



Appendix A: Carrier Output Power(ERP)

Test Mode	Modulation Type	Test Channel	Measured power (dBm)	Measured power (W)	Limit(W)	Result
TX-FRS	FM	CH _{M1}	31.26	1.34	≤2	PASS
TX-FRS	FM	CH _{M2}	25.75	0.38	≤0.5	PASS
TX-FRS	FM	CH _{M3}	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}	5.225	10.12	≤12.5	PASS
TX-FRS	FM	CH _{M2}	5.227	10.11	≤12.5	PASS
TX-FRS	FM	CH _{M3}	<u>5.238</u>	10.11	≤12.5	PASS



Appendix B: 99% Occupied Bandwidth & 26dB Bandwidth

Test Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-FRS	FM	CH _{M1}	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 462.637500 MHz</p> <p>Center Freq 462.637500 MHz</p> <p>Trig: Free Run</p> <p>Avg/Hold: 10/10</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref 34.09 dBm</p> <p>Center 462.6 MHz</p> <p>#Res BW 100 Hz</p> <p>#VBW 300 Hz</p> <p>Span 50 kHz</p> <p>Sweep FFT</p> <p>Occupied Bandwidth 5.225 kHz</p> <p>Total Power 30.8 dBm</p> <p>Transmit Freq Error -67 Hz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 10.12 kHz</p> <p>x dB -26.00 dB</p> <p>Frequency 462.637500 MHz</p> <p>CF Step 5.000 kHz</p> <p>Freq Offset 0 Hz</p>
TX-FRS	FM	CH _{M2}	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 467.637500 MHz</p> <p>Center Freq 467.637500 MHz</p> <p>Trig: Free Run</p> <p>Avg/Hold: 10/10</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref 28.23 dBm</p> <p>Center 467.6 MHz</p> <p>#Res BW 100 Hz</p> <p>#VBW 300 Hz</p> <p>Span 50 kHz</p> <p>Sweep FFT</p> <p>Occupied Bandwidth 5.227 kHz</p> <p>Total Power 24.4 dBm</p> <p>Transmit Freq Error 160 Hz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 10.11 kHz</p> <p>x dB -26.00 dB</p> <p>Frequency 467.637500 MHz</p> <p>CF Step 5.000 kHz</p> <p>Freq Offset 0 Hz</p>
TX-FRS	FM	CH _{M3}	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 462.650000 MHz</p> <p>Center Freq 462.650000 MHz</p> <p>Trig: Free Run</p> <p>Avg/Hold: 10/10</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref 33.95 dBm</p> <p>Center 462.7 MHz</p> <p>#Res BW 100 Hz</p> <p>#VBW 300 Hz</p> <p>Span 50 kHz</p> <p>Sweep FFT</p> <p>Occupied Bandwidth 5.238 kHz</p> <p>Total Power 29.9 dBm</p> <p>Transmit Freq Error 99 Hz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 10.11 kHz</p> <p>x dB -26.00 dB</p> <p>Frequency 462.650000 MHz</p> <p>CF Step 5.000 kHz</p> <p>Freq Offset 0 Hz</p>



Appendix C:Emission Mask

Test Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-FRS	FM	CH _{M1}	<p>MultiView Spectrum Ref Level 33.00 dBm Offset 21.00 dB RBW 300 Hz Att 40 dB SWI 14 ms (~22 ms) VBW 1 kHz Mode Auto FFT 1 Frequency Sweep 30 dBm 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm M1[1] 30.75 dBm 462.6373600 MHz MASK-FRS CF 462.6375 MHz 1001 pts 7.0 kHz/ Span 70.0 kHz Measuring... 14.02.2019 10:39:39 Date: 14.FEB.2019 10:39:39</p>
TX-FRS	FM	CH _{M2}	<p>MultiView Spectrum Ref Level 33.00 dBm Offset 21.00 dB RBW 300 Hz Att 40 dB SWI 14 ms (~22 ms) VBW 1 kHz Mode Auto FFT 1 Frequency Sweep 30 dBm 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm M1[1] 25.45 dBm 467.6373600 MHz MASK-FRS CF 467.6375 MHz 1001 pts 7.0 kHz/ Span 70.0 kHz Measuring... 14.02.2019 10:46:43 Date: 14.FEB.2019 10:46:43</p>
TX-FRS	FM	CH _{M3}	<p>MultiView Spectrum Ref Level 33.00 dBm Offset 21.00 dB RBW 300 Hz Att 40 dB SWI 14 ms (~22 ms) VBW 1 kHz Mode Auto FFT 1 Frequency Sweep 30 dBm 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm M1[1] 30.66 dBm 462.6498600 MHz MASK-FRS CF 462.65 MHz 1001 pts 7.0 kHz/ Span 70.0 kHz Measuring... 14.02.2019 10:42:33 Date: 14.FEB.2019 10:42:33</p>

