FCC TEST REPORT No. 14/989	2014
for 47 CFR Part 15	24 November

Model name:	**FOCUS RXR-SD**
Product description	Electrical Meter
FCC ID	NTA3GINTRP1
Applicant	Telematics Wireless Ltd., Israel
Manufacturer	Telematics Wireless Ltd., Israel

The results in this report apply only to the samples tested.
Reproduction or copying of this report or its any part may only be made with the prior
written approval of PE TC "Omega"

PUBLIC ENTERPRISE
TESTING CENTER
"OMEGA"

29 Vakulenchuk str., Sevastopol,
99053, Crimea, Ukraine, P.O.B.-37
phone: +380 692 53 70 72
fax: +380 692 46 96 79
e-mail: stcomega@stc-omega.biz

Approved by
Sergey Bogach,
Chief TC of PE TC "OMEGA"

Table of contents

1 EQUIPMENT UNDER TEST

Only the relevant tests were performed for update product. Full test results are provided test report TELRAD_FCC.23395_DTS

1.1 Basic description

Equipment Category	
Model name	**FOCUS RXR-SD**
Destination	Electrical Meter with 2-Way RF communicator
Configuration	Combined equipment (Equipment where the radio part is fully integrated within another type of equipment)
FCC ID number	NTA3GINTRP1

1.2 Technical characteristics declared by manufacturer

Assigned frequency range	902 - 928 MHz
Operating frequency range	905.43 - 923.546 MHz (BPSK modulation) 916.3 MHz (FSK modulation)
Peak output power	20.10 dBm – (BPSK modulation) 18.85 dBm – (FSK modulation)
Antenna type	Integral
Antenna gain	3 dBi
Transmitter aggregate data rate	60 kbps
Type of modulation	BPSK; FSK
Modulating test signal (baseband)	PRBS
Transmitter duty cycle	1%
Supply voltage	110 VDC ± 10 %

1.3 Photos

Figure 1.3.1 Front view 1

Figure 1.3.2 Front view 2

2 GENERAL INFORMATION ABOUT TESTS

2.1 Test program and results of the tests

Number of test	FCC rule	Description of test	Result (Pass, Fail, N/A)
1	15.247(b)3	Peak Output Power	Pass
2	15.207(a)	Conducted Emissions	Pass
3	15.247(d)	Radiated Spurious Emissions	Pass

Tested by:
tests No. 1: Laboratory engineer
Boris Trifonov
tests No. 2, 3: Laboratory engineer
Vladimir Osaulko

Reviewed by:
Leading engineer
Fjodor Shubin

2.2 Test conditions and test modes

Normal temperature and humidity:
- temperature: from +15 °C to +35 °C;
- relative humidity: from 20 % to 75 %

Normal power source:
- Unom = 120V AC

The frequencies for the testing

Channel	Frequency, MHz
Low	905.430
Mid	916.300
High	923.546

2.3 Test equipment used

№	Name	Model	Inventory or serial No.
1.	EMI Test receiver/spectrum analyzer	R&S ESU-26	100260
2.	Antenna (30 – 1000) MHz	Schwarzbeck UBAA 9114	9111-214
3.	Antenna (1000 - 10000) MHz	ETS-Lingren 1-18GHz	00110301
4.	Digital multimeter	FLUKE 189	89750179
5.	Preamplifier (0.1-18) GHz	Agilent 87405c	MY47010400
6.	Psychrometer	ВИТ-2	B931
7.	Shielded Semi-Anechoic Chamber	"DON"	1

All listed above test equipment is calibrated and certified in accordance with established procedure. The equipment has certificates currently in force.

Ancillary equipment

№	Name	Model
1.	Master meter	DMMR-BT1
2.	ComHUB	"SUNIX"

2.4 Measurement uncertainty

Parameter	Maximum uncertainty
Radiated emission	± 5,2 dB
Conducted Emissions	± 3,6 dB
Frequency	$\pm 1 \times 10^{-6}$
Temperature	± 1 °C
Humidity	± 2 %
Voltage supply AC	± 2 %

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k = 2.

2.5 Photo of test site

Figure 2.5.1 Radiated measurement

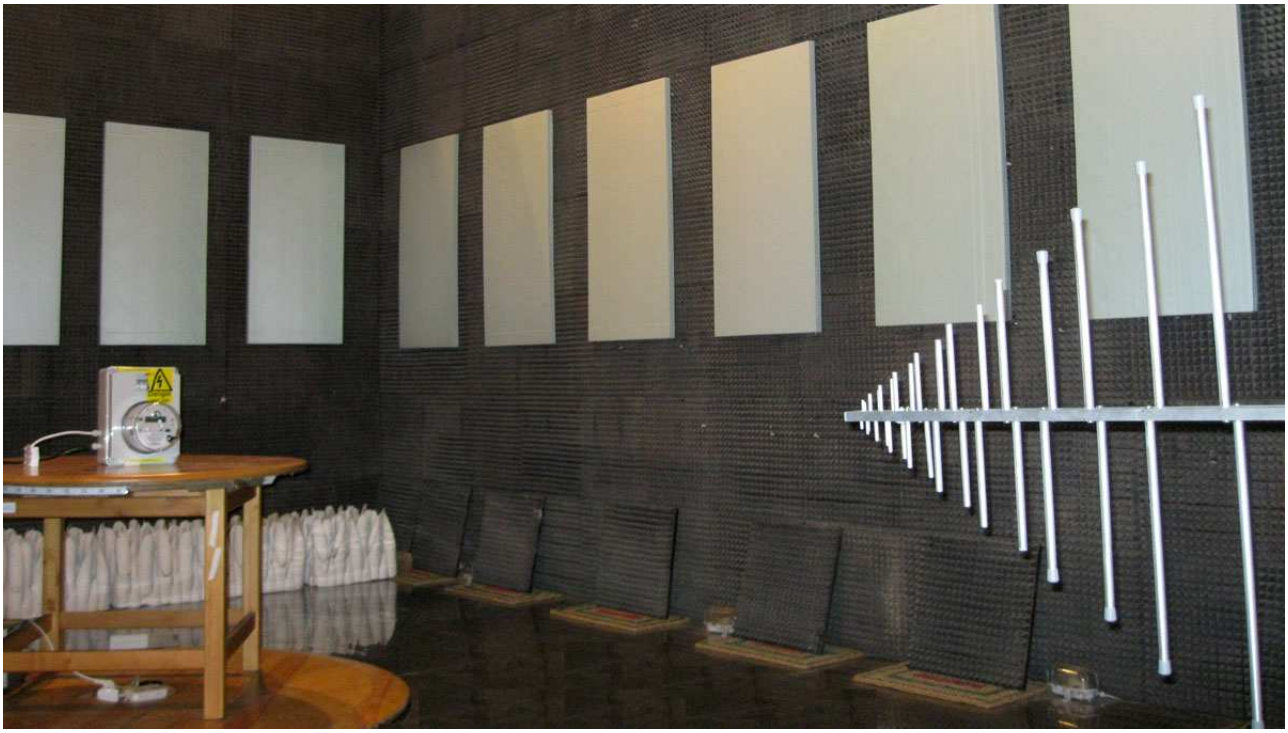


Figure 2.5.2 Radiated measurement

Figure 2.5.3 Conducted measurement

3 REPORT OF MEASUREMENTS AND EXAMINATIONS

3.1 Peak Output power

3.1.1 Test requirements 15.247(b)3

b) The maximum peak conducted output power of the intentional radiator shall not exceed the following:

3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Table 3.1.1 Peak output power limits

Assigned frequency range, MHz	Maximum antenna gain, dBi	Peak output power		Equivalent field strength limit @ 3m, dB(μV/m)
		W	dBm	
902.0 – 928.0	6.0	1.0	30.0	131.2

