Full-Band THz Systems Brochure

Broadband AMC and Source Systems

Product Guidelines

ACST GmbH · Josef-Bautz Str. 15 · DE-63457 Hanau · Germany
Phone: +49 (0) 6181 96 69 86 00 · sales@acst.de · www.acst.de

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Contents

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1. BROADBAND INTEGRATED SYSTEM

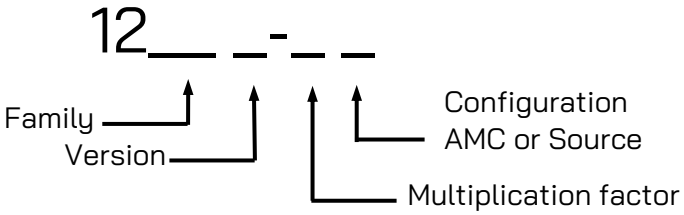
1.1 PRODUCT DESCRIPTION

This document is focused on the available product catalogue of broadband integrated systems able to provide RF power in the full waveguide bands. Based on a modular design, each AMC and Source from this family is integrated on an esthetic metallic housing featuring standard input and output interfaces. They are fixed tuned and do not require any adjustment for proper operation. Options like Horn antenna (for coupling the output signal to free space), waveguide sections compatible with the output RF-port may be integrated on customer request.

Figure 1. Illustration of a RF Integrated System at ACST

1.2 ORDERING INFORMATION

Modular Subsystem Example: A G-band (WR-5.1) AMC Standard system **1223D-12A**



- Family and Version are in Section 2
- Configuration mode AMC or Source is described in Section 3
- The Options are described in Section 4

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2. PRODUCT LIST

ACST offers Standard and Modular system types. Modular version allows to have access to more than one band using combined standard ACST products. The modular version must be ordered as combination of the standard system + multipliers.

2.1 BROADBAND SYSTEMS PRODUCT LIST

Note: Experimental performance is Illustrated in Section 5, for every system

Band Designation	System Name	Frequency (GHz)	Typical Output Power	Configuration	System Type	Multiplication Factor
WR-15	1216D	43-75	150 mW	1216D	Standard	4 (6)
WR-12	1216B	55-85	120 mW	1216B	Standard	4 (6)
WR-10	1217E	70-110	60 mW	1217E	Standard	6 (9)
WR-8.0	1217F	83-125	50 mW	1217F	Standard	6 (9)
	1214G	90-140	10 mW	1214G	Standard	8 (12)
WR-6.5	1214B	110-170	10 mW	1214B	Standard	8 (12)
WR-5.1	1223D	140-220	10 mW	1223D	Standard	12 (18)
WR-4.3	1223B	155-260	6.5 mW	1223B	Standard	12 (18)
WR-3.4	1219E	220-330	2.5 mW	1219E	Standard	18 (27)
WR-2.8	1219H	250-370	2 mW	1219H	Standard	18 (27)
WR-2.2	1218B	330-500	0.8 mW	1223B+218B	Modular	24 (36)
WR-1.5	1221B	500-750	-9 dBm	1223B+221B	Modular	36 (54)
WR-1.0	1221A	750-1100	-16 dBm	1219H+221A	Modular	54 (81)
WR-0.8	1227D	1000-1500	-28 dBm	1223B+218B+227D	Modular	72 (108)

Table 1. List of Broadband Systems for the family, version selection and multiplication factor steps

The list of products in Table 1 contains the standardized versions of broadband systems. Customized options with integrated tuneable attenuator, horn antenna and TTL port can be included under specific inquiry. The multiplication factor in parentheses isn't standard and can lead to longer delivery times.

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2.2 PRODUCT OVERVIEW

All Broadband Systems are designed with the same housing and outlines. All systems have the E field vertically aligned. The Electric field has vertical orientation with respect to the base of the system. The height of the output waveguide can be calibrated between 55-100 mm using the included ajustable feet. This is shown in Figure **1**Figure 2 and Figure 3, for the standard type and modular type, respectively.