**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	0.062	0.186	0.265	0.424	2.5	PASS
TX-FRS	FM	CH _{M1}	-15	0.083	0.298	0.451	0.734	2.5	PASS
TX-FRS	FM	CH _{M1}	-10	0.113	0.509	0.773	1.292	2.5	PASS
TX-FRS	FM	CH _{M1}	-5	0.184	0.868	1.35	1.742	2.5	PASS
TX-FRS	FM	CH _{M1}	0	0.296	1.519	1.775	1.845	2.5	PASS
TX-FRS	FM	CH _{M1}	5	0.508	1.839	1.88	1.882	2.5	PASS
TX-FRS	FM	CH _{M1}	10	0.878	2.015	1.909	1.9	2.5	PASS
TX-FRS	FM	CH _{M1}	15	1.516	2.079	1.932	1.908	2.5	PASS
TX-FRS	FM	CH _{M1}	20	1.957	2.09	1.96	1.951	2.5	PASS
TX-FRS	FM	CH _{M2}	-20	0.062	0.179	0.261	0.413	2.5	PASS
TX-FRS	FM	CH _{M2}	-15	0.085	0.297	0.434	0.71	2.5	PASS
TX-FRS	FM	CH _{M2}	-10	0.114	0.502	0.75	1.24	2.5	PASS
TX-FRS	FM	CH _{M2}	-5	0.187	0.857	1.313	1.731	2.5	PASS
TX-FRS	FM	CH _{M2}	0	0.293	1.505	1.766	1.847	2.5	PASS
TX-FRS	FM	CH _{M2}	5	0.497	1.828	1.874	1.874	2.5	PASS
TX-FRS	FM	CH _{M2}	10	0.858	2.005	1.906	1.895	2.5	PASS
TX-FRS	FM	CH _{M2}	15	1.505	2.072	1.914	1.906	2.5	PASS
TX-FRS	FM	CH _{M2}	20	1.947	2.089	1.954	1.934	2.5	PASS
TX-FRS	FM	CH _{M3}	-20	0.065	0.18	0.266	0.419	2.5	PASS
TX-FRS	FM	CH _{M3}	-15	0.08	0.297	0.443	0.732	2.5	PASS
TX-FRS	FM	CH _{M3}	-10	0.124	0.505	0.769	1.286	2.5	PASS
TX-FRS	FM	CH _{M3}	-5	0.181	0.874	1.344	1.747	2.5	PASS
TX-FRS	FM	CH _{M3}	0	0.3	1.508	1.772	1.843	2.5	PASS
TX-FRS	FM	CH _{M3}	5	0.492	1.826	1.876	1.88	2.5	PASS
TX-FRS	FM	CH _{M3}	10	0.869	2.011	1.909	1.895	2.5	PASS
TX-FRS	FM	CH _{M3}	15	1.513	2.073	1.921	1.918	2.5	PASS
TX-FRS	FM	CH _{M3}	20	1.937	2.092	1.956	1.938	2.5	PASS



Appendix D:Modulation Limit

Test Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-FRS	FM	CH _{M1}	
TX-FRS	FM	CH _{M2}	
TX-FRS	FM	CH _{M3}	

