

Project No.	SHT2204062803EW		
Test sample No.	YPHT22040628005	Model No.	Sapphire Connect
Start test date	2022/5/18	Finish date	2022/5/20
Temperature	22.4℃	Humidity	47%
Test Engineer	Bo Wang	Auditor	<i>Xiaodong Zhao</i>

Appendix clause	Test Item	Result
A	Conducted Power Measurement Results	PASS
B	SAR Measurement Results	PASS
C	Simultaneous Transmission analysis	PASS

Appendix A:Conducted Power Measurement Results-GSM

GSM850		Burst Average Power (dBm)			Tune-up limit (dBm)	Division Factors	Frame-Average Power (dBm)			Tune-up limit (dBm)
		CH128	CH190	CH251			CH128	CH190	CH251	
		824.2MHz	836.6MHz	848.8MHz			824.2MHz	836.6MHz	848.8MHz	
GSM		32.43	32.38	32.37	32.50	-9.03	23.40	23.35	23.34	23.47
GPRS (GMSK)	1Tx slot	32.40	32.47	32.41	32.50	-9.03	23.37	23.44	23.38	23.47
	2Tx slots	31.80	31.76	31.81	32.00	-6.02	25.78	25.74	25.79	25.98
	3Tx slots	29.59	30.10	30.26	30.50	-4.26	25.33	25.84	26.00	26.24
	4Tx slots	28.84	28.79	28.92	29.00	-3.01	25.83	25.78	25.91	25.99
EGPRS (8PSK)	1Tx slot	26.41	26.24	26.26	26.50	-9.03	17.38	17.21	17.23	17.47
	2Tx slots	26.01	25.93	25.91	26.50	-6.02	19.99	19.91	19.89	20.48
	3Tx slots	24.40	24.22	24.37	24.50	-4.26	20.14	19.96	20.11	20.24
	4Tx slots	23.02	23.01	23.12	23.50	-3.01	20.01	20.00	20.11	20.49

GSM1900		Burst Average Power (dBm)			Tune-up limit (dBm)	Division Factors	Frame-Average Power (dBm)			Tune-up limit (dBm)
		CH512	CH661	CH810			CH512	CH661	CH810	
		1850.2MHz	1880MHz	1909.8MHz			1850.2MHz	1880.0MHz	1909.8MHz	
GSM		30.17	30.00	29.82	30.50	-9.03	21.14	20.97	20.79	21.47
GPRS (GMSK)	1Tx slot	29.97	29.84	29.81	30.00	-9.03	20.94	20.81	20.78	20.97
	2Tx slots	28.38	28.18	28.32	28.50	-6.02	22.36	22.16	22.30	22.48
	3Tx slots	26.77	26.51	26.97	27.00	-4.26	22.51	22.25	22.71	22.74
	4Tx slots	26.48	26.29	25.90	26.50	-3.01	23.47	23.28	22.89	23.49
EGPRS (8PSK)	1Tx slot	25.98	25.71	25.51	26.00	-9.03	16.95	16.68	16.48	16.97
	2Tx slots	24.84	24.65	24.41	25.00	-6.02	18.82	18.63	18.39	18.98
	3Tx slots	23.02	22.82	22.67	23.50	-4.26	18.76	18.56	18.41	19.24
	4Tx slots	21.62	21.55	21.40	22.00	-3.01	18.61	18.54	18.39	18.99

Appendix A:Conducted Power Measurement Results-NB IoT

LTE-FDD Band 2			Conducted Power (dBm)			Tune-up Limit(dBm)
Modulation	Sub-carrier spacing (KHz)	RB offset	Low	Middle	High	
BPSK	3.75	1@0	23.78	23.87	23.95	24.00
		1@47	23.64	23.74	23.86	
	15	1@0	23.65	23.62	23.72	24.00
		1@11	23.58	23.53	23.67	
QPSK	3.75	1@0	23.68	23.75	23.86	24.00
		1@47	23.62	23.79	23.76	
	15	1@0	23.57	23.50	23.66	24.00
		1@11	23.58	23.57	23.64	
	15	12@0	21.25	21.28	21.46	21.50

LTE-FDD Band 4			Conducted Power (dBm)			Tune-up Limit(dBm)
Modulation	Sub-carrier spacing (KHz)	RB offset	Low	Middle	High	
BPSK	3.75	1@0	23.74	23.62	23.67	24.00
		1@47	23.58	23.52	23.59	
	15	1@0	23.59	23.45	23.66	24.00
		1@11	23.57	23.44	23.64	
QPSK	3.75	1@0	23.59	23.47	23.60	24.00
		1@47	23.65	23.45	23.58	
	15	1@0	23.52	23.45	23.74	24.00
		1@11	23.55	23.48	23.69	
	15	12@0	21.60	21.47	21.63	22.00