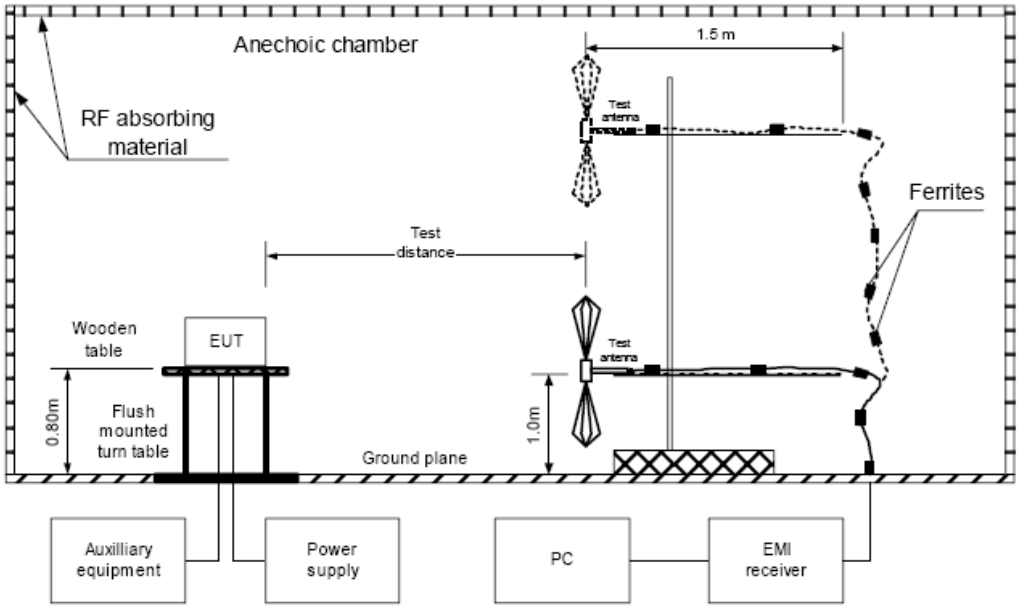
3.1.2 Test procedure

Test set up is shown in the figure below.
The device shall be set to transmit modulated carrier.
The field strength of the EUT carrier frequency shall be measured with antenna connected to spectrum analyzer. To find maximum radiation the turntable was rotated 3600 and the measuring antenna height shall be swept in both vertical and horizontal polarizations. This level shall be recorded.
To determine the absolute measurement value a substitution measurement is performed. The following steps have to be performed:
1) The EUT shall be replaced with the substitution antenna. The substitution antenna will have vertical polarization.
2) A signal generator shall be connected to the substitution antenna, and adjusted to the measurement frequency.
3) To find maximum radiation the turntable was rotated 360^0 and the measuring antenna height shall be swept in both vertical and horizontal polarizations.
4) Subsequently, the power of the signal generator shall be adjusted until the same level is obtained again at the measurement equipment.
5) The radiated power is equal to the power supplied by the signal generator, increased the substitution antenna gain minus the cable losses (values in dB).

6) This measurement shall be repeated with horizontal polarization of the substitution antenna.
Settings of the spectrum analyzer:
RBW = 1 MHz
VBW = 3 MHz
Span = 0 MHz
Sweep time = 50 ms
Detector = peak
Trace mode = max hold

3.1.3 Test setup layout

Figure 3.2.1 Setup for carrier field strength measurement



3.1.4 Test result

Temperature: +18 °C Relative humidity: 40 %

Table 3.1.2 Peak output power test result

Frequency, MHz	Output generator, dBm	Coax Loss, dB	Antenna gain, dBi	Test antenna height, m	Measured E.I.R.P, dBm	Limit, dBm	Test Result (Pass, Fail, N/A)
BPSK modulation							
905.430	17.30	3.2	6.0	1.0	20.1	30	Pass
916.300	17.40	3.4	6.0	1.0	20.0	30	Pass
923.546	17.90	4.2	6.0	1.0	19.7	30	Pass
FSK modulation							
916.300	16.25	3.4	6.0	1.0	18.85	30	Pass

3.2 Spurious Emissions (radiated)

3.2.1 Test requirements 15.247(d)

(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Table 3.2.1 Radiated spurious emissions limits

<table>
<tr><th rowspan="2">Frequency, MHz</th><th colspan="3">Field strength at 3 m within restricted bands, dB(μV/m)***</th><th rowspan="2">Attenuation of field strength of spurious versus carrier outside restricted bands, dBc***</th></tr>
<tr><th>Peak</th><th>Quasi Peak</th><th>Average</th></tr>
<tr><td>0.009 – 0.090</td><td>148.5 – 128.5</td><td>NA</td><td>128.5 – 108.5**</td><td rowspan="11">20.0</td></tr>
<tr><td>0.090 – 0.110</td><td>NA</td><td>108.5 – 106.8**</td><td>NA</td></tr>
<tr><td>0.110 – 0.490</td><td>126.8 – 113.8</td><td>NA</td><td>106.8 – 93.8**</td></tr>
<tr><td>0.490 – 1.705</td><td rowspan="7">NA</td><td>73.8 – 63.0**</td><td rowspan="7">NA</td></tr>
<tr><td>1.705 – 30.0*</td><td>69.5</td></tr>
<tr><td>30 – 88</td><td>40.0</td></tr>
<tr><td>88 – 216</td><td>43.5</td></tr>
<tr><td>216 – 960</td><td>46.0</td></tr>
<tr><td>960 - 1000</td><td>54.0</td></tr>
<tr><td>1000 – 10thharmonic</td><td>74.0</td><td>NA</td><td>54.0</td></tr>
</table>

* - The limit for 3 m test distance was calculated using inverse square distance extrapolation factor as follows:

$$Lim_{s2} = Lim_{s1} + 40\log(S_1/S_2),$$

where S_1 and S_2 – standard defined and test distance respectively in meters.

** - The limit decreases linearly with the logarithm of frequency.

*** - The field strength limits applied from lower radio frequency generated in the device, without going below 9 kHz up to the tenth harmonic of the highest fundamental frequency.

Table 3.2.2 Restricted bands

MHz	MHz	MHz	MHz	MHz	GHz
0.09 - 0.11	8.37625 - 8.38675	73 - 74.6	399.9 - 410	2690 - 2900	10.6 - 12.7
0.495 - 0.505	8.41425 - 8.41475	74.8 - 75.2	608 - 614	3260 - 3267	13.25 - 13.4
2.1735 - 2.1905	12.29 - 12.293	108 - 121.94	960 - 1240	3332 - 3339	14.47 - 14.5
4.125 - 4.128	12.51975 - 12.52025	123 - 138	1300 - 1427	3345.8 - 3358	15.35 - 16.2
4.17725 - 4.17775	12.57675 - 12.57725	149.9 - 150.05	1435 - 1626.5	3600 - 4400	17.7 - 21.4
4.20725 - 4.20775	13.36 - 13.41	156.52475 - 156.52525	1645.5 - 1646.5	4500 - 5150	22.01 - 23.12
6.215 - 6.218	16.42 - 16.423	156.7 - 156.9	1660 - 1710	5350 – 5460	23.6 - 24
6.26775 - 6.26825	16.69475 - 16.69525	162.0125 - 167.17	1718.8 - 1722.2	7250 - 7750	31.2 - 31.8
6.31175 - 6.31225	16.80425 - 16.80475	167.72 - 173.2	2200 - 2300	8025 – 8500	36.43 - 36.5
8.291 - 8.294	25.5 - 25.67	240 - 285	2310 - 2390	9000 - 9200	Above 38.6
8.362 - 8.366	37.5 - 38.25	322 - 335.4	2483.5 - 2500	9300 - 9500	

3.2.2 Test procedure (558074 D01 DTS Meas Guidance v01)

The transmitter was set to the normal operational mode with the maximum power rating.

