

Test Report

INTENTIONAL RADIATOR TESTS ACCORDING TO FCC PART 15 B and INDUSTRY CANADA REQUIREMENTS

Equipment Under Test: 2.4 GHz Transceiver

Type/ Model: DRC-10 D3

Manufacturer: Scanreco AB
Årsta Skolgränd 22
SE-47144 Stockholm
SWEDEN

Customer: Scanreco AB
Årsta Skolgränd 22
SE-47144 Stockholm
SWEDEN

FCC Rule Part: 15.107 / 15.109
IC Rule Part: RSS-210, Issue 8, 2010
RSS-GEN Issue 4, 2014

Date: December 23, 2014

Issued by:



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Date: December 29, 2014

Checked by:



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Equipment Under Test (EUT)

Final Product
Type/ Model: DRC-10 D3
Serial Number: -

DRC-BM D3 is an industrial hand-held 2.4 GHz transceiver.

Transmitter was not operating during the tests. Only charging of batteries was operating.

Classification of the device

Fixed device	<input type="checkbox"/>
Mobile Device (Human body distance > 20cm)	<input checked="" type="checkbox"/>
Portable Device (Human body distance < 20cm)	<input type="checkbox"/>

Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

Ratings and declarations

Operating Frequency Range (OFR): 2405 – 2480 MHz
Channels: 16
Channel separation: 5 MHz
Conducted power: 19.94 dBm
Transmission technique: FHSS
Modulation: GFSK
Integrated antenna gain: -
External antenna gain: 0.0 dBi

Power Supply

Batteries: 2 x 1.32 VDC Ni-MH

AC mains charger:

The following wall charger was used during the tests (supplied with 115 V/ 60 Hz).

Manufacturer: CMP
Model: S008CM0900090
Serial number: -
Input voltage: 100-240 VAC
Rated current: 250 mA
Rated frequency: 50-60 Hz
Output voltage: 9.0 V DC
Output current: 900 mA

Disclaimer

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SUMMARY OF TESTING

Test Specification	Description of Test	Result
§15.107(a) / RSS-GEN 8.8	Conducted Emissions on Power Supply Lines	PASS
§15.109 / RSS-GEN 8.9	Unintentional Radiated Emissions	PASS

EUT Test Conditions during Testing

Transmitter was not operating during the tests. Only charging of batteries was operating.

Test Facility

<input type="checkbox"/>	Testing Location / address: FCC registration number: 90598	SGS Fimko Ltd Särkiniementie 3 FI-00210, HELSINKI FINLAND
<input checked="" type="checkbox"/>	Testing Location / address: FCC registration number: 178986 Industry Canada registration number: 8708A-2	SGS Fimko Ltd Karakaareнкуja 4 FI-02610, ESPOO FINLAND

Conducted Emissions In The Frequency Range 150 kHz - 30 MHz.

Standard: ANSI C63.10 (2013)
Tested by: PKA
Date: 17.12.2014
Temperature: 30 – 60 %
Humidity: 22 ± 3 °C
Barometric pressure: 860 – 1 060 mbar
Measurement uncertainty: ± 2.9 dB Level of confidence 95 % (k = 2)

FCC Rule: 15.107

Conducted disturbance voltage was measured with an artificial main network from 150 kHz to 30 MHz with 4.5 kHz steps and a resolution bandwidth of 9 kHz. Measurements were carried out with peak and average detectors.

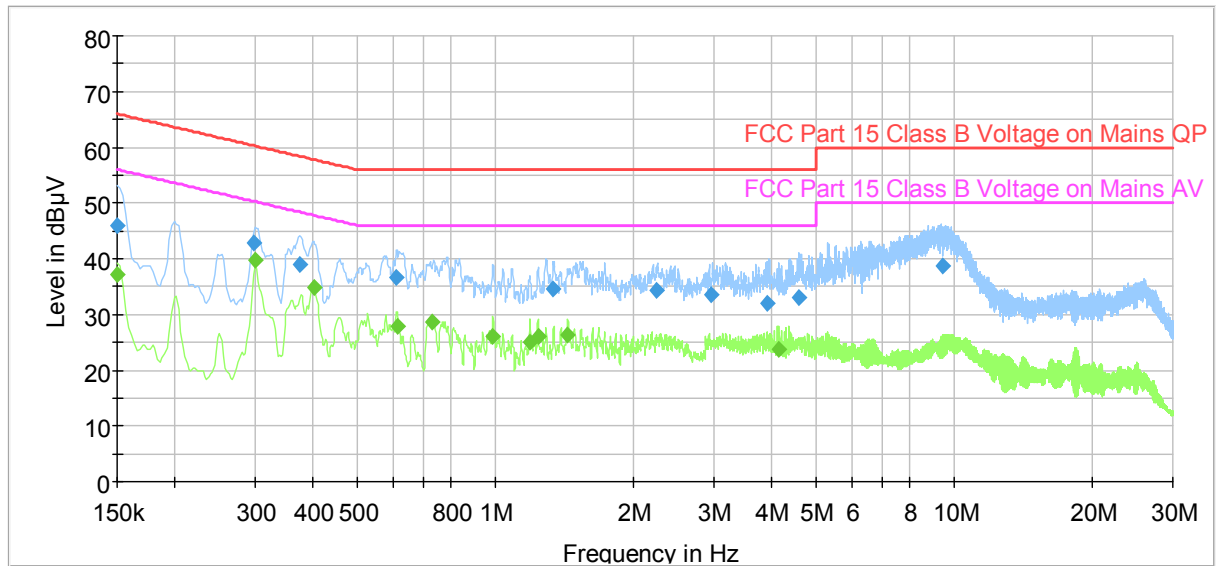
During the test the EUT was powered from the separate power supply (115VAC / 60 Hz) through the LISN.