**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	-33.83			PASS
TX-FRS	FM	CH _{M1}	200	-33.87			PASS
TX-FRS	FM	CH _{M1}	300	-14.71	-17.84	-9.42	PASS
TX-FRS	FM	CH _{M1}	400	-9.38	-12.86	-6.93	PASS
TX-FRS	FM	CH _{M1}	500	-6.97	-9.00	-5.00	PASS
TX-FRS	FM	CH _{M1}	600	-4.77	-7.42	-3.42	PASS
TX-FRS	FM	CH _{M1}	700	-3.34	-6.09	-2.09	PASS
TX-FRS	FM	CH _{M1}	800	-2.03	-4.93	-0.93	PASS
TX-FRS	FM	CH _{M1}	900	-1.03	-3.91	0.09	PASS
TX-FRS	FM	CH _{M1}	1000	0.03	-3.00	1.00	PASS
TX-FRS	FM	CH _{M1}	1200	1.80	-1.42	2.58	PASS
TX-FRS	FM	CH _{M1}	1400	3.20	-0.09	3.91	PASS
TX-FRS	FM	CH _{M1}	1600	4.52	1.07	5.07	PASS
TX-FRS	FM	CH _{M1}	1800	5.42	2.09	6.09	PASS
TX-FRS	FM	CH _{M1}	2000	6.38	3.00	7.00	PASS
TX-FRS	FM	CH _{M1}	2100	6.63	3.42	7.42	PASS
TX-FRS	FM	CH _{M1}	2200	6.78	3.83	7.83	PASS
TX-FRS	FM	CH _{M1}	2300	6.96	4.21	8.21	PASS
TX-FRS	FM	CH _{M1}	2400	7.04	4.58	8.58	PASS
TX-FRS	FM	CH _{M1}	2500	7.15	4.93	8.93	PASS
TX-FRS	FM	CH _{M1}	2600	7.21	4.59	9.27	PASS
TX-FRS	FM	CH _{M1}	2700	7.26	4.27	9.60	PASS
TX-FRS	FM	CH _{M1}	2800	7.25	3.95	9.91	PASS
TX-FRS	FM	CH _{M1}	2900	7.20	3.65	10.22	PASS
TX-FRS	FM	CH _{M1}	3000	7.09	3.35	10.51	PASS
TX-FRS	FM	CH _{M1}	3500	4.21			PASS
TX-FRS	FM	CH _{M1}	4000	-3.18			PASS
TX-FRS	FM	CH _{M1}	4500	-11.52			PASS
TX-FRS	FM	CH _{M1}	5000	-19.32			PASS
TX-FRS	FM	CH _{M2}	100	-33.68	-	-	PASS
TX-FRS	FM	CH _{M2}	200	-33.90	-	-	PASS
TX-FRS	FM	CH _{M2}	300	-15.03	-17.84	-9.42	PASS
TX-FRS	FM	CH _{M2}	400	-9.53	-12.86	-6.93	PASS
TX-FRS	FM	CH _{M2}	500	-6.99	-9.00	-5.00	PASS
TX-FRS	FM	CH _{M2}	600	-4.91	-7.42	-3.42	PASS
TX-FRS	FM	CH _{M2}	700	-3.43	-6.09	-2.09	PASS
TX-FRS	FM	CH _{M2}	800	-2.11	-4.93	-0.93	PASS
TX-FRS	FM	CH _{M2}	900	-1.13	-3.91	0.09	PASS
TX-FRS	FM	CH _{M2}	1000	-0.05	-3.00	1.00	PASS
TX-FRS	FM	CH _{M2}	1200	1.72	-1.42	2.58	PASS
TX-FRS	FM	CH _{M2}	1400	3.10	-0.09	3.91	PASS
TX-FRS	FM	CH _{M2}	1600	4.41	1.07	5.07	PASS

**Appendix E:Aduio Frequency Response**

Test Mode	Modulation Type	Test Channel	Frequency (Hz)	Audio Frequency Response (dB)	Lower Limit	Upper Limit	Result
TX-FRS	FM	CH _{M2}	1800	5.32	2.09	6.09	PASS
TX-FRS	FM	CH _{M2}	2000	6.30	3.00	7.00	PASS
TX-FRS	FM	CH _{M2}	2100	6.57	3.42	7.42	PASS
TX-FRS	FM	CH _{M2}	2200	6.73	3.83	7.83	PASS
TX-FRS	FM	CH _{M2}	2300	6.91	4.21	8.21	PASS
TX-FRS	FM	CH _{M2}	2400	7.00	4.58	8.58	PASS
TX-FRS	FM	CH _{M2}	2500	7.12	4.93	8.93	PASS
TX-FRS	FM	CH _{M2}	2600	7.18	4.59	9.27	PASS
TX-FRS	FM	CH _{M2}	2700	7.23	4.27	9.60	PASS
TX-FRS	FM	CH _{M2}	2800	7.22	3.95	9.91	PASS
TX-FRS	FM	CH _{M2}	2900	7.18	3.65	10.22	PASS
TX-FRS	FM	CH _{M2}	3000	7.07	3.35	10.51	PASS
TX-FRS	FM	CH _{M2}	3500	4.20	-	-	PASS
TX-FRS	FM	CH _{M2}	4000	-3.17	-	-	PASS
TX-FRS	FM	CH _{M2}	4500	-11.50	-	-	PASS
TX-FRS	FM	CH _{M2}	5000	-19.28	-	-	PASS
TX-FRS	FM	CH _{M3}	100	-33.87			PASS
TX-FRS	FM	CH _{M3}	200	-33.96			PASS
TX-FRS	FM	CH _{M3}	300	-15.01	-17.84	-9.42	PASS
TX-FRS	FM	CH _{M3}	400	-9.52	-12.86	-6.93	PASS
TX-FRS	FM	CH _{M3}	500	-7.02	-9.00	-5.00	PASS
TX-FRS	FM	CH _{M3}	600	-4.85	-7.42	-3.42	PASS
TX-FRS	FM	CH _{M3}	700	-3.35	-6.09	-2.09	PASS
TX-FRS	FM	CH _{M3}	800	-2.04	-4.93	-0.93	PASS
TX-FRS	FM	CH _{M3}	900	-1.05	-3.91	0.09	PASS
TX-FRS	FM	CH _{M3}	1000	-0.01	-3.00	1.00	PASS
TX-FRS	FM	CH _{M3}	1200	1.77	-1.42	2.58	PASS
TX-FRS	FM	CH _{M3}	1400	3.17	-0.09	3.91	PASS
TX-FRS	FM	CH _{M3}	1600	4.48	1.07	5.07	PASS
TX-FRS	FM	CH _{M3}	1800	5.37	2.09	6.09	PASS
TX-FRS	FM	CH _{M3}	2000	6.35	3.00	7.00	PASS
TX-FRS	FM	CH _{M3}	2100	6.62	3.42	7.42	PASS
TX-FRS	FM	CH _{M3}	2200	6.77	3.83	7.83	PASS
TX-FRS	FM	CH _{M3}	2300	6.94	4.21	8.21	PASS
TX-FRS	FM	CH _{M3}	2400	7.04	4.58	8.58	PASS
TX-FRS	FM	CH _{M3}	2500	7.14	4.93	8.93	PASS
TX-FRS	FM	CH _{M3}	2600	7.20	4.59	9.27	PASS
TX-FRS	FM	CH _{M3}	2700	7.25	4.27	9.60	PASS
TX-FRS	FM	CH _{M3}	2800	7.23	3.95	9.91	PASS
TX-FRS	FM	CH _{M3}	2900	7.19	3.65	10.22	PASS
TX-FRS	FM	CH _{M3}	3000	7.08	3.35	10.51	PASS
TX-FRS	FM	CH _{M3}	3500	4.20			PASS



