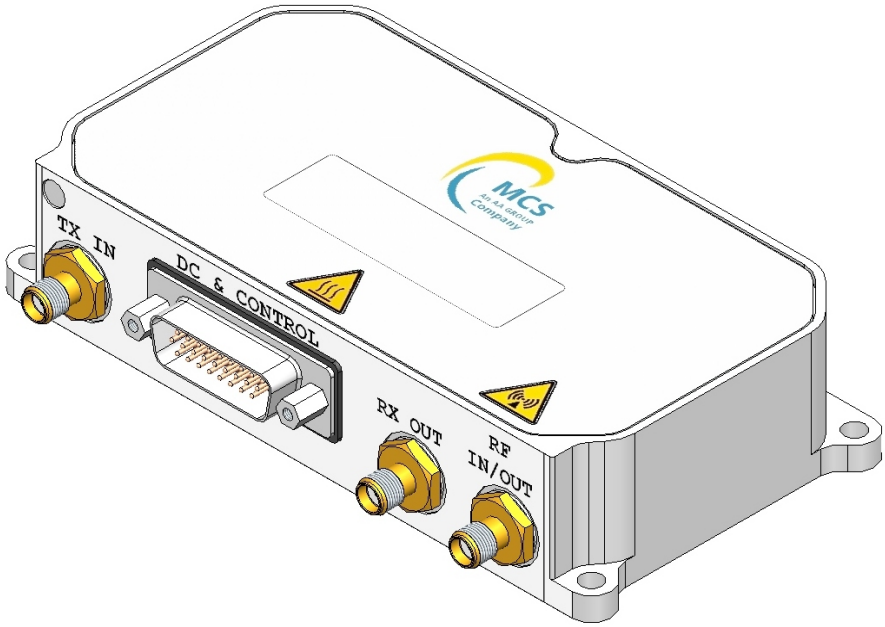
DATASHEET
FEUILLE DE SPECIFICATIONS

P/N: MCS-TRX-5800M-8000M-45dB-43dBm-0
Designation: 20W, 45dB, 5800-8000MHz Transceiver Module



5800-8000MHz 20W Transceiver Module

Ed.	*Written by*	*Date*	*Observation*	*Approved by*
0	A. Billy	12/05/2022	Creation	R. VERGNAULT

Electrical features *Caractéristiques électriques*		All parameters specified @ baseplate temperature of +25°C and Vsupply=+28Vdc, unless otherwise specified	
Electrical parameters *Paramètres électriques*	**Measuring conditions** *Conditions de mesure*	**MCS specifications** *Spécifications MCS*	**Units** *Unités*
Bandwidth *Bande de fréquence*		5800 - 8000	MHz
TX Output power *Puissance de sortie TX*	In CW Mode: **High power mode** @ Psat @ 0dBm Input power	Suitable for OQPSK modulation 43 min. 44 typ. 45.5 max. 43 typ.	dBm
	Low power mode @ 0dBm Input Power	15 typ.	dBm
Input power *Puissance d'entrée*	For saturated power Absolute maximum level	0 min. to +5 max. **+20 max.**	dBm
Gain *Gain*	**High power mode** @ small signal	50 min. 56 typ. 62 max. (includes gain compensation vs temperature)	dB
	Low power mode @ 0dBm Input Power	15 typ.	dB
In band Gain ripple *Ondulation de gain*	@ Psat	+/- 2 max.	dB
Insertion loss in RX mode *Perte d'insertion en mode RX*	RF_IN/OUT to RX_OUT	1.0 typ. 1.3 max.	dB
Impedance *Impedance*		50	Ohms
Input / Output VSWR *TOS d'entrée / sortie*	TX_IN RF_IN/OUT RX_OUT	1.5:1 typ. 2:1 max. 1.5:1 typ. 2:1 max. 1.5:1 typ. 2:1 max.	
Load mismatch *Résistance au TOS de charge*		Infinite (protected by the circulator, if RX_OUT is loaded)	
Noise figure *Facteur de bruit*	**High power mode**	12 typ. 15 max.	dB

