Agenda Item: 8.7

Source: Ericsson

Title: Downlink test model for 25.141

Document for: Approval

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1. Introduction

TS25.141V2.0.2 needs some input on the "Base Station Test Model". This contribution supplies some models, which can be used for different types of test. Text proposals for the affected sections are also included.

2. General

When TX conformance tests are performed, it needs to be specified, how the baseband signal is set up. A compromise should be made between complexity of the setup and the realism it shows. It shall also be aligned with other models used e.g. for simulation.

3. Test Models

Ericsson therefore proposes to use test models as below. Only channels are used, which are transmitted continously (i.e. under operation conditions!). They shall have constant mean power, if possible (e.g. not for power control tests). Where more than one channel of a type is transmitted (e.g. DPCH) the power distribution among those shall reflect a realistic traffic scenario. For this purpose, results from network simulations are used and translated into a table, which approximates the simulated distribution. This approximation is done by obtaining a distribution with 50 samples, which has the same cumulative distribution as the original distribution

The only exception from this is the test on Peak Code Domain Error, which by definition requires identical power on all DPCH.

Test Model 1

This model shall be used for tests on Spectrum emission mask, ACLR, Spurious emissions , Transmit intermodulation and Modulation accuracy. "Fraction of power" relates to the mean output power on the TX antenna interface under test.
(Note: The identification of the individual DPCH channels is for further study)

Type	Number of Channels	Fraction of Power (%)	Fraction of Power (dB)	Comments
PCCPCH+ SCH	1	10	-10	
Primary CPICH	1	10	-10	
PICH	1	3.2	-15	
DPCH	50	**varying**	**varying**	See table 1, sum over all channels shall be 76.8%

Test Model 2

This model shall be used for tests on Output power dynamics. "Fraction of power" relates to the mean output power on the TX antenna interface under test.

Type	Number of Channels	Fraction of Power (%)	Fraction of Power (dB)	Comments
PCCPCH+ SCH	1	10	-10	
Primary CPICH	1	10	-10	
PICH	1	3.2	-15	
DPCH	1	10	-10	

Test Model 3

This model shall be used for tests on Peak code domain error. "Fraction of power" relates to the mean output power on the TX antenna interface under test.

Type	Number of Channels	Fraction of Power (%)	Fraction of Power (dB)	Comments
PCCPCH+ SCH	1	10	-10	
Primary CPICH	1	10	-10	
PICH	1	3.2	-15	
DPCH	50	1.536	-18.1	

Code power distribution for DPCH

Table 1: Code power distribution

Code #	Relative power (wrt. overall power, linear)
1	0,001935
2	0,003166
3	0,004028
4	0,004731
5	0,005311
6	0,005839
7	0,006296
8	0,006754
9	0,007141
10	0,007545
11	0,007914
12	0,008284
13	0,008636

14	0,008794
15	0,009286
16	0,009603
17	0,009902
18	0,010429
19	0,010904
20	0,011344
21	0,011749
22	0,012135
23	0,01247
24	0,012821
25	0,013314
26	0,013824
27	0,014334
28	0,014826
29	0,015301
30	0,015846
31	0,016444
32	0,017025
33	0,017588
34	0,018115
35	0,018819
36	0,019346
37	0,019874
38	0,020578
39	0,021281
40	0,02216
41	0,02304
42	0,023919
43	0,024974
44	0,02603
45	0,027261
46	0,028668
47	0,030251
48	0,032361
49	0,035175
50	0,040627

4. Proposed new text

In section 6.2.1.1 all text from " For those base station …" down to the end of 6.2.1.1 shall be removed. Instead the following text shall be included in section 6.1:

The setup of physical channels for transmitter tests shall be according to one of the tables below. A reference to the applicable table is made with each test. The mean overall output power to be transmitted, is specified with each test.

Table 6.1-1

Type	Number of Channels	Fraction of Power (%)	Fraction of Power (dB)	Comments
PCCPCH+ SCH	1	10	-10	
Primary CPICH	1	10	-10	
PICH	1	3.2	-15	
DPCH	50	varying	varying	See table 6.1-4, sum over all channels shall be 76.8%

Table 6.1-2

Type	Number of Channels	Fraction of Power (%)	Fraction of Power (dB)	Comments
PCCPCH+ SCH	1	10	-10	
Primary CPICH	1	10	-10	
PICH	1	3.2	-15	
DPCH	1	10	-10	

Table 6.1-3

Type	Number of Channels	Fraction of Power (%)	Fraction of Power (dB)	Comments
PCCPCH+ SCH	1	10	-10	
Primary CPICH	1	10	-10	
PICH	1	3.2	-15	
DPCH	50	1.536	-18.1	

Table 6.1-4: Code power distribution

Code #	Relative power (wrt. overall power, linear)
1	0,001935
2	0,003166
3	0,004028
4	0,004731
5	0,005311
6	0,005839
7	0,006296
8	0,006754

9	0,007141
10	0,007545
11	0,007914
12	0,008284
13	0,008636
14	0,008794
15	0,009286
16	0,009603
17	0,009902
18	0,010429
19	0,010904
20	0,011344
21	0,011749
22	0,012135
23	0,01247
24	0,012821
25	0,013314
26	0,013824
27	0,014334
28	0,014826
29	0,015301
30	0,015846
31	0,016444
32	0,017025
33	0,017588
34	0,018115
35	0,018819
36	0,019346
37	0,019874
38	0,020578
39	0,021281
40	0,02216
41	0,02304
42	0,023919
43	0,024974
44	0,02603
45	0,027261
46	0,028668
47	0,030251
48	0,032361
49	0,035175
50	0,040627

The following text shall be included in sections 6.2, 6.7, 6.8, 6.9.1:

The physical channels for the following test(s) shall be setup according to table 6.1-1

The follwing text shall be included in section 6.5:

The physical channels for the following test(s) shall be setup according to table 6.1-2

In section 6.3.1 the alternative "CW signal" shall be chosen.

The follwing text shall be included in section 6.9.2:

The physical channels for the following test shall be setup according to table 6.1-3