

FCC Part 15C Compliance Test Report

Test Report no.:	FCC15CWLAN_RM-927_12.docx	Date of Report:	30-Jul-2013
Number of pages:	16	Customer's Contact person:	Victoria Abadilla
Testing laboratory:	TCC Nokia San Diego Laboratory 16620 West Bernardo Drive San Diego, CA 92127 USA Tel. +1 858 831 5000 Fax. +1 858 831 6500	Customer:	Nokia, Inc. 16620 West Bernardo Drive San Diego, CA 92127 USA Tel. +1 858 831 5000 Fax. +1 858 385 1598
FCC listing no.:	586140		
IC recognition no.:	10162A-1		
Tested devices/ accessories:	Phone RM-927 / AC Charger AC-60 / Data Cable CA-190 / Headset WH-902		
FCC ID:	QMND	IC:	661X-D
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart C, ANSI C63.4 (2003), DTS procedures KDB 558074, IC standards. 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:			

Paul Grossberg, Specialist

1. Summary for FCC Part 15C Compliance Test Report

Date of receipt	30-Jul-2013
Testing completed	30-Jul-2013
The customer's contact person	Victoria Abadilla
Test Plan referred to	T:\Projects\RM-927\TestPlan\RS_testplan_RM-927.xlsm
Notes	-
Document name	T:\Projects\RM-927\EMC\FCC15CWLAN_RM-927_12.docx

1.1. EUT and Accessory Information

The EUT is a mobile phone with following features:

GSM/CDMA/WCDMA/WLAN/Bluetooth

The EUT is tested with maximum rated TX power.

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-927	355906050012326	0160	-	1028.0305.1329.2000	30747
AC Charger	AC-60	4090493175610303747	-	-	-	30748
Data Cable	CA-190	-	-	-	-	30749
Headset	WH-902	-	-	-	-	30750

1.2. Summary of Test Results

WLAN:

Section in CFR 47	Section in RSS-GEN or RSS-210	Name of the test	Result
15.247(b)(1)	A8(0.4(4))	Conducted peak output power	NP
15.247(d), 15.205(b)	A8(0.5)	Band edge compliance of RF emissions	NP
15.247(d)	A8(0.5)	Spurious RF conducted emissions	NP
15.247(d), 15.209	A8(0.5)	Spurious radiated emissions	NP
15.207	7.2.2	AC powerline conducted emissions	PASSED
15.247(a)(2)	A8(0.1(1))	6dB(bandwidth)	NP
15.247(e)	A8(0.1(2))	Power spectral density	NP

PASSED

FAILED

NP

The EUT complies with the essential requirements in the standard.

The EUT does not comply with the essential requirements in the standard.

The test was not performed by the TCC Nokia Laboratory.

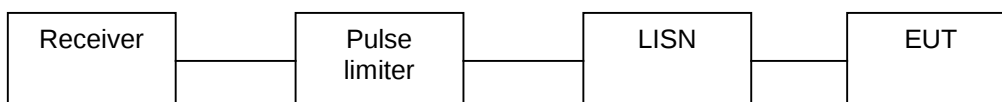
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2. AC powerline conducted emissions (FCC §15.207, RSS-GEN 7.2.2)

EUT with DUT number	RM-927, DUT 30747
Accessories with DUT numbers	AC-60, DUT 30748 ; CA-190, DUT 30749 ; WH-902, DUT 30750
Operation Voltage [V] / [Hz]	120VAC/60Hz
Results	Passed
Remarks	-
Temp [°C] / Humidity [%RH]	24.3/33.9
Date of measurements	30-Jul-2013
Measured by	Paul Grossberg

2.1. Test Setup



2.2. Test method and limit

The measurement is made according to procedure KDB 558074 and IC standard RSS-GEN as follows:

The EUT is placed on a wooden table 80 cm above the reference groundplane.

The EUT is connected via LISN to a test power supply.