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Time for TX on/off (blanking) *Vitesse d'exctinction RF*	10-90% RF rise / fall time "RF_On/Off"	0.5 typ. 1 max.	µs
Power density in blanking mode *Densité spectrale de puissance*	In 2MHz BW	-120 max. (gate bias and drain cutoff of power MMICs)	dBm
Harmonics *Harmoniques*	**High power mode** @ 0dBm Input H2 H3	 -30 typ. -25 max. -40 typ. -35 max.	dBc
Spurious *Parasites*	**High power mode** @ 0dBm Input **Low power mode** @ 0dBm Input	 -65 max. -50 max.	dBc dBc
AM/PM conversion *Conversion AM/PM*	@ Pout=43dBm	3 max.	°/dB
Intermodulation OIP3 *Intermodulation OIP3*	@ Pout=40dBm	47 typ.	dBm
Operating class *Classe de fonctionnement*		A or AB on GaN power devices	
Supply voltage *Tension d'alimentation*	"Vdc"	+27 min. +28 typ. +29 max.	Vdc
Current consumption *Consommation de courant*	**High power mode :** @Psat @Pout=43dBm @ small signal **Low power mode** **Blanking mode**	 4.8 typ. 5.5 max 4 typ. 4.5 max. 2.1 typ. 0.7 typ. 0.5 max.	A

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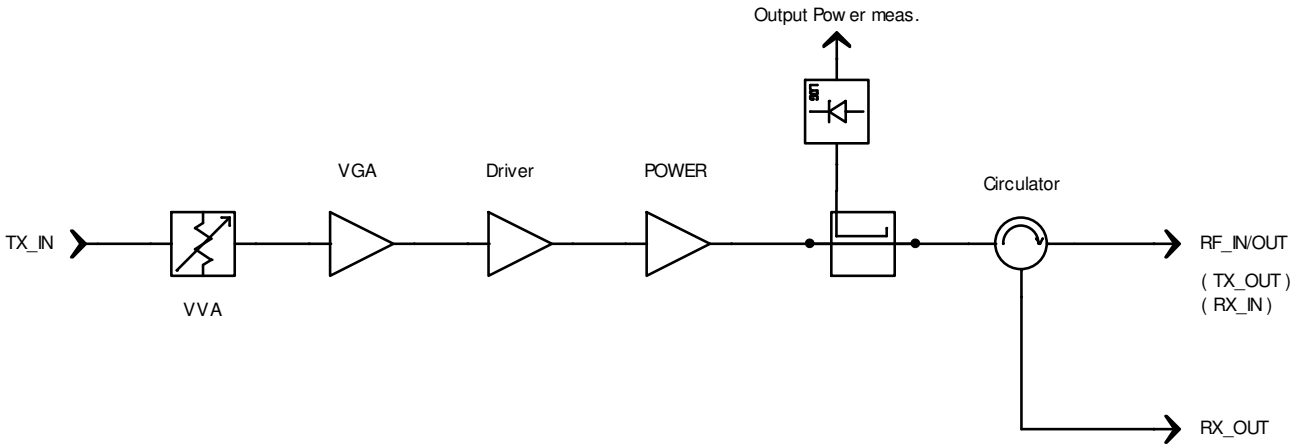
Temperature voltage monitoring *Tension de contrôle de température*	"Temperature" Analog signal: positive slope & value	15 typ. **1.5V typ. @ +25°C**	mV/°C
Output Power voltage monitoring *Tension de contrôle de puissance*	"Output power level" Analog signal: positive slope & value	50 typ. **2.5V typ. @ 43dBm**	mV/dB

Bloc diagram



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Control, Alarms and Monitoring (Sub-D connector) *Contrôles, Alarmes et Informations*		
Parameters *Paramètres*	**Description** *Description*	**Spécifications** *Specifications*
Shutdown ON/OFF command *Commande Marche/Arrêt*	RS422 - "DC ON/OFF" (Shutdown of internal supplies)	(-P) Low = **DC OFF (Shutdown)** (-P) High or Not connected = **DC ON**
Noise quieting / RF blanking control *Commande d'extinction RF*	RS422 - "RF ON/OFF"	(-P) Low = **RF Output OFF** (-P) High or Not Connected = **RF Output ON**
Power mode control *Sélection mode de puissance*	RS422 - "High/Low Power"	(-P) Low = **Low Power Mode** (-P) High or Not Connected = **High Power Mode**
Temperature analog signal *Lecture temperature*	Signal "Temperature"	Analog output Refer to Electrical features
Output Power analog signal *Lecture puissance de sortie*	Signal "Output power level"	Analog output Refer to Electrical features