Measurements of spurious emissions outside restricted bands.

Measurement were made in the anechoic chamber with metal floor (in the band of 9 kHz - 1000 MHz) and in fully anechoic chamber (1000 MHz - 10000 MHz) at distance of 3 m. The turntable was rotated, test antenna height (in the band 30 MHz-1000 MHz) was altered in the range of 1-4m (in the chamber with metal floor), test antenna polarization was changed from horizontal to vertical to find maximum reading. In the frequency range of 9 kHz to 30 MHz measurements were made with loop antenna placed at the height of 1 m.

1) Reference power was measured on the center frequency of the signal at distance of 3 m using biconical antenna by the test receiver with the following settings: RBW = 100 kHz, VBW = 300 kHz, Video Detector = Positive Peak.

Spurious emissions were measured:
2) In the band of 9 kHz - 30 MHz with active loop antenna and with the following test receiver settings: RBW =100 kHz; VBW=300 kHz; Video Detector = Positive Peak.
3) In the band of 30 MHz - 1000 MHz with biconical antenna and with the following test receiver settings: RBW = 100 kHz; VBW = 300 kHz; Video Detector = Positive Peak.
4) In the band of 1000 MHz - 10000 MHz with horn antenna and with the following test receiver settings: RBW = 100 kHz; VBW = 300 kHz; Video Detector = Positive Peak.
5) The worst test results (the lowest margins) were recorded and shown in the associated plots.

Measurements of spurious emissions within restricted bands below 1 GHz.

Measurement were made in the anechoic chamber with metal ground floor at distance of 3 m. The turntable was rotated, test antenna height (above 30 MHz) was altered in the range of 1-4m, test antenna polarization was changed from horizontal to vertical to find maximum reading.

Spurious emissions were measured:
1) In the band of 9 kHz - 150 kHz with active loop antenna and with the following settings of test receiver: RBW = 1 kHz; VBW = 3 kHz; Video Detector = Positive Peak - during prequalification measurement, Quasi-Peak - during final measurement.
2) In the band of 150 kHz - 30 MHz with active loop antenna and with the following settings of test receiver: RBW = 10 kHz; VBW = 30 kHz, Video Detector = Positive Peak - during prequalification measurement, Quasi-Peak - during final measurement.
3) In the band of 30 MHz - 1000 MHz with biconical antenna and with the following settings of test receiver: RBW = 120 kHz, VBW = 300 kHz, Video Detector = Positive Peak - during prequalification measurement, Quasi-Peak - during final measurement.
4) The worst test results (the lowest margins) were recorded and shown in the associated plots.

Measurements of spurious emissions within restricted bands above 1 GHz.

Measurements were made in the anechoic chamber at distance of 3 m. The turntable was rotated; test antenna polarization was changed from horizontal to vertical to find maximum reading.
Spurious emissions were measured:
1) In the band of 1000 MHz - 10000 MHz with horn antenna and with the following settings of test receiver: RBW = 1 MHz, VBW = 3 MHz, Video Detector = Positive Peak - during prequalification measurement, Average - during final measurement.
2) The worst test results (the lowest margins) were recorded and shown in the associated plots.

Figure 3.2.1 Test setup layout (below 30 MHz)

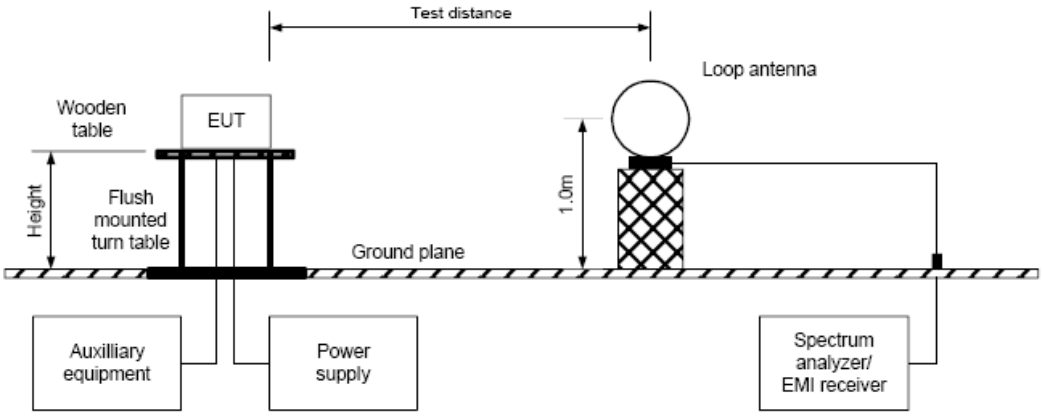
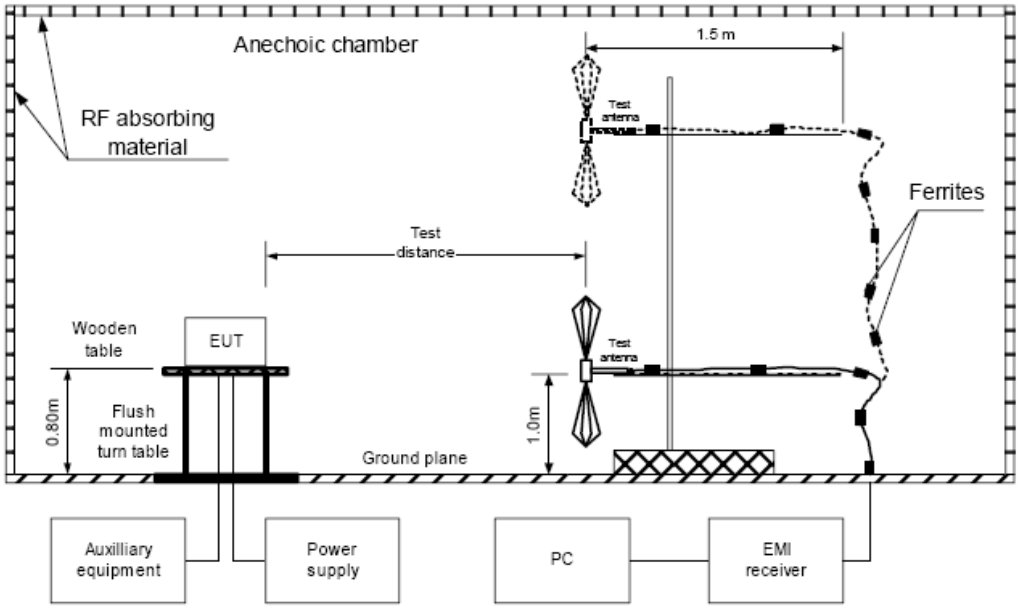


Figure 3.2.2 Test setup layout (above 30 MHz and below 10 GHz)



3.2.3 Test results

Temperature: +20 °C Relative humidity: 65 %

Table 3.2.3 Radiated emission measurements from 30 MHz to 1000 MHz at the 916.3 MHz carrier frequency (FSK)

Frequency, MHz	Antenna polarization	Antenna height, m	Field strength, dBµV/m	Limit at 3m, dBµV/m	Margin, dB	Result (Pass, Fail, N/A)
47.64	V	1.25	21.9	40.0	18.1	**Pass**
89.12	V	1.50	32.2	43.5	11.3	**Pass**
232.24	H	1.25	32.4	46.0	13.6	**Pass**
466.44	V	2.00	40.1	46.0	5.9	**Pass**
905.80	V	1.00	43.2	46.0	2.8	**Pass**

Plot 3.2.1 Radiated emission measurements from 30 MHz to 1000 MHz at the 916.3 MHz carrier frequency (FSK)