LTE-FDD Band 12			Conducted Power (dBm)			Tune-up Limit(dBm)
Modulation	Sub-carrier spacing (KHz)	RB offset	Low	Middle	High	
BPSK	3.75	1@0	23.30	23.29	23.21	23.50
		1@47	23.24	23.22	23.23	
	15	1@0	23.44	23.30	23.28	23.50
		1@11	23.38	23.25	23.25	
QPSK	3.75	1@0	23.30	23.30	23.16	23.50
		1@47	23.37	23.24	23.26	
	15	1@0	23.41	23.37	23.31	23.50
		1@11	23.34	23.32	23.32	
	15	12@0	21.34	21.26	21.27	21.50

Appendix A:Conducted Power Measurement Results-eMTC

LTE-FDD Band 2				Conducted Power (dBm)			Tune-up Limit(dBm)
Band-width (MHz)	Modulation	RB allocation	RB offset	Low	Middle	High	
1.4	QPSK	1	0	23.05	23.09	23.11	24.00
			2	23.16	23.19	23.22	
			5	23.38	23.44	23.50	
		3	0	22.26	22.29	22.32	23.00
			1	22.31	22.35	22.38	
			3	22.42	22.47	22.50	
		6	0	21.13	20.96	21.57	22.00
	16QAM	1	0	22.75	22.69	22.82	24.00
			2	23.18	23.10	23.33	
			5	23.36	23.27	23.58	
		3	0	21.82	21.76	21.88	22.50
			1	21.88	21.83	21.95	
			3	22.04	21.99	22.11	
		5	0	21.11	21.02	21.72	22.00
3	QPSK	1	0	23.44	23.32	23.26	23.50
			2	23.38	23.25	23.19	
			5	23.23	23.11	23.01	
		3	0	22.71	22.60	22.54	23.00
			1	22.55	22.43	22.37	
			3	22.48	22.36	22.31	
		6	0	21.12	20.96	20.91	21.50
	16QAM	1	0	22.05	22.01	21.94	22.50
			2	22.04	22.02	21.96	
			5	22.03	22.00	21.99	
		3	0	21.37	21.33	21.26	21.50
			1	21.21	21.17	21.10	
			3	21.15	21.11	21.04	
		5	0	21.33	21.26	20.88	21.50
5	QPSK	1	0	23.14	23.00	23.26	23.50
			2	23.22	23.20	23.28	
			5	23.26	23.17	23.37	
		3	0	22.19	22.06	22.31	23.00
			1	22.26	22.12	22.37	
			3	22.42	22.29	22.54	
		6	0	22.07	21.93	22.54	23.00
	16QAM	1	0	23.31	23.14	23.33	23.50
			2	23.30	23.14	23.33	
			5	23.33	23.16	23.35	
		3	0	22.35	22.19	22.37	23.00
			1	22.42	22.26	22.44	
			3	22.59	22.42	22.61	
		5	0	21.11	21.03	21.55	22.00

10	QPSK	1	0	23.03	23.07	23.13	23.50
			2	23.12	23.16	23.20	
			5	23.20	23.26	23.30	
		3	0	23.08	23.05	23.15	23.50
			1	23.14	23.20	23.22	
			3	23.34	23.40	23.45	
		6	0	22.44	22.52	22.64	23.00
	16QAM	1	0	23.24	23.23	23.36	24.00
			2	23.32	23.29	23.41	
			5	23.60	23.58	23.64	
		3	0	21.81	21.89	21.96	23.00
			1	22.16	22.20	22.29	
			3	22.38	22.40	22.51	
		5	0	21.44	21.50	21.62	22.00
15	QPSK	1	0	23.08	23.09	23.05	23.50
			2	23.05	23.08	23.03	
			5	23.04	23.06	23.01	
		3	0	22.36	22.37	22.33	22.50
			1	22.20	22.21	22.17	
			3	22.13	22.14	22.10	
		6	0	23.14	23.03	23.01	23.50
	16QAM	1	0	23.22	23.17	23.20	23.50
			2	23.18	23.07	23.12	
			5	23.08	22.91	22.96	
		3	0	22.50	22.45	22.48	22.50
			1	22.34	22.29	22.32	
			3	22.27	22.22	22.25	
		5	0	23.24	23.06	23.15	23.50
20	QPSK	1	0	23.11	23.10	23.08	23.50
			2	23.08	23.05	23.02	
			5	23.05	23.02	23.01	
		3	0	22.39	22.38	22.36	22.50
			1	22.23	22.22	22.20	
			3	22.16	22.15	22.13	
		6	0	23.11	23.00	22.96	23.50
	16QAM	1	0	23.25	23.24	23.20	23.50
			2	23.06	23.02	22.99	
			5	22.68	22.66	22.61	
		3	0	22.53	22.52	22.48	23.00
			1	22.36	22.35	22.32	
			3	22.30	22.29	22.25	
		5	0	23.17	23.08	23.07	23.50

