

Project No.	SHT2104078804EW		
Test sample No.	YPHT21040788044	Model No.	RT648
Start test date	2021/4/28	Finish date	2021/4/28
Temperature	23.6℃	Humidity	59%
Test Engineer	Zijian Li	Auditor	Xiaodong Zhu

Appendix clause	Test Item	Test date (M/D)	Test Result (PASS/FAIL)
A	Transmit Power (ERP)	4/27	PASS
B	Occupied Bandwidth	4/27	PASS
C	Emission Mask	4/27	PASS
D	Modulation Limit	4/27	PASS
E	Audio Frequency Response	4/27	PASS
F	Audio Low Pass Filter Response	4/27	PASS
G	Frequency Stability Test & Temperature	4/27	PASS
H	Frequency Stability Test & Voltage	4/27	PASS

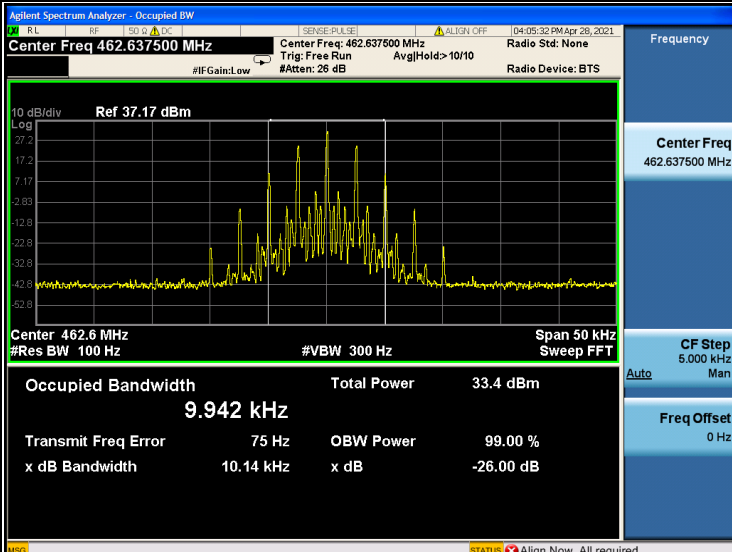
Appendix A: Transmit Power (ERP)

Test Mode	Modulation Type	Test Channel	Measured power (dBm)	Measured power (W)	Limit(W)	Result
TX-FRS	FM	CH _{M1}	31.45	1.40	≤2	PASS

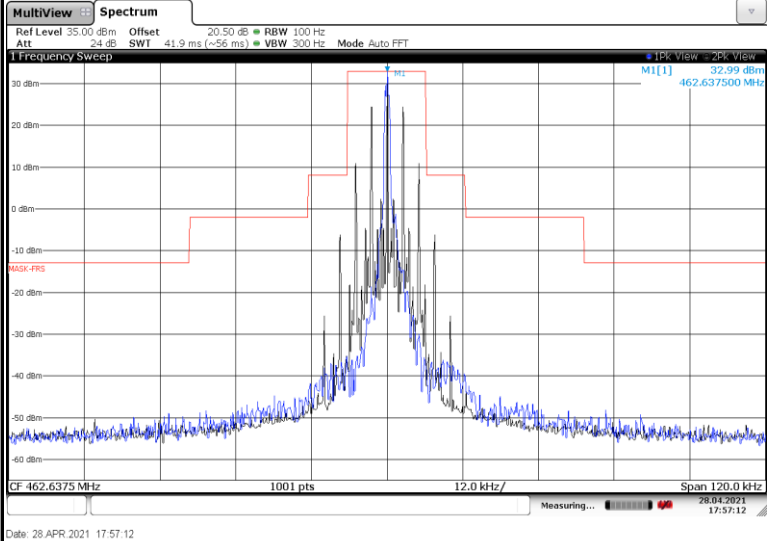
Appendix B: 99% Occupied Bandwidth & 26dB Bandwidth

Test Mode	Modulation Type	Test Channel	Occupied Bandwidth		99% Limit(kHz)	Result
			99%(kHz)	26dB(kHz)		
TX-FRS	FM	CH _{M1}	9.942	10.14	≤12.5	PASS