Mechanical features *Caractéristiques mécaniques*			
Parameters *Paramètres*	**Measuring conditions** *Conditions de mesure*	**MCS specifications** *Spécifications MCS*	**Units** *Unités*
Length x width x height *Longueur x largeur x Hauteur*	L x W x H ISO 2768-mH	129 x 65 x 28 max. (without connectors) (see drawings below)	mm
Cooling *Dissipation*	Apply thermal interface	Conduction cooled: user must maintain base plate temperature below +85°C (Self-protection turns ON at +90°C)	-
RF Connectors *Connectique RF*	Input / Output	SMA female	-
Supply & Control connector *Connecteur de contrôle et alim.*	"DC & CONTROL"	Sub-D High density male 26pts	
Weight *Masse*		400 typ.	g
Housing *Châssis*		Aluminium coated with Surtec 650	

"DC & Control" pinning:

Pin No.	Signal Name	Comment
1	RF_On/Off -P	RS422 Input
2	RF_On/Off -N	
3	High/Low Power -P	RS422 Input
4	High/Low Power -N	
5	DC_On/Off -P	RS422 Input
6	DC_On/Off -N	
7 to 10	GND	Common ground
11	Output power level	Analog output
12	Temperature	Analog output
13 to 16	Vdc	Supply voltage
17 to 26	N.C	

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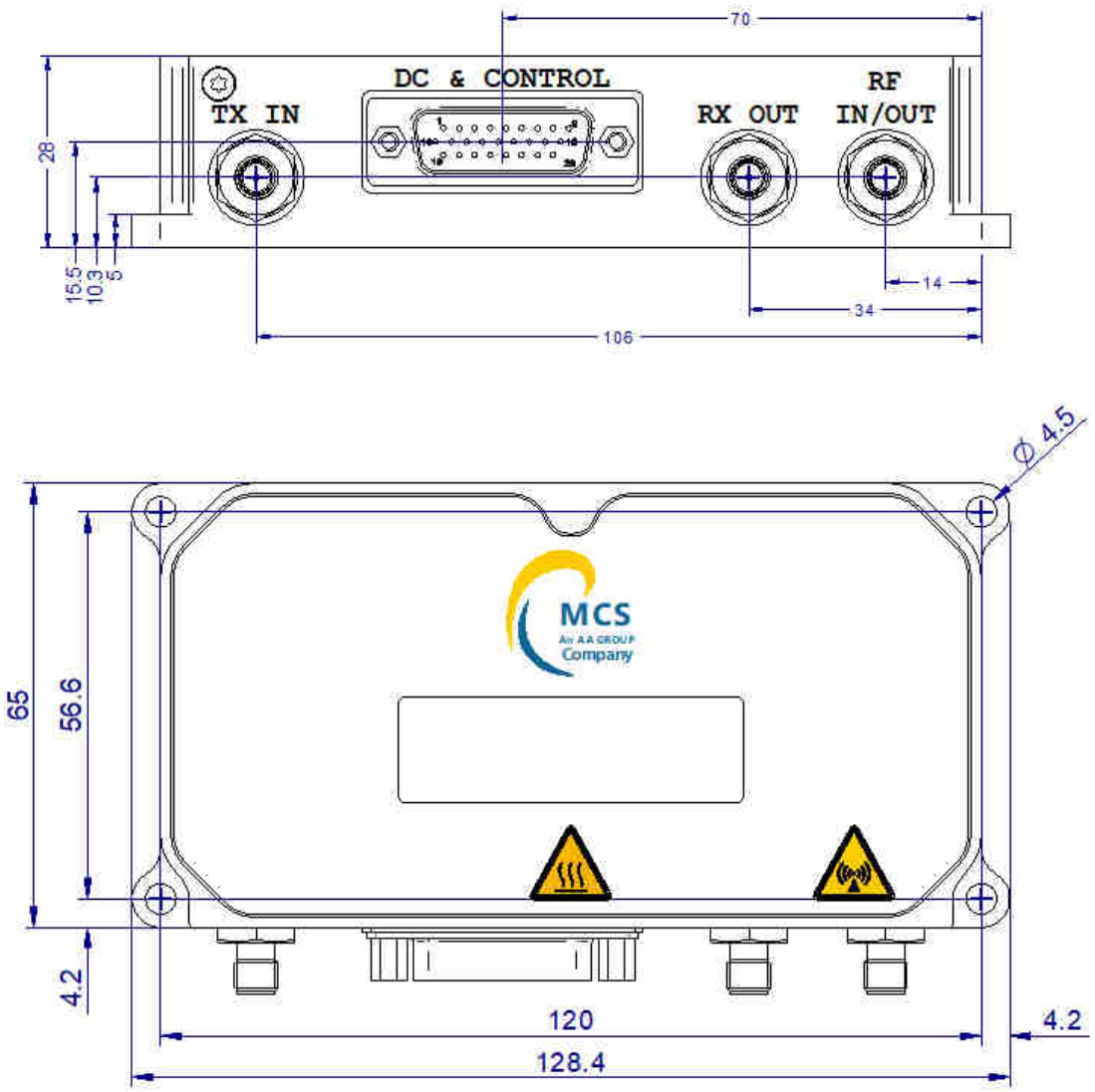
Mechanical drawing:



