

FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-1073_05.docx	Date of Report:	04-Feb-2015
Number of pages:	22	Customer's Contact person:	Juha Paukku
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FCC listing no.:	533467		
IC recognition no.:	661V-1		
Tested devices/ accessories:	Phone RM-1073 / Battery BV-T5C / Ac-Charger AC-20E / Headset WH-108		
FCC ID:	PYARM-1073	IC:	661X-RM1073
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart B, ANSI C63.4 (2009), CISPR 22 and IC standards, RSS-GEN (Issue 4, November 2014), RSS-132 (Issue 3, January 2013), RSS-133 (Issue 6, January 2013), RSS-139 (Issue 2, February 2009), RSS-199 (Issue 2, October 2014), RSS-130 (Issue 1, October 2013). 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 Microsoft.		
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:			

Kalle Hannila, System Manager, EMC

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	21-Nov-2014
Testing completed	27-Nov-2014
The customer's contact person	Juha Paukku
Test Plan referred to	T:\Projects\RM-1073\TestPlan\RS_TestPlan_RM-1073.xlsm
Notes	Measured from Antenna1.
Document name	T:\Projects\RM-1073\EMC\FCC15B_RM-1073_05.docx

1.1. EUT and Accessory Information

The EUT is a mobile phone with following features:
GSM/WCDMA/WLAN/Bluetooth
The EUT is tested with maximum rated TX power.

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-1073	004402740502103	1540	-	02149.00000.14441.39000	18897
Battery	BV-T5C	LGC?BV+T5C?Phone Program?v4.0?05186	-	-	-	18898
Ac-Charger	AC-20E	409049415667071145560675628	-	-	-	18697
Headset	WH-108	4235VFA	-	-	-	18698

1.2. Summary of Test Results

GSM 850:

Section in CFR 47	Section in RSS-GEN	Name of the test	Result
15.107, a	7.2.4	AC powerline conducted emissions	
15.109, a	6.1	Radiated emissions	PASSED

GSM 1900:

Section in CFR 47	Section in RSS-GEN	Name of the test	Result
15.107, a	7.2.4	AC powerline conducted emissions	
15.109, a	6.1	Radiated emissions	PASSED

WCDMA4:

Section in CFR 47	Section in RSS-GEN	Name of the test	Result
15.107, a	7.2.4	AC powerline conducted emissions	
15.109, a	6.1	Radiated emissions	PASSED

LTE7:

Section in CFR 47	Section in RSS-GEN	Name of the test	Result
15.107, a	7.2.4	AC powerline conducted emissions	
15.109, a	6.1	Radiated emissions	PASSED

LTE17:

Section in CFR 47	Section in RSS-GEN	Name of the test	Result
15.107, a	7.2.4	AC powerline conducted emissions	
15.109, a	6.1	Radiated emissions	PASSED

LTE12:

Section in CFR 47	Section in RSS-GEN	Name of the test	Result
15.107, a	7.2.4	AC powerline conducted emissions	
15.109, a	6.1	Radiated emissions	PASSED

LTE28:

Section in CFR 47	Section in RSS-GEN	Name of the test	Result
15.107, a	7.2.4	AC powerline conducted emissions	
15.109, a	6.1	Radiated emissions	PASSED

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 Microsoft Laboratory.

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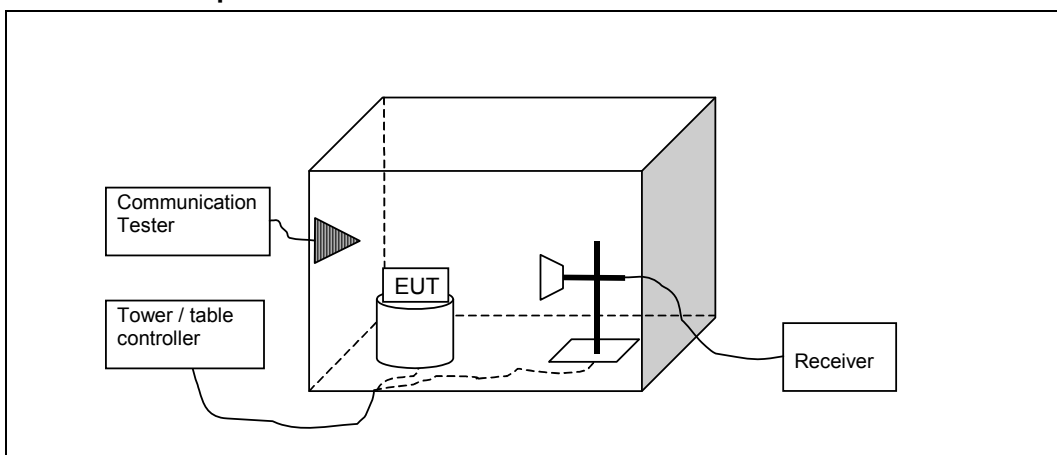
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2. Radiated emissions