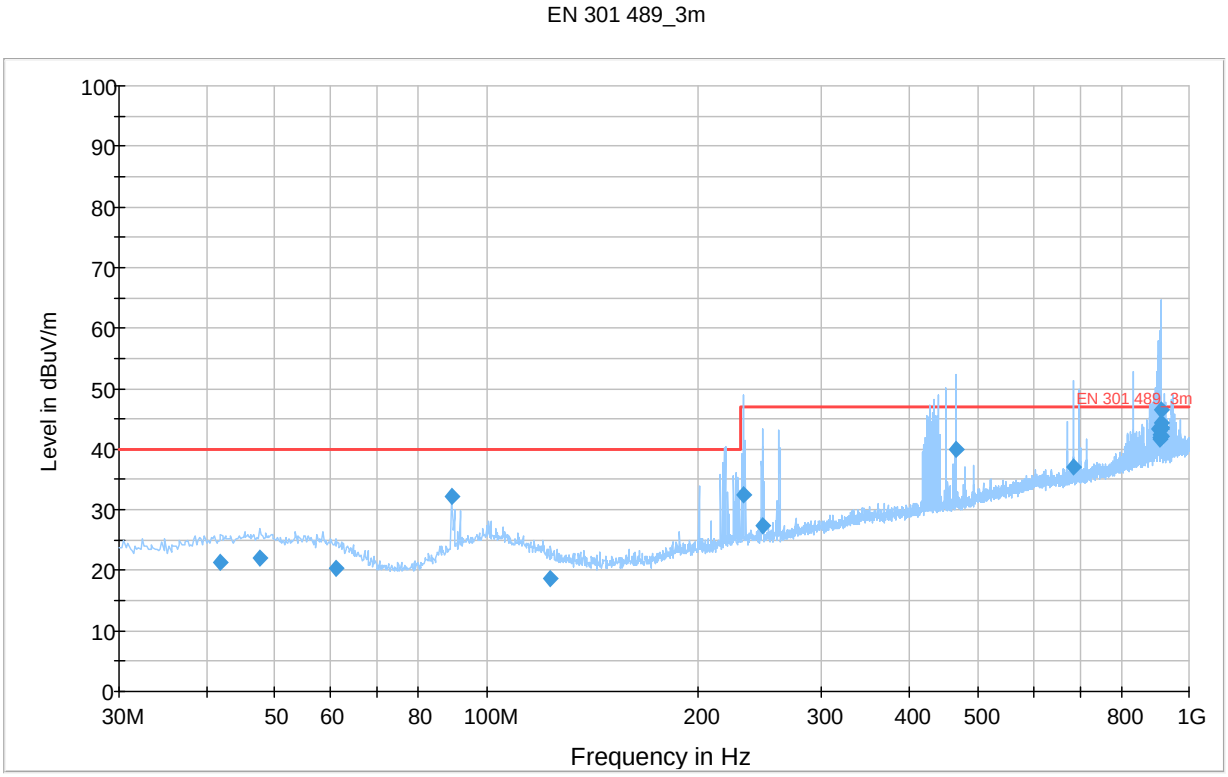


Table 3.2.4 Radiated emission measurements from 1000 MHz to 10000 MHz at the 916.3 MHz carrier frequency (FSK - Peak detector)

Frequency, MHz	Antenna polarization	Antenna height, m	Field strength, dBµV/m	Limit at 3m, dBµV/m	Margin, dB	Result (Pass, Fail, N/A)
1149.00	V	1.00	57.0	74.0	17.0	**Pass**
2748.00	H	2.00	62.4	74.0	11.6	**Pass**
3663.00	V	1.50	63.1	74.0	10.9	**Pass**
3666.00	V	2.00	62.3	74.0	11.7	**Pass**
4580.00	H	3.00	56.7	74.0	17.3	**Pass**

Table 3.2.5 Radiated emission measurements from 1000 MHz to 10000 MHz at the 916.3 MHz carrier frequency (FSK - Average detector)

Frequency, MHz	Antenna polarization	Antenna height, m	Field strength, dBµV/m	Limit at 3m, dBµV/m	Margin, dB	Result (Pass, Fail, N/A)
1149.00	V	1.00	29.2	54.0	24.8	**Pass**
2748.00	H	2.00	38.3	54.0	15.7	**Pass**
4580.00	H	3.00	39.0	54.0	15.0	**Pass**
6157.00	H	2.00	40.9	54.0	13.1	**Pass**
7334.00	V	3.00	41.5	54.0	12.5	**Pass**

Plot 3.2.2 Radiated emission measurements from 1 GHz to 10 GHz at the 916.3 MHz carrier frequency (FSK)

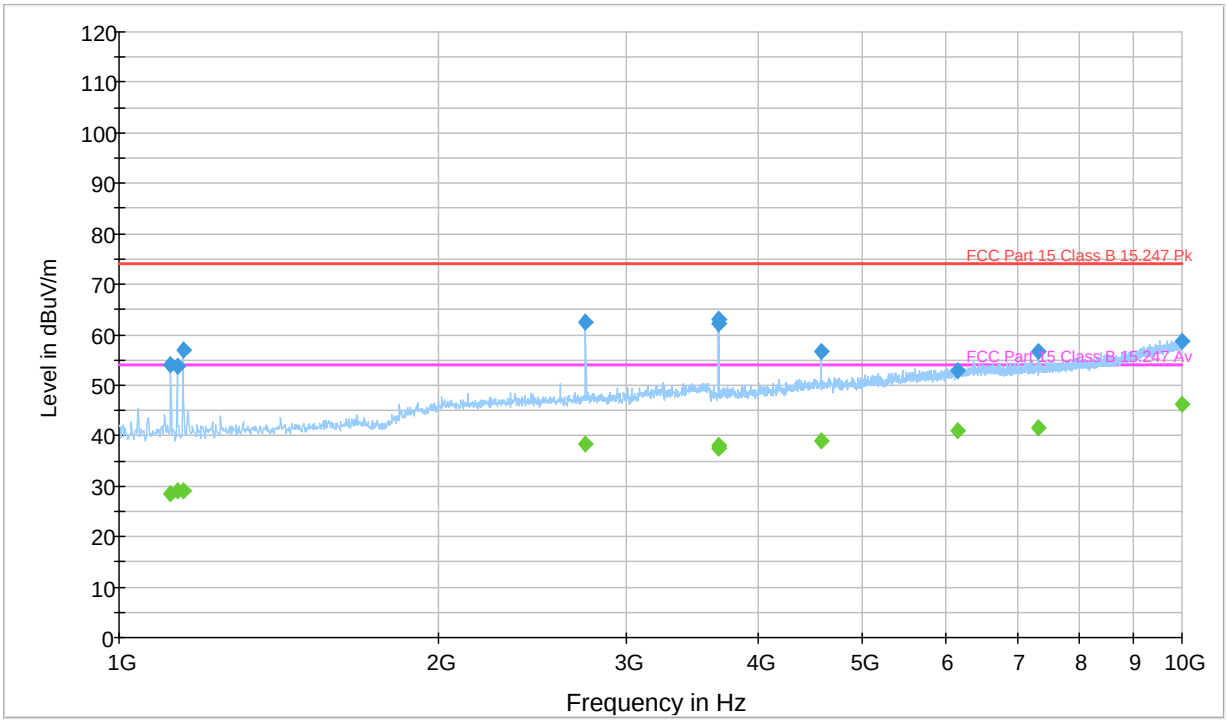


Table 3.2.6 Radiated emission measurements from 30 MHz to 1000 MHz at the 923.546 MHz carrier frequency (BPSK)

Frequency, MHz	**Antenna polarization**	**Antenna height, m**	**Field strength, dBµV/m**	**Limit at 3m, dBµV/m**	**Margin, dB**	**Result (Pass, Fail, N/A)**
47.24	V	1.5	21.7	40	18.3	**Pass**
104.52	V	1.00	31.6	43.5	11.9	**Pass**
231.68	H	1.75	45.9	46	0.1	**Pass**
246.04	H	2.50	34.1	46	11.9	**Pass**
674.12	V	2.75	36.6	46	9.4	**Pass**

