

# 4 CH COMBINER

“LOW POWER COMBINING (DEC 20-2010)”

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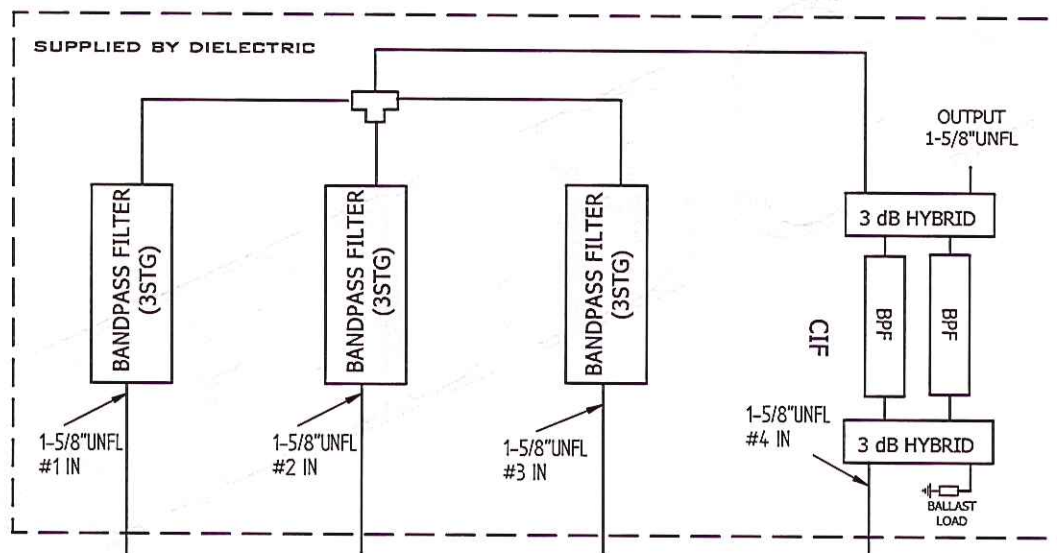
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**EXHIBIT B**  
**APPLICATION FOR STATION LICENSE**  
**BLUEWATER BROADCASTING COMPANY, LLC**  
**WQKS-FM RADIO STATION**  
**CH 241A - 96.1 MHZ - 0.9 KW**  
**MONTGOMERY, ALABAMA**  
**February 2013**

# PROPOSED RF FLOW DIAGRAM

FM SITE SUMMARY			
FM#1	FM#2	FM#3	FM#4
96.1MHZ	100.5MHZ	104.9MHZ	107.1MHZ
1460W	250W	250W	250W



DWG NO.	SHT 1 OF 1	REV A
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TITLE RF FLOW DIAG. 4FM-CHANNEL COMBINER  
USED ON :

REVISIONS			
SYM	DESCRIPTION	DATE	APPR
A	PRELIMINARY RF FLOW DIAGRAM	DEC 20, 10	CPO

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DWG NO.	SHT 1 OF 1 NONE	REV A	
DRAWN BY : CPO		CHKD BY : CPO	
DATE: 20:DEC:10		SCALE : 1/1	

DO NOT SCALE DWG.

NEXT ASSY:

SAVED AS :RF FLOW DIA. low power-4FM

Rev 0



COMMUNICATION TECHNOLOGY

**CALCULATED POWER LEVELS IN A RF SYSTEM FOR ANALOG-DIGITAL IBOC-FM \_(4CH-COMBINER)**

GENERAL	SERVICE	1	2	3	4	
	CHANNEL (FREQUENCY- MHZ)	96.1	100.5	104.9	107.1	
	STANDARD	FM+HD	HD	HD	HD	
TRANSMITTER	DIGITAL TX AVERAGE POWER (KW)	0.46	0.25	0.25	0.25	
	TX VISUAL PEAK POWER (KW)	0	0	0	0	
	TX SOUND (FM) POWER (KW)	1	0	0	0	
	CREST FACTOR (dB) (USING CARRIER APPROACH)-DIGITAL	11	11	11	11	
	TOTAL TX PEAK VOLTAGE (KV)	0.854	0.397	0.397	0.397	
COMBINER	CALCULATED INPUT MISMATCH OF COMBINER (dB)	-26.0	-26.0	-26.0	-26.0	
	CALCULATED FILTER/CIF MODULE INTEGRATED LOSS (dB)	0.65	0.65	0.65	0.75	
	CALCULATED WIDEBAND INTEGRATED LOSS THRU UNIT 4 (dB)	0.1	0.1	0.3		
	CALCULATED CHANNEL INTEGRATED LOSS, COMBINER OUTPUT (dB)	0.75	0.75	0.95	0.75	
	PEAK VOLTAGE AT COMBINER OUTPUT IN SYSTEM (KV)	0.832	1.219	1.606	1.961	
						TOTAL POWER @ANTENNA INPUT
	CALCULATED CHANNEL LOSS TO ANTENNA (Db)	0.75	0.75	0.95	0.75	
	MEAN POWER AT ANTENNA INPUT/FILTER (KW)	1.228	0.210	0.201	0.210	
						1.850

\* Peak voltage is set to not exceed a max CF=20db of output mean power in this calculation.

# FM CHANNEL COMBINER

TOTAL AVERAGE POWER	5.0KW
FREQUENCY	87.5... 108Mhz
CHANNEL SPACING	$\geq 2.2\text{Mhz}$
INPUT 1, 2, 3, 4	
POWER HANDLING	1460W/250W/250W/250W
INSERTION LOSS	
F0	$\leq 0.8\text{dB}$
F0 $\pm 200\text{ KHz}$	$\leq 1.1\text{dB}$
GROUP DELAY VARIATION	$\leq 100\text{nS @}\pm 200\text{Khz}$
VSWR	$\leq 1.12$
NUMBER OF SECTIONS/BAND PASS FILTER	3
INPUT CONNECTOR	1-5/8" UNFL
OUTPUT CONNECTOR	
OUTPUT CONNECTOR	1-5/8" UNFL
ISOLATION BETWEEN INPUTS	$\geq 36\text{dB}$
BLOWERS AND SHROUDS	NO
AMBIENT TEMPERATURE	32F(0C) to 104F(+40C)
STORAGE TEMPERATURE	32F(0C) to 122F(50C)
HUMIDITY	MAX. 90%, NON-CONDENSING
DIMENSIONS (DxWxH) ESTIMATED	42"x60" x24"
WEIGHT (Lbs.) ESTIMATED	280lb
ALTITUDE (max) <sup>1)</sup>	5,000FT (1,524m)
APPLICATION	FM

NOTE: 1) For more than 5,000FT (1.524m), please consult the factory





**FM RF SYSTEM  
4 CH COMBINER  
LOW POWER IBOC -FM**

**MAX. ALTIT: 1.530m**

**SPX**

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