The measurement results are obtained as described below:

$$U [dB\mu V] = U_{RX} + A_{TOT}$$

Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

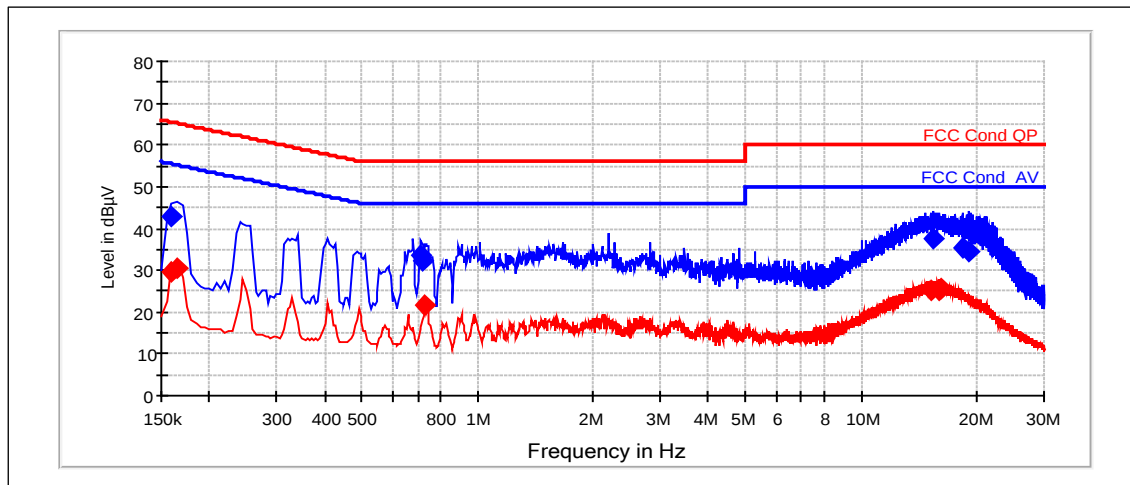
CISPR 22 Class B limits

Frequency range [MHz]	Quasi peak limit [dBμV]	Average limit [dBμV]
0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

2.3. WLAN Test results

2.3.1 DSSS mode, BPSK modulation, 1 Mbps data rate

Channel 6 / 2437 MHz



QuasiPeak (RBW: 9 kHz)

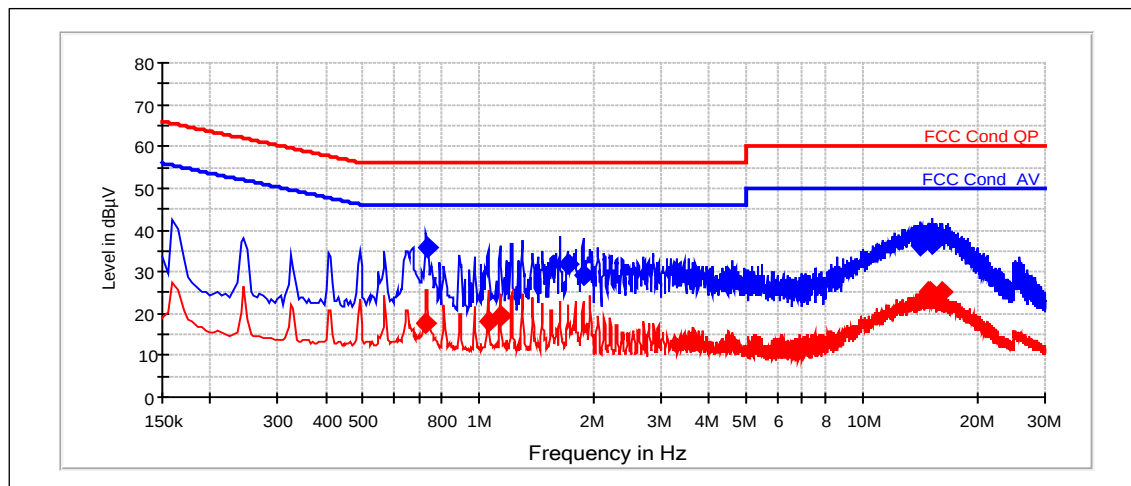
Frequency [MHz]	U [dBμV]	Line	Result
0.16	42.68	L1	PASSED
0.71	33.56	N	PASSED
0.72	32.29	N	PASSED
15.455	37.44	L1	PASSED
18.465	35.36	N	PASSED
19.125	34.63	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.16	29.64	L1	PASSED
0.165	30.58	N	PASSED
0.725	21.49	N	PASSED
15.155	25.17	N	PASSED
15.89	25.41	N	PASSED
16.105	25.59	L1	PASSED