Appendix B: 99% Occupied Bandwidth & 26dB Bandwidth

Operation Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-FRS	FM	CH _{M1}	 Agilent Spectrum Analyzer - Occupied BW Center Freq 462.637500 MHz Trig: Free Run #IF Gain: Low #Atten: 26 dB Center Freq: 462.637500 MHz Trig: Free Run Avg/Hold: >10/10 Radio Std: None Radio Device: BTS Frequency Center Freq 462.637500 MHz CF Step 5.000 kHz Auto Man Freq Offset 0 Hz Span 50 kHz Sweep FFT Occupied Bandwidth 9.942 kHz Total Power 33.4 dBm Transmit Freq Error 75 Hz OBW Power 99.00 % x dB Bandwidth 10.14 kHz x dB -26.00 dB STATUS Align Now, All required

Appendix C:Emission Mask

Test Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-FRS	FM	CH _{M1}	 MultiView Spectrum Ref Level 35.00 dBm Offset 20.50 dB RBW 100 Hz Att 24 dB SWT 41.9 ms (~56 ms) VBW 300 Hz Mode Auto FFT Frequency Sweep 30 dBm 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm MASK-FRS CF 462.6375 MHz 1001 pts 12.0 kHz/div Span 120.0 kHz M1[1] 32.99 dBm 462.637500 MHz Measuring... 28 APR 2021 17:57:12

Appendix D:Modulation Limit

Test Mode	Modulation Type	Test Channel	Modulation Level (dB)	Peak Frequency Deviation (Hz)				Limit (kHz)	Result
				300	1004	1500	2500		
TX-FRS	FM	CH _{M1}	-20	0.050	0.188	0.316	0.571	2.5	PASS
TX-FRS	FM	CH _{M1}	-15	0.055	0.291	0.530	0.978	2.5	PASS
TX-FRS	FM	CH _{M1}	-10	0.070	0.490	0.917	1.719	2.5	PASS
TX-FRS	FM	CH _{M1}	-5	0.099	0.844	1.589	2.060	2.5	PASS
TX-FRS	FM	CH _{M1}	0	0.133	1.511	2.063	2.241	2.5	PASS
TX-FRS	FM	CH _{M1}	5	0.213	1.984	2.141	2.293	2.5	PASS
TX-FRS	FM	CH _{M1}	10	0.356	1.898	2.143	2.297	2.5	PASS
TX-FRS	FM	CH _{M1}	15	0.604	1.914	2.141	2.301	2.5	PASS
TX-FRS	FM	CH _{M1}	20	0.659	1.906	2.145	2.298	2.5	PASS

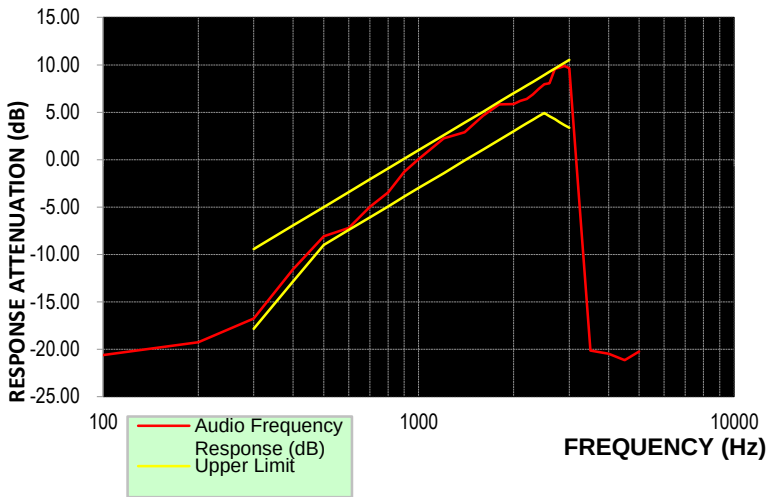
Appendix D:Modulation Limit

Test Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-FRS	FM	CH _{M1}	Peak Deviation (kHz) Modulation Level (dB) Legend: - Limit (kHz) 300 1004 1500 2500

