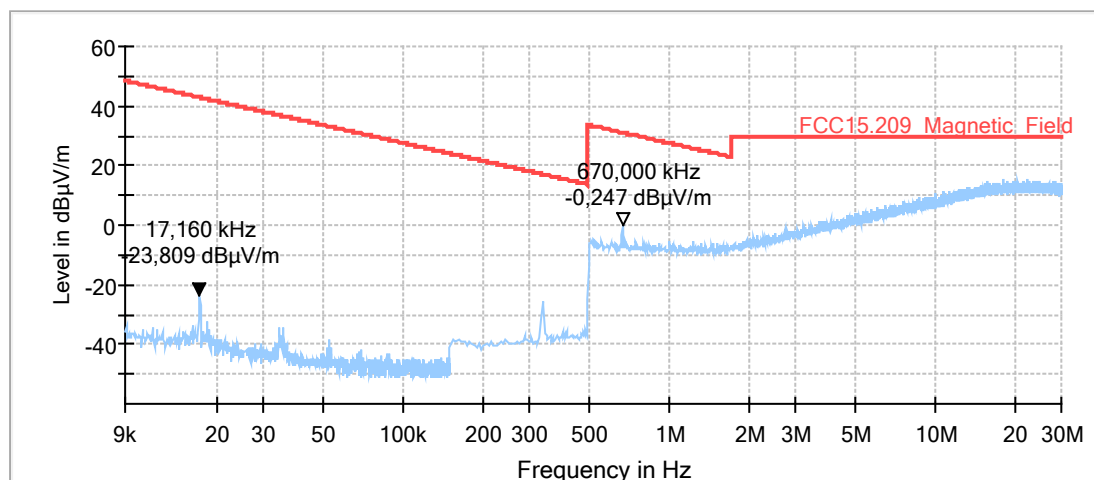


Diagram 2.03b_mgn_ch9538_Standing_Position

Common Information

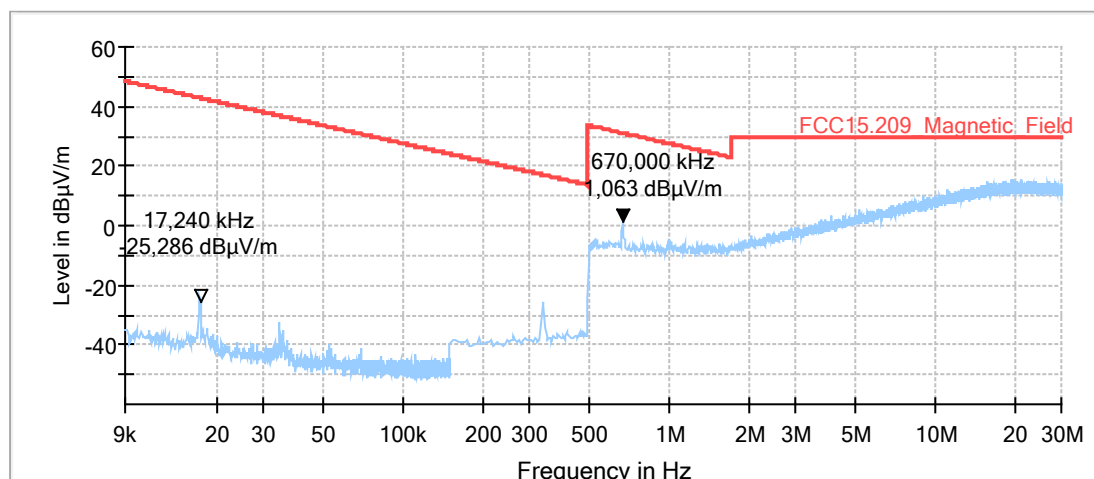
Test description:	Magnetic Field Strength Measurement related to 30 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.00
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	FCC 15.205; RSS-Gen: Issue 4
Operator:	DLe
Operating conditions:	TX-on - CH_9538
Power during tests:	24V DC
Comment 1:	

EUT Information

Manufacturer:	WAGO Kontakttechnik GmbH
Model: Serie750	-
ITEM-NO:	750-8207/025-001

HW version:	06
SW version:	02
Serial number:	MAC-ID: 00:30:DE:41_2A:23
Connected Interfaces:	LAN Cable+WAGO-USB-Kommunikationskabel+Magnetic food antenna
Power Supply:24V DC	-
Comments:	-

