FCC Part 15C Compliance Test Report

Test Report no.:	FCC15C_RM-485_08.doc	**Date of Report:**	04-Nov-2009
Number of pages:	19	**Customer's Contact person:**	Asko Pasanen
Testing laboratory:	TCC Nokia Salo Laboratory P.O.Box(86) Joensuunkatu 7H / Kiila 1B FIN-24101 SALO, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 45220	**Customer:**	Nokia Corporation P.O. Box 50 Mattilanniemi 6-8 FIN-40101 JYVÄSKYLÄ, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 78000
FCC listing no.: **IC recognition no.:**	533467 661V-1		
Tested devices/ accessories:	**Phone RM-485 / Battery BL-5K / Audio Adapter AD-54 / Headset HS-44 / AC-Charger AC-10C / Data Cable CA-101**		
FCC ID:	QURRM-485X	**IC:**	661AC-RM485
Supplement reports:	-		
Testing has been carried out in accordance with:	**CFR 47, FCC rules Part 15 Subpart C, ANSI C63.4 (2003), Public Notice DA 00-705, DTS procedures KDB 558074, IC standards RSS-GEN (Issue 2, June 2007) and RSS-210 (Issue 7, June 2007). Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".**		
Documentation:	The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.		
Test Results:	**The EUT complies with the requirements in respect of all parameters subject to the test.** The test results relate only to devices specified in this document.		
Date and signature for the contents:	Digitally signed by Sami Lehtonen Date: 2009.11.04 14:06:43 +02'00'		

Sami Lehtonen, System Specialist, EMC

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1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	23-Mar-2009
Testing completed	01-Apr-2009
The customer's contact person	Asko Pasanen
Test Plan referred to	T:\Projects\RM-484\TestPlan_RS\RS_testplan_RM-484.xlsT:\Projects\
Notes	-
Document name	T:\Projects\RM-485\EMC\FCC15C_RM-485_08.doc

1.1. EUT and Accessory Information

The EUT is a 7-band (GSM850/900/1800/1900 and WCDMA Band I/II(1900)/V) mobile phone with GPRS, EGPRS, Bluetooth, WLAN and FM transmitter. Bluetooth and WLAN are tested with maximum rated TX power.

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-484	004401105659300	0800	-	0.527	13623
Battery	BL-5K	4620408441L10102999;0670580	-	-	-	13626
Audio Adapter	AD-54	0751156841581R20897	-	-	-	13621
Headset	HS-44	0694557820318603062	-	-	-	13625
AC-Charger	AC-10C	3997918271100200421;0675412	-	-	-	13521
Data Cable	CA-101	07306348221M1206557	-	-	-	13522

1.2. Summary of Test Results

Bluetooth:

Section in CFR 47	Section in *RSS-GEN* or RSS-210	Name of the test	Result
15.247(b)(1)	A8.4 (2)	Conducted peak output power	NP
15.247(d)	A8.5	Band edge compliance of RF emissions	PASSED
15.247(d)	A8.5	Spurious RF conducted emissions	NP
15.247(d), 15.209	A8.5	Spurious radiated emissions	NP
15.207	*7.2.2*	AC powerline conducted emissions	NP
15.247(a)(1)	A8.1 (a)	20 dB bandwidth	NP
15.247(a)(1)	A8.1 (b)	Carrier frequency separation	NP
15.247(a)(1)(iii)	A8.1 (d)	Number of hopping frequencies	NP
15.247(a)(1)(iii)	A8.1 (d)	Time of occupancy	NP

PASSED	The EUT complies with the essential requirements in the standard.
FAILED	The EUT does not comply with the essential requirements in the standard.
NP	The test was not performed by the TCC Nokia Salo LaboratoryNokia.

The test results of QURRM-484 are re-used for certification of the QURRM-485X. The table above indicates the results, which will be re-used.

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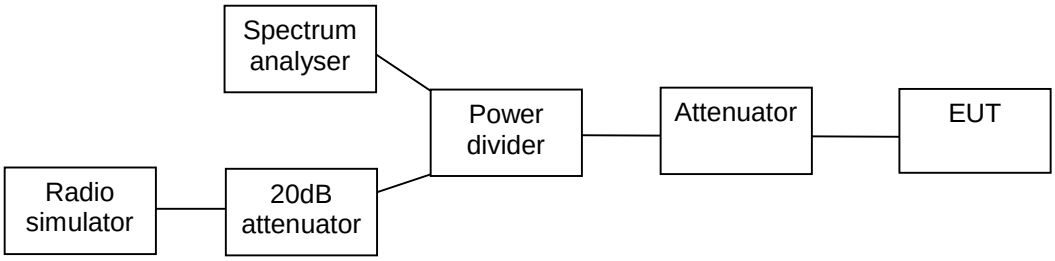
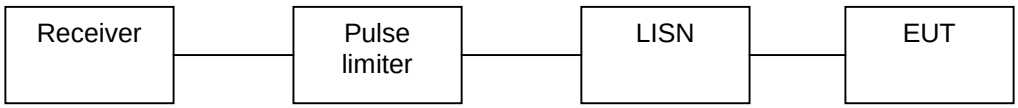
2. Test setups

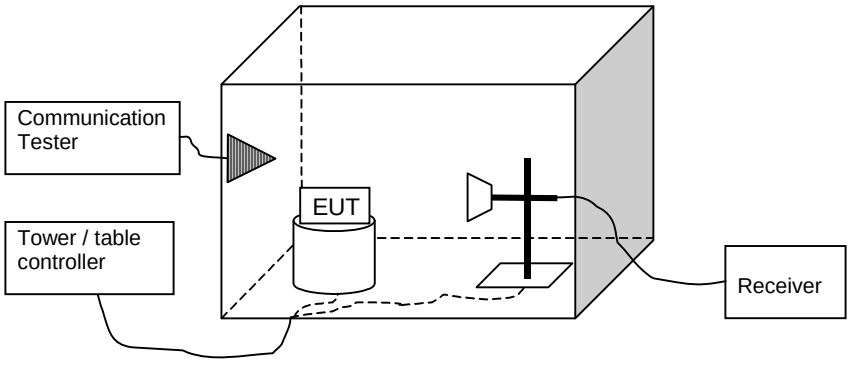
2.1. Conducted RF test setup



2.2. AC powerline conducted emissions test setup



2.3. Radiated test setup



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3. Band edge compliance of RF emissions

(FCC §15.247(d), RSS-210 A8.5)

EUT with DUT number	RM-484, DUT 13623
Accessories with DUT numbers	BL-5K, DUT 13626; AD-54, DUT 13621; HS-44, DUT 13625; AC-10C. DUT 13521; CA-101, DUT 13522
Operation Voltage [V] / [Hz]	115 / 60
Result	PASSED
Remarks	Phone tested slide open, slide closed and slide mp3 mode.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 42 / 106.1
Date of measurements	01-Apr-2009
Measured by	Sami Lehtonen / Kalle Hannila

3.1. Test method and limit

The measurement is made according to Public notice DA 00-705 and IC standard RSS-210.