(FCC 15.109, a, RSS-132 6.1, RSS-133 6.1, RSS-139 6.1, RSS-199 6.1, RSS-130 6.1)

EUT with DUT number	RM-1073, DUT 18897
Accessories with DUT numbers	BV-T5C, DUT 18898 ; AC-20E, DUT 18697 ; WH-108, DUT 18698
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 45 / 100
Date of measurements	27-Nov-2014
Measured by	Sami Lehtonen

2.1.1 Test setup



2.2. Test method and limit

The measurement is made according to ANSI C63.4-2009 as follows:

The measurement is performed in the Semi-Anechoic Chamber with conducting metal floor.

The measurement distance is 3 m.

The EUT is placed on a nonconductive plate at 80 cm height.

For each suspected frequency, the turntable is rotated 360 degrees and antenna is scanned from 1 to 4 m. This is repeated for both horizontal and vertical receive antenna polarizations.

The emissions less than 20 dB below the permissible value are reported.

The measurement results are obtained as described below:

$$E [dB\mu V/m] = U_{RX} + A_{TOT}$$

Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable loss, antenna factor and preamplifier gain ($A_{TOT} = L_{CABLES} + A_F - G_{PREAMP}$).

CISPR 22 and FCC Part 15 Class B limits (3 m measurement distance)

Frequency range [MHz]	Quasi peak limit [dB μ V/m]	Average limit [dB μ V/m]	Peak limit [dB μ V/m]
30 - 230	40	-	-
230 – 1000	47	-	-
1000 - 3000	-	50	70
Above 3000	-	54	74

2.3. GSM 850 test results, FM Receiver active

RX mode, channel 128 / 869.2 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3477.6	36.67	68.155	42.47	-5.8	74	37.33	PASSED
6953	46.92	221.82	44.62	2.3	74	27.08	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3477.6	23.75	15.399	29.55	-5.8	54	30.25	PASSED
6953	34.01	50.176	31.71	2.3	54	19.99	PASSED

RX mode, channel 190 / 881.6 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
36.715	29.73	30.655	42.13	-12.4	40	10.27	PASSED
40.044	15	5.623	29.4	-14.4	40	25	PASSED
72.455	18.48	8.395	41.78	-23.3	40	21.52	PASSED
98.036	62.86	1389.953	84.76	-21.9	40	-22.86	*PASSED
104.829	23.53	15.014	45.23	-21.7	40	16.47	PASSED
122.523	20.76	10.914	42.26	-21.5	40	19.24	PASSED
196.202	29.17	28.741	53.07	-23.9	40	10.83	PASSED
294.309	30.35	32.923	50.95	-20.6	47	16.65	PASSED

*98.0 MHz frequency is FM-Radio signal and thus ignored."