Full Spectrum



4.2. Magnetic field emission measurements §15.209 (FDD Band V transmitting mode)

Diagram 2.04_mgn_ch4132

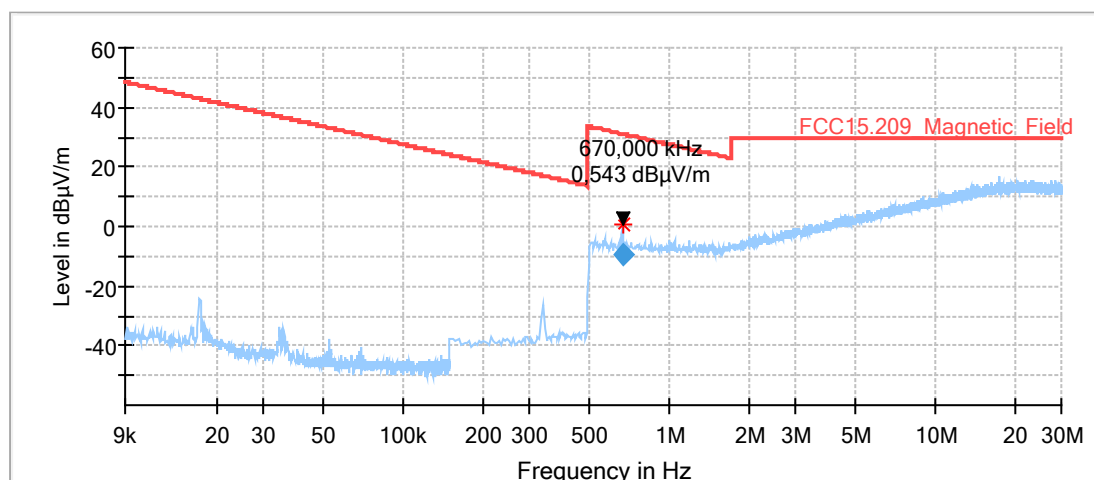
Common Information

Test description:	Magnetic Field Strength Measurement related to 30 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.00
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
Test specification:	FCC 15.207; RSS-Gen: Issue 4
Operator:	DLe
Operating conditions:	TX-on - CH_4132
Power during tests:	24V DC
Comment 1:	

EUT Information

Manufacturer:	WAGO Kontakttechnik GmbH
Model: Serie750	-
ITEM-NO:	750-8207/025-001
HW version:	06
SW version:	02
Serial number:	MAC-ID: 00:30:DE:41_2A:23
Connected Interfaces:	LAN Cable+WAGO-USB-Kommunikationskabel+Magnetic food antenna
Power Supply:24V DC	-
Comments:	-

Full Spectrum



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

8.20_RSE_R_Ch9262_RMC

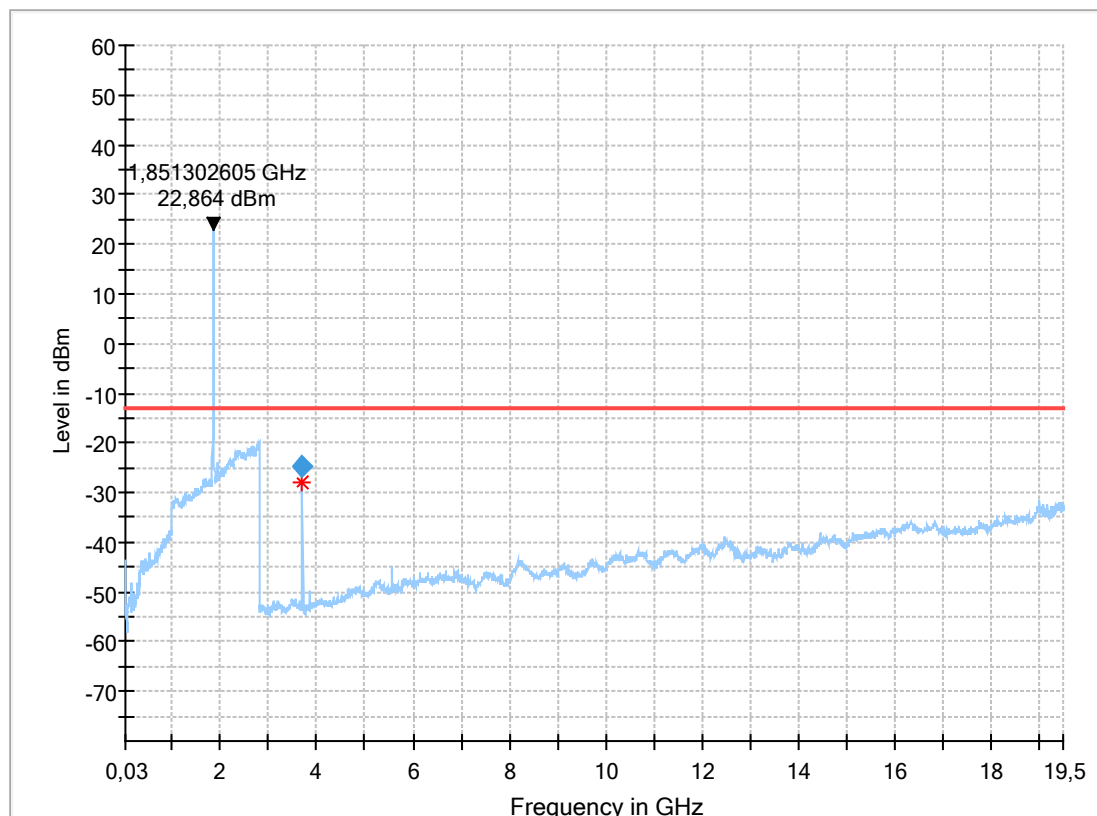
Common Information

Test Description:	Radiated Spurious Emissions UMTS FDDII
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24
Operating Mode:	UE allocated channel 9262 (fc = 1852.4 MHz)
Environmental Conditions:	Humidity: 35%rH; Temperature: 22°C
Operator:	RLS

EUT Information

Manufacturer:	WAGO Kontakttechnik GmbH
Model:	Serie750
ITEM-NO:	750-8207/025-001
HW version:	06
SW version:	02
Serial number:	MAC-ID: 00:30:DE:41_2A:23
Connected Interfaces:	LAN Cable+WAGO-USB-Kommunikationskabel+Magnetic food antenna
Power Supply:	24V DC
Comments:	-

Full Spectrum



Final Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
3702.960921	-13.00	11.71	10000.0	H	304.0	90.0	-94.9