Plot 3.2.3 Radiated emission measurements from 30 MHz to 1000 MHz at the 923.546 MHz carrier frequency (BPSK)

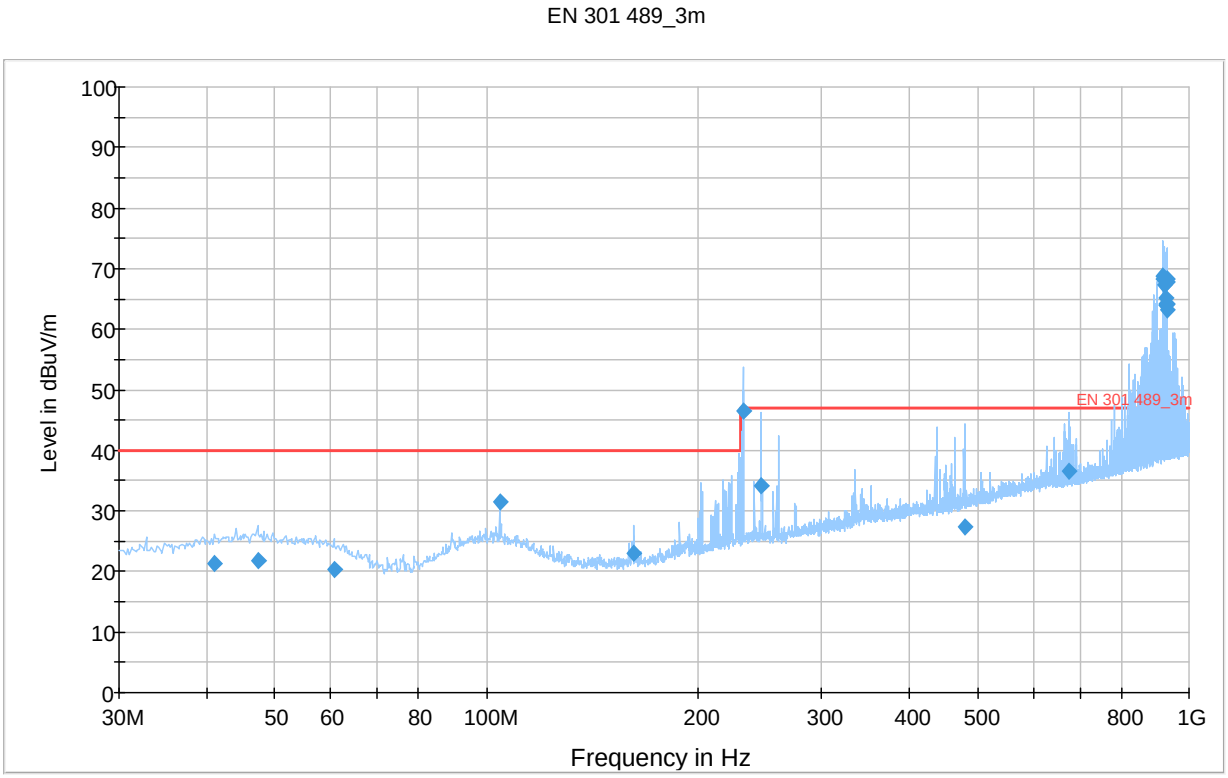


Table 3.2.7 Radiated emission measurements from 1000 MHz to 10000 MHz at the 923.546 MHz carrier frequency (BPSK - Peak detector)

Frequency, MHz	**Antenna polarization**	**Antenna height, m**	**Field strength, dBµV/m**	**Limit at 3m, dBµV/m**	**Margin, dB**	**Result (Pass, Fail, N/A)**
1006.60	V	4.00	50.1	74.0	23.9	**Pass**
3694.00	H	3.50	56.7	74.0	17.3	**Pass**
4618.00	V	3.00	55.1	74.0	18.9	**Pass**
6136.00	H	1.00	53.4	74.0	20.6	**Pass**
7776.00	H	2.50	54.5	74.0	19.5	**Pass**

Table 3.2.8 Radiated emission measurements from 1000 MHz to 10000 MHz at the 923.546 MHz carrier frequency (BPSK - Average detector)

Frequency, MHz	**Antenna polarization**	**Antenna height, m**	**Field strength, dBµV/m**	**Limit at 3m, dBµV/m**	**Margin, dB**	**Result (Pass, Fail, N/A)**
1006.50	V	4.00	29.1	54.0	24.9	**Pass**
3694.00	H	3.50	37.2	54.0	16.8	**Pass**
4618.00	V	3.00	38.5	54.0	15.5	**Pass**
6136.00	H	1.00	40.5	54.0	13.5	**Pass**
7776.00	H	2.50	41.8	54.0	12.2	**Pass**

Plot 3.2.4 Radiated emission measurements from 1000 MHz to 10000 MHz at the 923.546 MHz carrier frequency (BPSK)

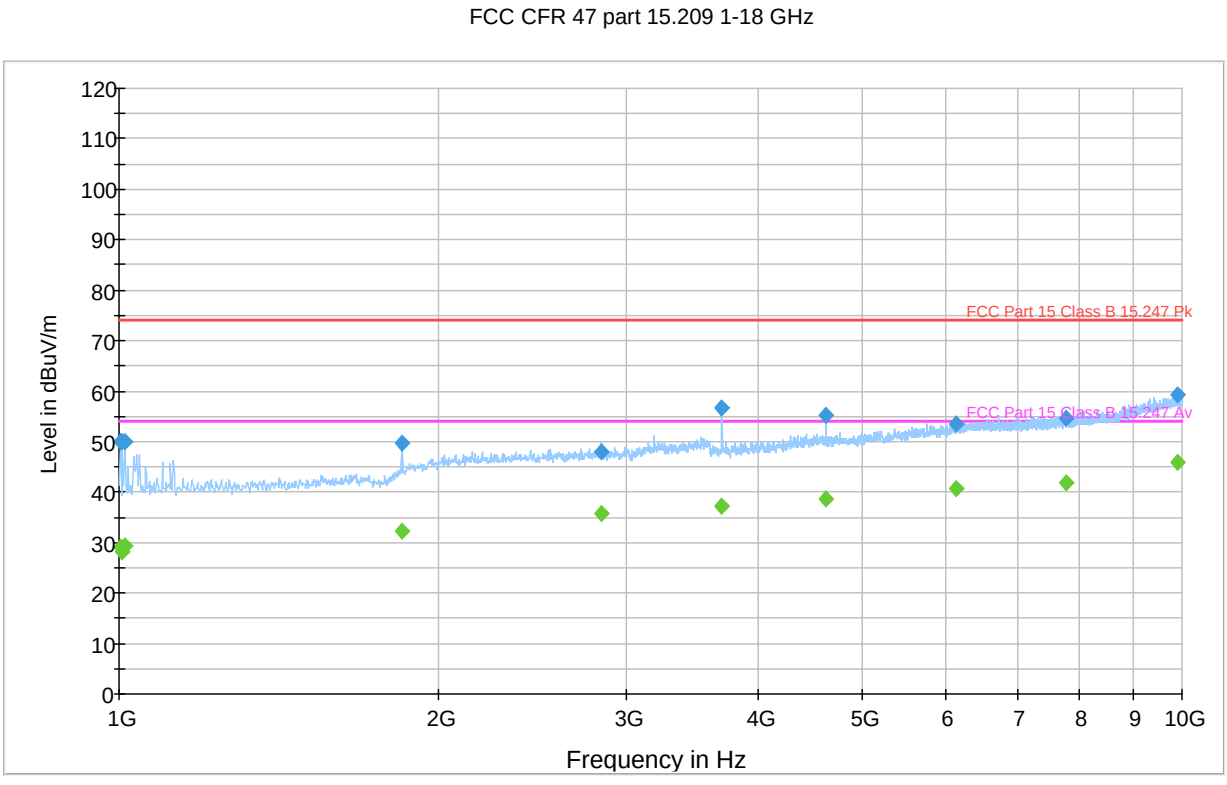


Table 3.2.8 Radiated emission measurements from 30 MHz to 1000 MHz at the 916.3 MHz carrier frequency (BPSK)