RX mode, channel 190 / 881.6 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7823.75	47.48	236.592	42.18	5.3	74	26.52	PASSED
7834.97	47.28	231.206	41.88	5.4	74	26.72	PASSED
7839.275	47.66	241.546	42.26	5.4	74	26.34	PASSED
7863.03	46.84	219.786	41.24	5.6	74	27.16	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7823.75	34.26	51.642	28.96	5.3	54	19.74	PASSED
7834.97	34.28	51.761	28.88	5.4	54	19.72	PASSED
7839.275	34.24	51.523	28.84	5.4	54	19.76	PASSED
7863.03	34.06	50.466	28.46	5.6	54	19.94	PASSED

RX mode, channel 190 / 881.6 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3527.8	37.26	72.946	42.66	-5.4	74	36.74	PASSED
7052.6	45.63	191.205	42.63	3	74	28.37	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3527.8	24.28	16.368	29.68	-5.4	54	29.72	PASSED
7052.6	32.5	42.17	29.5	3	54	21.5	PASSED

RX mode, channel 251 / 893.8 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3576.2	37.96	79.068	42.96	-5	74	36.04	PASSED
7149.8	46.65	215.03	42.95	3.7	74	27.35	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3576.2	24.37	16.539	29.37	-5	54	29.63	PASSED
7149.8	33.48	47.206	29.78	3.7	54	20.52	PASSED

2.4. GSM 1900 test results, FM Receiver active

RX mode, channel 512 / 1930.2 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3860.5	38.07	80.076	42.67	-4.6	74	35.93	PASSED
7718.9	47.28	231.206	42.38	4.9	74	26.72	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3860.5	25.11	18.009	29.71	-4.6	54	28.89	PASSED
7718.9	34.15	50.992	29.25	4.9	54	19.85	PASSED

RX mode, channel 661 / 1960.0 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
37.563	27.24	23.014	40.14	-12.9	40	12.76	PASSED
38.972	17.18	7.228	30.98	-13.8	40	22.82	PASSED
73.085	19.78	9.75	42.98	-23.2	40	20.22	PASSED
98.066	70.99	3544.051	92.89	-21.9	40	-30.99	*PASSED
106.55	21.79	12.289	43.49	-21.7	40	18.21	PASSED
119.419	19.02	8.933	40.32	-21.3	40	20.98	PASSED
196.193	32.79	43.601	56.69	-23.9	40	7.21	PASSED
294.309	24.4	16.596	45	-20.6	47	22.6	PASSED

*98.0 MHz frequency is FM-Radio signal and thus ignored."

RX mode, channel 661 / 1960.0 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7819.336	46.96	222.844	41.66	5.3	74	27.04	PASSED
7840.679	47.31	232.006	41.91	5.4	74	26.69	PASSED
7845.392	46.6	213.796	41.2	5.4	74	27.4	PASSED
7856.511	46.94	222.331	41.44	5.5	74	27.06	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7819.336	34.2	51.286	28.9	5.3	54	19.8	PASSED
7840.679	34.18	51.168	28.78	5.4	54	19.82	PASSED
7845.392	34.14	50.933	28.74	5.4	54	19.86	PASSED
7856.511	34.03	50.292	28.53	5.5	54	19.97	PASSED

RX mode, channel 661 / 1960.0 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3919.3	38.06	79.983	42.26	-4.2	74	35.94	PASSED
7838.8	47.3	231.739	41.9	5.4	74	26.7	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3919.3	25.32	18.45	29.52	-4.2	54	28.68	PASSED
7838.8	34.24	51.523	28.84	5.4	54	19.76	PASSED

RX mode, channel 810 / 1989.8 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3980.9	37.77	77.357	42.07	-4.3	74	36.23	PASSED
7960.4	48	251.189	41.9	6.1	74	26	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3980.9	25.02	17.824	29.32	-4.3	54	28.98	PASSED
7960.4	34.98	56.105	28.88	6.1	54	19.02	PASSED

2.5. WCDMA4 test results, GPS Receiver active

RX mode, channel 1537 / 2112.4 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
4225.8	37.91	78.614	41.81	-3.9	74	36.09	PASSED
6335.9	45.56	189.671	45.76	-0.2	74	28.44	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
4225.8	25.25	18.302	29.15	-3.9	54	28.75	PASSED
6335.9	32.17	40.598	32.37	-0.2	54	21.83	PASSED

RX mode, channel 1637 / 2132.4 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
37.214	31.25	36.517	43.95	-12.7	40	8.75	PASSED
38.802	24.42	16.634	38.12	-13.7	40	15.58	PASSED
71.364	24.84	17.458	48.34	-23.5	40	15.16	PASSED
214.699	20.94	11.143	44.14	-23.2	40	19.06	PASSED

