The Spot-check Cover Sheet

Summary:

To demonstrate the change of deviated non-electrical characteristics components leaves no significant performance change with regards to the compliance concern

Change part:

U603 as 2G FEM (VC7912-62) to SKY68018-11
U703 as 4G FEM (LTE cat.M/NB-IOT) QM55001 to RR88916-81H

Mode of Selection

(The item of re-test and spot check test to ensure consistency of performance

Part 22 covering GSM850/LTE 850 bands

Test Case	Original	Variant
RF Power Output and Effective Radiated Power	PASS	Retest(GSM850 / LTE band5 / LTE band 26)
Occupied Bandwidth	PASS	Verify the worst combination of each frequency band(GSM850 / LTE band5 / LTE band 26)
Band Edge Compliance	PASS	Verify the worst combination of each frequency band(GSM850 / LTE band5 / LTE band 26)
Peak-to-Average Power Ratio	PASS	Retest(GSM850 / LTE band5 / LTE band 26)
Frequency Stability	PASS	Verify the worst combination of each frequency band(GSM850 / LTE band5 / LTE band 26)
Spurious Emissions at Antenna Terminals	PASS	Verify the worst combination of each frequency band(GSM850 / LTE band5 / LTE band 26)
Radiates Spurious Emission	PASS	Verify the worst combination of each frequency band(GSM850 / LTE band5 / LTE band 26)

Part 24 covering GSM1900/LTE 1900 bands

Test Case	Original	Variant
RF Power Output and Effective Radiated Power	PASS	Retest(GSM1900 / LTE Band 2 / LTE Band 25)
Occupied Bandwidth	PASS	Verify the worst combination of each frequency band(GSM1900 / LTE Band 2 / LTE Band 25)
Band Edge Compliance	PASS	Verify the worst combination of each frequency band(GSM1900 / LTE Band 2 / LTE Band 25)
Peak-to-Average Power Ratio	PASS	Retest(GSM1900 / LTE Band 2 / LTE Band 25)
Frequency Stability	PASS	Verify the worst combination of each frequency band(GSM1900 / LTE Band 2 / LTE Band 25)
Spurious Emissions at Antenna Terminals	PASS	Verify the worst combination of each frequency band(GSM1900 / LTE Band 2 / LTE Band 25)
Radiates Spurious Emission	PASS	Verify the worst combination of each frequency band(GSM1900 / LTE Band 2 / LTE Band 25)

Part 90 covering LTE 800 bands

Test Case	Original	Variant
RF Power Output and Effective Radiated Power	PASS	Retest(LTE Band 26)
Occupied Bandwidth	PASS	Verify the worst combination of each frequency band(LTE Band 26)
Band Edge Compliance	PASS	Verify the worst combination of each frequency band(LTE Band 26)
Peak-to-Average Power Ratio	PASS	Retest(LTE Band 26)
Frequency Stability	PASS	Verify the worst combination of each frequency band(LTE Band 26)
Spurious Emissions at Antenna Terminals	PASS	Verify the worst combination of each frequency band(LTE Band 26)
Radiates Spurious Emission	PASS	Verify the worst combination of each frequency band(LTE Band 26)

Part 27 covering LTE 700/1700 bands

Test Case	Original	Variant
RF Power Output and Effective Radiated Power	PASS	Retest(LTE Band 4/66/12/13/71/85)
Occupied Bandwidth	PASS	Verify the worst combination of each frequency band(LTE Band 4/66/12/13//7185)
Band Edge Compliance	PASS	Verify the worst combination of each frequency band(LTE Band 4/66/12/13//7185)
Peak-to-Average Power Ratio	PASS	Retest(LTE Band 4/66/12/13/71/85)
Frequency Stability	PASS	Verify the worst combination of each frequency band(LTE Band 4/66/12/13/71/85)
Spurious Emissions at Antenna Terminals	PASS	Verify the worst combination of each frequency band(LTE Band 4/66/12/13/71/85)
Radiates Spurious Emission	PASS	Verify the worst combination of each frequency band(LTE Band 4/66/12/13/71/85)

The comparison

	Power Output Original worst dBm	Power Output New worst dBm	Original worst % deviation	New worst % deviation	Emission designat Original worst	Emission designat New worst
GSM850	32.47	32.44	1.766	1.754	248KGXW	247KGXW
GSM850	26.41	26.40	0.438	0.437	248KG7W	251KG7W
GSM1900	30.17	29.58	1.040	0.908	248KGXW	245K GXW
GSM1900	25.98	25.74	0.396	0.375	248KG7W	244K G7W
LTE5 CATM	23.98	23.59	0.250	0.229	1M12G7D	1M12G7D
LTE5 CATM	23.98	23.47	0.250	0.222	962KW7D	961KW7D
LTE5 NB-IOT	23.61	23.26	0.230	0.212	184KG7D	127K G7D
LTE26 CATM	23.99	23.51	0.251	0.224	1M13MG7D	1M12G7D
LTE26 CATM	23.97	23.48	0.249	0.223	961KW7D	956KW7D
LTE26 CATM	23.66	23.55	0.232	0.226	1M11G7D	1M12G7D
LTE26 CATM	23.38	23.26	0.218	0.212	962KW7D	963KW7D
LTE2 CATM	23.50	23.50	0.224	0.224	1M14G7D	1M12G7D
LTE2 CATM	23.64	23.64	0.231	0.231	982KW7D	956K W7D
LTE2 NB-IOT	23.95	23.44	0.248	0.221	187KG7D	62KG7D
LTE25 CATM	23.60	23.29	0.229	0.213	1M14G7D	1M11G7D
LTE25 CATM	23.65	23.33	0.232	0.215	991KW7D	952KW7D
LTE25 NB-IOT	23.95	23.28	0.248	0.213	185KG7D	121KG7D
LTE4 CATM	23.69	23.15	0.234	0.207	1M13G7D	1M12G7D
LTE4 CATM	23.76	23.28	0.238	0.213	974KW7D	967KW7D
LTE4 NB-	23.74	23.21		0.209	184KG7D	132KG7D