Appendix E:Audio Frequency Response

Test Mode	Modulation Type	Test Channel	Frequency (Hz)	Audio Frequency Response (dB)	Lower Limit	Upper Limit	Result
TX-FRS	FM	CH _{M1}	100	-20.63			PASS
TX-FRS	FM	CH _{M1}	200	-19.25			PASS
TX-FRS	FM	CH _{M1}	300	-16.75	-17.84	-9.42	PASS
TX-FRS	FM	CH _{M1}	400	-11.58	-12.86	-6.93	PASS
TX-FRS	FM	CH _{M1}	500	-8.07	-9.00	-5.00	PASS
TX-FRS	FM	CH _{M1}	600	-7.22	-7.42	-3.42	PASS
TX-FRS	FM	CH _{M1}	700	-4.98	-6.09	-2.09	PASS
TX-FRS	FM	CH _{M1}	800	-3.46	-4.93	-0.93	PASS
TX-FRS	FM	CH _{M1}	900	-1.31	-3.91	0.09	PASS
TX-FRS	FM	CH _{M1}	1000	0.05	-3.00	1.00	PASS
TX-FRS	FM	CH _{M1}	1200	2.24	-1.42	2.58	PASS
TX-FRS	FM	CH _{M1}	1400	2.88	-0.09	3.91	PASS
TX-FRS	FM	CH _{M1}	1600	4.64	1.07	5.07	PASS
TX-FRS	FM	CH _{M1}	1800	5.83	2.09	6.09	PASS
TX-FRS	FM	CH _{M1}	2000	5.85	3.00	7.00	PASS
TX-FRS	FM	CH _{M1}	2100	6.21	3.42	7.42	PASS
TX-FRS	FM	CH _{M1}	2200	6.42	3.83	7.83	PASS
TX-FRS	FM	CH _{M1}	2300	6.86	4.21	8.21	PASS
TX-FRS	FM	CH _{M1}	2400	7.46	4.58	8.58	PASS
TX-FRS	FM	CH _{M1}	2500	7.95	4.93	8.93	PASS
TX-FRS	FM	CH _{M1}	2600	8.07	4.59	9.27	PASS
TX-FRS	FM	CH _{M1}	2700	9.58	4.27	9.60	PASS
TX-FRS	FM	CH _{M1}	2800	9.72	3.95	9.91	PASS
TX-FRS	FM	CH _{M1}	2900	9.89	3.65	10.22	PASS
TX-FRS	FM	CH _{M1}	3000	9.65	3.35	10.51	PASS
TX-FRS	FM	CH _{M1}	3500	-20.14			PASS
TX-FRS	FM	CH _{M1}	4000	-20.48			PASS
TX-FRS	FM	CH _{M1}	4500	-21.16			PASS
TX-FRS	FM	CH _{M1}	5000	-20.23			PASS

Appendix E:Aduio Frequency Response

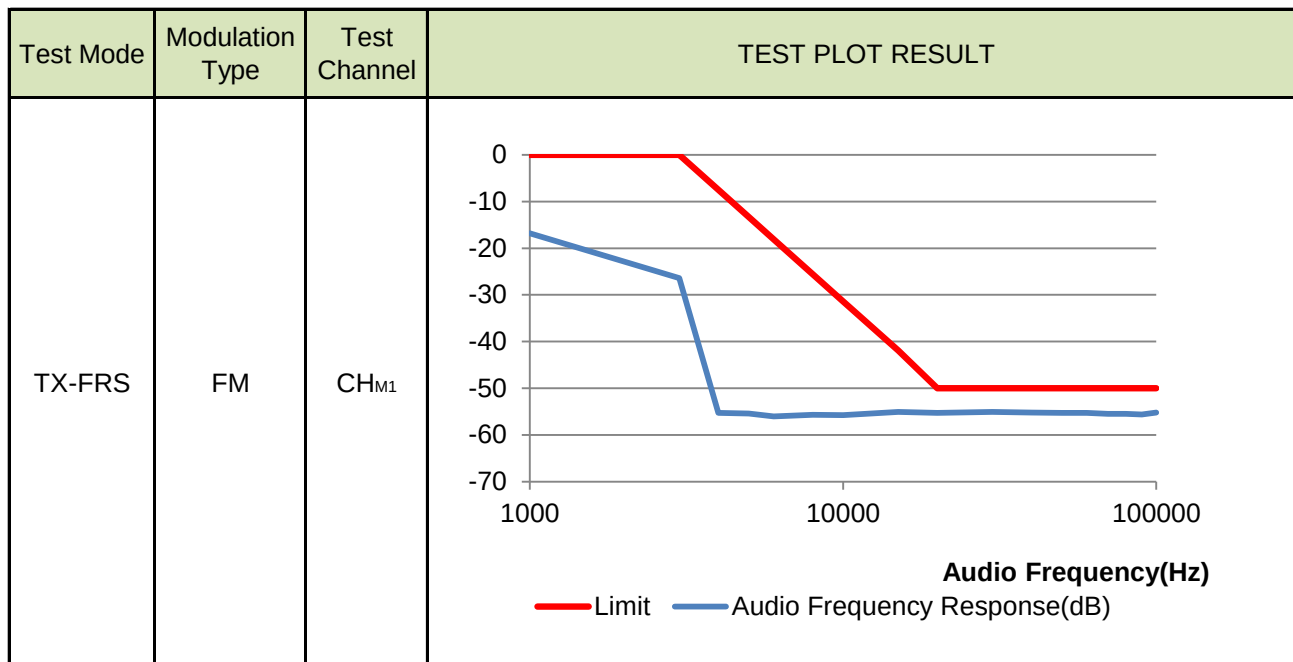
Test Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-FRS	FM	CH _{M1}	