2.2.1 STANDARD SYSTEM TYPE

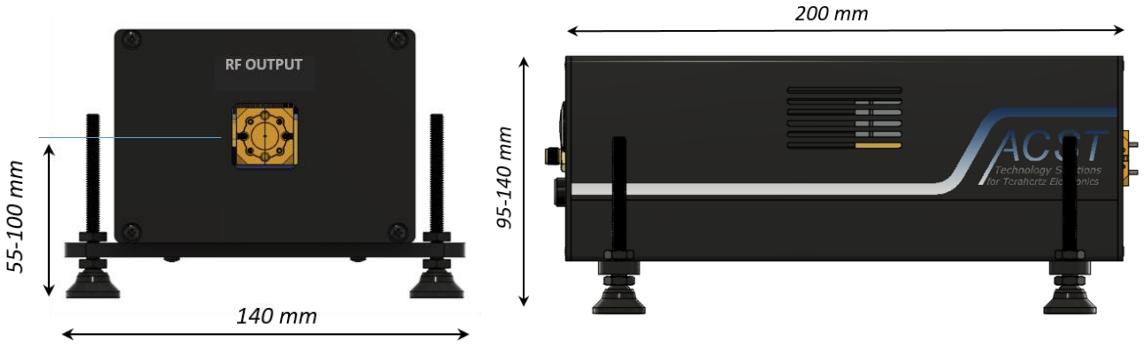

Figure 2. Illustration of the Mechanical Outlines of the broadband systems

2.2.2 MODULAR SYSTEM TYPE

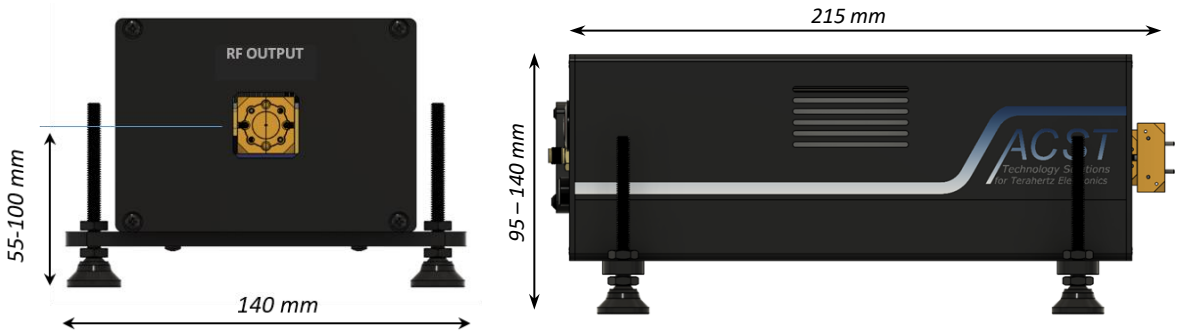

Figure 3. Illustration of the Mechanical Outlines of the broadband systems

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3. AMC AND SOURCE SYSTEM CONFIGURATION

All systems described in Section 2 can be configured in Active Multiplication Chain (AMC) or Source Mode. The AMC mode requires an additional RF signal generator to provide the input frequency and power, while the Source mode can by driven exclusively by DC voltage signals. The possible configurations are described in Table 2.

System Name Subfix	Configuration	Description
-S	Source Mode	Includes a Voltage Controlled Oscillator (VCO) to select the output frequency giving an input DC voltage. No TTL is included in the standard option. Only the standard (lowest) multiplication factor can be used with this option.
-A	AMC	It requires an RF input frequency signal to select the output frequency in accordance with the multiplication factor of the system.

Table 2. List of possible system configurations.

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4. ADDITIONAL OPTIONS

The list of options is described in Table 3. It is important to notice that more than one option can be selected at a time.

- If no option is given, the standard version of the system will be quoted.
- If the selected option includes some additional RF part, it will be automatically assigned in accordance with the inquired System Name.