Frequency of emission (MHz)	Conducted limit (dBµV)	
	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.

Conducted Emissions In The Frequency Range 150 kHz – 30 MHz

Conducted Emission Mains FCC Part 15 Class B with ESH3-Z5 8019



- FCC Part 15 Class B Voltage on Mains QP [..\EMI conducted\]
- FCC Part 15 Class B Voltage on Mains AV [..\EMI conducted\]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- Preview Result 2-AVG [Preview Result 2.Result:2]
- ◆ Final Result 1-QPK [Final Result 1.Result:1]
- ◆ Final Result 2-AVG [Final Result 2.Result:1]

Figure 1. The measured curves with peak- and average detector

Final measurements from the worst frequencies

Table 1. Final results (QP).

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150	46.0	1000.0	9.000	GN	L1	10.7	20.0	66.0
0.299	43.0	1000.0	9.000	GN	N	10.5	17.3	60.3
0.375	38.9	1000.0	9.000	GN	N	10.3	19.5	58.4
0.609	36.7	1000.0	9.000	GN	N	10.1	19.3	56.0
1.333	34.5	1000.0	9.000	GN	N	10.2	21.5	56.0
2.242	34.2	1000.0	9.000	GN	N	10.3	21.8	56.0
2.946	33.4	1000.0	9.000	GN	N	10.3	22.6	56.0
3.916	32.0	1000.0	9.000	GN	N	10.4	24.0	56.0
4.604	32.9	1000.0	9.000	GN	L1	10.5	23.1	56.0
9.419	38.8	1000.0	9.000	GN	L1	10.9	21.2	60.0

Table 2. Final results (AV).

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150	37.0	1000.0	9.000	GN	N	10.6	19.0	56.0
0.301	39.8	1000.0	9.000	GN	N	10.5	10.5	50.2
0.402	34.8	1000.0	9.000	GN	N	10.2	13.0	47.8
0.611	27.9	1000.0	9.000	GN	N	10.1	18.1	46.0
0.728	28.7	1000.0	9.000	GN	N	10.1	17.3	46.0
0.989	26.1	1000.0	9.000	GN	N	10.2	19.9	46.0
1.191	24.9	1000.0	9.000	GN	N	10.2	21.1	46.0
1.241	26.1	1000.0	9.000	GN	N	10.2	19.9	46.0
1.441	26.3	1000.0	9.000	GN	N	10.2	19.7	46.0
4.163	23.6	1000.0	9.000	GN	N	10.4	22.4	46.0

Unintentional Radiated Emissions 30 MHz to 1000 MHz

Standard:	ANSI C63.10	(2013)
Tested by:	PKA	
Date:	17.12.2014	
Temperature:	30 – 60 %	
Humidity:	22 ± 3 °C	
Measurement uncertainty	± 5.1 dB (30 – 200 MHz)	Level of confidence 95 % (k = 2)
	± 4.2 dB (200 – 1 000 MHz)	

FCC Rule: 15.109

The correction factor in the final result table contains the sum of the transducers (antenna + amplifier + cables).
The result value is the measured value corrected with the correction factor.