RX mode, channel 1637 / 2132.4 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7074.048	45.82	195.434	42.42	3.4	74	28.18	PASSED
7821.946	47.36	233.346	42.06	5.3	74	26.64	PASSED
7831.962	47.63	240.713	42.23	5.4	74	26.37	PASSED
7848.494	47.34	232.809	41.94	5.4	74	26.66	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7074.048	32.81	43.702	29.41	3.4	54	21.19	PASSED
7821.946	34.21	51.345	28.91	5.3	54	19.79	PASSED
7831.962	34.27	51.701	28.87	5.4	54	19.73	PASSED
7848.494	34.09	50.641	28.69	5.4	54	19.91	PASSED

RX mode, channel 1637 / 2132.4 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
4278	38.86	87.7	42.16	-3.3	74	35.14	PASSED
6420.2	45.08	179.473	44.98	0.1	74	28.92	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
4278	25.89	19.702	29.19	-3.3	54	28.11	PASSED
6420.2	32.08	40.179	31.98	0.1	54	21.92	PASSED

RX mode, channel 1738 / 2152.6 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
4307	39.44	93.756	42.24	-2.8	74	34.56	PASSED
6457	45.82	195.434	45.42	0.4	74	28.18	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
4307	26.28	20.606	29.08	-2.8	54	27.72	PASSED
6457	32.47	42.024	32.07	0.4	54	21.53	PASSED

2.6. LTE7 test results, GPS Receiver active

RX mode, channel 2775 / 2622.5 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
5246.9	43.45	148.765	44.95	-1.5	74	30.55	PASSED
7866.3	47.02	224.388	41.42	5.6	74	26.98	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
5246.9	29.77	30.796	31.27	-1.5	54	24.23	PASSED
7866.3	33.96	49.888	28.36	5.6	54	20.04	PASSED

RX mode, channel 3100 / 2655 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
37.385	31.87	39.219	44.67	-12.8	40	8.13	PASSED
39.142	25.99	19.93	39.89	-13.9	40	14.01	PASSED
71.393	25.36	18.535	48.86	-23.5	40	14.64	PASSED
107.264	20.12	10.139	41.82	-21.7	40	19.88	PASSED

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
2656.113	56.8	691.831	57	-0.2	70	13.2	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
2656.113	42.16	128.233	42.36	-0.2	50	7.84	PASSED

RX mode, channel 3100 / 2655 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7830.464	47.04	224.905	41.64	5.4	74	26.96	PASSED
7840.182	47.08	225.944	41.68	5.4	74	26.92	PASSED
7845.892	46.72	216.77	41.32	5.4	74	27.28	PASSED
7863.727	47.46	236.048	41.86	5.6	74	26.54	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7830.464	34.28	51.761	28.88	5.4	54	19.72	PASSED
7840.182	34.18	51.168	28.78	5.4	54	19.82	PASSED
7845.892	34.07	50.524	28.67	5.4	54	19.93	PASSED
7863.727	34.06	50.466	28.46	5.6	54	19.94	PASSED

RX mode, channel 3100 / 2655 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
5310.1	42.02	126.183	43.62	-1.6	74	31.98	PASSED
7966	47.87	247.457	41.77	6.1	74	26.13	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
5310.1	29.13	28.609	30.73	-1.6	54	24.87	PASSED
7966	34.95	55.911	28.85	6.1	54	19.05	PASSED

RX mode, channel 3425 / 2687.5 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
5375.3	43.15	143.714	44.55	-1.4	74	30.85	PASSED
8064.2	47.86	247.172	41.56	6.3	74	26.14	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
5375.3	30	31.623	31.4	-1.4	54	24	PASSED
8064.2	34.74	54.576	28.44	6.3	54	19.26	PASSED

2.7. LTE17 test results, GPS Receiver active

RX mode, channel 5755 / 736.5 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
736.45	43.45	148.765	50.35	-6.9	47	3.55	PASSED

