

PRODUCT EVALUATION REPORT

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Product Division :
Model Name : Midland 203 PLUS
Model Code : CBM259
Description : AM/FM 4W

Rev. No	Date	Drawn	Reviewed	Approved
00	31 January 2011	Paolo B.		
01	12 July 2011		Paolo B	
02	13 Jul 2011		Chutchawal	Paolo B.

COMMENTS

Approved by customer : _____ Date : _____

**Model : Midland 203 Multi AM/FM 40 CH (I Band)
Transmitter (AM)**

Page of

No.	Test item		Unit	Specification		CH	Serial No.								
				Normal	Limit										
1.	TX Power Output	DC 13.8 V	W	3.8	3.4 – 4.0	1									
						20									
						40									
		DC12.6V	W	3.6	3.2 – 4.0	1									
						20									
						40									
2.	Modulation Distortion (1 KHz/60 % mod)		%	3.0	8.0	20									
3.	Modulation Capability 1 KHz/60 % Mod/20 dB up		%	73	70 - 80	1									
						20									
						40									
4.	DC Current@ 4W	No Mod	mA	900	1300	20									
		Max mod		1200	1900										
5.	TX Frequency Response 60 % 1 KHz 0 dB REF	3.0 KHz	dB	-2	+/-6	20									
		300 Hz		-11	+/-6										
6.	Adjacent Channel Power (1.25 KHz/60% 20 dB Up)		uW (dBm)	15 (-18)	20 (-17)	1									
						20									
						40									
	Adjacent Channel Power (1.25 KHz/ 1.5 V)		uW (dBm)	15 (-18)	20 (-17)	1									
						20									
						40									
7.	Harmonics @12,6Vdc with modulation		dBm			1 20 40	1	20	40	1	20	40	1	20	40
		47 to 74 MHz		-56	-54										
		87.5 to 118 MHz		-56	-54										
		174 to 230 MHz		-56	-54										
		470 to 862 MHz		-56	-54										
		9 KHz to 1 GHz		-36	-36										
		1 GHz to 2 GHz		-30	-30										
8.	Mic Sensitivity 60 % mod/1KHz		mV	2.5	8.0	20									
9.	AMC Range at AM 60% to 100%		dB	57	50	20									

Model : Midland 203 Multi AM/FM 40 CH (I Band)

Page of

Receiver (AM)

No.	Test item	Unit	Specification		CH	Serial No.		
			Normal	Limit				
1.	Max Sensitivity 20 dB SND(W/CTITT Filter)	dBm	-110	-107	3			
					19			
					39			
2.	S/N Ratio @ 1 mV 60% mod w/o filter CCITT	dB	45	>40	19			
3.	Distortion @ 1 mV 60% mod	%	3.0	8.0	19			
4.	Audio Output @ 1mV 10% THD	W	2.0	Min 1,6 – max 2,8	19			
5.	Audio Response	3.0 KHz	dB	-10	+/-6	19		
		300 Hz						
6.	Adjacent Channel Selectivity (2 Signal)	+10 KHz	dB	60	48	19		
		-10 KHz						
7.	Image Rejection Ratio	26.275 MHz	dB	60	48	19		
		28.095 MHz						
8.	IF Rejection Ratio	455 KHz	dB	60	48	19		
		10.695 MHz						
9.	Spurious Rejection Ratio	22.285 MHz	dB	60	48	19		
		86.455 MHz						
10.	AGC 10 mV for 10 dB Change	dB	80	70	19			
11.	Inter Modulation	Step +1	dB	54	48	19		
		Step -1						
		Step +2						
		Step -2						
12	RX NOISE WITHOUT RF SIGNAL AND RADIO NOT CONNECTED TO INSTRUMENT IN THE MAXIMUM VOLUME POSITION	V (RMS)	300mV	MAX 450mV	1			
					20			
					40			
13	DAS ON	dBm	14	+/- 6dB	20			

TEST CONDITION

1.) STD. Supply Voltage : 12.6 Vdc

5.) Load impedance : 50 ohm

2.) Normal Temperature : 25 C +/- 10 C ,Extreme : -10 , +55 C

6.) Reference Audio out put : 2.0 Vrms(500mw)

3.) STD. Audio Frequency : 1 KHz

7.) Audio Output load : 8 ohm (Ext)

4.) Main Signal input level : -47 dBm(1Mv)