Final results 30 – 1000 MHz:

Radiated Emission FCC Part 15 Class B 30-1000MHz 3m

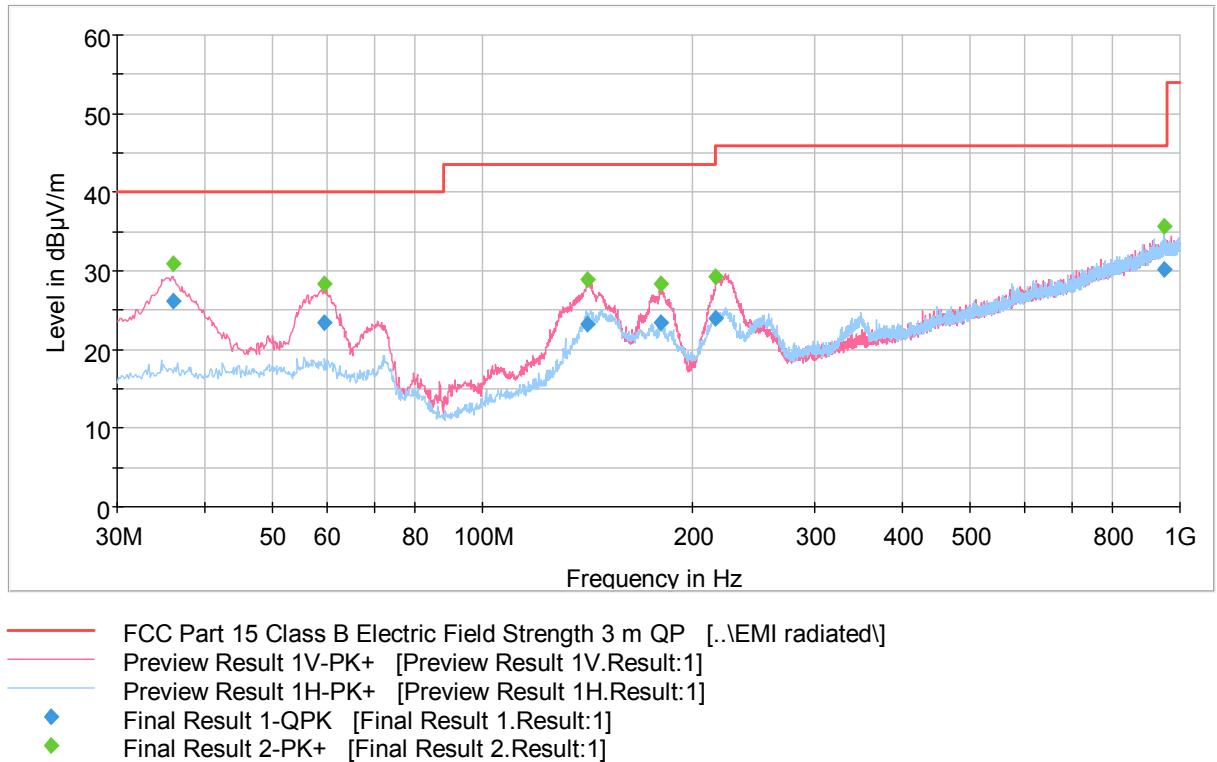


Figure 2. Measured curve with peak-detector. Final results 2-PK only for information

Final measurements from the worst frequencies

Table 3. Final results 30 – 1000 MHz (QP).

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
36.075	26.1	1000.0	120.000	100.0	V	71.0	14.5	13.9	40.0	PASS
59.465	23.3	1000.0	120.000	100.0	V	4.0	14.8	16.7	40.0	PASS
141.855	23.3	1000.0	120.000	100.0	V	150.0	14.3	20.2	43.5	PASS
179.975	23.4	1000.0	120.000	100.0	V	180.0	14.0	20.1	43.5	PASS
216.035	24.1	1000.0	120.000	100.0	V	210.0	12.5	22.0	46.0	PASS
948.885	30.2	1000.0	120.000	387.0	H	90.0	28.3	15.8	46.0	PASS

LIST OF TEST EQUIPMENT

Conducted Emissions

Equipment	Manufacturer	Type	Serial no	Inv.no
TEST RECEIVER	ROHDE & SCHWARZ	ESU 26	100185	8453
TEST SOFTWARE	ROHDE & SCHWARZ	EMC-32	-	-
PULSE LIMITER	ROHDE & SCHWARZ	ESH3-Z2	#1	8359
LISN	ROHDE & SCHWARZ	ESH3-Z5	863794/014	8019
AC Power Source	CALIFORNIA INSTRUMENTS	5001 iX Series II	58209	7826

Radiated Emissions

Equipment	Manufacturer	Type	Serial no	Inv.no
TEST RECEIVER	ROHDE & SCHWARZ	ESU 26	100185	8453
TEST SOFTWARE	ROHDE & SCHWARZ	EMC-32	-	-
ANTENNA (30-1000 MHz)	SCHWARZBECK	VULB 9168	8168-503	8911
ANTENNA MAST	DEISEL	MA240	240/455	5017
TURNTABLE	DEISEL	DS420	-	5015
CONTROLLER	COMTEST	HD100	100/457	5018
AC Power Source	CALIFORNIA INSTRUMENTS	5001 iX Series II	58209	7826

All used measurement equipment was calibrated (if required).