2.3.2 DSSS mode, QPSK modulation, 5.5 Mbps data rate

Channel 6 / 2437 MHz



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.735	35.99	L1	PASSED
1.715	31.66	L1	PASSED
1.875	29.31	L1	PASSED
14.255	36.14	N	PASSED
15.225	36.8	L1	PASSED
15.315	36.82	N	PASSED

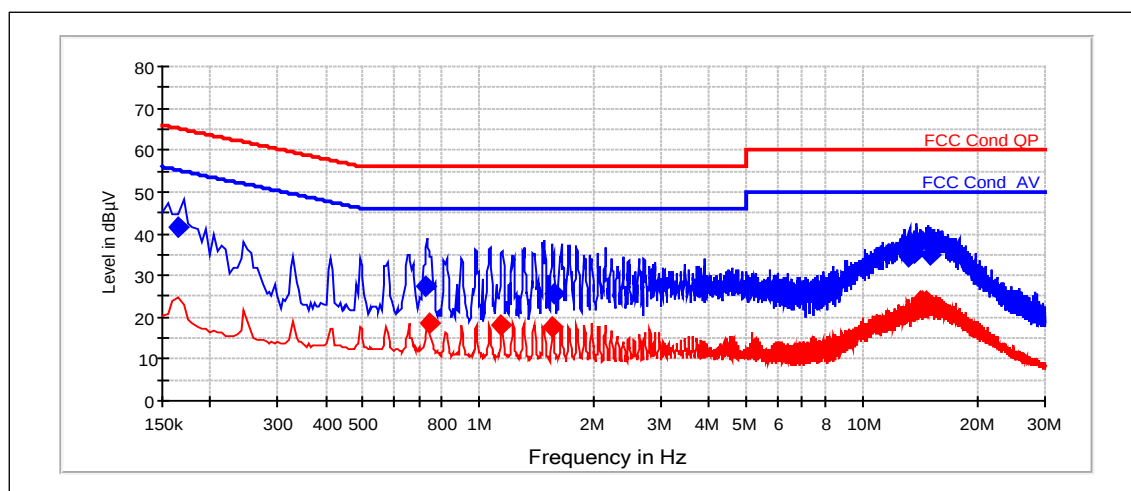
Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.725	17.72	L1	PASSED
1.06	18.06	L1	PASSED
1.145	19.62	N	PASSED
14.92	25.09	L1	PASSED
15.11	25.22	L1	PASSED
16.145	25.31	L1	PASSED

2.4. 5 GHz RLAN Test results

2.4.1 OFDM mode, BPSK modulation, 9 Mbps data rate

Channel 116 / 5580 MHz



QuasiPeak (RBW: 9 kHz)

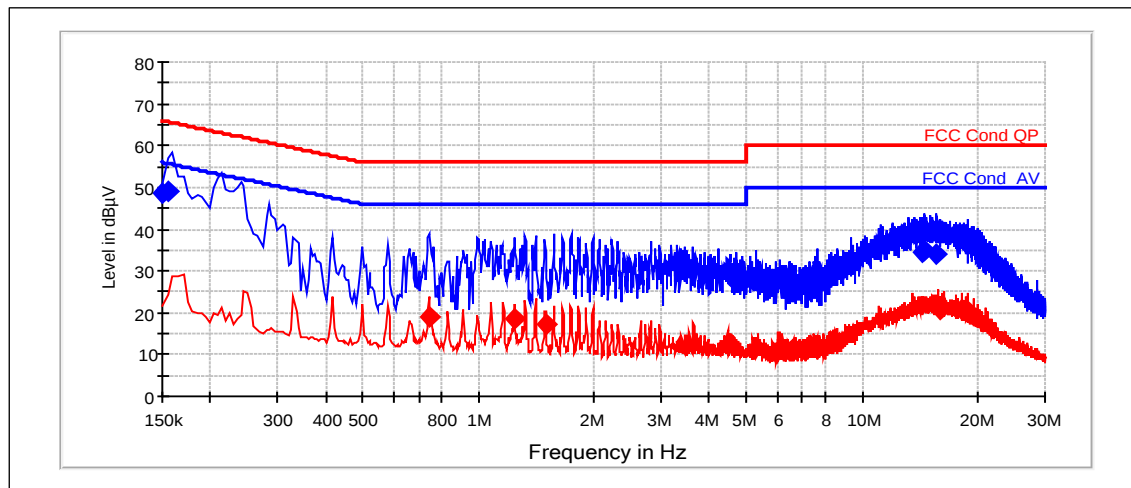
Frequency [MHz]	U [dBμV]	Line	Result
0.165	41.69	L1	PASSED
0.73	27.29	L1	PASSED
1.575	25.55	L1	PASSED
13.225	34.31	N	PASSED
13.715	35.44	N	PASSED
15.02	34.83	L1	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.745	18.45	N	PASSED
1.15	18.15	L1	PASSED
1.56	17.76	N	PASSED
14.21	23.66	L1	PASSED
14.37	23.72	L1	PASSED
14.785	24.04	N	PASSED