Limits for band edge compliance of RF emissions measurements (3 m measurement distance)

Frequency range [MHz]	Limit Average [dBµV/m]	Limit Peak [dBµV/m]
Below 2390 and above 2483.5	≤ 54	≤ 74

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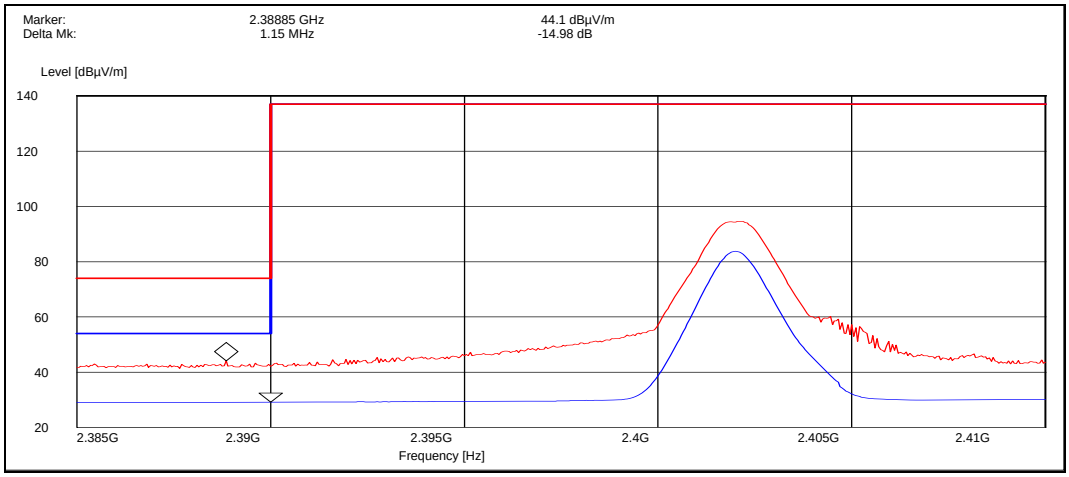
3.2. Bluetooth Test results

3.2.1 GFSK modulation, PRBS packet type

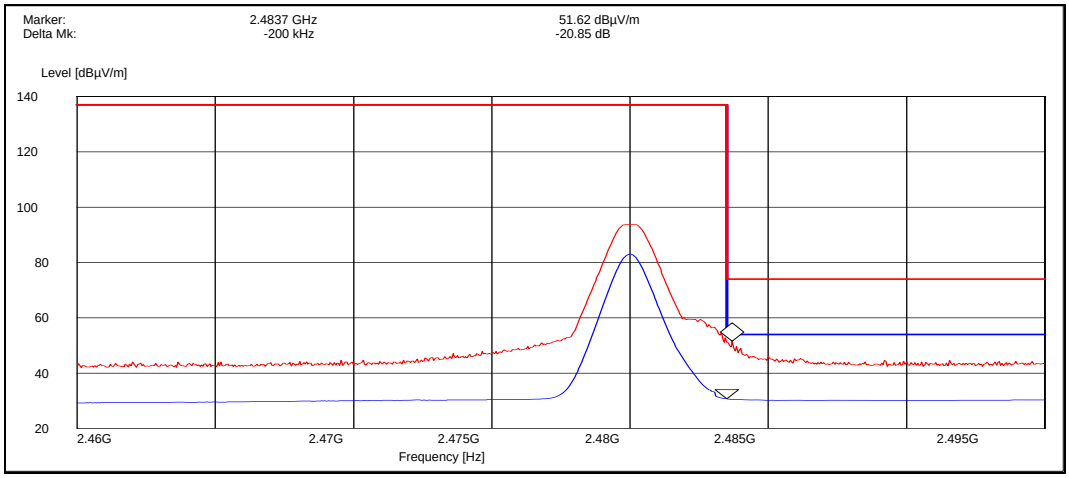
Slide Open:

Channel 0 / 2402 MHz



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	44.10	PASSED
Average	29.10	PASSED

Channel 78 / 2480 MHz



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	51.60	PASSED
Average	30.80	PASSED

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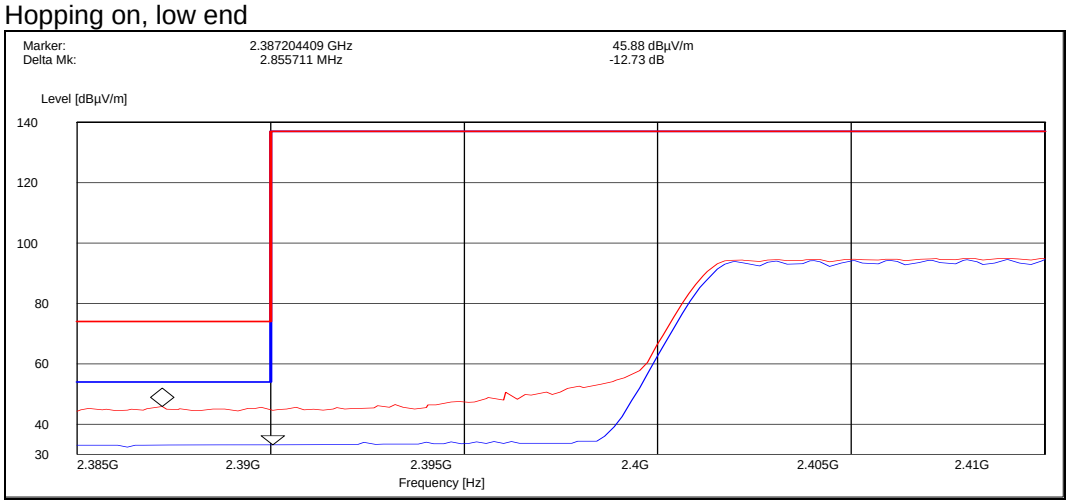
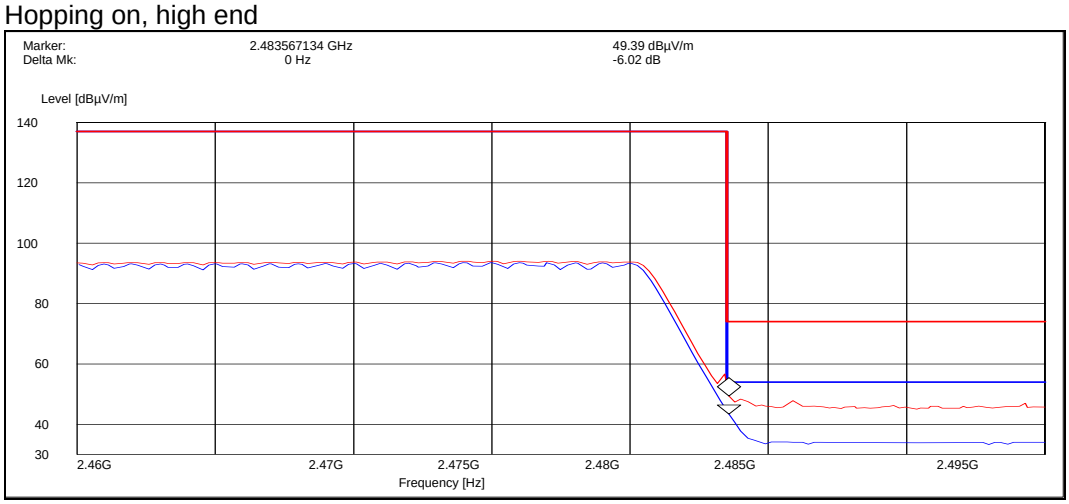
Hopping on, low end



