Annex 1: Measurement diagrams to
T E S T R E P O R T
No.: 17-1-0231003T01a

According to:
Title 47 CFR, Chapter I
FCC Regulations, Subchapter B
Part 22, Part 24 Part 27

for

IPETRONIK GmbH & Co KG

µCROS SL
Data Logger

FCC-ID: 2ARF8UCROS-SL

Laboratory Accreditation and Listings
ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-12047-01-01 D-PL-12047-01-03 D-PL-12047-01-04
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. Measurement diagrams

1.1. Spurious emissions radiated (850 MHz + WLAN 2.4GHz transmitting mode)_30MHz-9GHz

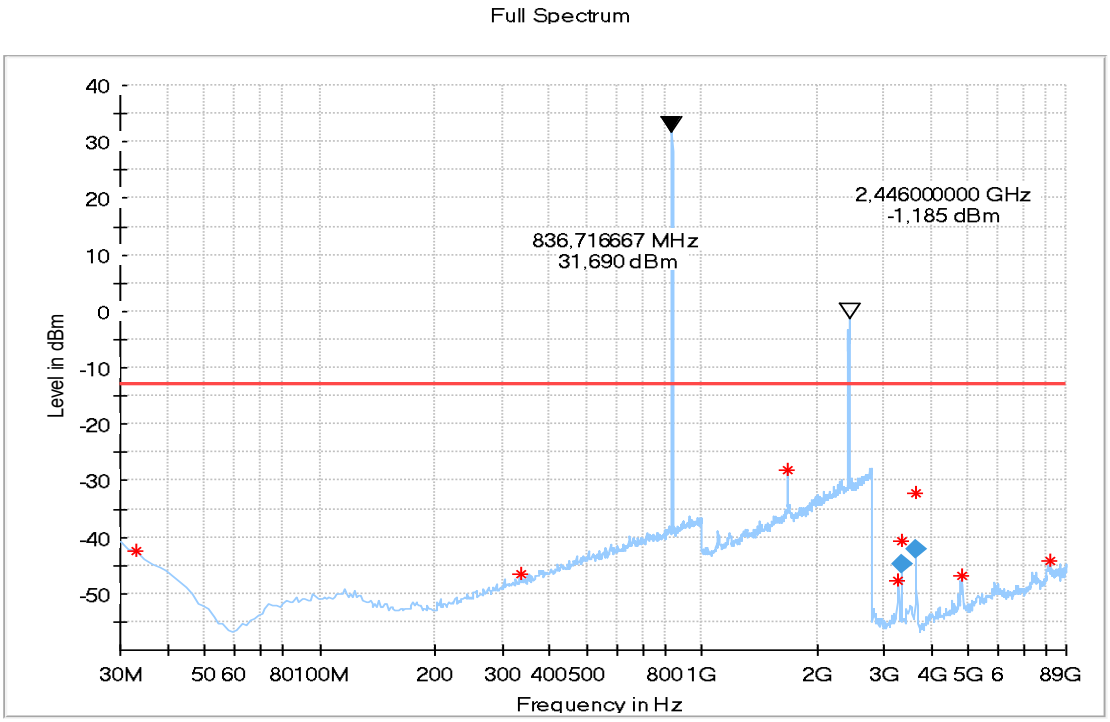
8.01a_RSE_GSM850 + WLAN_2.4GHz

Common Information

Test Description:	Radiated emission
Test Site:	FAR1
Test Standard:	FCC Part 22.917(a)
Antenna polarisation:	vertical / horizontal
Operating Mode:	1
Operator:	Aho/Tfra
Environmental Conditions::	Humidity : 48%rH; Temperature: 20°C
EUT Setup:	EUT connected with two Laptops with Router from outside the chamber
Verdict:	Passed

EUT Information

Manufacturer:	IPETRONIK GmbH & Co KG
Product:	µCROS SL
Model:	Data Logger
HW version:	1.03
SW version:	1.30
Serial number:	00060
Power Supply:	24 V DC



Remarks:

- Emission at 836,716667MHz and 2,446000000GHz is Carrier Frequency from GSM 850 and WLAN 2.4GHz, which are not relevant to results.