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1471.7	35.38	58.749	42.48	-7.1	70	34.62	PASSED
1474.2	36.07	63.606	43.07	-7	70	33.93	PASSED
2208.2	39.77	97.387	42.47	-2.7	70	30.23	PASSED
2210.4	40.33	103.872	43.13	-2.8	70	29.67	PASSED
3000.4	37.49	74.903	42.19	-4.7	74	36.51	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1471.7	22.6	13.49	29.7	-7.1	50	27.4	PASSED
1474.2	22.67	13.599	29.67	-7	50	27.33	PASSED
2208.2	27.21	22.935	29.91	-2.7	50	22.79	PASSED
2210.4	27.23	22.988	30.03	-2.8	50	22.77	PASSED
3000.4	24.6	16.982	29.3	-4.7	54	29.4	PASSED

RX mode, channel 5790 / 740.0 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
35.437	28.12	25.468	39.72	-11.6	40	11.88	PASSED
37.545	31.93	39.491	44.83	-12.9	40	8.07	PASSED
38.832	26.61	21.404	40.31	-13.7	40	13.39	PASSED
71.342	24.41	16.615	47.91	-23.5	40	15.59	PASSED
739.017	42.13	127.791	55.03	-12.9	47	4.87	PASSED

RX mode, channel 5790 / 740.0 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7817.338	47.52	237.684	42.22	5.3	74	26.48	PASSED
7826.754	47.85	246.888	42.45	5.4	74	26.15	PASSED
7832.364	47.42	234.963	42.02	5.4	74	26.58	PASSED
7843.583	48.06	252.93	42.66	5.4	74	25.94	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7817.338	34.12	50.816	28.82	5.3	54	19.88	PASSED
7826.754	34.3	51.88	28.9	5.4	54	19.7	PASSED
7832.364	34.23	51.464	28.83	5.4	54	19.77	PASSED
7843.583	34.14	50.933	28.74	5.4	54	19.86	PASSED

RX mode, channel 5790 / 740.0 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1478.5	35.43	59.088	42.53	-7.1	70	34.57	PASSED
1478.7	35.79	61.589	42.89	-7.1	70	34.21	PASSED
2221.5	40.53	106.292	43.23	-2.7	70	29.47	PASSED
2221.6	40.28	103.276	42.98	-2.7	70	29.72	PASSED
3000.5	37.24	72.778	41.94	-4.7	74	36.76	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1478.5	22.6	13.49	29.7	-7.1	50	27.4	PASSED
1478.7	22.58	13.459	29.68	-7.1	50	27.42	PASSED
2221.5	27.36	23.335	30.06	-2.7	50	22.64	PASSED
2221.6	27.35	23.308	30.05	-2.7	50	22.65	PASSED
3000.5	24.67	17.12	29.37	-4.7	54	29.33	PASSED

RX mode, channel 5825 / 743.5 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1486.8	35.27	58.01	42.37	-7.1	70	34.73	PASSED
2231.2	40.26	103.039	42.46	-2.2	70	29.74	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1486.8	22.56	13.428	29.66	-7.1	50	27.44	PASSED
2231.2	27.62	24.044	29.82	-2.2	50	22.38	PASSED

2.8. LTE12 test results, GPS Receiver active

RX mode, channel 5035 / 731.5 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
732.38	38.88	87.902	45.88	-7	47	8.12	PASSED

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1463.3	35.49	59.498	42.29	-6.8	70	34.51	PASSED
1464.3	36.16	64.269	42.96	-6.8	70	33.84	PASSED
2192.5	40.2	102.329	43	-2.8	70	29.8	PASSED
2192.7	40.2	102.329	43	-2.8	70	29.8	PASSED
3000.3	37.53	75.249	42.23	-4.7	74	36.47	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1463.3	22.61	13.505	29.41	-6.8	50	27.39	PASSED
1464.3	22.58	13.459	29.38	-6.8	50	27.42	PASSED
2192.5	27.05	22.516	29.85	-2.8	50	22.95	PASSED
2192.7	27.06	22.542	29.86	-2.8	50	22.94	PASSED
3000.3	24.9	17.579	29.6	-4.7	54	29.1	PASSED