LTE-FDD Band 4				Conducted Power (dBm)			Tune-up Limit(dBm)
Band-width(MHz)	Modulation	RB allocation	RB offset	Low	Middle	High	
1.4	QPSK	1	0	23.48	23.69	23.52	24.00
			2	23.26	23.46	23.38	
			5	23.08	23.24	23.12	
		3	0	22.75	22.95	22.79	23.00
			1	22.59	22.79	22.62	
			3	22.52	22.72	22.55	
		6	0	21.52	21.37	21.41	22.00
	16QAM	1	0	22.74	22.52	22.36	23.00
			2	22.71	22.50	22.39	
			5	22.68	22.49	22.42	
		3	0	22.03	21.82	21.67	22.50
			1	21.87	21.66	21.51	
			3	21.81	21.60	21.44	
		5	0	21.40	21.56	21.13	22.00
3	QPSK	1	0	23.62	23.42	23.32	24.00
			2	23.54	23.43	23.28	
			5	23.44	23.30	23.25	
		3	0	22.89	22.69	22.60	23.00
			1	22.72	22.53	22.43	
			3	22.65	22.46	22.36	
		6	0	21.55	21.36	21.41	22.00
	16QAM	1	0	22.85	22.50	22.72	23.00
			2	22.82	22.64	22.68	
			5	22.78	22.70	22.63	
		3	0	22.14	21.80	22.01	22.50
			1	21.98	21.64	21.85	
			3	21.91	21.58	21.79	
		5	0	21.54	21.24	21.24	22.00
5	QPSK	1	0	23.56	23.43	23.34	24.00
			2	23.49	23.40	23.31	
			5	23.44	23.32	23.27	
		3	0	22.83	22.70	22.62	23.00
			1	22.66	22.54	22.45	
			3	22.59	22.47	22.38	
		6	0	22.54	22.38	22.44	23.00
	16QAM	1	0	23.76	23.15	23.47	24.00
			2	23.64	22.96	23.21	
			5	23.52	22.83	23.11	
		3	0	23.02	22.43	22.74	23.50
			1	22.85	22.27	22.58	
			3	22.79	22.20	22.51	
		5	0	21.42	21.48	21.51	22.00

10	QPSK	1	0	23.66	23.41	23.52	24.00
			2	23.51	23.26	23.45	
			5	23.33	23.12	23.26	
		3	0	23.66	23.40	23.50	24.00
			1	23.48	23.24	23.41	
			3	23.62	23.37	23.54	
		6	0	22.68	22.39	22.41	23.00
	16QAM	1	0	23.37	23.62	23.44	24.00
			2	23.31	23.44	23.25	
			5	23.27	23.36	23.14	
		3	0	22.62	22.17	22.43	23.00
			1	22.60	22.19	22.51	
			3	22.60	22.21	22.55	
		5	0	21.43	21.68	21.36	22.00
15	QPSK	1	0	23.62	23.55	23.32	24.00
			2	23.60	23.50	23.31	
			5	23.59	23.48	23.27	
		3	0	22.89	22.82	22.60	23.00
			1	22.72	22.65	22.43	
			3	22.65	22.58	22.36	
		6	0	23.64	23.54	23.47	24.00
	16QAM	1	0	23.27	23.17	23.13	23.50
			2	23.24	23.17	23.11	
			5	23.22	23.15	23.12	
		3	0	22.55	22.45	22.41	23.00
			1	22.38	22.29	22.25	
			3	22.32	22.22	22.18	
		5	0	23.65	23.58	23.49	24.00
20	QPSK	1	0	23.58	23.57	23.43	24.00
			2	23.56	23.55	23.38	
			5	23.54	23.52	23.31	
		3	0	22.85	22.84	22.70	23.00
			1	22.68	22.67	22.54	
			3	22.61	22.60	22.47	
		6	0	23.55	23.57	23.41	24.00
	16QAM	1	0	23.36	23.17	23.24	23.50
			2	23.27	23.13	23.20	
			5	23.21	23.08	23.16	
		3	0	22.64	22.45	22.52	23.00
			1	22.47	22.29	22.35	
			3	22.40	22.22	22.29	
		5	0	23.61	23.56	23.45	24.00