Final_Result

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
3347.733334	-44.80	-13.00	31.80	1000.0	100.000	V	208.0	0.0	-94
3634.216667	-42.26	-13.00	29.26	1000.0	100.000	V	288.0	0.0	-94

Spurious Emission List

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Pol	Azimuth (deg)	Elevation (deg)
33.233333	-42.47	-13.00	29.47	H	90.0	0.0
335.550000	-46.62	-13.00	33.62	V	0.0	90.0
1675.000000	-28.00	-13.00	15.00	V	120.0	0.0
3275.333333	-47.81	-13.00	34.81	V	300.0	0.0
3347.733334	-40.61	-13.00	32.04	V	208.0	0.0
3634.216667	-32.23	-13.00	29.05	V	288.0	0.0
4784.000000	-46.76	-13.00	33.76	V	30.0	0.0
8132.000000	-44.11	-13.00	31.11	V	30.0	90.0

1.2. Spurious emissions radiated (850 MHz + WLAN 2.4GHz transmitting mode)_9GHz-18GHz

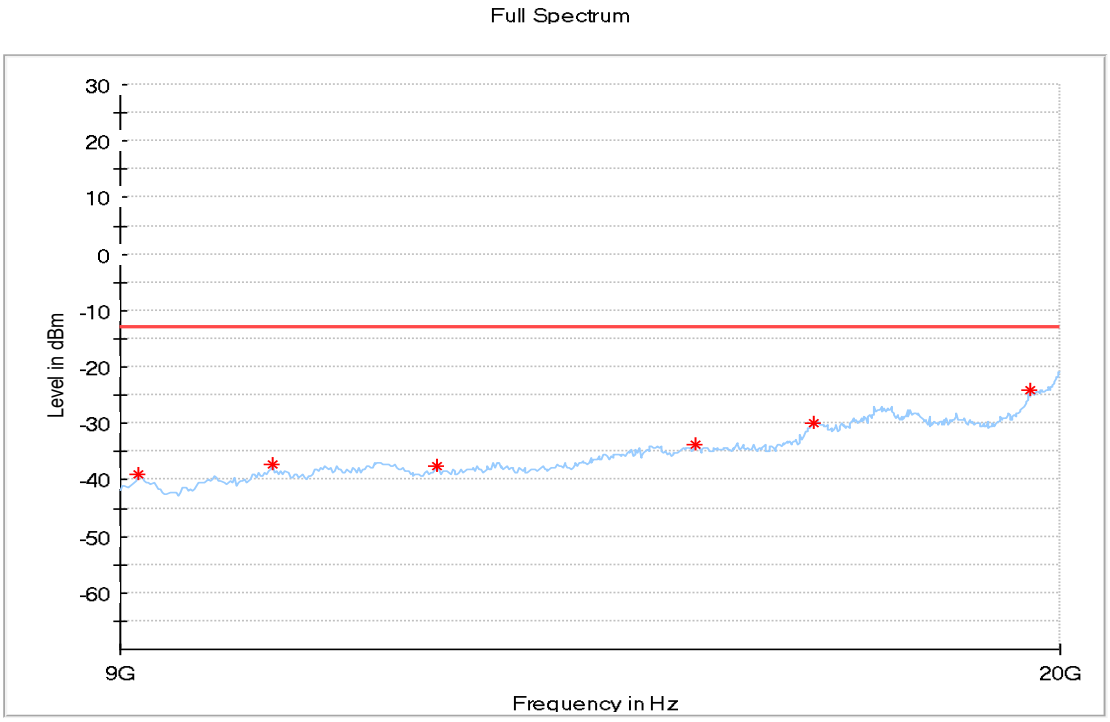
8.01b_RSE_GSM850 + WLAN_2.4GHz

Common Information

Test Description:	Radiated emission
Test Site:	FAR1
Test Standard:	FCC Part 22.917(a)
Antenna polarisation:	vertical / horizontal
Operating Mode:	1
Operator:	TFra
Environmental Conditions::	Humidity : 55%rH; Temperature: 20°C
EUT Setup:	EUT connected to Laptop outside chamber with optical-cable outside: 2x Laptop 1x Router
Verdict:	Passed