2.4.2 n-mode, 20 MHz CBW mode, QPSK modulation, 13.0 / 14.4 Mbps data rate

Channel 116 / 5580 MHz



QuasiPeak (RBW: 9 kHz)

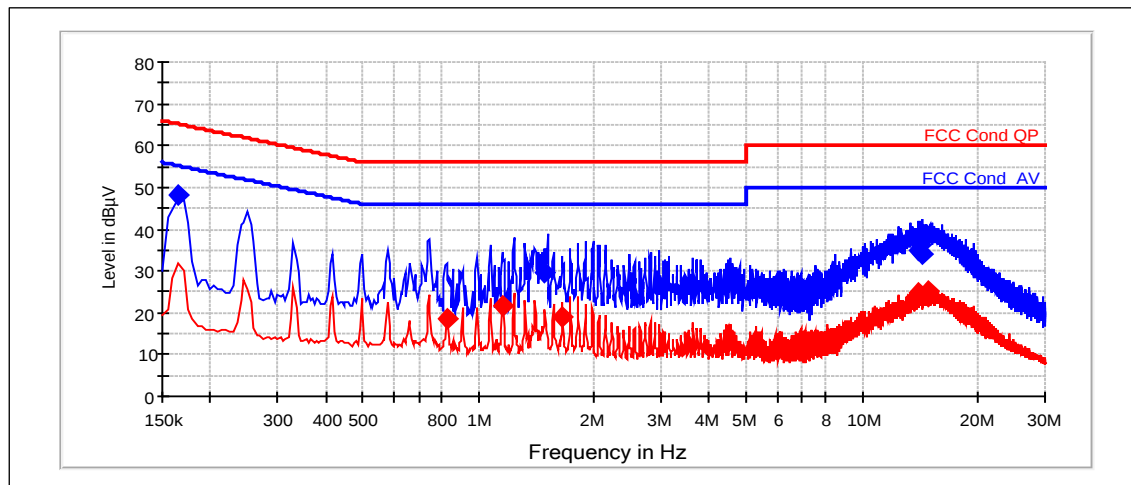
Frequency [MHz]	U [dBμV]	Line	Result
0.15	48.43	N	PASSED
0.155	48.88	L1	PASSED
14.405	34.61	L1	PASSED
14.485	35.04	L1	PASSED
15.675	33.92	L1	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.75	18.92	L1	PASSED
1.24	18.62	N	PASSED
1.495	17.16	L1	PASSED
15.89	20.68	L1	PASSED
18.26	20.72	N	PASSED
18.835	20.2	L1	PASSED

2.4.3 OFDM mode, BPSK modulation, 9 Mbps data rate

Channel 157 / 5785 MHz



QuasiPeak (RBW: 9 kHz)