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Standard environnemental conditions *Conditions environnementales standard*			
Parameters *Paramètres*	**Conditions** *Conditions*	**MCS specifications** *Spécifications MCS*	**Units** *Unités*
Cold temperature operation *Température de service à froid*	Baseplate temperature	-40 min.	°C
Cold temperature storage *Température de stockage à froid*	Baseplate temperature	-55 min.	°C
Dry heat temperature operation *Température de service à chaud*	Baseplate temperature	+85 max. (includes automatic shutdown for thermal protection when baseplate temp exceeds +90°C)	°C
Dry heat temperature storage *Température de stockage à chaud*	Baseplate temperature	+105 max.	°C

Specific environnemental conditions *Conditions environnementales spécifiques* (guaranteed by design, not qualified by test)			
Parameters *Paramètres*	**Conditions** *Conditions*	**MCS specifications** *Spécifications MCS*	**Units** *Unités*
Altitude *Altitude*		30 000 max.	ft
Sand and dust *Sable et poussières*		As per MIL-STD-810G, method 510.5 procedure I & II	
Humidity *Humidité*	97% @ +26°C	As per MIL-STD-810G, method 507.5 procedure II	
Salt fog *Brouillard salin*		As per MIL-STD-810G, method 509.6 for solution 6.5-7.2pH at 35°C	-
Fungus *Moisissures*		Coating compliant	-
Explosive atmosphere *Atmosphère explosive*		Sealing compliant No ignition caused by the amplifier.	

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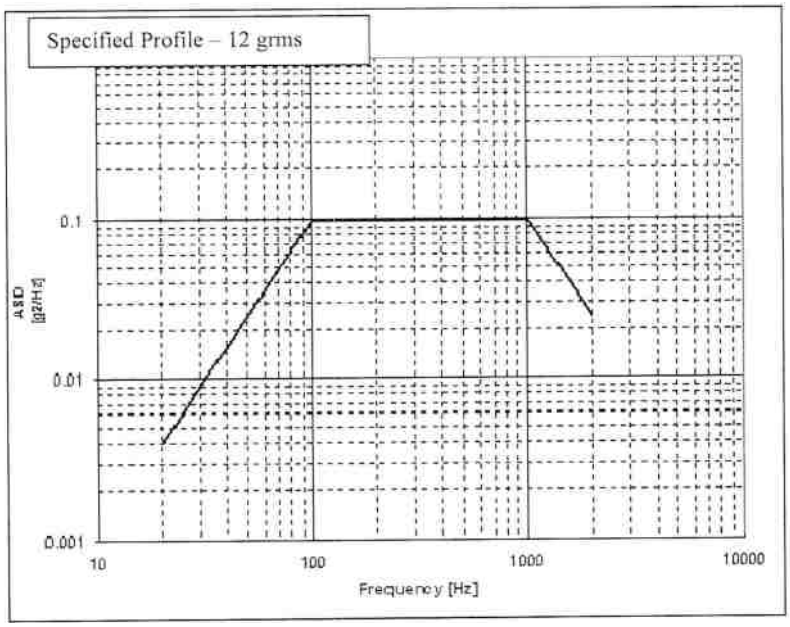
Specific environnemental conditions *Conditions environnementales spécifiques* (guaranteed by design, not qualified by test)			
Parameters *Paramètres*	**Conditions** *Conditions*	**MCS specifications** *Spécifications MCS*	**Units** *Unités*
Functional random vibrations *Vibrations aléatoires operation*	As per MIL-STD-810G method 514.6 procedure IV	shape: see graph below	
Functional shocks *Chocs fonctionnels*	As per MIL-STD-810G method 516.6 procedure I	30g half sine shock pulse during 11ms	
Functional acceleration *Accélération fonctionnelle*		Forward 12g Back 4g Up 4g Down 2g Lateral 3g	