EUT Information

Manufacturer:	IPETRONIK GmbH & Co KG
Product:	µCROS SL
Model:	Data Logger
HW version:	1.03
SW version:	1.30
Serial number:	00060
Power Supply:	24 V DC

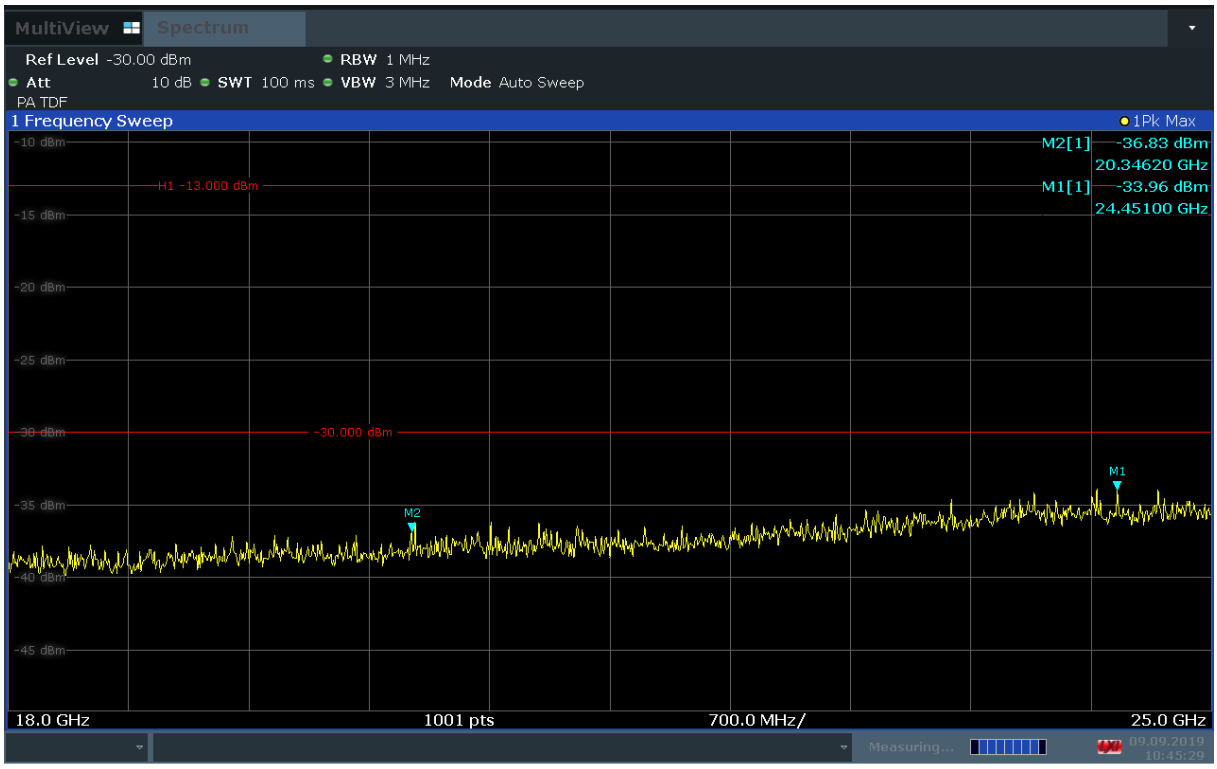


Spurious Emission List

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
9146.666667	-38.90	-13.00	25.90	155.0	H	75.0
10246.666667	-37.13	-13.00	24.13	155.0	H	210.0
11786.666667	-37.51	-13.00	24.51	155.0	V	300.0
14665.000000	-33.82	-13.00	20.82	155.0	V	300.0
16223.333333	-29.92	-13.00	16.92	155.0	H	165.0
19505.000000	-24.02	-13.00	11.02	155.0	V	300.0