8.21_RSE_R_Ch9400_RMC

Common Information

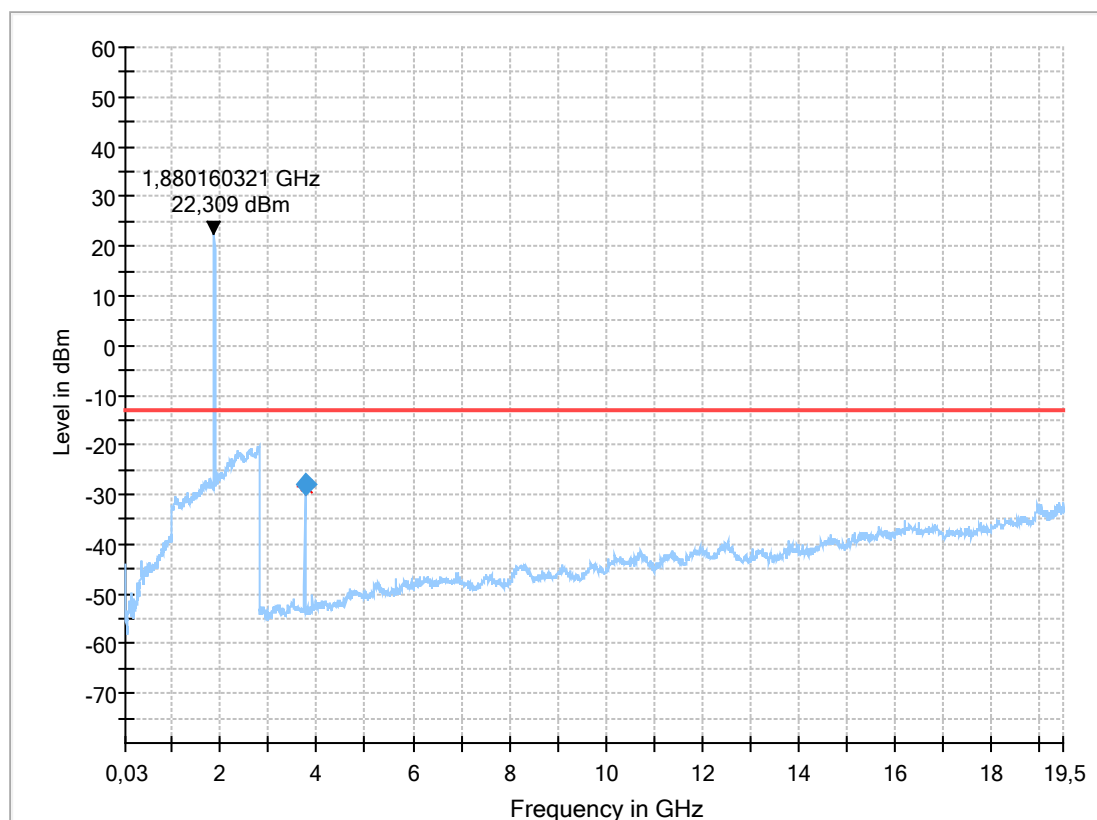
Test Description:	Radiated Spurious Emissions UMTS FDDII
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24
Operating Mode:	UE allocated channel 9400 (fc = 1880.0 MHz)
Environmental Conditions:	Humidity: 35%rH; Temperature: 22°C
Operator:	RI

EUT Information

Manufacturer:	WAGO Kontakttechnik GmbH
Model:	Serie750
ITEM-NO:	750-8207/025-001

HW version:	06
SW version:	02
Serial number:	MAC-ID: 00:30:DE:41_2A:23
Connected Interfaces:	LAN Cable+WAGO-USB-Kommunikationskabel+Magnetic food antenna
Power Supply:	24V DC
Comments:	-

Full Spectrum



Final Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
3758.572144	-13.00	14.85	10000.0	H	316.0	90.0	-95.1