LTE-FDD Band 12				Conducted Power (dBm)			Tune-up Limit(dBm)
Band-width(MHz)	Modulation	RB allocation	RB offset	Low	Middle	High	
1.4	QPSK	1	0	23.00	23.01	23.02	23.50
			2	22.91	22.94	23.02	
			5	22.97	23.00	23.03	
		3	0	22.06	22.07	22.08	22.50
			1	22.12	22.13	22.14	
			3	22.29	22.30	22.31	
		6	0	21.23	21.13	21.14	21.50
	16QAM	1	0	22.41	22.28	22.32	22.50
			2	22.40	22.21	22.28	
			5	22.39	22.11	22.21	
		3	0	21.71	21.59	21.63	22.00
			1	21.56	21.43	21.47	
			3	21.49	21.37	21.40	
		5	0	21.09	20.89	20.98	21.50
3	QPSK	1	0	23.60	23.41	23.34	24.00
			2	23.58	23.38	23.32	
			5	23.52	23.36	23.30	
		3	0	22.87	22.68	22.62	23.00
			1	22.70	22.52	22.45	
			3	22.63	22.45	22.38	
		6	0	21.16	21.08	21.12	21.50
	16QAM	1	0	22.23	22.05	22.17	22.50
			2	22.23	22.03	22.12	
			5	22.16	21.96	22.02	
		3	0	21.54	21.37	21.48	22.00
			1	21.38	21.21	21.33	
			3	21.32	21.15	21.26	
		5	0	21.56	21.45	21.51	22.00
5	QPSK	1	0	23.24	23.18	23.20	23.50
			2	23.22	23.16	23.15	
			5	23.20	23.12	23.14	
		3	0	22.52	22.46	22.48	23.00
			1	22.35	22.30	22.32	
			3	22.29	22.23	22.25	
		6	0	22.26	22.19	22.01	22.50
	16QAM	1	0	23.12	22.98	23.08	23.50
			2	23.08	22.74	22.96	
			5	23.01	22.63	22.83	
		3	0	22.40	22.27	22.36	22.50
			1	22.24	22.10	22.20	
			3	22.17	22.04	22.13	
		5	0	21.58	21.47	20.63	22.00
10	QPSK	1	0	23.23	23.25	23.20	23.50
			2	23.12	23.14	23.10	
			5	23.05	23.07	23.03	
		3	0	23.33	23.18	23.22	23.50
			1	23.28	23.14	23.17	
			3	23.24	23.09	23.16	
		6	0	21.72	21.50	21.66	22.00
	16QAM	1	0	23.02	23.04	23.09	23.50
			2	23.09	23.08	23.12	
			5	23.11	23.16	23.21	
		3	0	22.56	22.72	22.37	23.00
			1	22.31	22.44	22.06	
			3	21.90	21.98	21.81	
		5	0	21.38	21.29	21.17	21.50

Appendix B:SAR Measurement Results-Body

GSM850										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune-up limit (dBm)	Tune-up scaling factor	Power Drift(dB)	Measured SAR(1g)	Report SAR(1g)	Plot No.
		CH	MHz					(W/kg)	(W/kg)	
GPRS 3Tx slots	Rear	128	824.2	29.59	30.50	1.233	-	-	-	-
		190	836.6	30.10	30.50	1.096	-	-	-	-
		251	848.8	30.26	30.50	1.057	-0.17	0.006	0.006	1

GSM1900										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune-up limit (dBm)	Tune-up scaling factor	Power Drift(dB)	Measured SAR(1g)	Report SAR(1g)	Plot No.
		CH	MHz					(W/kg)	(W/kg)	
GPRS 4Tx slots	Rear	512	1850.2	26.48	26.50	1.005	0.09	0.064	0.064	2
		661	1880.0	26.29	26.50	1.050	-	-	-	-
		810	1909.8	25.90	26.50	1.148	-	-	-	-