1.3. Spurious emissions radiated (850 MHz + WLAN 2.4GHz transmitting mode)_18GHz-25GHz

8.01c_RSE_GSM850 + WLAN_2.4GHz



10:45:29 09.09.2019

➔ Line at value of -30dBm due to visual graphical reference value on FSE67 spectrum-analyzer (not a limit line)

1.4. Spurious emissions radiated (1900 MHz + WLAN 2.4GHz transmitting mode)_30MHz-18GHz

8.02a_RSE_GSM_1900 + WLAN_2.4GHz

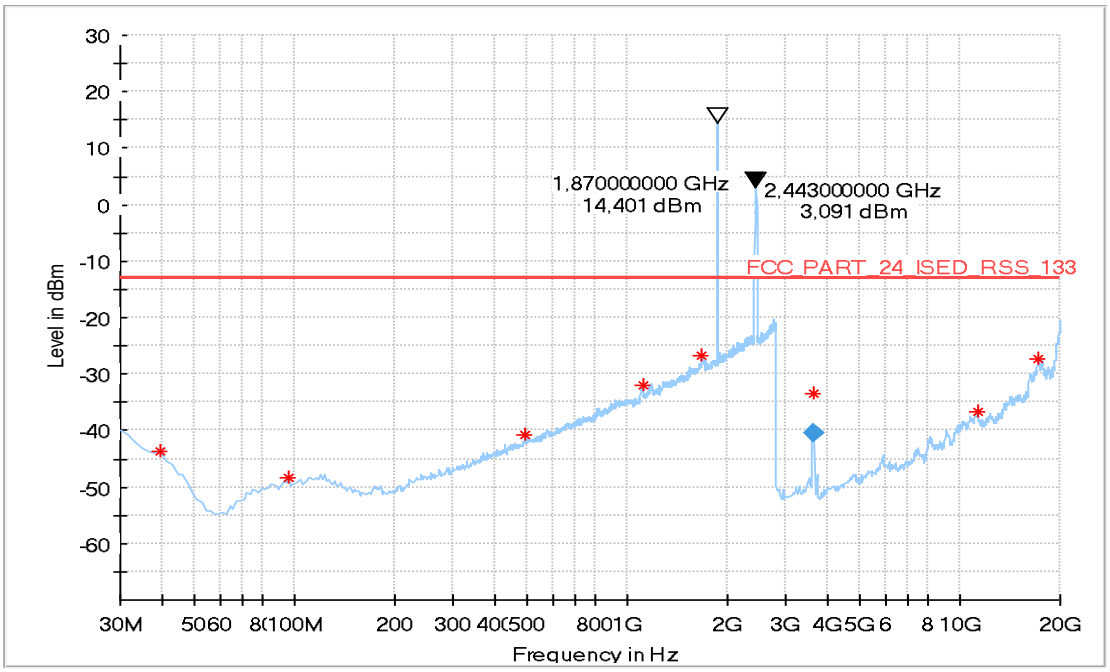
Common Information

Test Description:	Radiated emission
Test Site:	FAR1
Test Standard:	FCC Part 24.238 Broadband PCS
Antenna polarisation:	vertical / horizontal
Operating Mode:	2
Operator:	TFa
Environmental Conditions::	Humidity : 46%rH; Temperature: 20°C
Verdict:	Passed

EUT Information

Manufacturer:	IPETRONIK GmbH & Co KG
Product:	µCROS SL
Model:	Data Logger
HW version:	1.03
SW version:	1.30
Serial number:	00060
Power Supply:	24 V DC

Full Spectrum



Remarks:

- Emission at 1,870000000GHz and 2,443000000GHz is Carrier Frequency from GSM 1900 and WLAN 2.4GHz, which are not relevant to results.