Note: The highest audio frequency response at 3kHz<3.125kHz, so meet the requirement.

Appendix F:Audio Low Pass Filter Response

Test Mode	Modulation Type	Test Channel	Audio Frequency(Hz)	Audio Frequency Response(dB)	Limit	Result
TX-FRS	FM	CH _{M1}	1000	-16.78	0	PASS
TX-FRS	FM	CH _{M1}	3000	-26.37	0	PASS
TX-FRS	FM	CH _{M1}	4000	-55.29	-7.5	PASS
TX-FRS	FM	CH _{M1}	5000	-55.38	-13.3	PASS
TX-FRS	FM	CH _{M1}	6000	-56.04	-18.1	PASS
TX-FRS	FM	CH _{M1}	8000	-55.71	-25.6	PASS
TX-FRS	FM	CH _{M1}	10000	-55.73	-31.4	PASS
TX-FRS	FM	CH _{M1}	15000	-55.06	-41.9	PASS
TX-FRS	FM	CH _{M1}	20000	-55.28	-50	PASS
TX-FRS	FM	CH _{M1}	30000	-55.07	-50	PASS
TX-FRS	FM	CH _{M1}	40000	-55.19	-50	PASS
TX-FRS	FM	CH _{M1}	50000	-55.26	-50	PASS
TX-FRS	FM	CH _{M1}	60000	-55.30	-50	PASS
TX-FRS	FM	CH _{M1}	70000	-55.48	-50	PASS
TX-FRS	FM	CH _{M1}	80000	-55.51	-50	PASS
TX-FRS	FM	CH _{M1}	90000	-55.64	-50	PASS
TX-FRS	FM	CH _{M1}	100000	-55.18	-50	PASS

Appendix F:Audio Low Pass Filter Response



Appendix G:Frequency Stability Test & Temperature

Test Mode	Modulation Type	Test Conditions		Frequency error (ppm)	Limit (ppm)	Result
		Voltage	Temperature	CH _{M1}		
TX-FRS	FM	V _N	-30	0.109	±2.5	PASS
TX-FRS	FM	V _N	-20	0.107	±2.5	PASS
TX-FRS	FM	V _N	-10	0.102	±2.5	PASS
TX-FRS	FM	V _N	0	0.108	±2.5	PASS
TX-FRS	FM	V _N	10	0.104	±2.5	PASS
TX-FRS	FM	V _N	20	0.102	±2.5	PASS
TX-FRS	FM	V _N	30	0.111	±2.5	PASS
TX-FRS	FM	V _N	40	0.107	±2.5	PASS
TX-FRS	FM	V _N	50	0.110	±2.5	PASS

Appendix H:Frequency Stability Test & Voltage

Test Mode	Modulation Type	Test Conditions		Frequency error (ppm)	Limit (ppm)	Result
		Voltage	Temperature	CH _{M1}		
TX-FRS	FM	V _N	T _N	0.102	±2.5	PASS
TX-FRS	FM	V _L	T _N	0.107	±2.5	PASS
TX-FRS	FM	V _H	T _N	0.089	±2.5	PASS

-----End of Report-----