RX mode, channel 5095 / 737.5 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
37.675	29.71	30.584	42.71	-13	40	10.29	PASSED
42.304	20.8	10.965	36.8	-16	40	19.2	PASSED
76.96	18.14	8.072	40.84	-22.7	40	21.86	PASSED
77.152	15.38	5.875	38.08	-22.7	40	24.62	PASSED
736.101	40.18	102.094	53.08	-12.9	47	6.82	PASSED

RX mode, channel 5095 / 737.5 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7823.045	47.37	233.615	42.07	5.3	74	26.63	PASSED
7830.861	47.56	238.781	42.16	5.4	74	26.44	PASSED
7846.791	47.73	243.501	42.33	5.4	74	26.27	PASSED
7856.313	47.32	232.274	41.82	5.5	74	26.68	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7823.045	34.22	51.404	28.92	5.3	54	19.78	PASSED
7830.861	34.21	51.345	28.81	5.4	54	19.79	PASSED
7846.791	34.04	50.35	28.64	5.4	54	19.96	PASSED
7856.313	34.09	50.641	28.59	5.5	54	19.91	PASSED

RX mode, channel 5095 / 737.5 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1474.5	36.64	67.92	43.64	-7	70	33.36	PASSED
1475.7	35.28	58.076	42.28	-7	70	34.72	PASSED
2211	40.14	101.625	42.94	-2.8	70	29.86	PASSED
2213.5	40.25	102.92	42.95	-2.7	70	29.75	PASSED
3001.6	37.52	75.162	42.22	-4.7	74	36.48	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1474.5	22.51	13.351	29.51	-7	50	27.49	PASSED
1475.7	22.46	13.274	29.46	-7	50	27.54	PASSED
2211	27.03	22.465	29.83	-2.8	50	22.97	PASSED
2213.5	27.03	22.465	29.73	-2.7	50	22.97	PASSED
3001.6	24.91	17.599	29.61	-4.7	54	29.09	PASSED

RX mode, channel 5155 / 743.5 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1486.3	35.16	57.28	42.26	-7.1	70	34.84	PASSED
2232.1	39.99	99.885	42.19	-2.2	70	30.01	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1486.3	22.33	13.077	29.43	-7.1	50	27.67	PASSED
2232.1	27.47	23.632	29.67	-2.2	50	22.53	PASSED

2.9. LTE28 test results, GPS Receiver active

RX mode, channel 9235 / 760.5 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
759.7	44.93	176.401	51.83	-6.9	47	2.07	PASSED

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1519.7	35.41	58.952	42.51	-7.1	70	34.59	PASSED
1522.3	35.86	62.087	42.96	-7.1	70	34.14	PASSED
2280.9	40.74	108.893	42.34	-1.6	70	29.26	PASSED
2282.4	40.91	111.045	42.51	-1.6	70	29.09	PASSED
3001.2	37.52	75.162	42.22	-4.7	74	36.48	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1519.7	22.53	13.381	29.63	-7.1	50	27.47	PASSED
1522.3	22.51	13.351	29.61	-7.1	50	27.49	PASSED
2280.9	28.02	25.177	29.62	-1.6	50	21.98	PASSED
2282.4	28.07	25.322	29.67	-1.6	50	21.93	PASSED
3001.2	24.65	17.08	29.35	-4.7	54	29.35	PASSED

RX mode, channel 9435 / 780.5 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
38.176	30.9	35.075	44.2	-13.3	40	9.1	PASSED
40.675	21.12	11.376	36.02	-14.9	40	18.88	PASSED
76.709	18.37	8.289	41.07	-22.7	40	21.63	PASSED
76.767	18.48	8.395	41.18	-22.7	40	21.52	PASSED
779.49	39.51	94.515	52.31	-12.8	47	7.49	PASSED

RX mode, channel 9435 / 780.5 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7820.039	46.97	223.1	41.67	5.3	74	27.03	PASSED
7832.963	48.15	255.564	42.75	5.4	74	25.85	PASSED
7846.292	47.37	233.615	41.97	5.4	74	26.63	PASSED
7855.511	47.17	228.297	41.67	5.5	74	26.83	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7820.039	34.11	50.757	28.81	5.3	54	19.89	PASSED
7832.963	34.18	51.168	28.78	5.4	54	19.82	PASSED
7846.292	34.01	50.176	28.61	5.4	54	19.99	PASSED
7855.511	34	50.119	28.5	5.5	54	20	PASSED