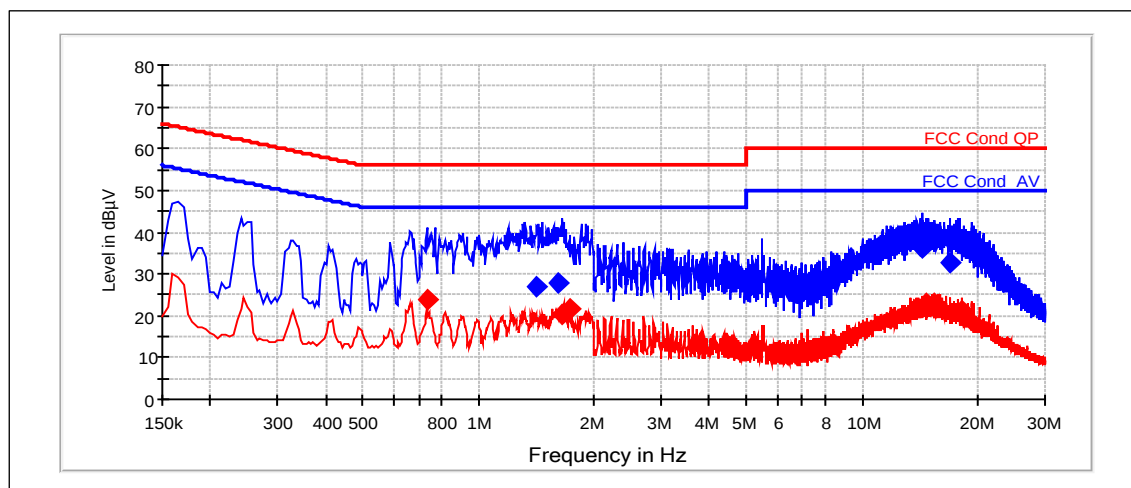
Frequency [MHz]	U [dBμV]	Line	Result
0.165	48.13	L1	PASSED
1.485	29.44	N	PASSED
14.065	34.7	N	PASSED
14.225	36.24	N	PASSED
14.34	33.94	L1	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.825	18.58	N	PASSED
1.155	21.54	N	PASSED
1.65	18.99	N	PASSED
14.055	24.55	N	PASSED
14.88	24.99	L1	PASSED
14.885	23.79	N	PASSED

2.4.4 n-mode, 20 MHz CBW mode, QPSK modulation, 13.0 / 14.4 Mbps data rate

Channel 157 / 5785 MHz



QuasiPeak (RBW: 9 kHz)

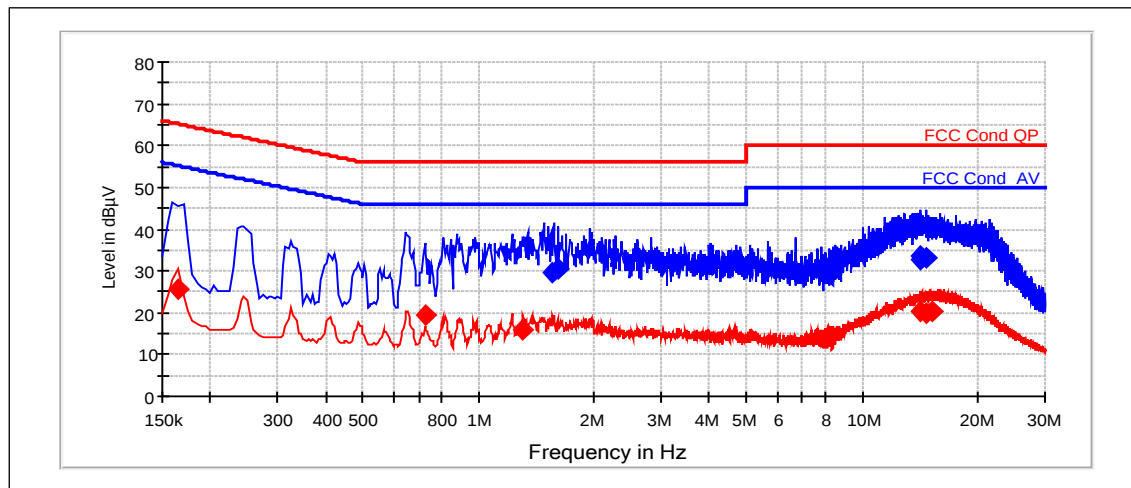
Frequency [MHz]	U [dBμV]	Line	Result
1.41	26.85	N	PASSED
1.615	28	L1	PASSED
14.27	36.5	N	PASSED
14.35	36.19	N	PASSED
16.95	32.85	L1	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.74	23.74	N	PASSED
1.645	20.4	L1	PASSED
1.725	21.66	L1	PASSED
14.68	23.12	N	PASSED
15.335	22.91	N	PASSED
18.215	21.03	N	PASSED

