

EXHIBIT D

NV7000 TRANSMITTER FAMILY SPECIFICATIONS



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Transmitter Family NV7000 General Specifications

Frequency range	470 to 860 MHz
Standards	EN 300 744
DVB band width	6, 7 or 8 MHz, software limited to 6 MHz for operation in USA
SFN function	to TS 101 191
Permissible VSWR	$s \leq 1,3$ (switch-off at 1,3)
RF Output Module (VH602A2) (Final RF Stage)	LDMOS transistors, 8-pairs for a total of 16 devices per amplifier module Final stage DC operating parameters are: E = 32-volts DC, I \approx 3.3 amperes/transistor, 6.6 amperes/pair, 53-amperes/module. Total power output is 440-watts for OFDM/MediaFLO modulation waveform.
Coolant	Demineralized water, or a mixture of same with Antifrogen N or Chevron-Texaco Dexcool or Prestone Extended Life. Please consult the pump assembly documentation from for specific information.
Max. installation altitude	2000 meters (6,562-feet) above sea level [>3000 meters ($>9,840$ -feet) operation available on request]
Operating temperature range in transmitter room when outside temperature is	+5° Celsius to +45° Celsius (+40° Fahrenheit to +113° Fahrenheit) -30° Celsius to +50° Celsius (-22° Fahrenheit to +122° Fahrenheit)
Max. relative humidity	95% non condensing
EMC	to ETS 300 447 and FCC Part 2 and Part 15.
AC supply voltage	400“Y”/230 Volts $\pm 15\%$
AC line frequency	50 Hz/60 Hz, $\pm 2\%$
Power factor	min. 0.9
Total noise level	<60 dBA

Frequency processing

Synthesizer	adjustable between 112.5 MHz and 900 MHz
Step width	1 Hz
Connection	internal OCXO (10 MHz), internal GPS receiver (optional) or external

Transfer characteristics

Transmission parameters	to ETS 300 774
Input data rate	5 to 40 Mbit/s (dep. on operating mode)
Frequency response $f_0 \pm 3,805$ MHz	≤ 1 dB



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Transmitter Family NV7000 General Specifications (continued)

Intermodulation suppression

DVB band width 8 MHz
 at $f_0 \pm 4.2$ MHz (without band pass filter) ≤ -36 dB (with pre correction)

DVB band width 7 MHz
 at $f_0 \pm 3.7$ MHz (without band pass filter) ≤ -36 dB (with pre correction)
 (information included for reference only!)

Parasitic emissions not detectable

Compliance with spectrum mask Please consult Exhibits F and S

MER ≥ 33 dB at Tx output

Spurious emissions

Harmonics ≥ -70 dB (with output band pass filter)

Noise power density ≥ 130 dBc/Hz

Connectors

ASI A 1/2 (LP) MPEG2; ASI, BNC, 75 W; input A or main and stand-by path for low priority data stream

ASI B 1/2 (HP) MPEG2; ASI, BNC, 75 W; input B or main and stand-by path for high priority data stream

Reference frequency 1, 5 or 10 MHz, 0.1 to 5 V_{pp} or TTL, BNC

Reference pulse 1 Hz, TTL, BNC, evaluating rising edge

GPS antenna for integrated GPS receiver (option), active GPS antenna, BNC, 50 W, remote feed 5 V DC

RF test points N or SMA

RF output Please refer to next page and appropriate model number

Transmitter protection facilities

Modulating signal input monitoring circuit

Reflection (VSWR) monitoring circuit

Amplifier and power supply monitoring circuit

Over temperature monitoring of power amplifier

Inlet temperature monitoring of coolant

AC supply voltage monitoring circuit

Smoke alarm (optional)

Remote Control

Serial RS-232 interface

Serial RS-485 interface / Bitbus to IEC/IEEE 864-1 (option)

Serial interface: NetLink software (optional)
 NetCCU 700 for Ethernet 10baseT with WEB Server, SNMP interface, or both (optional)

Parallel interface (optional)



Transmitter Family NV7000 Model Specific Information

Model	NV7080	NV7130	NV7170	NV7250	NV7340	NV7500	NV7640	NV7700	NV7930	
No. of amplifiers	2	3	4	6	8	12	16	18	24	
No. of Cabinets	1	1	1	1	1	2	2	3	3	
Output power at Tx output E/V versions										
shoulder -36 dB at $F_o \pm 4,3$ MHz	850 W	1280 W	1700 W	2560 W	3400 W	4890 W	6530 W	7320 W	9760 W	
shoulder -35 dB at $F_o \pm 4,3$ MHz	870 W	1310 W	1740 W	2620 W	3480 W	5010 W	6680 W	7500 W	10000 W	
Power consumption TX										
w/o cooling system										
From Ch 21 to Ch 60 approx.	5 kW	7 kW	9,5 kW	13,5 kW	18,5 kW	28,5 kW	38,5 kW	42,5 kW	57 kW	
From Ch 61 to Ch 69										
linear up to 10% higher										
Power consumption of cooling system										
Pump assembly approx.	0,8 kW	0,8 kW	0,8 kW	0,8 kW	1 kW	1,4 kW	2 kW	2 kW	2,8 kW	
Heat exchanger approx.	0,5 kW	0,5 kW	0,8 kW	0,8 kW	1,2 kW	1,2 kW	2,4 kW	2,4 kW	2,4 kW	
Cooling liquid volume flow rate (approx.)	15 l/min	22.5 l/min	30 l/min	45 l/min	60 l/min	90 l/min	120 l/min	135 l/min	180 l/min	
	3.3 gal/min	5 gal/min	6.6 gal/min	9.9 gal/min	13.2 gal/min	19.8 gal/min	26.4 gal/min	29.7 gal/min	39.6 gal/min	
Heat dissipation into room approx.	0,5 kW	0,8 kW	0,8 kW	1,0 kW	1,2 kW	2,0 kW	2,5 kW	3,0 kW	4,0 kW	
Heat dissipation guided outside approx.	4 kW	5 kW	7 kW	10 kW	14 kW	22 kW	30 kW	33 kW	44 kW	
Dimensions (H x D x W)										
E/V versions:	2167 mm x 1200 mm	630 mm	630 mm	630 mm	630 mm	630 mm	1260 mm	1260 mm	1890 mm	1890 mm
(H x D x W):	85.3" x 47.3"	24.8"	24.8"	24.8"	24.8"	24.8"	49.6"	49.6"	74.4"	74.4"
Weight (w/o transport packing and cooling system)										
E/V versions approx.	380 kg	410 kg	440 kg	490 kg	560 kg	1000 kg	1800 kg	1500 kg	2000 kg	
	838 lbs	904 lbs	970 lbs	1080 lbs	1235 lbs	2205 lbs	3968 lbs	3907 lbs	4409 lbs	
Weight (incl. transport packing and cooling system)										
for sea-/air freight, E/V approx.	1180 kg	1220 kg	1380 kg	1480 kg	1600 kg	2700 kg	4880 kg	4440 kg	5920 kg	
	2601 lbs	2690 lbs	3042 lbs	3263 lbs	5327 lbs	5953 lbs	10759 lbs	9789 lbs	13051 lbs	
RF output										
	EIA	EIA	EIA	EIA	EIA	EIA	EIA	EIA	EIA	
	1-5/8"	1-5/8"	1-5/8"	1-5/8"	1-5/8"	3-1/8"	3-1/8"	3-1/8"	3-1/8"	

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