RX mode, channel 9435 / 780.5 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1561.1	35.49	59.498	42.29	-6.8	70	34.51	PASSED
1562.2	35.5	59.566	42.3	-6.8	70	34.5	PASSED
2340.4	40.73	108.768	42.13	-1.4	70	29.27	PASSED
2341.9	41.07	113.11	42.57	-1.5	70	28.93	PASSED
3000.6	37.88	78.343	42.58	-4.7	74	36.12	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1561.1	22.75	13.725	29.55	-6.8	50	27.25	PASSED
1562.2	22.77	13.756	29.57	-6.8	50	27.23	PASSED
2340.4	27.95	24.975	29.35	-1.4	50	22.05	PASSED
2341.9	27.92	24.889	29.42	-1.5	50	22.08	PASSED
3000.6	25.26	18.323	29.96	-4.7	54	28.74	PASSED

RX mode, channel 9635 / 800.5 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Limit [dB μ V/m]	Margin	Results
1599.4	36.31	65.388	42.61	-6.3	70	33.69	PASSED
2402.3	40.63	107.523	42.33	-1.7	70	29.37	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dB μ V/m]	E [μ V/m]	U _{RX} [dB μ V]	A _{TOT} [dB]	Limit [dB μ V/m]	Margin	Results
1599.4	23.25	14.538	29.55	-6.3	50	26.75	PASSED
2402.3	27.52	23.768	29.22	-1.7	50	22.48	PASSED

3. Test Equipment

3.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
6039	USB Interface	5541765	Testo	22/24/27, 15C, 15B
6044	V-network	ESH3-Z6	R&S	-
2059	V-network	ESH3-Z6	R&S	-
1759	LISN 50 µH	ESH3-Z5	R&S	22/24/27, 15C, 15B
2097	Pulse Limiter	ESH3-Z2	R&S	22/24/27, 15C, 15B
1999	Receiver	ESIB26	R&S	22/24/27, 15C, 15B
2180	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2390	Directional Coupler	DC2600	AR	-
-	RF immunity / Emission Software	EMC32	R&S	22/24/27, 15C, 15B
2060	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
1759	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
2039	Power Supply	PL330QMD	Thurlby	15C, 15B
6036	Data Logger	175-H2	Testo	22/24/27, 15C, 15B
2359	Temperature Test Chamber	VT4002	Vötsch	22/24/27
2352	Spectrum Analyzer	FSP-30	R&S	22/24/27, 15C
6109	Communication Tester	CMU200	R&S	22/24/27, 15C
6246	Power Supply	66332A	HP	22/24/27, 15C
1992	Signal Generator	83630B	Agilent	15C, 15B
6098	Signal Generator	8648C	Agilent	-
6046	Attenuator 10dB	8493C	Agilent	22/24/27, 15C
6047	Attenuator 20dB	8493C	Agilent	22/24/27, 15C
6045	Power splitter	11667B	Agilent	22/24/27, 15C
6247	Communication Tester	CBT	R&S	22/24/27, 15C 15B
6052	Communication Tester	CMU200	R&S	22/24/27, 15C 15B
6248	Power Supply	6632B	-	22/24/27, 15C 15B
6106	Spectrum Analyzer	FSP-30	R&S	22/24/27, 15C 15B
6113	Signal Generator	SMF100A	R&S	22/24/27, 15C 15B
6202	Temperature Test Chamber	VT4002	Vötsch	22/24/27, 15C 15B
6122	Power Splitter	11667B	Agilent	22/24/27, 15C 15B
6134	Attenuator 10dB	BW-S10-2W263+	Mini-Circuits	22/24/27, 15C
6136	Attenuator 20dB	BW-S20-2W263+	Mini-Circuits	22/24/27, 15C
6103	Bluetooth tester	CBT	R&S	22/24/27, 15C 15B
6250	Power Supply	6651A	Agilent	22/24/27, 15C 15B
6108	Communication Tester	CMU200	R&S	22/24/27, 15C 15B
6105	Spectrum Analyzer	FSV-30	R&S	22/24/27, 15C 15B
6251	Temperature Test Chamber	VT4002	Vötsch	22/24/27, 15C 15B
6243	Power Splitter	1167B	Agilent	22/24/27, 15C 15B
6245	Attenuator 10dB	BW-S10-2W263+	Mini-Circuits	22/24/27, 15C 15B
6244	Attenuator 20dB	BW-S20-2W263+	Mini-Circuits	22/24/27, 15C 15B