8.22_RSE_R_Ch9538_RMC

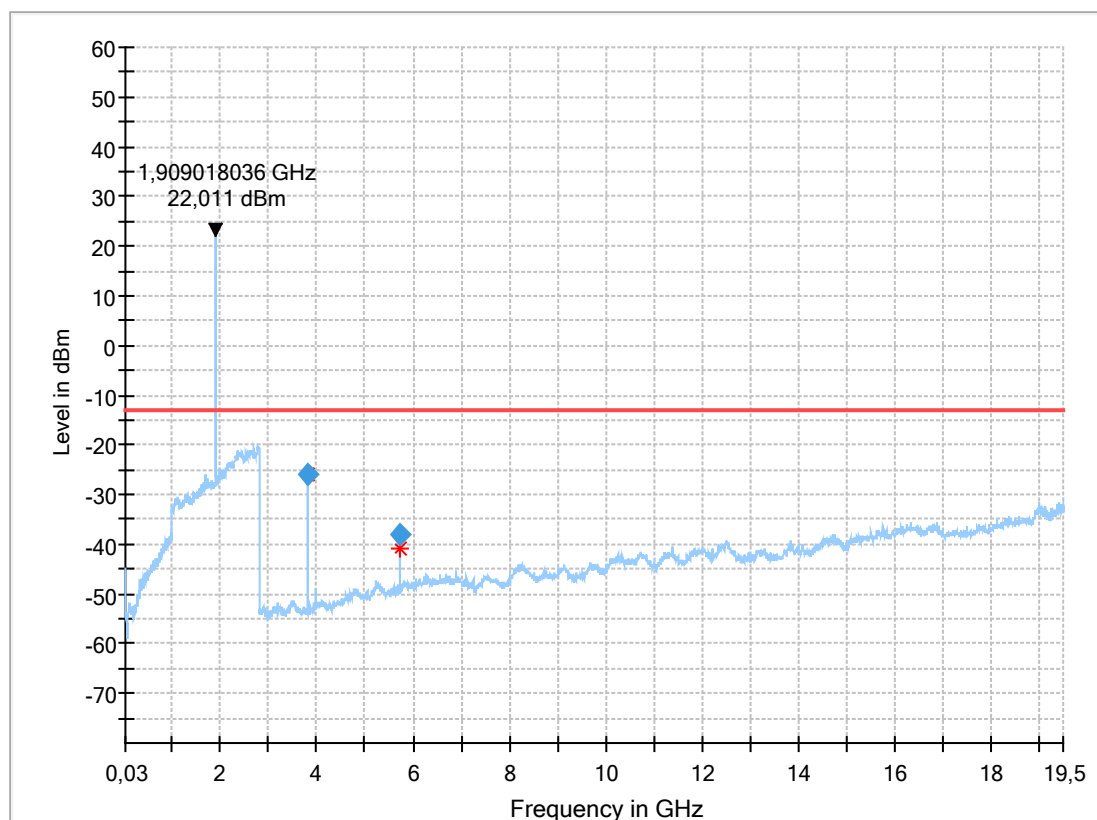
Common Information

Test Description:	Radiated Spurious Emissions UMTS FDDII
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24
Operating Mode:	UE allocated channel 9538 (fc = 1907.6 MHz)
Environmental Conditions:	Humidity: 35%rH; Temperature: 22°C
Operator:	RI

EUT Information

Manufacturer:	WAGO Kontakttechnik GmbH
Model:	Serie750
ITEM-NO:	750-8207/025-001
HW version:	06
SW version:	02
Serial number:	MAC-ID: 00:30:DE:41_2A:23
Connected Interfaces:	LAN Cable+WAGO-USB-Kommunikationskabel+Magnetic food antenna
Power Supply:	24V DC
Comments:	-

Full Spectrum



Final Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
3816.618237	-13.00	13.05	10000.0	H	316.0	90.0	-95.1
5721.528057	-13.00	24.91	10000.0	H	204.0	90.0	-89.5

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

8.50_RSE_R_Ch4132_RMC

Common Information

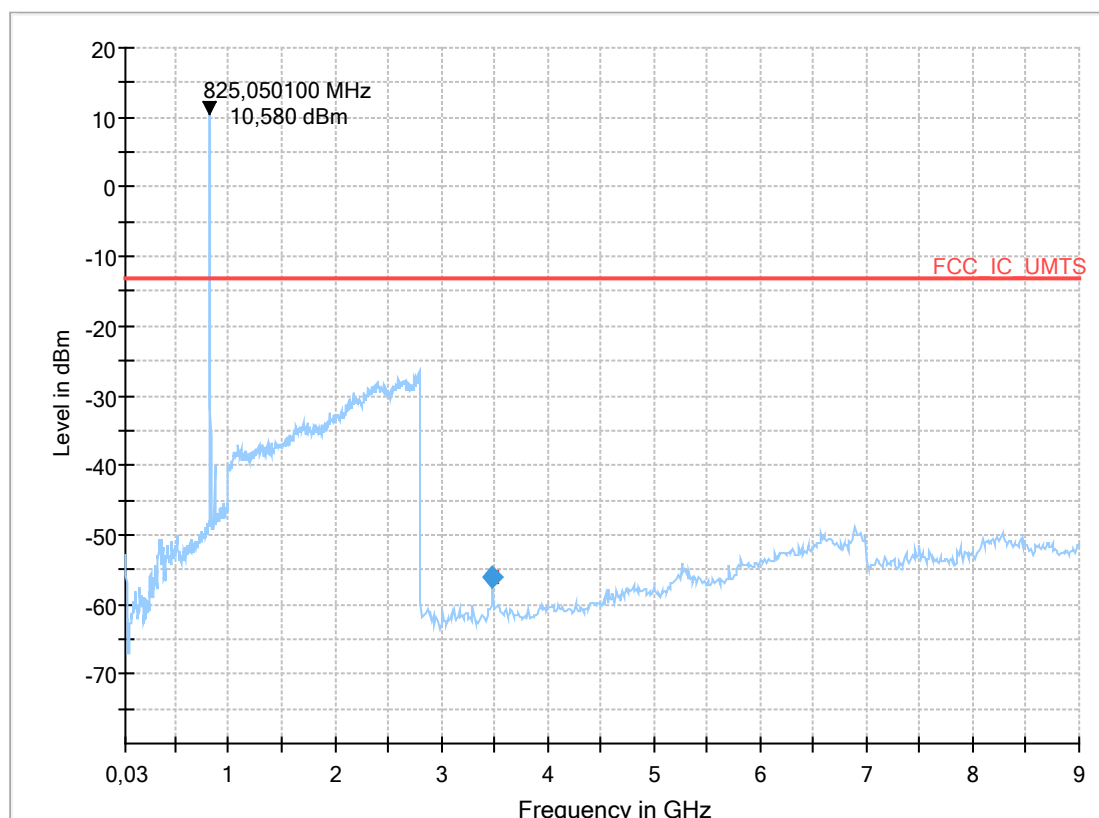
Test Description:	Radiated Spurious Emissions UMTS FDDV
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 22.917(a)
Operating Mode:	UE allocated channel 4133 (fc = 826.6 MHz)
Environmental Conditions:	Humidity: 35%rH; Temperature: 22°C
Operator:	RLS