LTE Band 2 - NB IoT										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune-up limit (dBm)	Tune-up scaling factor	Power Drift(dB)	Measured SAR(1g)	Report SAR(1g)	Plot No.
		CH	MHz					(W/kg)	(W/kg)	
BPSK 3.75KHz	Rear	18602	1850.2	23.78	24.00	1.052	-	-	-	-
		18900	1880.0	23.87	24.00	1.030	-	-	-	-
		19198	1909.8	23.95	24.00	1.012	-0.12	0.120	0.121	3
BPSK 15KHz	Rear	18602	1850.2	23.65	24.00	1.084	-	-	-	-
		18900	1880.0	23.62	24.00	1.091	-	-	-	-
		19198	1909.8	23.72	24.00	1.067	-0.05	0.108	0.115	-

LTE Band 4 - NB IoT										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune-up limit (dBm)	Tune-up scaling factor	Power Drift(dB)	Measured SAR(1g)	Report SAR(1g)	Plot No.
		CH	MHz					(W/kg)	(W/kg)	
BPSK 3.75KHz	Rear	19952	1710.2	23.74	24.00	1.062	-0.02	0.458	0.486	4
		20175	1732.5	23.62	24.00	1.091	-	-	-	-
		20398	1754.8	23.67	24.00	1.079	-	-	-	-
BPSK 15KHz	Rear	19952	1710.2	23.59	24.00	1.099	-0.10	0.415	0.456	-
		20175	1732.5	23.45	24.00	1.135	-	-	-	-
		20398	1754.8	23.66	24.00	1.081	-	-	-	-

LTE Band 12 - NB IoT										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune-up limit (dBm)	Tune-up scaling factor	Power Drift(dB)	Measured SAR(1g)	Report SAR(1g)	Plot No.
		CH	MHz					(W/kg)	(W/kg)	
BPSK 3.75KHz	Rear	23012	699.2	23.30	23.50	1.047	0.15	0.021	0.022	5
		23095	707.5	23.29	23.50	1.050	-	-	-	-
		23178	715.8	23.21	23.50	1.069	-	-	-	-
BPSK 15KHz	Rear	23012	699.2	23.44	23.50	1.014	-0.04	0.018	0.018	-
		23095	707.5	23.30	23.50	1.047	-	-	-	-
		23178	715.8	23.28	23.50	1.052	-	-	-	-

LTE Band 2 - eMTC										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune-up limit (dBm)	Tune-up scaling factor	Power Drift(dB)	Measured SAR(1g)	Report SAR(1g)	Plot No.
		CH	MHz					(W/kg)	(W/kg)	
20M QPSK 1RB	Rear	18700	1860.0	23.11	23.50	1.094	-0.12	0.125	0.137	6
		18900	1880.0	23.10	23.50	1.096	-	-	-	-
		19100	1900.0	23.08	23.50	1.102	-	-	-	-
20M QPSK 3RB	Rear	18700	1860.0	22.39	22.50	1.025	-0.08	0.104	0.107	-
		18900	1880.0	22.38	22.50	1.027	-	-	-	-
		19100	1900.0	22.36	22.50	1.032	-	-	-	-

LTE Band 4 - eMTC										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune-up limit (dBm)	Tune-up scaling factor	Power Drift(dB)	Measured SAR(1g)	Report SAR(1g)	Plot No.
		CH	MHz					(W/kg)	(W/kg)	
20M QPSK 1RB	Rear	20050	1720.0	23.58	24.00	1.102	-0.13	0.467	0.514	7
		20175	1732.5	23.57	24.00	1.104	-	-	-	-
		20300	1745.0	23.43	24.00	1.140	-	-	-	-
20M QPSK 3RB	Rear	20050	1720.0	22.85	23.00	1.036	-0.05	0.428	0.443	-
		20175	1732.5	22.84	23.00	1.038	-	-	-	-
		20300	1745.0	22.70	23.00	1.071	-	-	-	-

LTE Band 12 - eMTC										
Mode	Test Position	Frequency		Conducted Power (dBm)	Tune-up limit (dBm)	Tune-up scaling factor	Power Drift(dB)	Measured SAR(1g)	Report SAR(1g)	Plot No.
		CH	MHz					(W/kg)	(W/kg)	
10M QPSK 1RB	Rear	23060	704.0	23.23	23.50	1.064	0.04	0.024	0.026	8
		23095	707.5	23.25	23.50	1.059	-	-	-	-
		23130	711.0	23.20	23.50	1.072	-	-	-	-
10M QPSK 3RB	Rear	23060	704.0	23.33	23.50	1.040	0.08	0.018	0.019	-
		23095	707.5	23.18	23.50	1.076	-	-	-	-
		23130	711.0	23.22	23.50	1.067	-	-	-	-