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	45.90	PASSED
Average	33.10	PASSED

Hopping on, high end



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	49.40	PASSED
Average	43.40	PASSED

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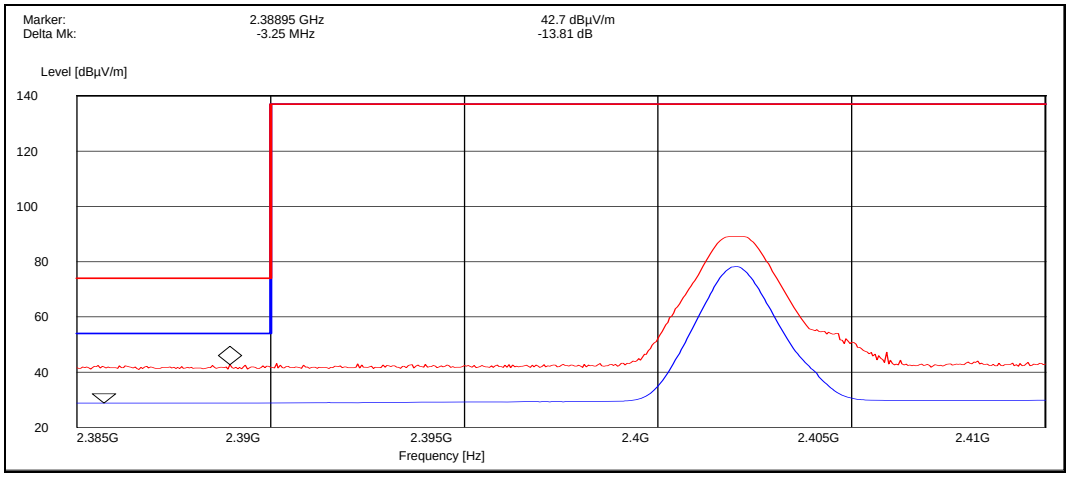
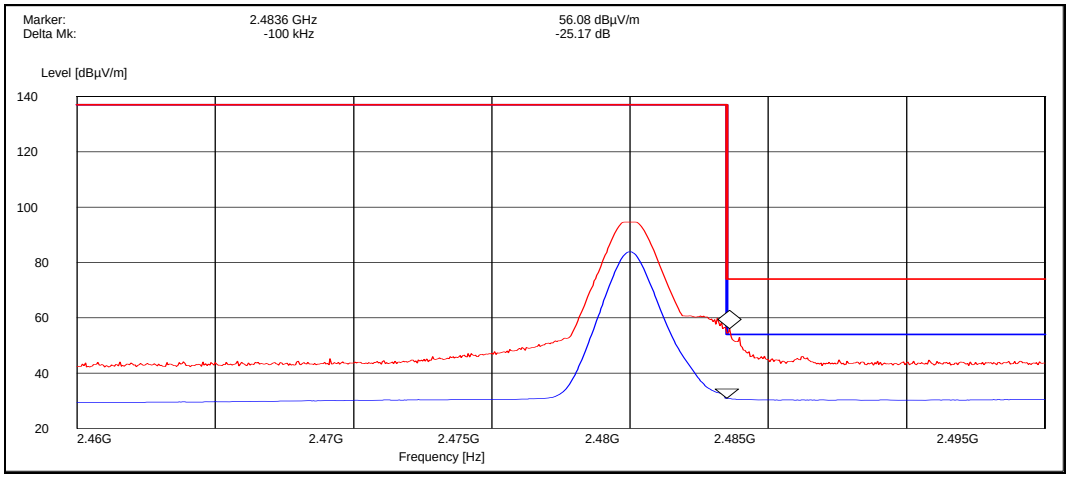
Slide Closed:
Channel 0 / 2402 MHz



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	42.70	PASSED
Average	28.90	PASSED

Channel 78 / 2480 MHz



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	56.10	PASSED
Average	30.90	PASSED

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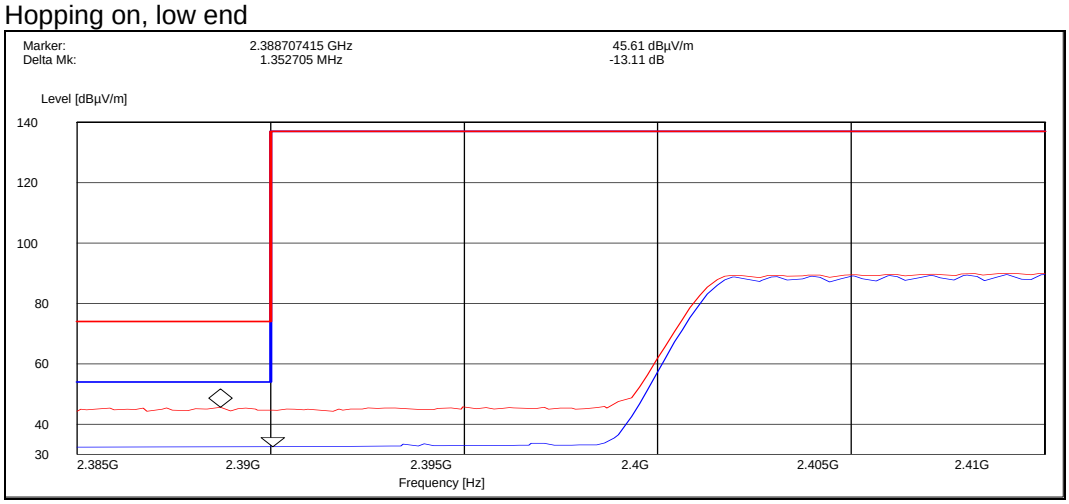
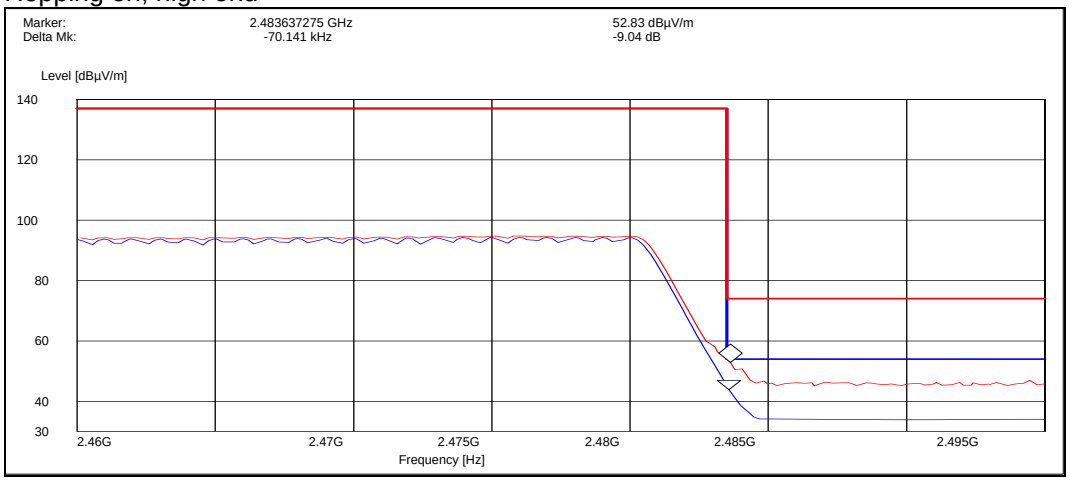
Hopping on, low end