EUT Information

Manufacturer:	WAGO Kontakttechnik GmbH
Model:	Serie750
ITEM-NO:	750-8207/025-001

HW version:	06
SW version:	02
Serial number:	MAC-ID: 00:30:DE:41_2A:23
Connected Interfaces:	LAN Cable+WAGO-USB-Kommunikationskabel+Magnetic food antenna
Power Supply:	24V DC
Comments:	-

Full Spectrum



Final Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
3485.561123	-	43.01	1000.0	H	147.0	90.0	-93.7

Diagram 8.51_RSE_R_Ch4183_RMC

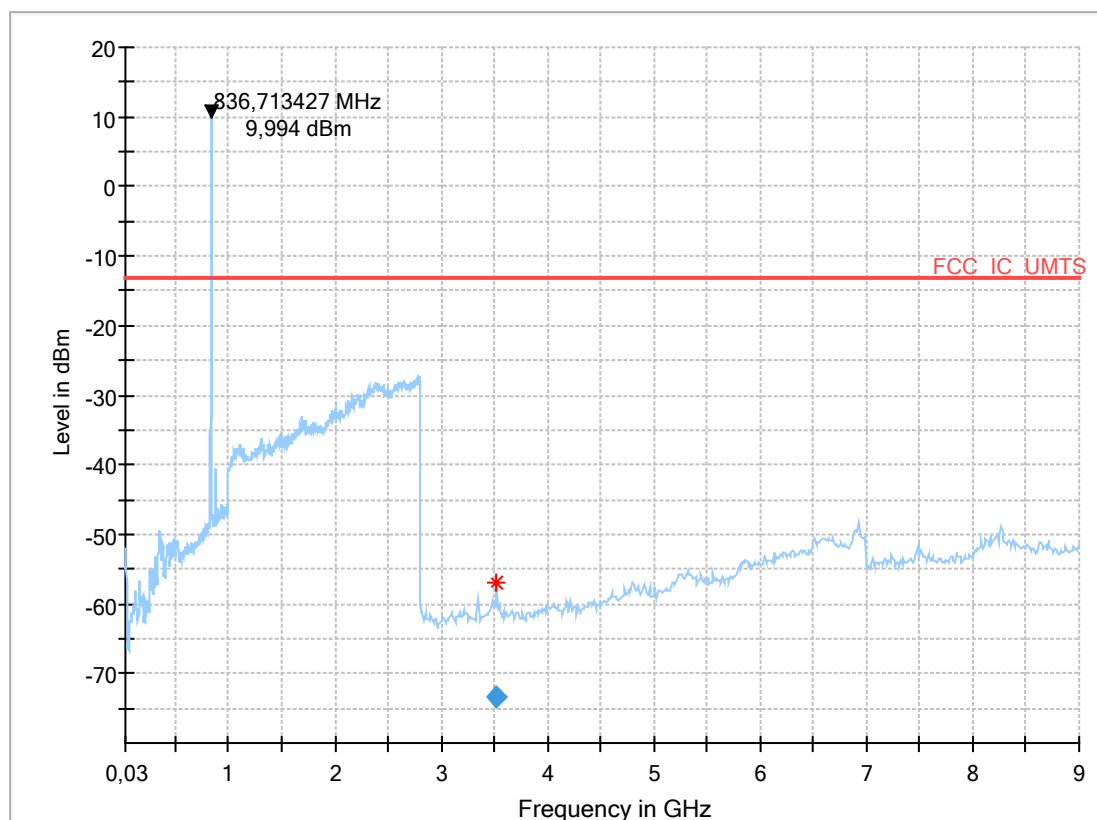
Common Information

Test Description:	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 4183 (fc = 836.6 MHz)
Environmental Conditions:	Humidity: 35%rH; Temperature: 22°C
Operator:	RI

EUT Information

Manufacturer:	WAGO Kontakttechnik GmbH
Model:	Serie750
ITEM-NO:	750-8207/025-001
HW version:	06
SW version:	02
Serial number:	MAC-ID: 00:30:DE:41_2A:23
Connected Interfaces:	LAN Cable+WAGO-USB-Kommunikationskabel+Magnetic food antenna
Power Supply:	24V DC
Comments:	

Full Spectrum



Final Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
3521.172345	-	60.37	1000.0	H	14.0	0.0	-93.7