2.4.5 n-mode, 40 MHz CBW mode, BPSK modulation, 13.5 / 15.0 Mbps data rate

Channel 149+153 / 5755 MHz



QuasiPeak (RBW: 9 kHz)

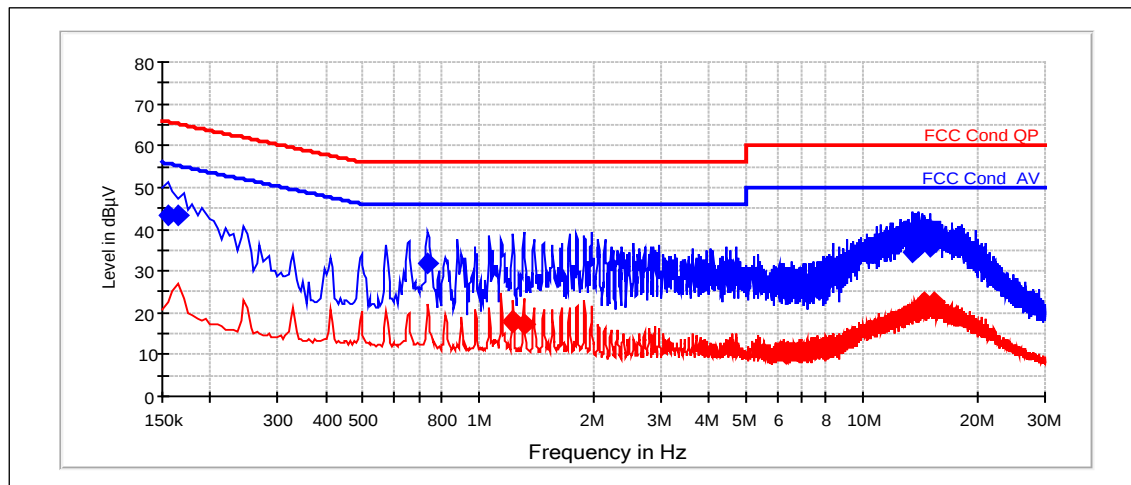
Frequency [MHz]	U [dBμV]	Line	Result
1.565	29.49	L1	PASSED
1.605	30.7	L1	PASSED
14.135	32.64	L1	PASSED
14.245	33.64	L1	PASSED
14.725	33.25	N	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.165	25.48	N	PASSED
0.725	19.66	L1	PASSED
1.305	15.95	N	PASSED
14.11	20.36	N	PASSED
14.745	19.91	L1	PASSED
15.16	20.23	L1	PASSED

2.4.6 n-mode, 40 MHz CBW mode, QPSK modulation, 27.0 / 30.0 Mbps data rate

Channel 149+153 / 5755 MHz



QuasiPeak (RBW: 9 kHz)

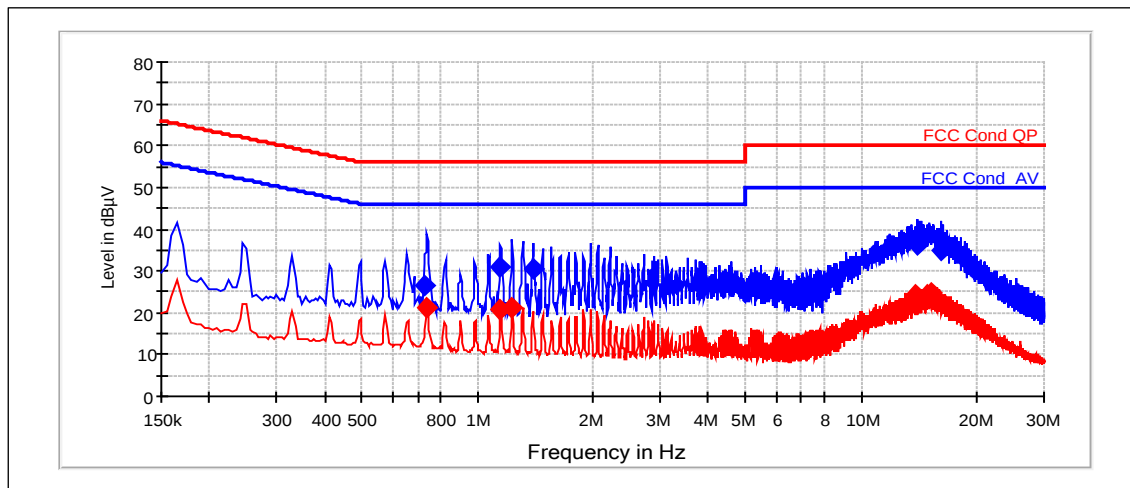
Frequency [MHz]	U [dBμV]	Line	Result
0.155	43.41	L1	PASSED
0.165	43.23	L1	PASSED
0.74	31.89	L1	PASSED
13.54	34.4	N	PASSED
14.105	35.73	N	PASSED
15.09	35.61	L1	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
1.23	17.67	N	PASSED
1.235	18.19	N	PASSED
1.315	17.46	L1	PASSED
14.355	22.2	N	PASSED
14.52	22.36	L1	PASSED
15.34	22.45	L1	PASSED