Frequency, MHz	**Antenna polarization**	**Antenna height, m**	**Field strength, dBµV/m**	**Limit at 3m, dBµV/m**	**Margin, dB**	**Result (Pass, Fail, N/A)**
46.20	V	1.5	21.7	40	18.3	**Pass**
104.48	V	1.00	30.2	43.5	13.3	**Pass**
216.56	H	2.00	28.8	46	17.2	**Pass**
447.96	V	1.00	32.5	46	13.5	**Pass**
678.68	H	3.00	38.7	46	7.3	**Pass**

Plot 3.2.5 Radiated emission measurements from 30 MHz to 1000 MHz at the 916.3 MHz carrier frequency (BPSK)

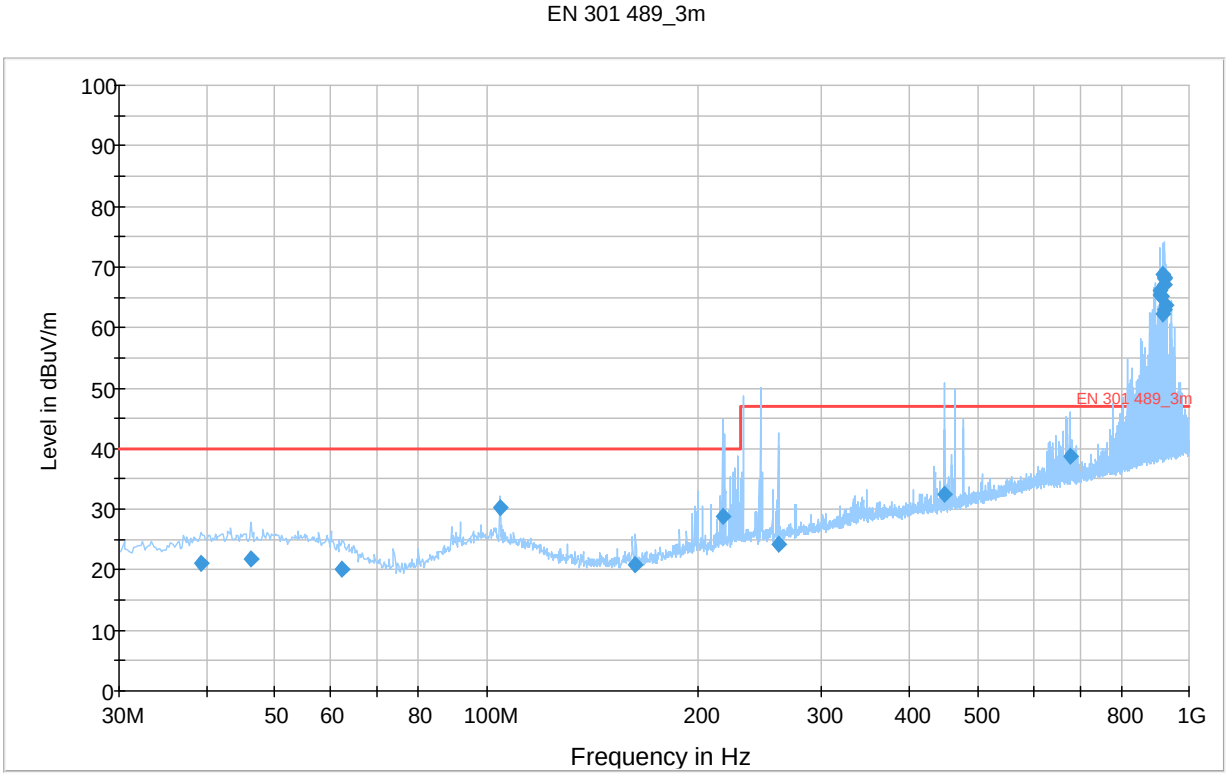


Table 3.2.9 Radiated emission measurements from 1000 MHz to 10000 MHz at the 916.3 MHz carrier frequency (BPSK - Peak detector)

Frequency, MHz	Antenna polarization	Antenna height, m	Field strength, dBµV/m	Limit at 3m, dBµV/m	Margin, dB	Result (Pass, Fail, N/A)
1050.50	V	1.00	51.7	74.0	22.3	**Pass**
1833.50	V	3.00	59.4	74.0	14.6	**Pass**
4707.00	H	2.00	51.1	74.0	22.9	**Pass**
5718.00	H	2.50	52.5	74.0	21.5	**Pass**
7929.00	V	1.50	55.2	74.0	18.8	**Pass**

Table 3.2.10 Radiated emission measurements from 1000 MHz to 10000 MHz at the 916.3 MHz carrier frequency (BPSK - Average detector)

Frequency, MHz	Antenna polarization	Antenna height, m	Field strength, dBµV/m	Limit at 3m, dBµV/m	Margin, dB	Result (Pass, Fail, N/A)
1050.50	V	1.00	29.1	54.0	24.9	**Pass**
1833.50	V	3.00	32.5	54.0	21.5	**Pass**
4707.00	H	2.00	38.4	54.0	15.6	**Pass**
5718.00	H	2.50	40.0	54.0	14.0	**Pass**
7929.00	V	1.50	42.1	54.0	11.9	**Pass**

Plot 3.2.6 Radiated emission measurements from 1000 MHz to 10000 MHz at the 916.3 MHz carrier frequency (BPSK)