Diagram 8.52_RSE_R_Ch4233_RMC

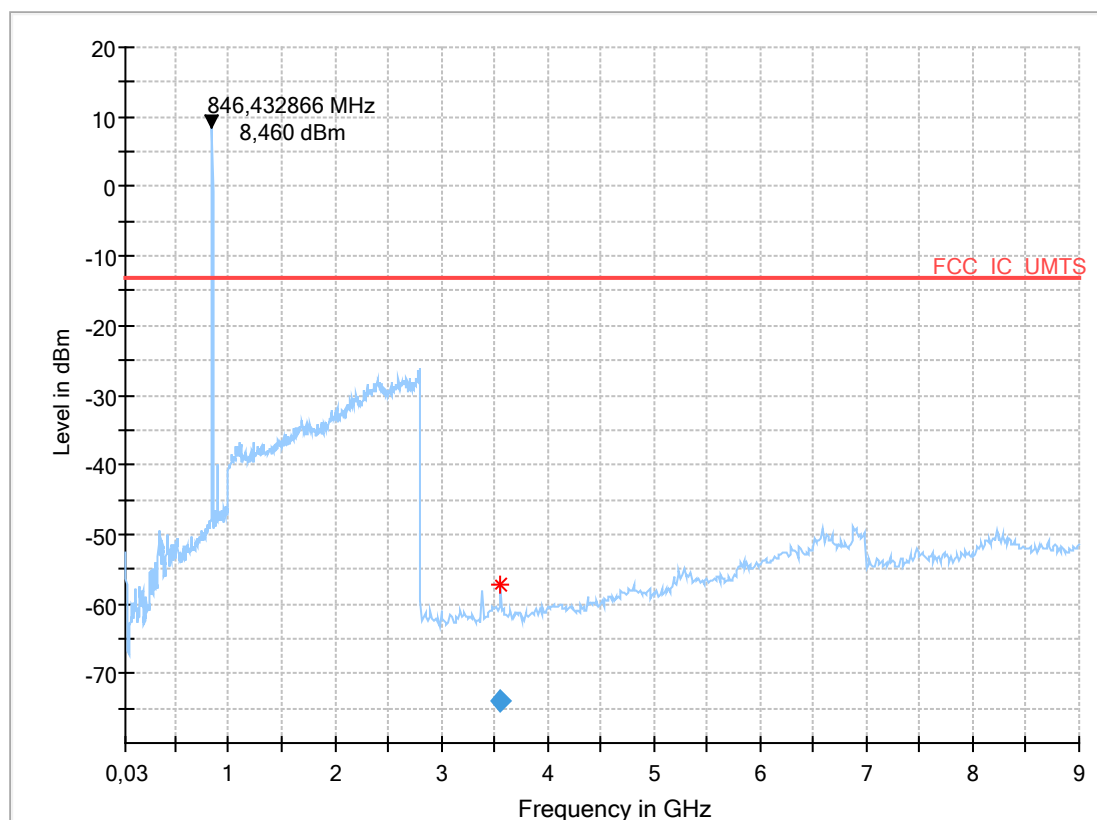
Common Information

Test Description:	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 (fc = 846.6 MHz)
Environmental Conditions:	Humidity: 35%rH; Temperature: 22°C
Operator:	RI

EUT Information

Manufacturer: WAGO Kontakttechnik GmbH	-
Model: Serie750	-
ITEM-NO:	750-8207/025-001
-----	-----
HW version:	06
SW version:	02
Serial number:	MAC-ID: 00:30:DE:41_2A:23
Connected Interfaces:	LAN Cable+WAGO-USB-Kommunikationskabel+Magnetic food antenna
Power Supply:24V DC	-
Comments:	-

Full Spectrum



Final Result

Frequency (MHz)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
3554.959920	-	60.85	1000.0	H	144.0	90.0	-94.1