2.4.7 ac-mode, 80 MHz CBW mode, BPSK modulation, 29.3 / 32.5 Mbps data rate

Channel 149-161 / 5775 MHz



QuasiPeak (RBW: 9 kHz)

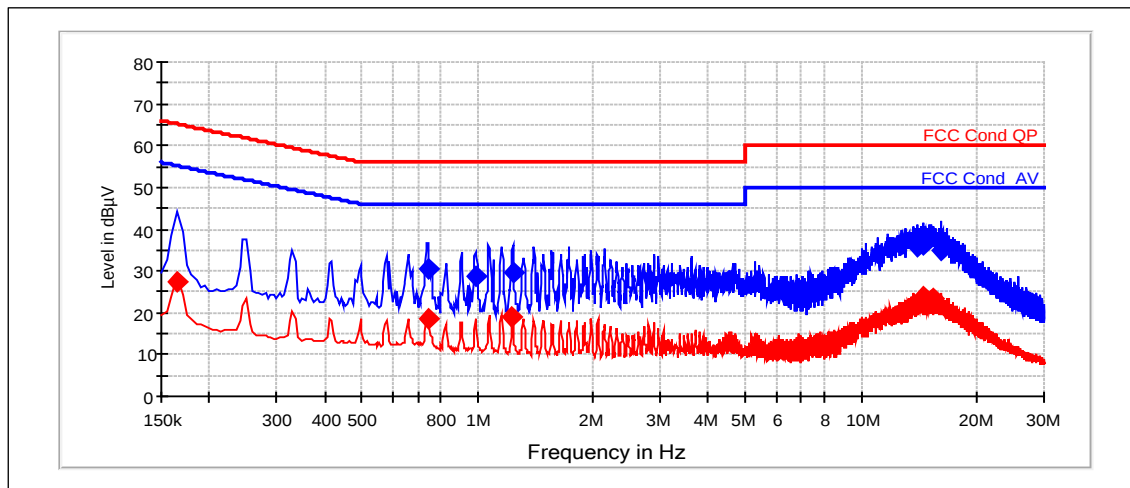
Frequency [MHz]	U [dBμV]	Line	Result
0.73	26.59	L1	PASSED
1.15	30.9	N	PASSED
1.4	30.46	N	PASSED
14.02	36.03	N	PASSED
14.1	36.53	N	PASSED
16.23	34.93	L1	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.74	21.3	N	PASSED
1.15	20.82	L1	PASSED
1.235	21.26	N	PASSED
13.935	24.18	N	PASSED
14.925	24.4	N	PASSED
15.25	24.78	N	PASSED

2.4.8 ac-mode, 80 MHz CBW mode, QPSK modulation, 29.3 / 32.5 Mbps data rate

Channel 149-161 / 5775 MHz



QuasiPeak (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.745	30.38	L1	PASSED
0.99	28.64	L1	PASSED
1.24	29.51	L1	PASSED
13.955	35.87	N	PASSED
14.45	36.02	N	PASSED
16.255	34.77	L1	PASSED

Average (RBW: 9 kHz)