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	45.60	PASSED
Average	32.50	PASSED

Hopping on, high end



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	52.80	PASSED
Average	43.80	PASSED

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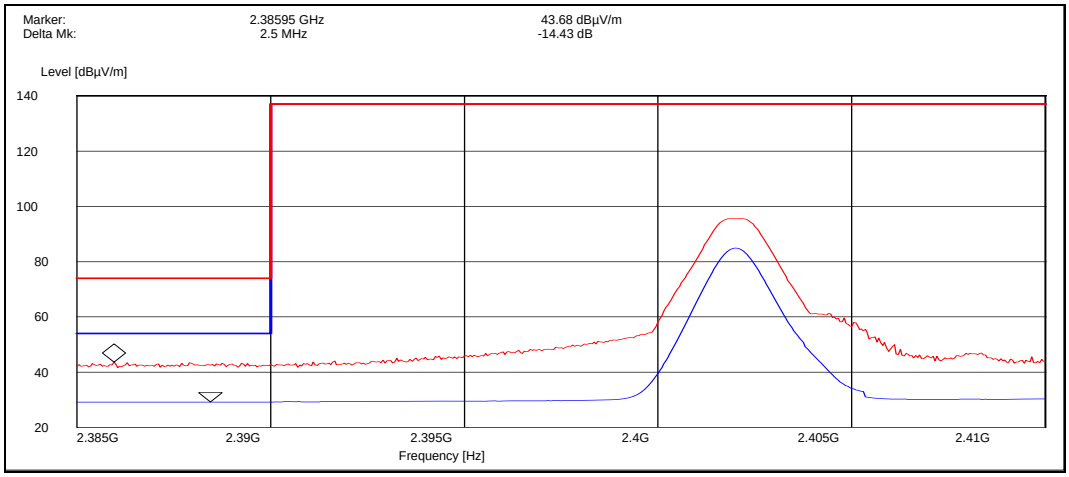
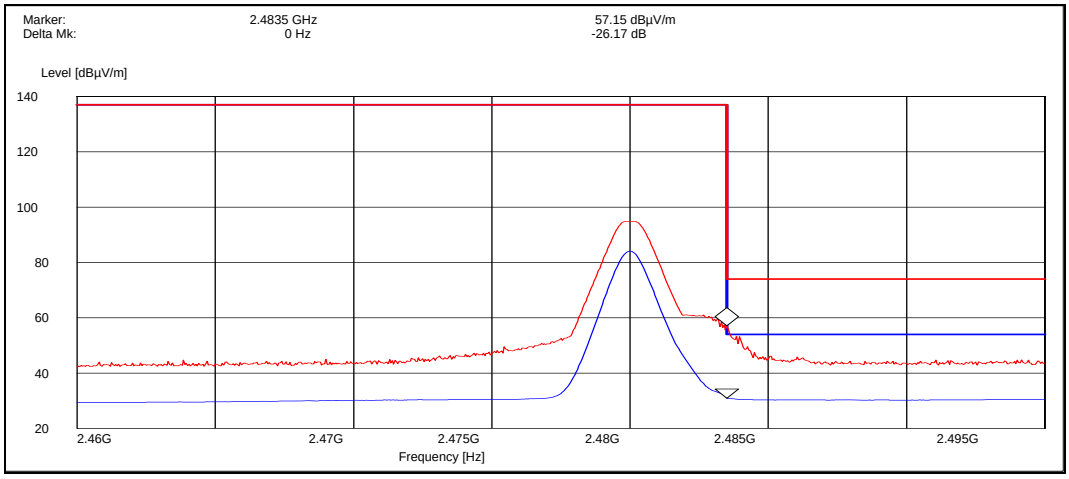
Slide MP3:
Channel 0 / 2402 MHz



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	43.70	PASSED
Average	29.30	PASSED

Channel 78 / 2480 MHz



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	57.20	PASSED
Average	31.00	PASSED

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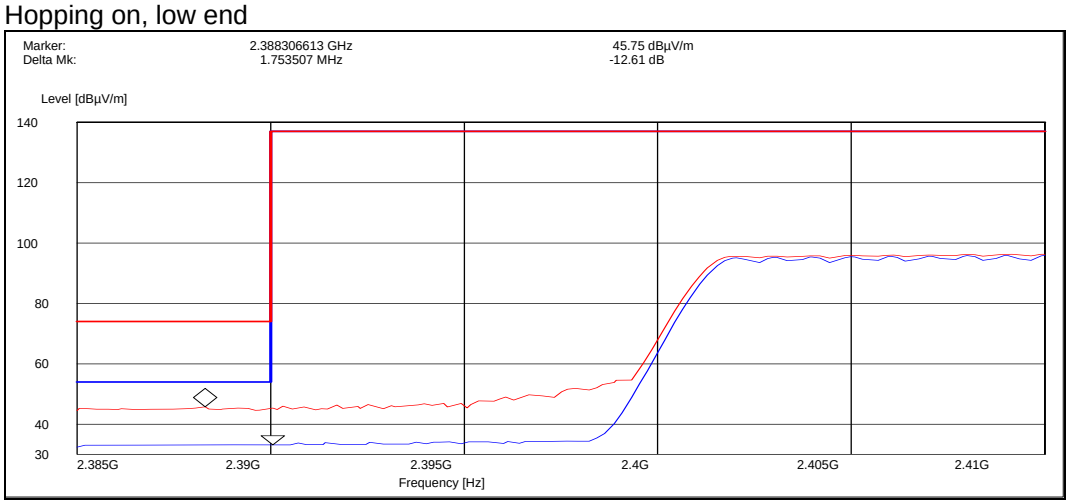
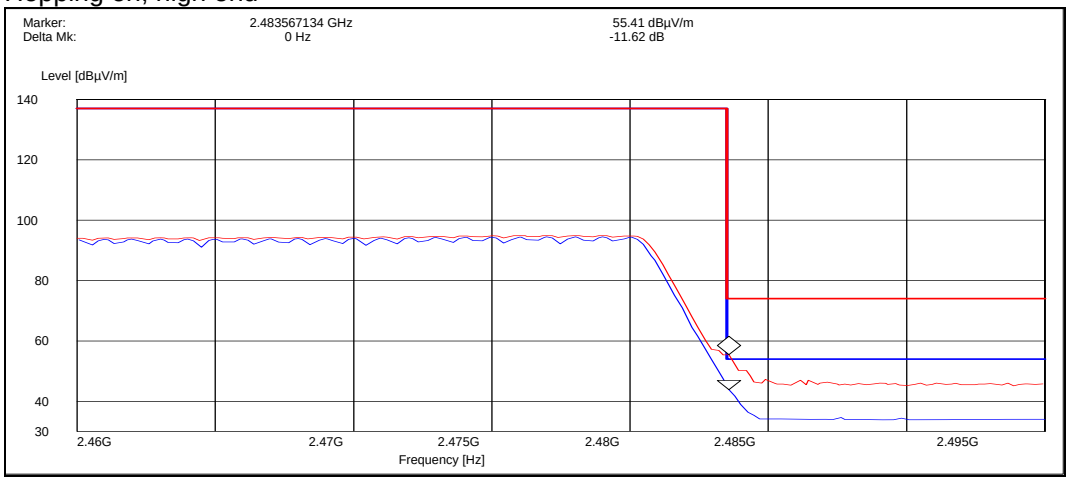
Hopping on, low end