4.5. Radiated emissions on FDD Band II band-edge

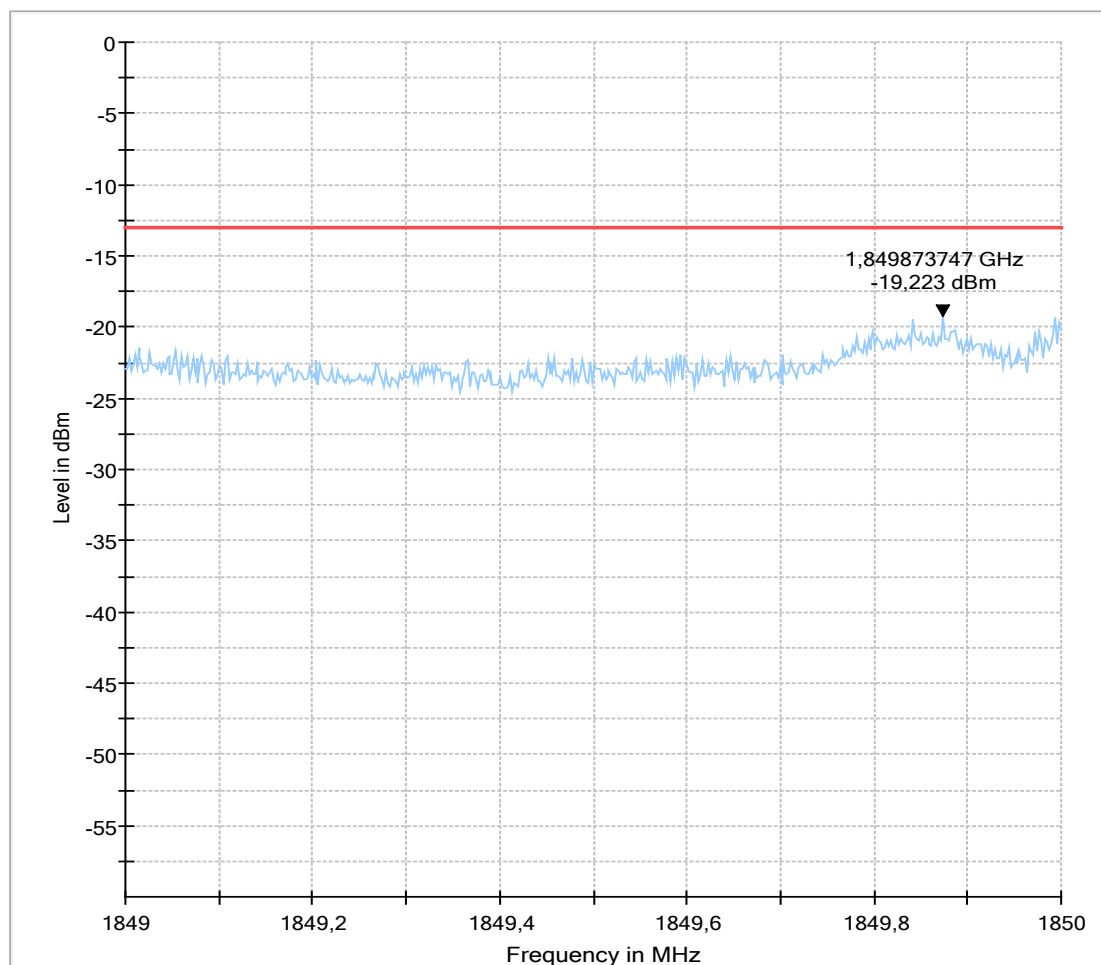
9.20_BE_R_Ch9262_RMC

Common Information

Test Description:	Band-Edge: Radiated Field Strength Emissions Emissions in 3m distance
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24
Operation mode:	UE allocated channel 9262 (fc = 1852.4 MHz)
Operator Name:	RIs
Comment:	Channel no. low

EUT Information

Manufacturer: WAGO Kontakttechnik GmbH	
Model: Serie750	-
ITEM-NO:	750-8207/025-001
HW version:	06
SW version:	02
Serial number:	MAC-ID: 00:30:DE:41_2A:23
Connected Interfaces:	LAN Cable+WAGO-USB-Kommunikationskabel+Magnetic food antenna
Power Supply:24V DC	-
Comments:	-



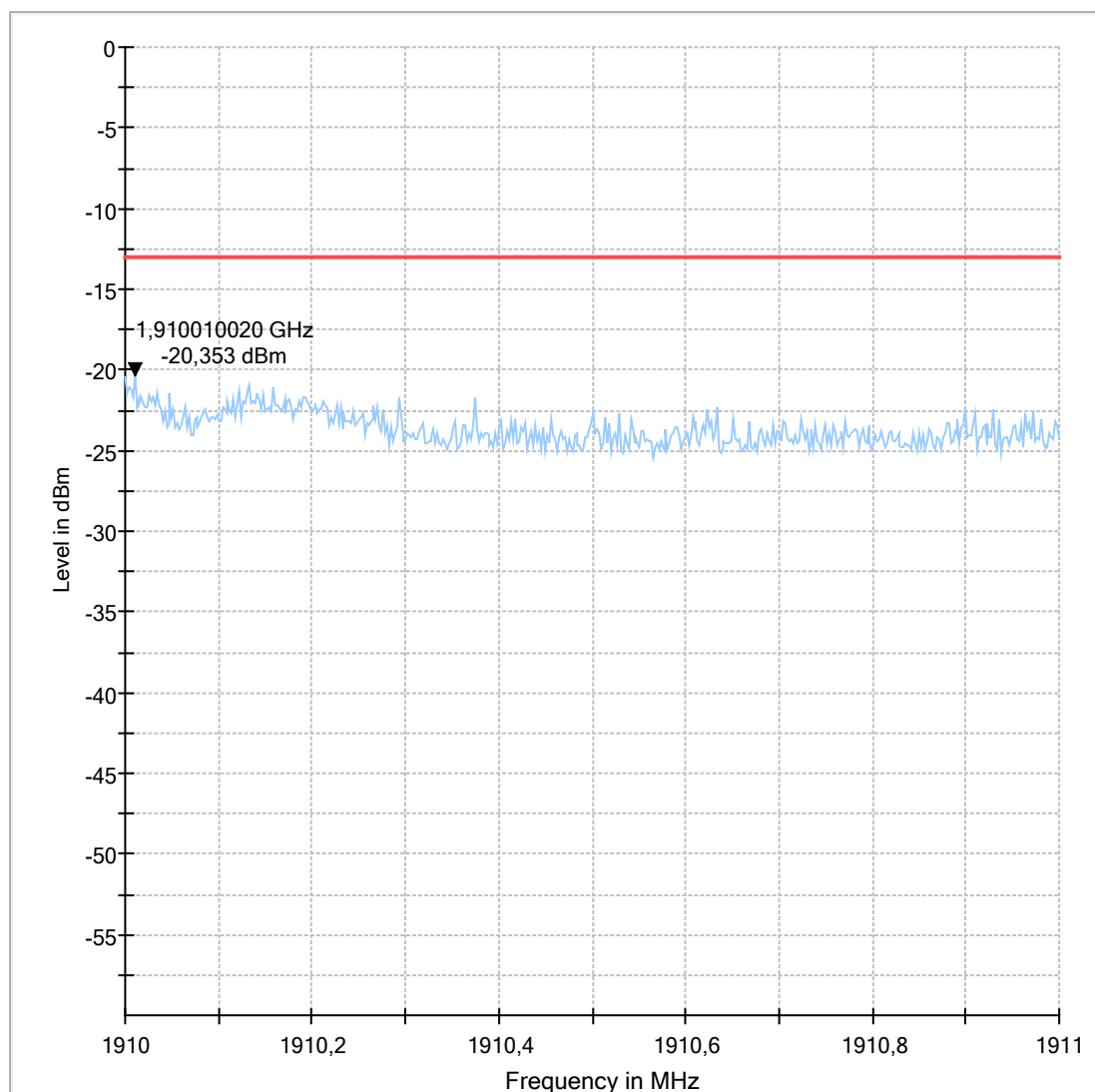
9.21_BE_R_Ch9538_RMC

Common Information

Test Description:	Band-Edge: Radiated Field Strength Emissions Emissions in 3m distance
Test Site Location:	CETECOM GmbH Essen
Test Site:	Fully Anechoic Room (FAR)
Test Standard:	FCC Part 24
Operation mode:	UE allocated channel 9538 (fc = 1907.6 MHz)
Operator Name:	RLS
Comment:	Channel no.high