8.) Channel Spacing : 10 KHz

**Model : Midland 203 AM/FM 40 CH (I Band)
Transmitter (FM)**

Page of

No.	Test item		Unit	Specification		CH	Serial No.								
				Normal	Limit										
1.	TX Power Output	DC 13.8 V	W	3.8	3.4-4.0	1									
						20									
						40									
		DC12.6V	W	3.6	3.2 – 4.0	1									
						20									
						40									
2.	Frequency Tolerance		Hz	+/-100	+/-600	20									
3.	Max Deviation 1 KHz/ 100 mV		KHz	1.7	1.6-1.8	1									
						20									
						40									
4.	Max Deviation 100 mV	300 Hz	KHz	< 2.0KHz	20										
		800 Hz													
		1000 Hz													
		1.5 KHz													
		2.0 KHz													
		3.0 KHz													
5.	DC Current (No Mod)@ 4W		mA	900	1300	20									
6.	Adjacent Channel Power (1.25 KHz/1.2 KHz 20 dB Up)		UW (dBm)	15 (-18)	20 (-17)	1									
						20									
						40									
7.	Harmonics @12,6Vdc		dBm			1 20 40	1	20	40	1	20	40	1	20	40
		47 to 68 MHz		-56	-54										
		87.5 to 118 MHz		-56	-54										
		174 to 230 MHz		-56	-54										
		470 to 862 MHz		-56	-54										
		9 KHz to 1 GHz		-36	-36										
		1 GHz to 2 GHz		-30	-30										
8.	Mic Sensitivity 1 KHz/1.2KHz Dev		mV	2.5	8	20									

9.	Modulation Distortion 1 KHz/1.2 KHz Dev	%	4.0	8.0	20			
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**Model : Midland 203 AM/FM 40 CH (I Band)
Receiver (FM)**

Page of

No.	Test item		Unit	Specification		CH	Serial No.		
				Normal	Limit				
1.	Max Sensitivity 20 dB SND(W/CTITT Filter)		dBm	-113	-110	3			
						19			
						39			
2.	S/N Ratio @ 1 mV 1.2 KHz Dev w/o filter CCITT		dB	45	40	19			
3.	Distortion @ 1 mV 1.2 KHz Dev		%	3.0	8.0	19			
4.	Audio Output @ 1mV 10% THD		W	2.2	Min 1,8 – max 2,8	19			
5.	Audio Response	3.0 KHz	dB	-16	+/-6	19			
		300 Hz		-3	+/-6				
6.	Adjacent Channel Rejection	+10 KHz	dB	60	48	19			
		-10 KHz							
7.	Image Rejection Ratio	26.275 MHz	dB	60	48	19			
		28.095 MHz							
8.	IF Rejection Ratio	455 KHz	dB	60	48	19			
		10.695 MHz							
9.	Spurious Rejection Ratio	22.285 MHz	dB	60	48	19			
		86.455 MHz							
10.	Inter Modulation	Step +1	dB	54	48	19			
		Step -1							
		Step +2							
		Step -2							
11.	Tight Squelch		dBm	-47	-53 - -41	19			
12.	Squelch threshold		dBm	-117	-107	19			
12A	DAS ON		dBm	14	+/- 6dB	20			
13.	DC Current Drain (No signal)		mA	350	600	19			
14.	Spurious Emission	12.6 V	dBm	-65	-57	19			
		-10 %							

Model : Midland 203 AM 12/FM 80 CH(D4 Band)
Page of
Transmitter (AM)

No.	Test item		Unit	Specification		CH	Serial No.					
				Normal	Limit							
1.	TX Power Output (No mod)	DC13.8V	W	3.8	3.4 – 4.0	1						
						20						
						40						
		DC12.6V	W	3.6	3.2 – 4.0	1						
						20						
						40						
2.	Modulation Distortion (1 KHz/60 % mod)		%	3.0	6	20						
3.	Modulation Capability 1 KHz/60 % Mod/20 dB up		%	65	60 – 80	1						
						20						
						40						
4.	DC Current	No Mod	mA	900	1300	20						
		Max mod		1300	1900							
5.	TX Frequency Response 60 % 1 KHz 0 dB REF	3.0 KHz	dB	-3	+/-6	20						
		300 Hz		-13	+/-6							
6.	Adjacent Channel Power (1.25 KHz/60% 20 dB Up)		UW (dBm)	15 (-18)	20 (-17)	1						
						20						
						40						
	Adjacent Channel Power (1.25 KHz/ 1.5 V)		UW (dBm)	15 (-18)	20 (-17)	1						
						20						
						40						
7.	Harmonics @12,6Vdc with modulation		dBm			1 40	1	40	1	40	1	40
		47 to 74 MHz		-56	-54							
		87.5 to 118 MHz		-56	-54							
		174 to 230 MHz		-56	-54							
		470 to 862 MHz		-56	-54							
		9 KHz to 1 GHz		-36	-36							
		1 GHz to 2 GHz		-30	-30							
8.	Mic Sensitivity 60 % mod/1KHz		mV	2.5	8	20						
9.	AMC Range at AM 60% to 100%		dB	57	50	40						