Band Designation	Main Feature	Description
Option 1	Modular System	This option offers the possibility of acquiring a particular system in its **Modular** version. This allows to exchange the available frequency band by connecting a multiplier in the system output port. See Table 1 for more details. For example: **1223B-12A** with Option 1 consists of **1216B-4A + 223B** standard products.
Option 2	TTL Port	This option offers the possibility of having a TTL port to switch ON and OFF with a 0 or 5 V voltage level. No modulation intended.
Option 3	Attenuator	This option offers an integrated tuneable attenuator than can be tuned by the user to control the output power. See Figure 4 in Annex 6.
Option 4	Antenna	This option includes a horn antenna in accordance with our standard products and its corresponding flange. **Family of products 527.**
Option 5	Waveguide Section	This option includes a high precision waveguide section for the output port of the system. It is available with 25 mm and 50 mm length. **Family of products 510.**
Option 6	Taper	This option includes a taper to adapt the output flange of the selected system and any other flange with lower cut-off frequency. **Family of products 521.** For example: 1223B could include a taper to adapt WR-4.3 to WR-10 or WR-5.1

Table 3: List of available Options

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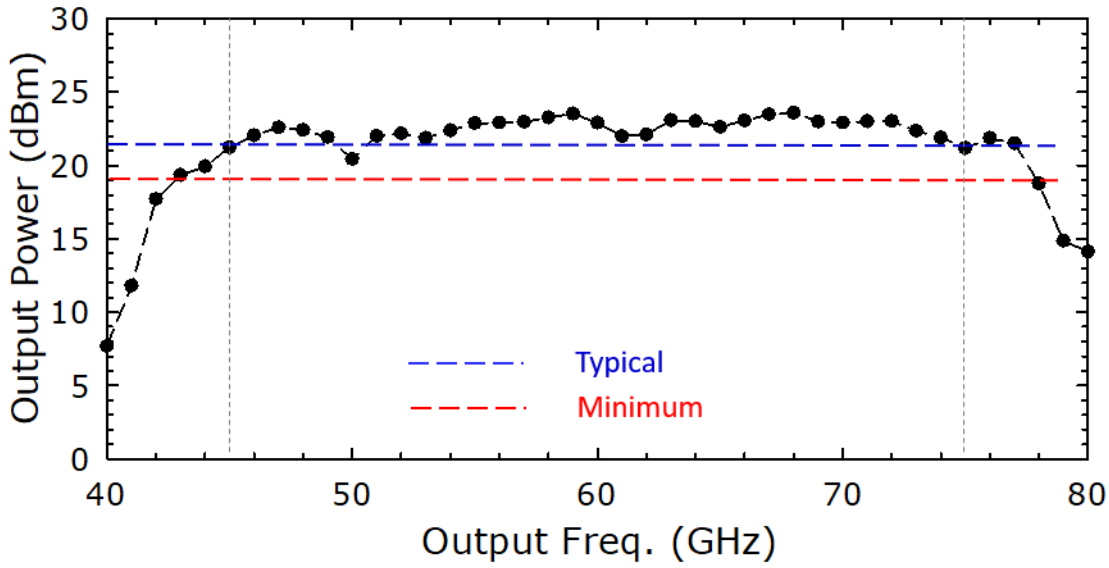
5. TYPICAL PERFORMANCE