Vibration envelope

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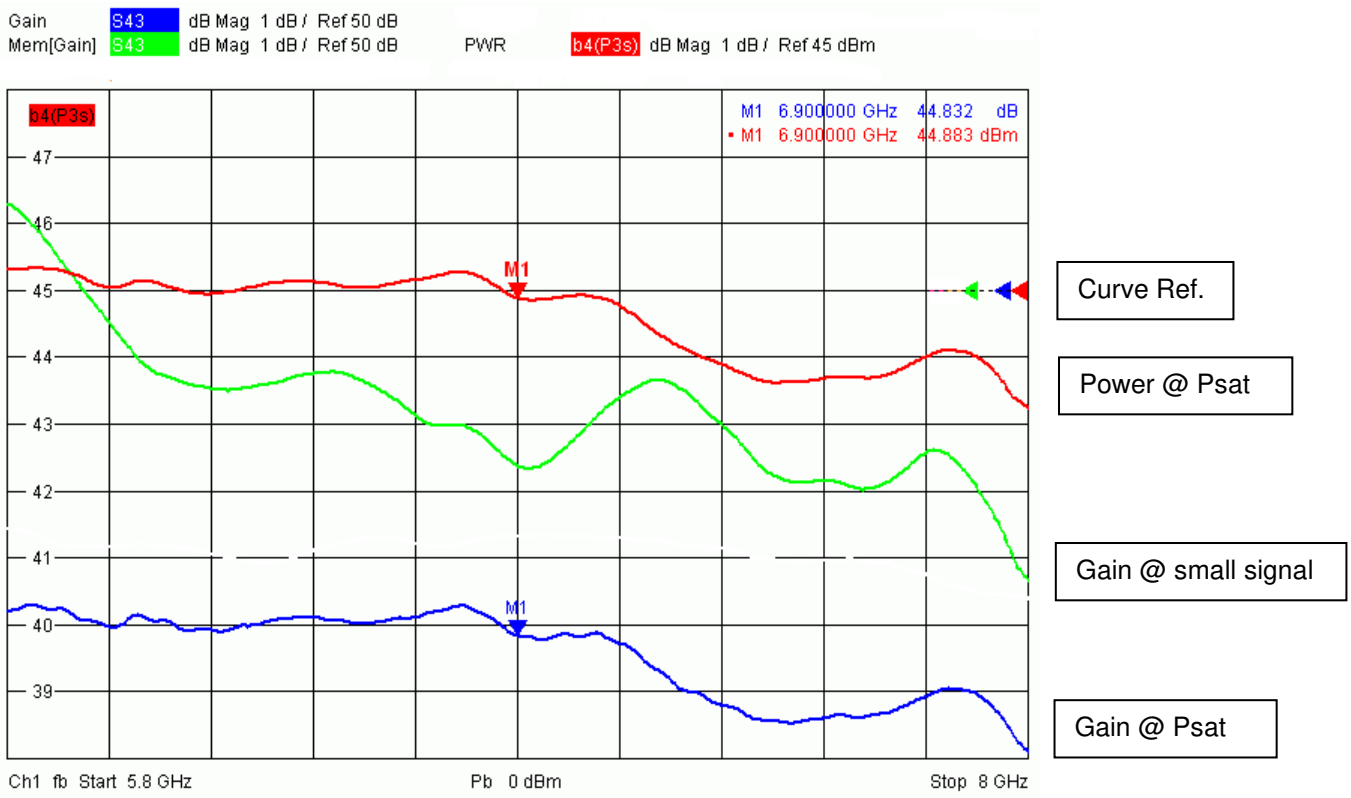
High Power mode

Saturated Output power at 0dBm input power, in dBm (red)
Gain at 0dBm input power, in dB (blue)
Gain at small signal, in dB (green)



Ref. is 45dBm for power curve
Ref. is 50dB for gain curves

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