Final_Result

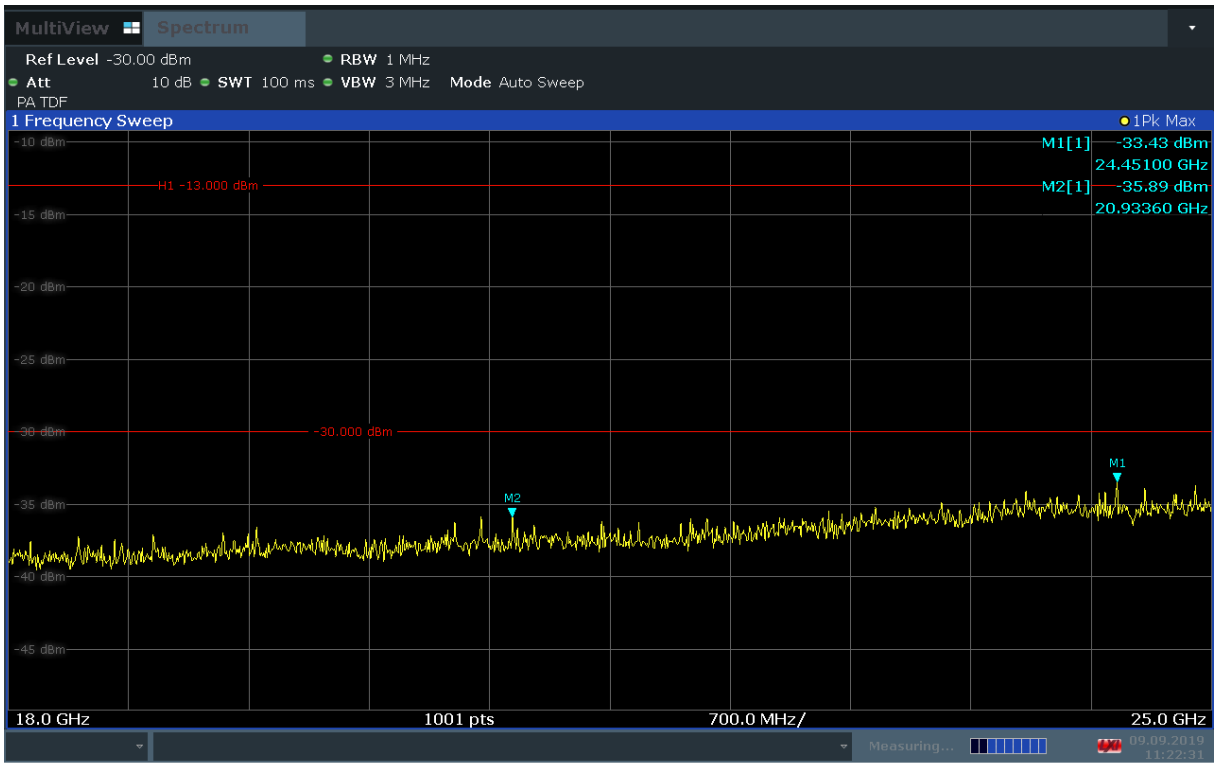
Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB)
3634.266666	-40.42	-13.00	27.42	100.0	1000.000	V	210.0	0.0	-94

Spurious Emission List

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
39.700000	-43.80	-13.00	30.80	155.0	H	180.0
96.283333	-48.51	-13.00	35.51	155.0	H	90.0
492.366667	-40.90	-13.00	27.90	155.0	V	90.0
1111.000000	-31.90	-13.00	18.90	155.0	H	255.0
1678.000000	-26.73	-13.00	13.73	155.0	V	210.0
3634.266666	-33.44	-13.00	26.74	155.0	V	210.0
11256.666667	-36.81	-13.00	23.81	155.0	V	75.0
17219.333333	-27.22	-13.00	14.22	155.0	H	255.0

1.5. Spurious emissions radiated (1900 MHz + WLAN 2.4GHz transmitting mode)_18GHz-25GHz

8.02b_RSE_GSM_1900 + WLAN_2.4GHz



11:22:32 09.09.2019

➔ Line at value of -30dBm due to visual graphical reference value on FSE67 spectrum-analyzer (not a limit line)