5.1 1216D



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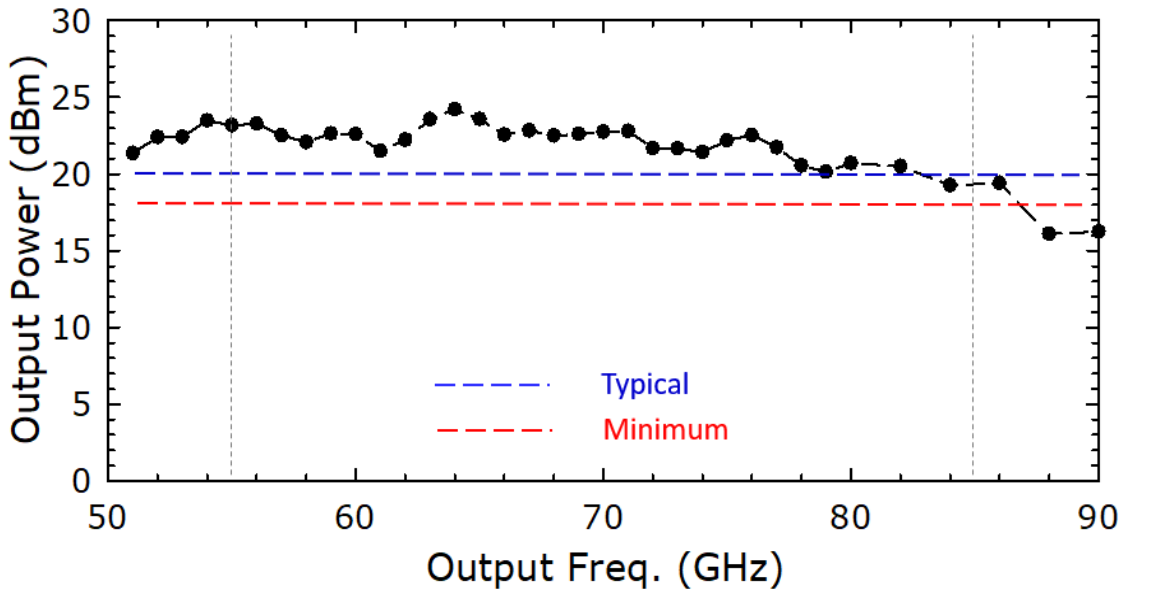

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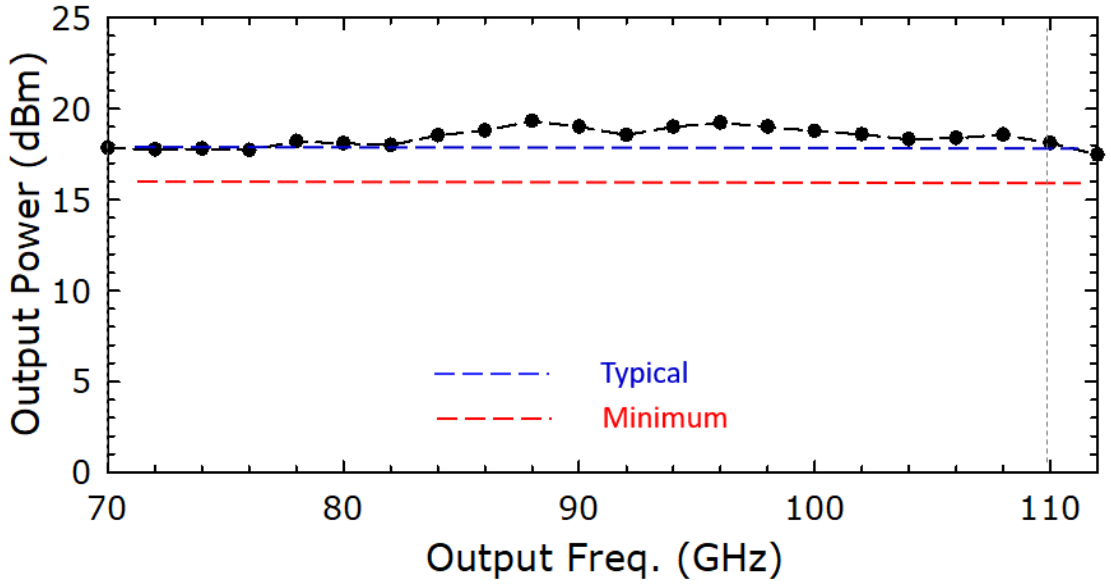
5.3 1217E