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	45.80	PASSED
Average	33.10	PASSED

Hopping on, high end



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	55.40	PASSED
Average	43.80	PASSED

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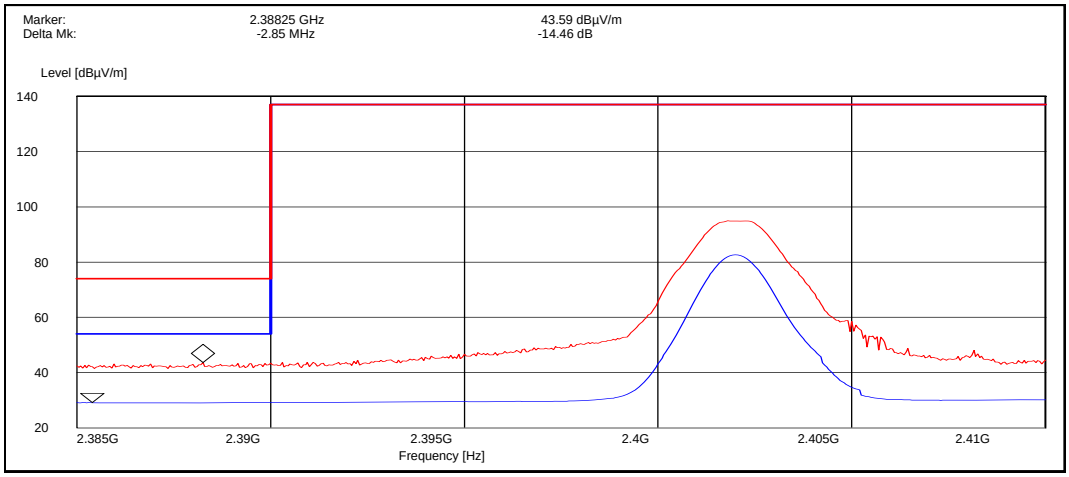
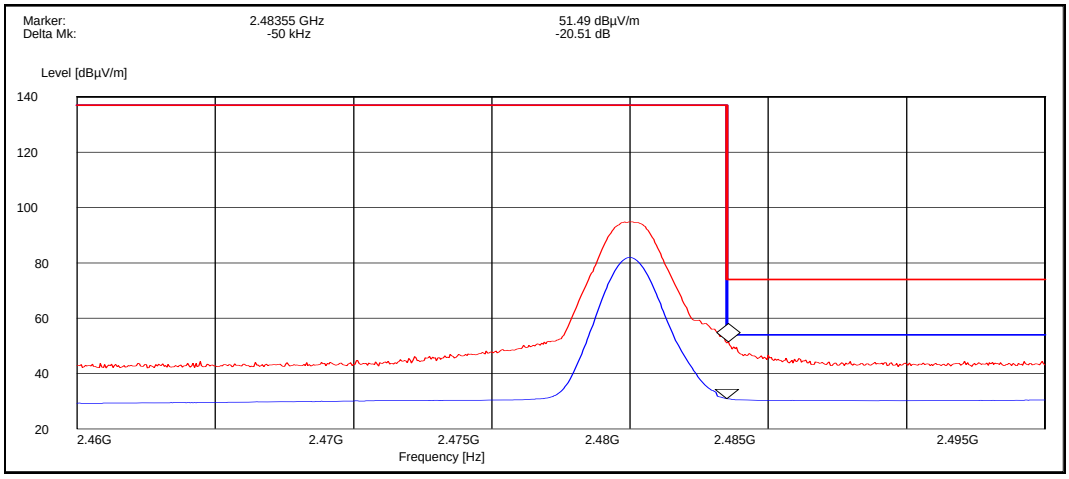
3.2.2 8DPSK modulation, PRBS packet type

Slide Open:
Channel 0 / 2402 MHz



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	43.60	PASSED
Average	29.10	PASSED

Channel 78 / 2480 MHz



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	51.50	PASSED
Average	31.00	PASSED

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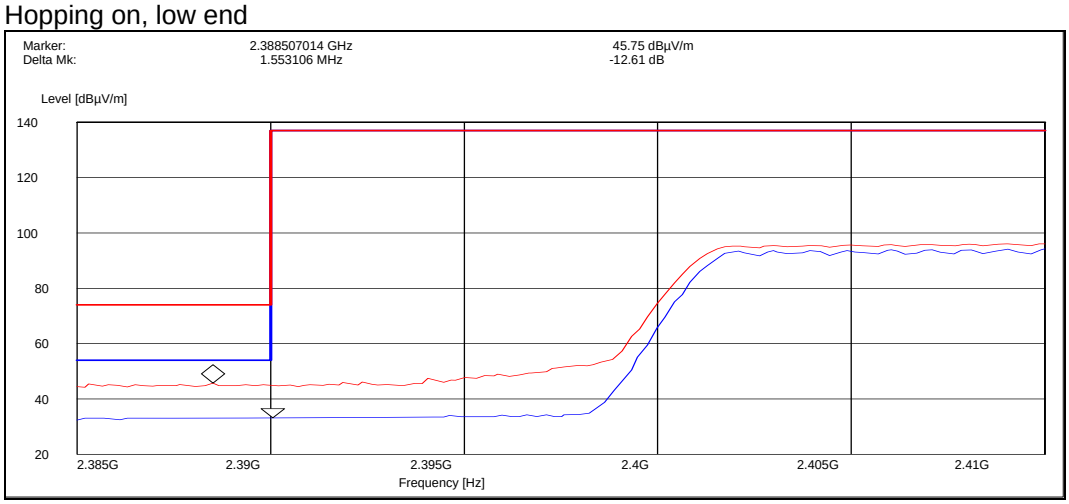
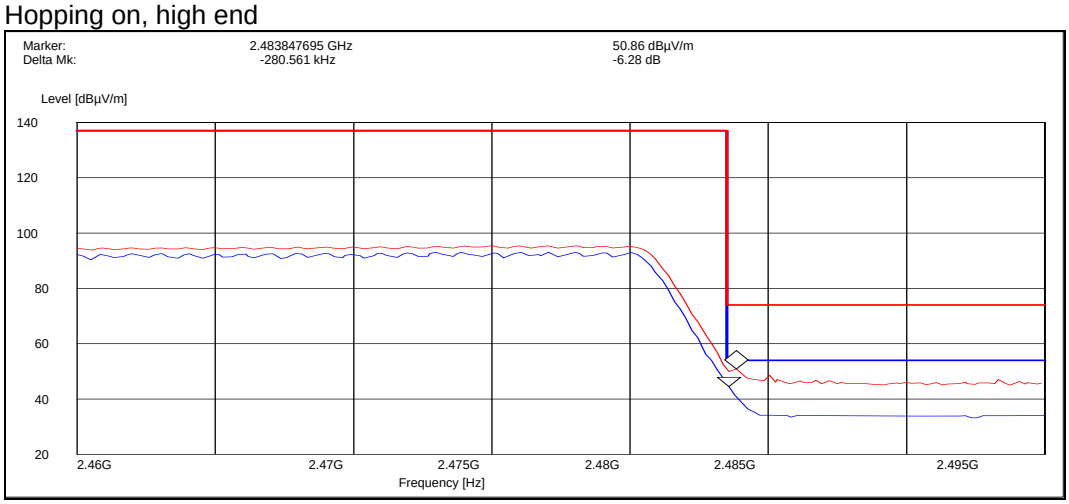
Hopping on, low end