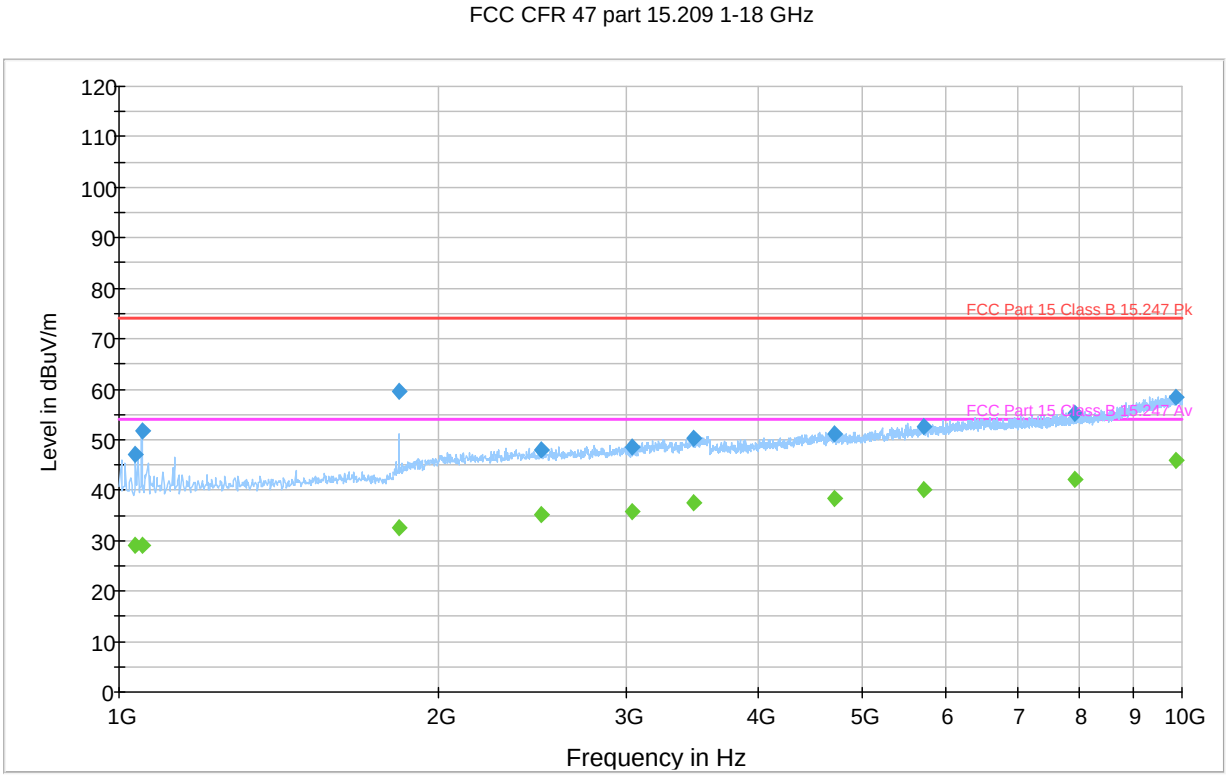


Table 3.2.11 Radiated emission measurements from 30 MHz to 1000 MHz at the 905.43 MHz carrier frequency (BPSK)

Frequency, MHz	**Antenna polarization**	**Antenna height, m**	**Field strength, dBµV/m**	**Limit at 3m, dBµV/m**	**Margin, dB**	**Result (Pass, Fail, N/A)**
89.12	V	1.00	31.5	40	8.5	**Pass**
217.40	H	1.75	30.8	43.5	12.7	**Pass**
246.80	V	2.50	27.6	46	18.4	**Pass**
466.52	V	1.50	26.9	46	19.1	**Pass**
676.84	H	2.75	39.3	46	6.7	**Pass**

Plot 3.2.7 Radiated emission measurements from 30 MHz to 1000 MHz at the 905.43 MHz carrier frequency (BPSK)

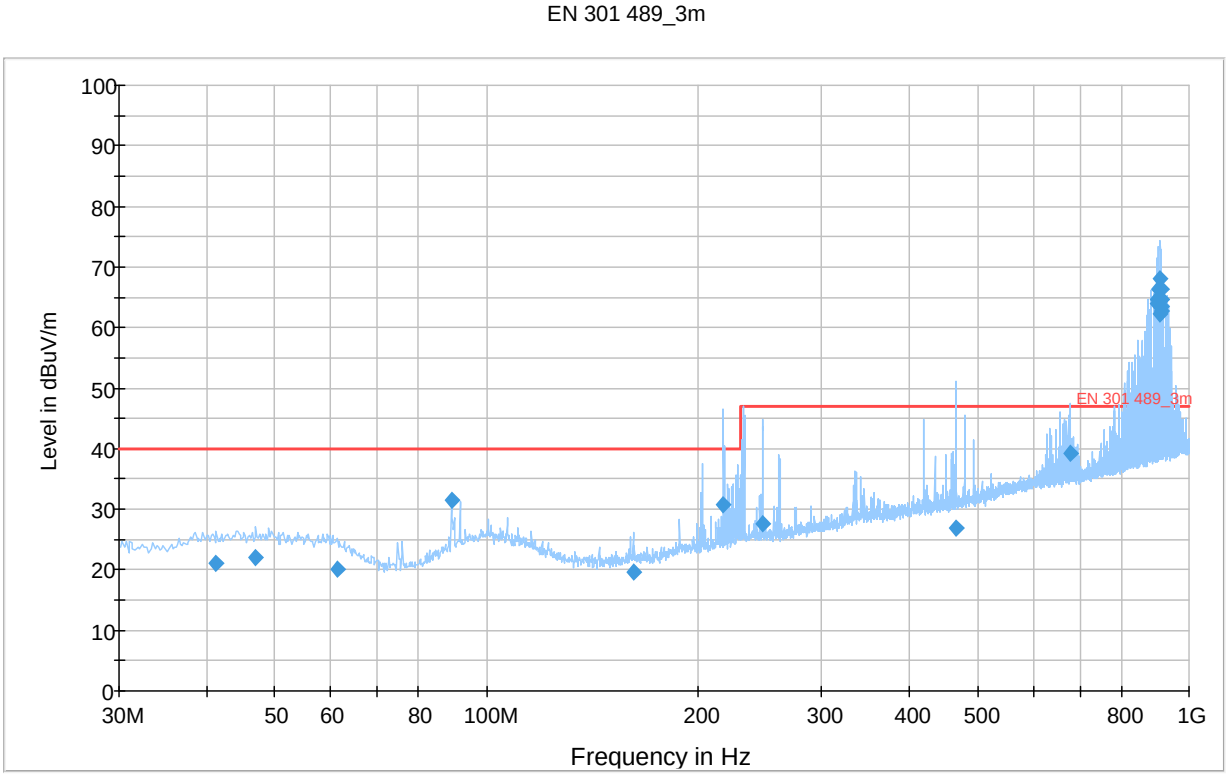


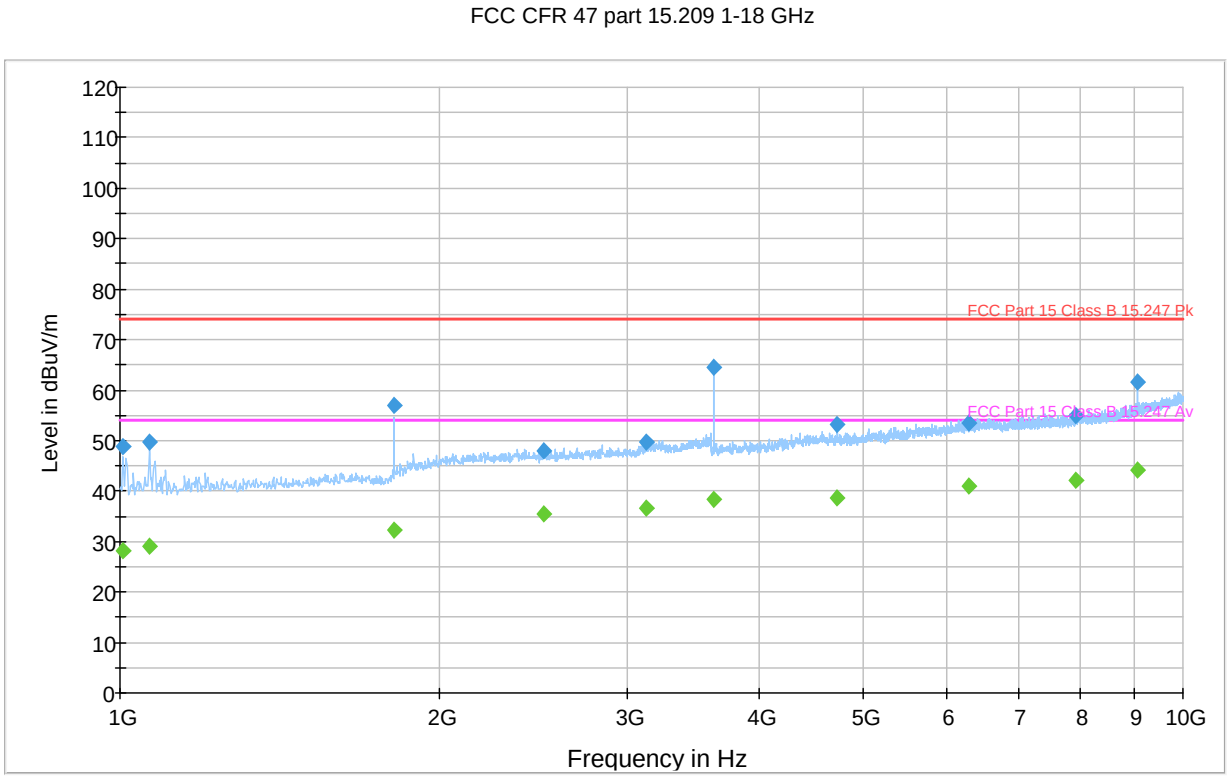
Table 3.2.12 Radiated emission measurements from 1000 MHz to 10000 MHz at the 905.43 MHz carrier frequency (BPSK - Peak detector)