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 _{M3}	4000	-3.18			PASS
TX-FRS	FM	CH _{M3}	4500	-11.52			PASS
TX-FRS	FM	CH _{M3}	5000	-19.32			PASS



Appendix E:Audio Frequency Response

Test Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-FRS	FM	CH _{M1}	<p>Graph showing Response Attenuation (dB) vs Frequency (Hz) for Test Channel CH_{M1}. The plot includes Audio Frequency Response (dB) (red line), Upper Limit (yellow line), and Lower Limit (green line). The response peaks around 3 kHz and drops sharply after 5 kHz.</p>
TX-FRS	FM	CH _{M2}	<p>Graph showing Response Attenuation (dB) vs Frequency (Hz) for Test Channel CH_{M2}. The plot includes Audio Frequency Response (dB) (red line), Upper Limit (yellow line), and Lower Limit (green line). The response peaks around 3 kHz and drops sharply after 5 kHz.</p>
TX-FRS	FM	CH _{M3}	<p>Graph showing Response Attenuation (dB) vs Frequency (Hz) for Test Channel CH_{M3}. The plot includes Audio Frequency Response (dB) (red line), Upper Limit (yellow line), and Lower Limit (green line). The response peaks around 3 kHz and drops sharply after 5 kHz.</p>

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

**Appendix F:Frequency Stability Test & Temperature**

Test Mode	Modulation Type	Test Conditions		Frequency error (ppm)			Limit (ppm)	Result
		Voltage	Temperature	CH _{M1}	CH _{M2}	CH _{M3}		
TX-FRS	FM	V _N	-30	<u>0.592</u>	0.386	0.397	±2.5	PASS
TX-FRS	FM	V _N	-20	0.575	0.379	0.393	±2.5	PASS
TX-FRS	FM	V _N	-10	0.569	0.369	0.386	±2.5	PASS
TX-FRS	FM	V _N	0	0.558	0.366	0.384	±2.5	PASS
TX-FRS	FM	V _N	10	0.552	0.359	0.376	±2.5	PASS
TX-FRS	FM	V _N	20	0.541	0.352	0.366	±2.5	PASS
TX-FRS	FM	V _N	30	0.554	0.361	0.370	±2.5	PASS
TX-FRS	FM	V _N	40	0.565	0.364	0.381	±2.5	PASS
TX-FRS	FM	V _N	55	0.572	0.370	0.389	±2.5	PASS



Appendix G:Frequency Stability Test & Voltage

Test Mode	Modulation Type	Test Conditions		Frequency error (ppm)			Limit (ppm)	Result
		Voltage	Temperature	CH _{M1}	CH _{M2}	CH _{M3}		
TX-FRS	FM	V _N	T _N	0.541	0.352	0.366	±2.5	PASS
TX-FRS	FM	V _L	T _N	0.565	0.373	0.385	±2.5	PASS
TX-FRS	FM	V _H	T _N	0.557	0.364	0.374	±2.5	PASS

----End of Report----