3.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
2388	Bluetooth Tester	CBT	R&S	15B
10479	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
2347	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2009	Signal Generator	SMP 22	R&S	22/24/27, 15C, 15B
2348	Controller	G-1000DXC	Yaesu	22/24/27, 15C, 15B
2349	Computer Controller	g-1000DXC	Yaesu	22/24/27, 15C, 15B
2116	Controller	EMCO 2090	ETS	22/24/27, 15C, 15B
2109	Power Supply	PL330QMD	Thurlby	22/24/27, 15C, 15B
2353	Receiver	ESIB26	R&S	22/24/27, 15C, 15B
6115	Open switch and control unit	OSP 130	R&S	22/24/27, 15C 15B
6116	Open switch and control unit	OSP 150	R&S	22/24/27, 15C 15B

Eq. No	Equipment	Type	Manufacturer	Used in
6117	Open switch and control unit	OSP 150	R&S	22/24/27, 15C, 15B
6131	Notch Filter	WRCT902.4-0.4/40-8SS	Wainwright	22/24/27, 15C, 15B
6130	Notch Filter	WRCD1880-1.1.25/50-10SS	Wainwright	22/24/27
6159	Band Reject Filter	WRCD1747.8-0.4/40-5SS	Wainwright	22/24/27, 15C, 15B
6158	Band Reject Filter	WRCT836.6-0.4/40-8SS	Wainwright	22/24/27, 15C, 15B
6197	Band Reject Filter	WRCJV2531/2539-2523/2547-60/12SS	Wainwright	22/24/27, 15C, 15B
2231	Band Reject Filter	WRCG1947/1953-1940/1960-40/6SS	Wainwright	22/24/27, 15C, 15B
2391	Band Reject Filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
2386	Band Reject Filter	WRCG1764.4/1770.4-1760.4/1774.4-40/6SS	Wainwright	22/24/27, 15C, 15B
2385	Band Reject Filter	WRCG1744.4/1750.4-1740.4/1754.4-40/6SS	Wainwright	22/24/27, 15C, 15B
2357	Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	15C
2188	Preamplifier	AFS4-00100300-20-23P-6	Miteq	22/24/27, 15C, 15B
6195	High Pass Filter	-	Wainwright	22/24/27, 15C, 15B
2364	Band Reject Filter	WRCG1877/1883 - 1870/1890-40/6SS	Wainwright	24
2361	Anechoic Chamber	3 m Semi / Full Anechoic Chamber	Euroshield	22/24/27, 15C, 15B
6212	Antenna Array system	-	TCC	22/24/27, 15C, 15B
-	RF immunity / Emission Software	EMC32	R&S	22/24/27, 15C, 15B
6089	Antenna	HFH2-Z2	R&S	15C, 15B
2027	CDN	M2 (modified) DC1	MEB	22/24/27, 15C, 15B
2028	CDN	M3 (modified) DC2	MEB	22/24/27, 15C, 15B
2176	CDN	CDN 801-M3	Lüthi	22/24/27, 15C, 15B
2135	CDN	CDN 801-M3	Lüthi	22/24/27, 15C, 15B
2029	Power Supply	PL330	Thurlby	22/24/27, 15C
6038	Data Logger	Testo 580	Testo	22/24/27, 15C, 15B
6037	Data Logger	175-H2	Testo	22/24/27, 15C, 15B
6039	USB Interface	5541765	Testo	22/24/27, 15C, 15B