IOT			0.237			
LTE12 CATM	23.60	22.67	0.229	0.185	1M12G7D	1M1167G7D
LTE12 CATM	24.44	22.73	0.278	0.187	952KW7D	963KW7D
LTE12 NB-IOT	23.44	22.84	0.221	0.192	185K G7D	130KG7D
LTE13 CATM	23.30	22.92	0.214	0.196	1M12G7D	1M11G7D
LTE13 CATM	23.33	22.83	0.215	0.192	956KW7D	947KW7D
LTE13 NB-IOT	23.71	22.80	0.235	0.191	186K G7D	119KG7D
LTE66 CATM	23.89	23.45	0.245	0.221	1M12G7D	1M13G7D
LTE66 CATM	23.76	23.51	0.238	0.224	966KW7D	962kW7D
LTE66 NB-IOT	23.67	23.16	0.233	0.207	186K G7D	128K G7D
LTE71 NB-IOT	23.69	23.32	0.234	0.215	184KG7D	134KG7D
LTE85 CATM	23.41	22.93	0.219	0.196	1M14G7D	1.1178G7D
LTE85 CATM	23.32	22.87	0.215	0.194	958KW7D	958KW7D
LTE85 NB-IOT	23.54	22.72	0.226	0.187	184KG7D	127KG7D

	PAPR Original worst dBm	PAPR New worst dBm	Frequency Stability Original worst （ppm）	Frequency Stability New (ppm)	Radiates Spurious Emission Original worst (dBm/MHz)	Radiates Spurious Emission New (dBm/MHz)
GSM850	1.49	5.83	0.01	0.01	28.2	36.85
GSM1900	1.49	5.86	0.01	0.01	25.2	30.5
LTE5 CATM	11.46	10.61	0.01	0.01	34.7	36.56
LTE5 CATM	11.57	10.61	0.01	0.01	34.7	36.56
LTE5 NB-IOT	7.15	7.23	0.01	0.01	33.8	19.45
LTE26 part22 CATM	9.71	9.74	0.01	0.01	34.2	32.82
LTE26 part22 CATM	10.32	10.45	0.01	0.01	34.2	32.82
LTE26 Part90 CATM	9.75	9.46	0.01	0.01	34.8	33.5
LTE26 Part90 CATM	10.3	10.18	0.01	0.01	34.8	33.5
LTE2 CATM	9.86	10.95	0.01	0.01	26.2	29.84
LTE2 CATM	10.24	10.84	0.01	0.01	26.2	29.84
LTE2 NB-IOT	7.24	7.17	0.01	0.01	27.7	30.52
LTE25 CATM	11.36	9.68	0.01	0.01	26.3	29.88
LTE25 CATM	11.31	10.26	0.01	0.01	26.3	29.88
LTE25 NB-IOT	7.21	7.09	0.01	0.01	26.7	30.37
LTE4 CATM	9.94	9.54	0.01	0.01	24.5	29.04

LTE4 CATM	10.53	9.74	0.01	0.01	24.5	29.04
LTE4 NB-IOT	7.3	7.32	0.01	0.01	23.52	30.62
LTE12 CATM	11.48	10.53	0.01	0.01	34.8	34.48
LTE12 CATM	12.1	11.82	0.01	0.01	34.8	34.48
LTE12 NB-IOT	7.17	7.3	0.01	0.01	28.2	16.79
LTE13 CATM	9.49	9.46	0.01	0.01	18.35	9.2
LTE13 CATM	10.28	10.12	0.01	0.01	18.35	9.2
LTE13 NB-IOT		7.16	0.01	0.01	7.1	21.76
LTE66 CATM	10.09	9.56	0.01	0.01	25.7	29.55
LTE66 CATM	10.74	10.08	0.01	0.01	25.7	29.55
LTE66 NB-IOT	7.29	7.34	0.01	0.01	19.99	32.05
LTE71 NB-IOT	7.23	7.28	0.01	0.01	28.8	14.55
LTE85 CATM	10.25	9.94	0.01	0.01	36.1	32.28
LTE85 CATM	10.23	11.89	0.01	0.01	36.1	32.28
LTE85 NB-IOT	7.17	7.37	0.01	0.01	28.7	19.81

Conclusion:

As reflected from the result of the summarized table above, all items of the re-test, and spot check with the original worst remains compliant, further with lower value in percentage of the deviation.

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