EUT Information

Manufacturer: WAGO Kontakttechnik GmbH	
Model: Serie750	-
ITEM-NO:	750-8207/025-001
-----	-----
HW version:	06
SW version:	02
Serial number:	MAC-ID: 00:30:DE:41_2A:23
Connected Interfaces:	LAN Cable+WAGO-USB-Kommunikationskabel+Magnetic food antenna
Power Supply:24V DC	-
Comments:	-



4.6. Radiated emissions on FDD Band V band-edge

Diagram 9.50_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: 35%rH; Temperature: 22°C
Operator:	RLS

EUT Information

Manufacturer:	WAGO Kontakttechnik GmbH
Model:	Serie750
ITEM-NO:	750-8207/025-001
HW version:	06
SW version:	02
Serial number:	MAC-ID: 00:30:DE:41_2A:23
Connected Interfaces:	LAN Cable+WAGO-USB-Kommunikationskabel+Magnetic food antenna
Power Supply:	24V DC
Comments:	

Full Spectrum

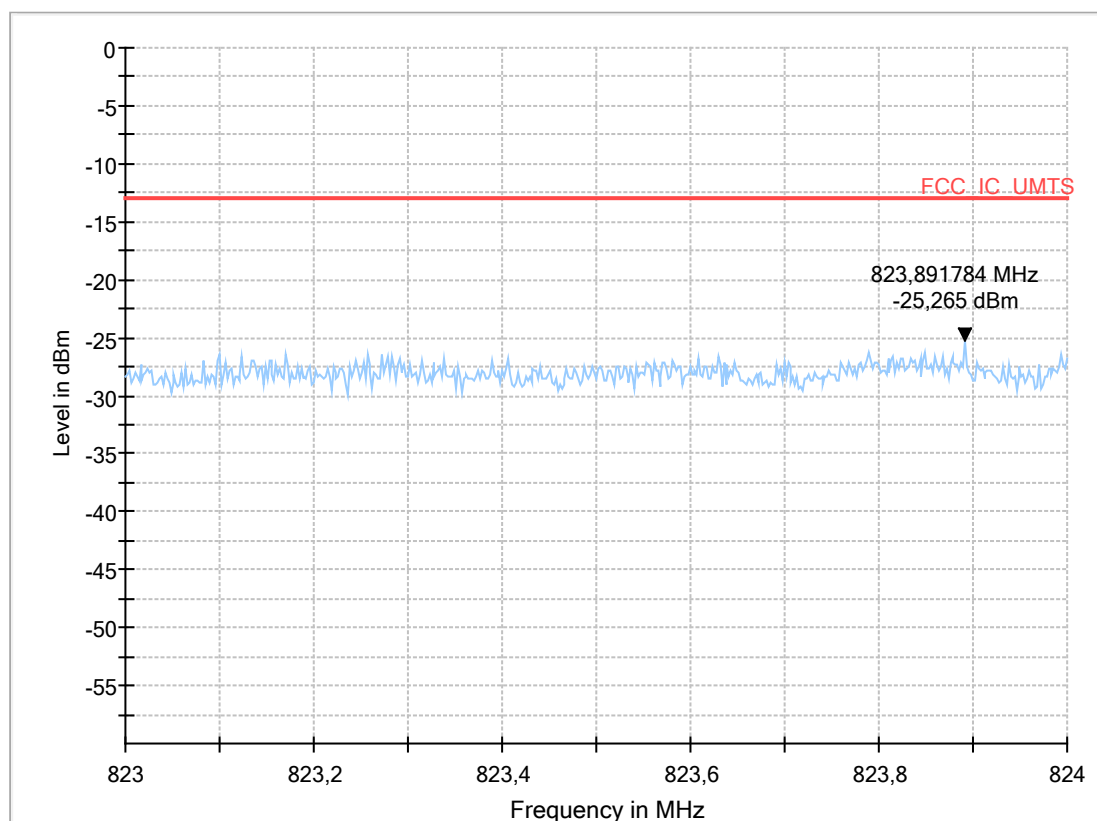


Diagram 9.51_BE_R_Ch4233_RMC

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 4133
Environmental Conditions:	Humidity: 35%rH; Temperature: 22°C
Operator:	RLs

EUT Information

Manufacturer: WAGO Kontakttechnik GmbH	
Model: Serie750	-
ITEM-NO:	750-8207/025-001
-----	-----
HW version:	06
SW version:	02
Serial number:	MAC-ID: 00:30:DE:41_2A:23
Connected Interfaces:	LAN Cable+WAGO-USB-Kommunikationskabel+Magnetic food antenna
Power Supply:24V DC	-
Comments:	-

Full Spectrum