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	45.80	PASSED
Average	33.10	PASSED

Hopping on, high end



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	50.90	PASSED
Average	44.60	PASSED

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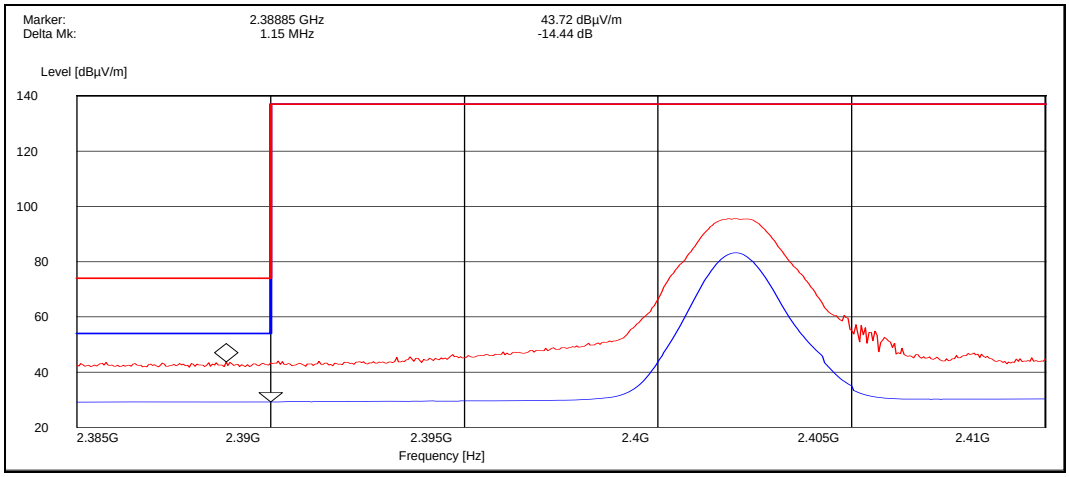
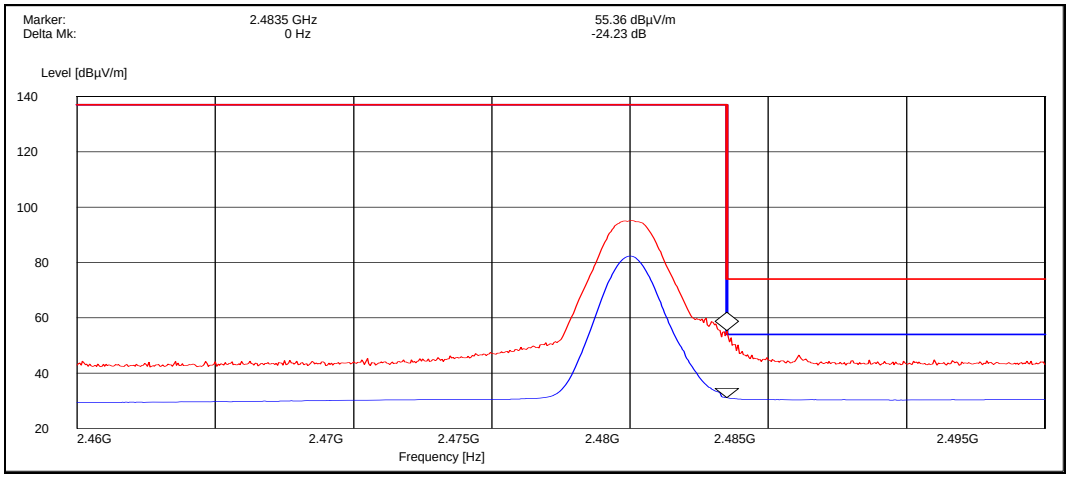
Slide Closed:
Channel 0 / 2402 MHz



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	43.70	PASSED
Average	29.30	PASSED

Channel 78 / 2480 MHz



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	55.40	PASSED
Average	31.10	PASSED

Hopping on, low end

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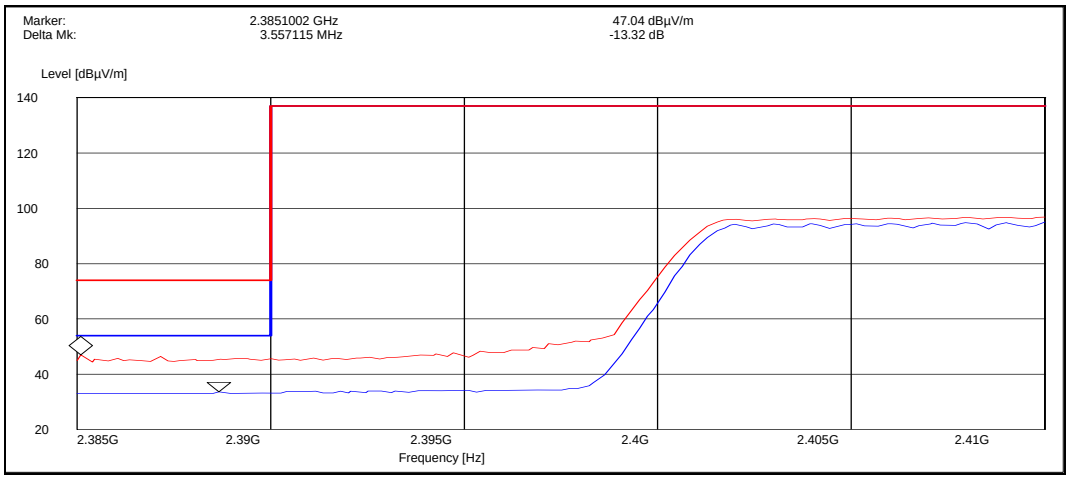
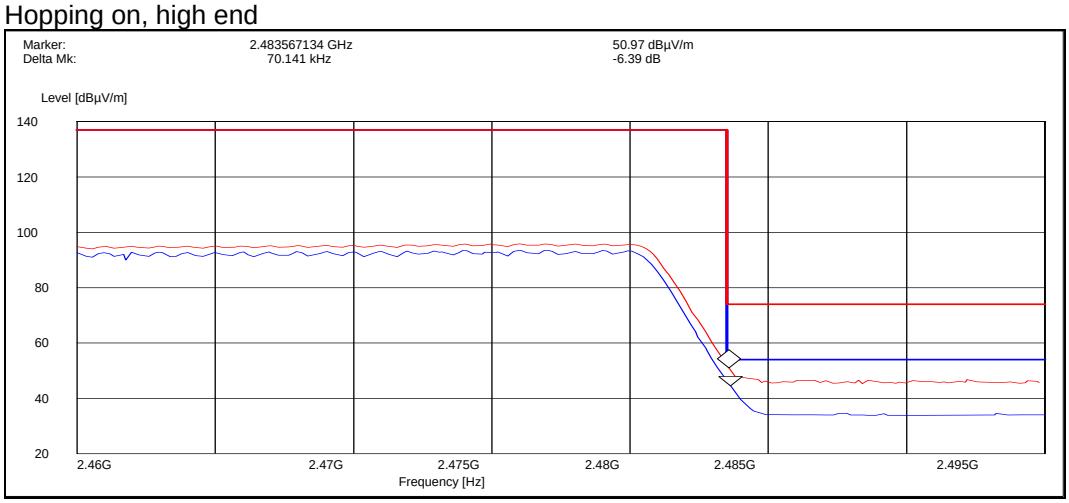


Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	47.00	PASSED
Average	33.70	PASSED

Hopping on, high end



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	51.00	PASSED
Average	44.60	PASSED

Slide MP3:
Channel 0 / 2402 MHz

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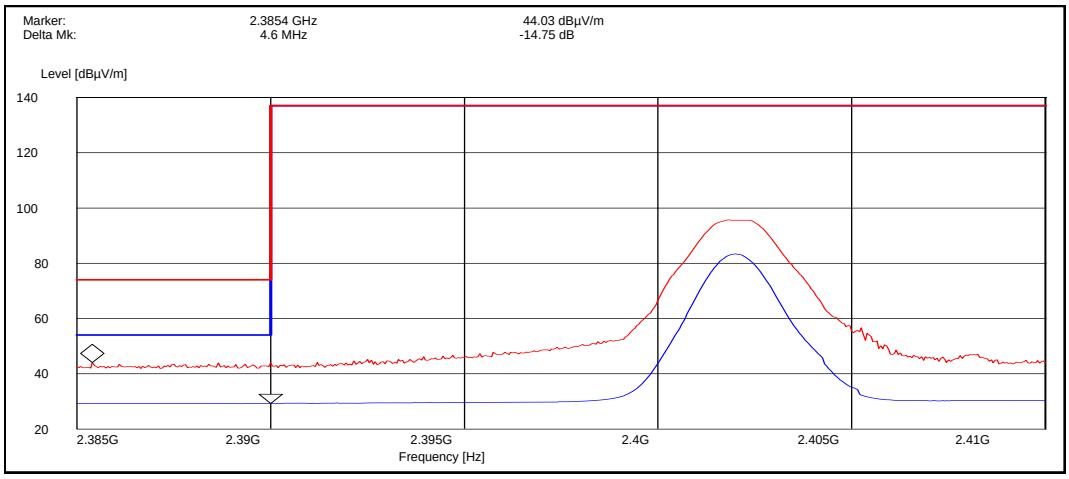
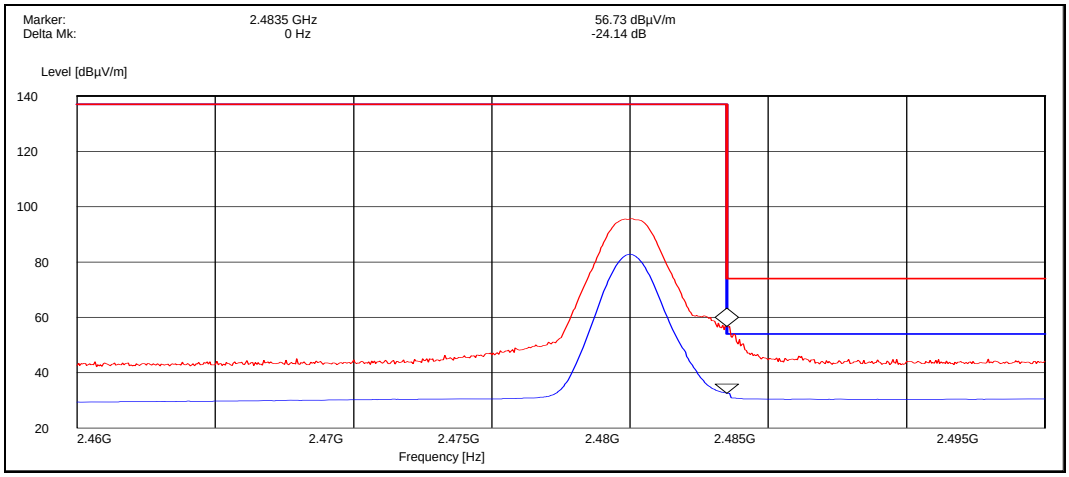


Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	44.00	PASSED
Average	29.30	PASSED

Channel 78 / 2480 MHz



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	56.70	PASSED
Average	32.60	PASSED

Hopping on, low end

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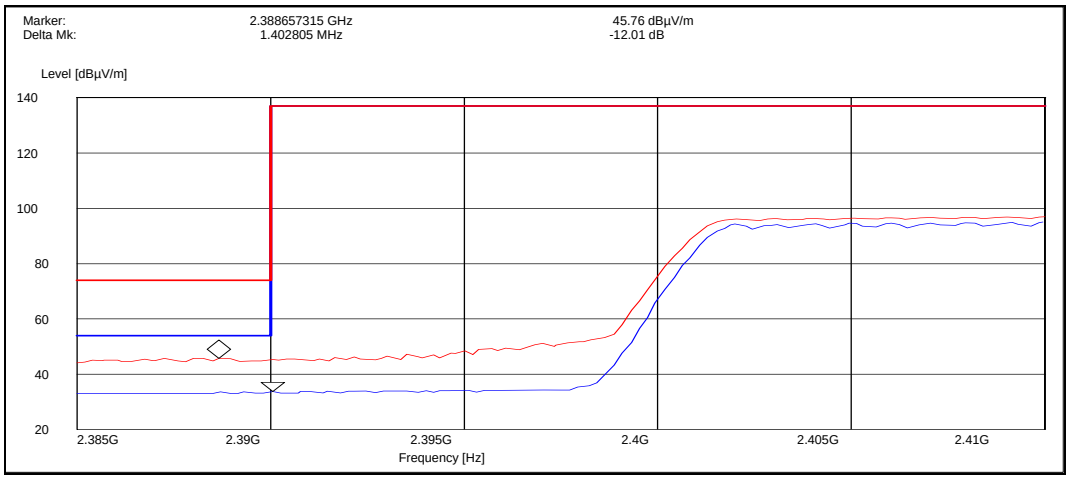
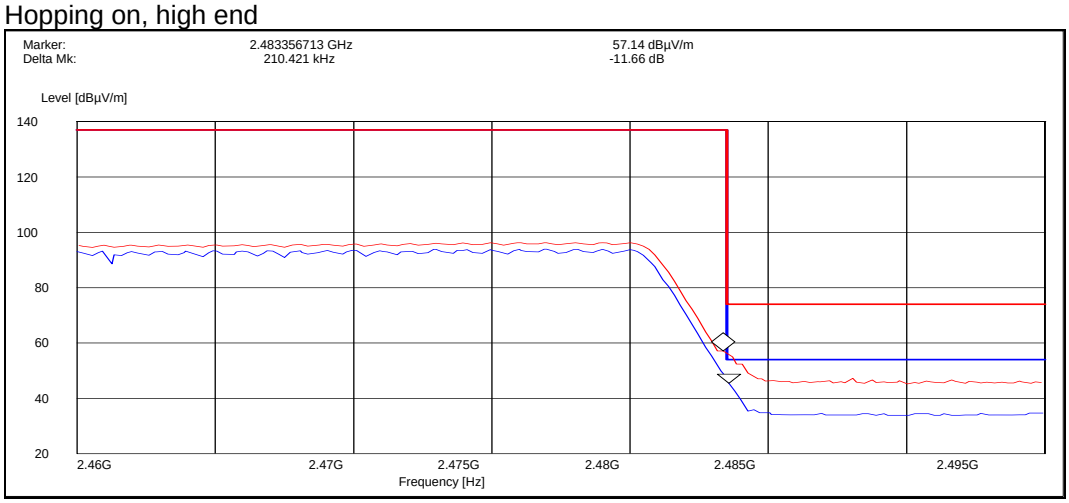


Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	45.80	PASSED
Average	33.70	PASSED

Hopping on, high end



Detector (RBW: 1 MHz)	E [dBµV/m]	Result
Peak	57.10	PASSED
Average	45.50	PASSED

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4. Test Equipment

4.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
1742	EMI Test Receiver	ESMI	R&S	15C, 15B
1759	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
1872	Thermo- Hygrograph	00.02520.150700	Lambrecht	15C, 15B
1916	Radio Communication tester	CMTA84	R&S	15C, 15B
2039	Power Supply	PL330QMD	THURLBY	15C, 15B
2060	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
2068	CDN-Antenna line	S1	NMP	15C, 15B
2097	Pulse Limiter	ESH3-Z2	R&S	15C, 15B
2111	Multimeter	TX3	Tektronix	15C, 15B
2156	Digital Radio Communication Tester	CMU200	R&S	15C, 15B
2206	Signal generator	SMX	R&S	15C, 15B
2335	GPIB Switch 2 to 1	-	National Instruments	15C, 15B
2347	Digital Radio Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2352	Spectrum Analyzer	FSP	R&S	22/24/27, 15C
2359	Temperature Test system	VT4002	Vötsch Industrietechnik	22/24/27
2360	Serial Bus Converter	Serial 488A	IO Tech	22/24/27
2362	Power Supply	NGPX 70/5	R&S	22/24/27
2388	Bluetooth Tester	CBT	R&S	15C, 15B
-	RF Emission Software	ES-K1 v.1.71	R&S	22/24/27, 15C, 15B

4.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
1748	Log. per. Antenna	HL025	R&S	22/24/27, 15C
1749	Log. per. Antenna	HL025	R&S	22/24/27, 15C
1875	Thermo- Hygrograph	00.02520.150700	Lambrecht	22/24/27, 15C, 15B
1917	Radio Communication tester	CMTA84	R&S	22/24/27, 15C, 15B
1933	Precision half-wave dipole antennas	HZ-13	R&S	22/24/27, 15C
1938	Precision half-wave dipole antennas	HZ-12	R&S	22/24/27, 15C
2006	Radiation Reference Source	VSQ	MEB	22/24/27, 15C, 15B
2009	Signal generator	SMP 22	R&S	22/24/27, 15C, 15B
2019	Multimeter	34401A	HP	22/24/27, 15C, 15B
2027	Coupling and Decoupling Network	M2 (modified) DC1	MEB	22/24/27, 15C, 15B
2028	Coupling and Decoupling Network	M3 (modified) DC2	MEB	22/24/27, 15C, 15B
2029	Power Supply	PL330	THURLBY	22/24/27, 15C, 15B
2043	Band Reject Filter	WRCA824/849-0,2-6SS	Wainwright	22, 15C, 15B
2047	Band Reject Filter	WRCC1800/2000-0.2-10SS	Wainwright	24, 15C, 15B
2048	Band Reject Filter	WRCC1700/1800-0.2-10SS	Wainwright	27, 15C, 15B
2051	High Pass Filter	4HC1700-1-KK	R&S	22/24/27, 15C
2057	Log. per. Antenna	HL025	R&S	22/24/27, 15C
2109	Power Supply	PL330QMD	THURLBY	22/24/27, 15C, 15B
2110	Multimeter	34401A	HP	22/24/27, 15C, 15B
2112	Multimeter	TX3	Tektronix	22/24/27, 15C, 15B
2116	Controller	EMCO MODEL 2090	ETS	22/24/27, 15C, 15B
2133	Power Meter	NRVS	R&S	22/24/27, 15C
2134	Power Sensor	NRV-Z32	R&S	22/24/27, 15C
2135	Coupling and Decoupling Network	CDN 801-M3	LÜTHI	22/24/27, 15C, 15B

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Eq. No	Equipment	Type	Manufacturer	Used in
2138	Ultra Broadband Antenna	HL562	R&S	22/24/27, 15C, 15B
2140	Biconical Antenna	EMCO93110B	EMCO	22/24/27, 15C
2142	Log.-per.-dipol Antenna	3146	EMCO	22/24/27, 15C
2144	Attenuator	6803.17B	Huber-Suhner	22/24/27, 15C, 15B
2150	High Pass Filter	F-15041	RLC ELECTRONICS	22/24/27, 15C
2176	Coupling and Decoupling Network	CDN 801-M3	LÜTHI	22/24/27, 15C, 15B
2180	Digital Radio Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2188	Preamplifier	AFS4-00100300-20-23P-6	MITEQ	22/24/27, 15C, 15B
2330	EMI Test receiver	ESIB26	R&S	22/24/27, 15C, 15B
2334	GPIB Switch 2 to 1	-	National Instruments	22/24/27, 15C, 15B
2348	Yaesu controller	G-1000DXC	YAESU	22/24/27, 15C, 15B
2349	Computer controller (Yaesu)	GS-232B	YAESU	22/24/27, 15C, 15B
2350	Preamplifier	AMF-6D-020180-29-20P	MITEQ	22/24/27, 15C
2361	Anechoic chamber	3 meter semi/full anechoic chamber	Euroshield	22/24/27, 15C, 15B
2398	Horn antenna	HF906	R&S	22/24/27, 15C
2363	Band Reject Filter	WRCG 832/838-825/845/5SS	Wainwright	22/24/27
2364	Band Reject Filter	WRCG1877/1883 - 1870/1890-40/6SS	Wainwright	22/24/27
2365	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
2366	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
2384	Band Reject Filter	WRCG832/838-825/845-40/5SS	Wainwright	22/24/27
2388	Bluetooth Tester	CBT	R&S	15C, 15B
-	RF Emission Software	ES-K1 v.1.71	R&S	22/24/27, 15C, 15B

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