Frequency [MHz]	U [dBμV]	Line	Result
0.165	27.24	N	PASSED
0.745	18.75	L1	PASSED
1.235	19.07	N	PASSED
14.615	23.75	L1	PASSED
15.195	22.89	L1	PASSED
15.355	23.46	L1	PASSED

3. Test Equipment

3.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
4406	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
7602	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
7151	Bluetooth Tester	CBT	R&S	15B
-	GPS RX Antenna w/AMP	L1A-PM-NF	GPS Source	15C
-	GPS Inline amplifier	A11M-V-NF-NM	GPS Source	15C
-	GPS signal Splitter	S12-P110/5-NF	GPS Source	15C
-	GPS TX Antenna	L1P-PV-NF	GPS Source	15C
7912	Spectrum Analyzer	FSV-30	R&S	22/24/27, 15C
-	Thermal Chamber	VT-4002	Vötsch	22/24/27, 15C
-	Power splitter	11667B	Agilent	22/24/27, 15C
3396	EMC Analyzer	E7405A	HP	-
7451	EMI Receiver	ESU-26	R&S	22/24/27, 15C, 15B
4188	LISN 50 μ H	ESH3-Z5	R&S	15C, 15B
6981	LISN 50 μ H	ESH3-Z5	R&S	15C, 15B
-	Pulse Limiter	ESH3-Z2	R&S	15C, 15B
7582	Signal Generator	SMB100A	R&S	15C, 15B

3.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
7591	Antenna	HL562	R&S	22/24/27, 15C, 15B
7572	Double Ridge Horn Antenna	3117	ETS-Lindgren	22/24/27, 15C
7607	Standard Gain Horn Antenna	SAS 586	A.H. System	22/24/27, 15C
7624	Standard Gain Horn Antenna	SAS 587	A.H. System	22/24/27, 15C
7561	Antenna	HFH2-Z2	R&S	15C, 15B
5715	Antenna	MBA-3030	EMC Automation	22/24/27, 15C
5712	Antenna	PLP3003	EMC Automation	22/24/27, 15C
7457	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
7459	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
5729	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
5728	EMI Receiver	ESIB26	R&S	22/24/27, 15C, 15B
4406	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
7602	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
7151	Bluetooth Tester	CBT	R&S	15B
3406	Controller	Sc99V	Sunol	22/24/27, 15C, 15B
-	Controller	G-1000DXC	Yaesu	22/24/27, 15C, 15B
-	Computer Controller	GS-232B	Yaesu	22/24/27, 15C, 15B
7040	Preamplifier	TS-PR3	R&S	22/24/27, 15C, 15B
-	Preamplifier	AMF-6D-020180-29-20P	Miteq	22/24/27, 15C, 15B
-	Preamplifier	AMF-4D-01000800-30-29P	Miteq	22/24/27, 15C, 15B
-	Preamplifier	AMF-5F-18002650-25-10P	Miteq	22/24/27, 15C, 15B
-	High Pass Filter	4HC1700-1-KK	R&S	22
-	High Pass Filter	F-15041	RLC	22/24/27, 15C
-	Band Reject Filter	WRCA824/849-0.2-6SS	Wainwright	22
-	Band Reject Filter	WRCC1800/2000-0.2-10SS	Wainwright	24
-	Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	15C
-	Band Reject Filter	WRCG832/838-825/845-40/5SS	Wainwright	22
-	Band Reject Filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27

Eq. No	Equipment	Type	Manufacturer	Used in
-	Band Reject Filter	WRCG1877/1883 - 1870/1890-40/6SS	Wainwright	24
-	Notch Filter	WRCD1880-1.1.25/50-10SS	Wainwright	22/24/27
-	Notch Filter	WRCT902.4-0.4/40-8SS	Wainwright	-
Planned	Notch Filter	WRCJV2531/2539-2523/2547-60/12SS	Wainwright	22/24/27
-	GPS RX Antenna w/AMP	L1A-PM-NF	GPS Source	15C
-	GPS Inline amplifier	A11M-V-NF-NM	GPS Source	15C
-	GPS signal Splitter	S12-P110/5-NF	GPS Source	15C
-	GPS TX Antenna	L1P-PV-NF	GPS Source	15C