**Model : Midland 203 Multi AM 12/FM 80 CH(D4 Band)
Receiver (AM)**

Page of

No.	Test item		Unit	Specification		CH	Serial No.		
				Normal	Limit				
1.	Max Sensitivity 20 dB SND(W/CTITT Filter)		dBm	-110	-107	3			
						19			
						39			
2.	S/N Ratio @ 1 mV 60% mod		dB	45	40	19			
3.	Distortion @ 1 mV 60% mod		%	3.0	8.0	19			
4.	Audio Output @ 1mV 10% THD		W	2.5	2.0	19			
5.	Audio Response	3.0 KHz	dB	-8	+/-6	19			
		300 Hz		-3	+/-6				
6.	Adjacent Channel Selectivity (2 Signal)	+10 KHz	dB	62	55	19			
		-10 KHz							

**Model : Midland 203 AM 12/FM 80 CH(D4 Band)
Transmitter (FM)**

Page of

No.	Test item		Unit	Specification		CH	Serial No.		
				Normal	Limit				
1.	TX Power Output (No mod)	DC 13.8 V	W	3.8	3.4- 4.0	41			
		DC12.6V	W	3.6	3.2- 4.0	41			
2.	Max Deviation 1 KHz/ 100 mV		KHz	1.55	1.45-1.75	41			
3.	Max Deviation 100 mV	300 Hz	KHz	< 2.0KHz	20				
		800 Hz							
		1000 Hz							
		1.5 KHz							
		2.0 KHz							
		3.0 KHz							
4.	Adjacent Channel Power (1.25 KHz/1.2 KHz 20 dB Up)		UW (dBm)	15 (-18)	20 (-17)				
						41			
5.	Harmonics @ 12,6Vdc	47 to 68 MHz	dBm	-56	-54	41			
		87.5 to 118 MHz		-56	-54				
		174 to 230 MHz		-56	-54				

PRODUCT EVALUATION REPORT

Page of

		470 to 862 MHz		-56	-54				
		9 KHz to 1 GHz		-36	-36				
		1 GHz to 2 GHz		-30	-30				
6.	Mic Sensitivity 1 KHz/1.2KHz Dev		mV	2.5	8	41			

**Model : Midland 203 AM 12/FM 80 CH(D4 Band)
Receiver (FM)**

Page of

No.	Test item	Unit	Specification		CH	Serial No.		
			Normal	Limit				
1.	Max Sensitivity 20 dB SND(W/CTITT Filter)	dB	-113	-110				
					41			

TEST CONDITION

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|---|---|
| 1.) STD. Supply Voltage : 12.6 Vdc | 5.) Load impedance : 50 ohm |
| 2.) Normal Temperature : 25 C +/- 10 C ,Extreme : -10 , +55 C | 6.) Reference Audio out put : 2.0 Vrms(500mw) |
| 3.) STD. Audio Frequency : 1 KHz | 7.) Audio Output load : 8 ohm (Ext) |
| 4.) Main Signal input level : -47 dBm(1Mv) | 8.) Channel Spacing : 10 KHz |

**Model : Midland 203 AM/FM 40 CH (PL Band)
Transmitter (AM)**

Page of

No.	Test item		Unit	Specification		CH	Serial No.		
				Normal	Limit				
1.	TX Power Output (No mod)	DC 13.8 V	W	3.8	3.4-4.0				
						20			

Receiver (AM)

No.	Test item	Unit	Specification		CH	Serial No.		
			Normal	Limit				
1.	Max Sensitivity 20 dB SINAD (WITH CTITT Filter)	dBm	-110	-107				
					19			

Transmitter (FM)

No.	Test item		Unit	Specification		CH	Serial No.		
				Normal	Limit				
1.	TX Power Output (No mod)	DC 13.8 V	W	3.8	3.4-4.0				
						20			

Receiver (FM)

No.	Test item		Unit	Specification		CH	Serial No.		
				Normal	Limit				
1.	Max Sensitivity 20 dB SINAD (WITH CTITT Filter)	dBm		-113	-110	3			
						19			
						39			

Model : Midland 203 AM/FM 120 CH (PL/RU Band)

Transmitter (AM)

No.	Test item		Unit	Specification		CH	Serial No.		
				Normal	Limit				
1.	TX Power Output (No mod)	DC 13.8 V	W	3.8	3.2 - 4.0	.1			
						40.			

Receiver (AM)

No.	Test item		Unit	Specification		CH	Serial No.		
				Normal	Limit				
1.	Max Sensitivity 20 dB SINAD (WITH CTITT Filter)	dBm		-110	-105	.1			
						40.			

Transmitter (FM)

No.	Test item		Unit	Specification		CH	Serial No.		
				Normal	Limit				
1.	TX Power Output (No mod)	DC 13.8 V	W	3.8	3.2-4.0	.1			
						40.			

Receiver (FM)

No.	Test item		Unit	Specification		CH	Serial No.		
				Normal	Limit				
1.	Max Sensitivity 20 dB SINAD (WITH CTITT Filter)	dBm		-113	-107	.1			
						40.			