Frequency, MHz	Antenna polarization	Antenna height, m	Field strength, dBµV/m	Limit at 3m, dBµV/m	Margin, dB	Result (Pass, Fail, N/A)
1811.50	H	3.50	56.9	74.0	17.1	**Pass**
3622.00	V	1.50	64.4	74.0	9.6	**Pass**
4732.50	H	3.00	53.1	74.0	20.9	**Pass**
6298.00	V	4.00	53.3	74.0	20.7	**Pass**
7925.00	H	4.00	55.0	74.0	19.0	**Pass**

Table 3.2.13 Radiated emission measurements from 1000 MHz to 10000 MHz at the 905.43 MHz carrier frequency (BPSK - Average detector)

Frequency, MHz	Antenna polarization	Antenna height, m	Field strength, dBµV/m	Limit at 3m, dBµV/m	Margin, dB	Result (Pass, Fail, N/A)
3123.50	H	2.00	36.5	54.0	17.5	**Pass**
3622.00	V	1.50	38.3	54.0	15.7	**Pass**
4732.50	H	3.00	38.6	54.0	15.4	**Pass**
6298.00	V	4.00	40.9	54.0	13.1	**Pass**
7925.00	H	4.00	42.1	54.0	11.9	**Pass**

Plot 3.2.8 Radiated emission measurements from 1000 MHz to 10000 MHz at the 905.43 MHz carrier frequency (BPSK)



3.3 Conducted Emission

3.3.1 Test requirements of 15.207

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

	Conducted limit (dBμV)	
Frequency of emission (MHz)	**Quasi-peak**	**Average**
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

3.3.2 Test procedure (ANSI C63.10-2013, Sections 6.3)

The EUT emitted a BEACON (Info + Reading value + Alarm Status) every 11sec.
The EUT was placed on a platform of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The vertical conducting plane or wall of an RF-shielded (screened) room shall be located 40 cm to the rear of the EUT. All other surfaces of tabletop or floor-standing EUTs shall be at least 80 cm from any other grounded conducting surface, including the case or cases of one or more LISNs.
The measurements were performed on the line under test in a 2m x 2m x 2m screened enclosure by means of an Impedance Stabilization Network (ISN) bonded to the ground plane and connected to the spectrum analyzer. The EUT was placed on a non-metallic table, 0.8m above the ground reference plane and was configured, arranged and operated in a manner consistent with typical application and load conditions. Normal performance of the EUT was verified.
Conducted common mode (asymmetric mode) disturbance at the tested port was investigated in the appropriate frequency range using the resolution-bandwidth per CISPR16-1, Table 7, and QP and Average readings were taken.
Worst-case results were recorded.

3.3.3 Test result

Temperature: +20°C Relative humidity: 63%

EUT OPERATING MODE: Transmit

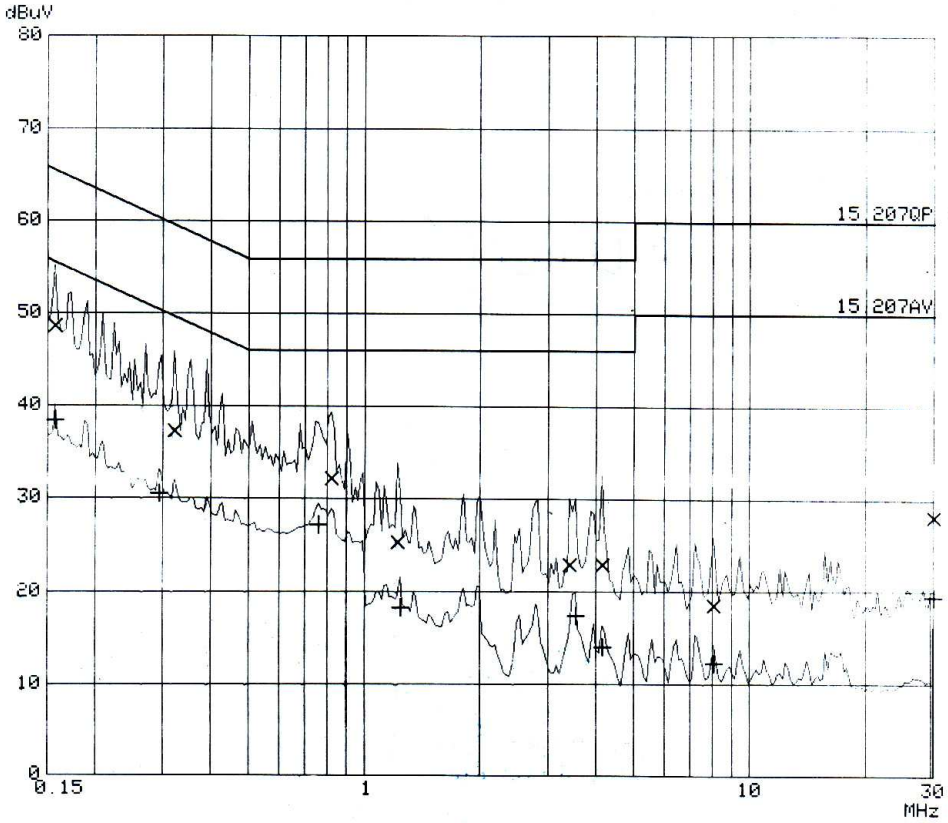
Table 3.3.1 Conducted emission test result ("Phase" Lead)

Frequency, MHz	**Measured Result, dBµV**		**Limit, dBµV**		**Margin, dB**		**Result (Pass, Fail, N/A)**
	QP	AVR	QP	AVR	QP	AVR	
0.157	48.6	38.3	65.6	55.6	17.0	17.3	**Pass**
0.321	37.2	30.5	59.7	50.5	22.5	20.0	**Pass**
0.819	32.2	27.2	56.0	46.0	23.8	18.8	**Pass**
1.219	25.3	18.2	56.0	46.0	30.7	27.8	**Pass**
3.421	22.9	17.4	56.0	46.0	33.1	28.6	**Pass**
4.139	22.9	14.0	56.0	46.0	33.1	32.0	**Pass**
8.061	18.5	12.2	60.0	50.0	41.5	37.8	**Pass**
30.000	28.2	19.4	60.0	50.0	31.8	30.6	**Pass**

Table 3.3.2 Conducted emission test result ("Neutral" Lead)

Frequency, MHz	**Measured Result, dBµV**		**Limit, dBµV**		**Margin, dB**		**Result (Pass, Fail, N/A)**
	QP	AVR	QP	AVR	QP	AVR	
0.165	47.9	37.2	65.2	55.2	17.3	18.0	**Pass**
0.292	38.6	29.8	60.5	50.5	21.9	20.7	**Pass**
0.819	26.7	22.9	56.0	46.0	29.3	23.1	**Pass**
1.162	19.4	13.9	56.0	46.0	36.6	32.1	**Pass**
4.009	20.7	13.0	56.0	46.0	35.3	33.0	**Pass**
4.138	20.7	12.8	56.0	46.0	35.3	33.2	**Pass**
14.051	15.7	13.3	60.0	50.0	44.3	36.7	**Pass**
17.547	25.2	22.4	60.0	50.0	34.8	27.6	**Pass**

Plot 3.2.9 Plot Conducted emission test result ("Phase" Lead)



Plot 3.2.10 Plot Conducted emission test result ("Neutral" Lead)