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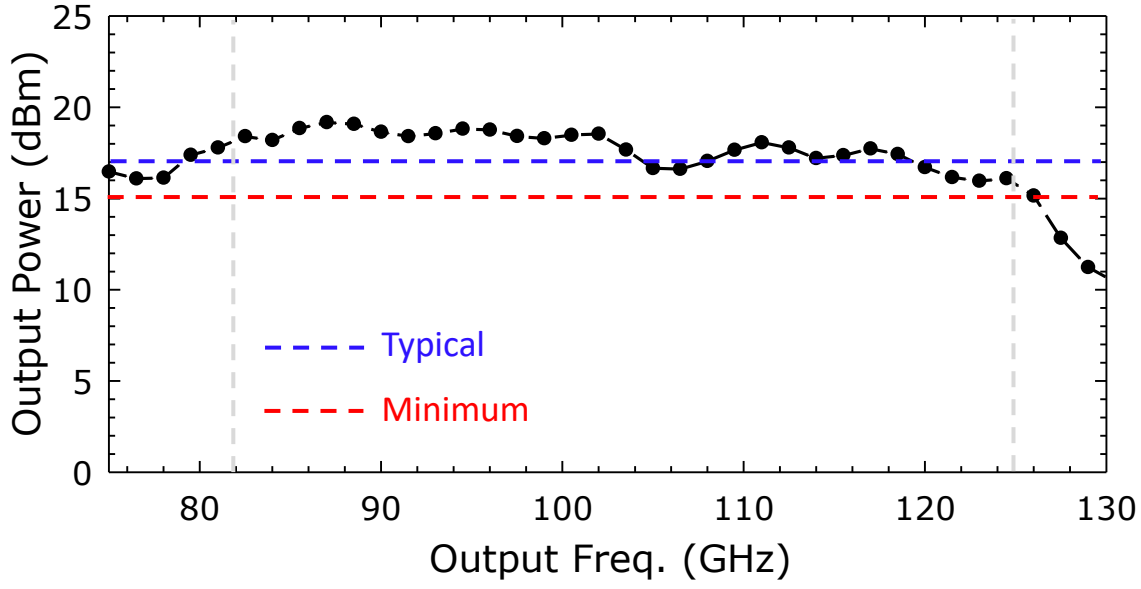

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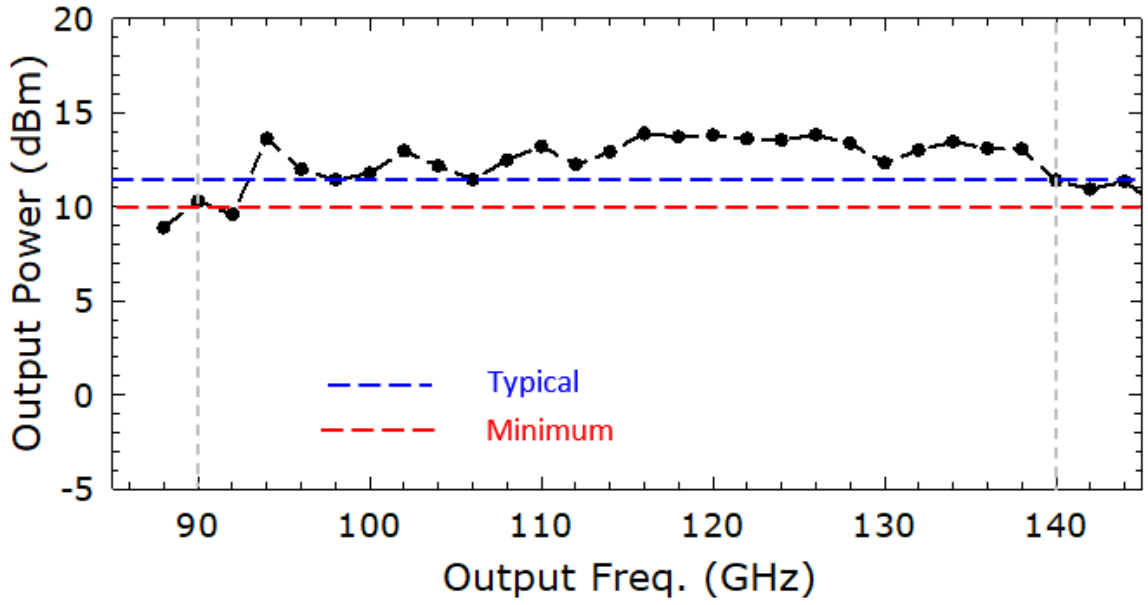
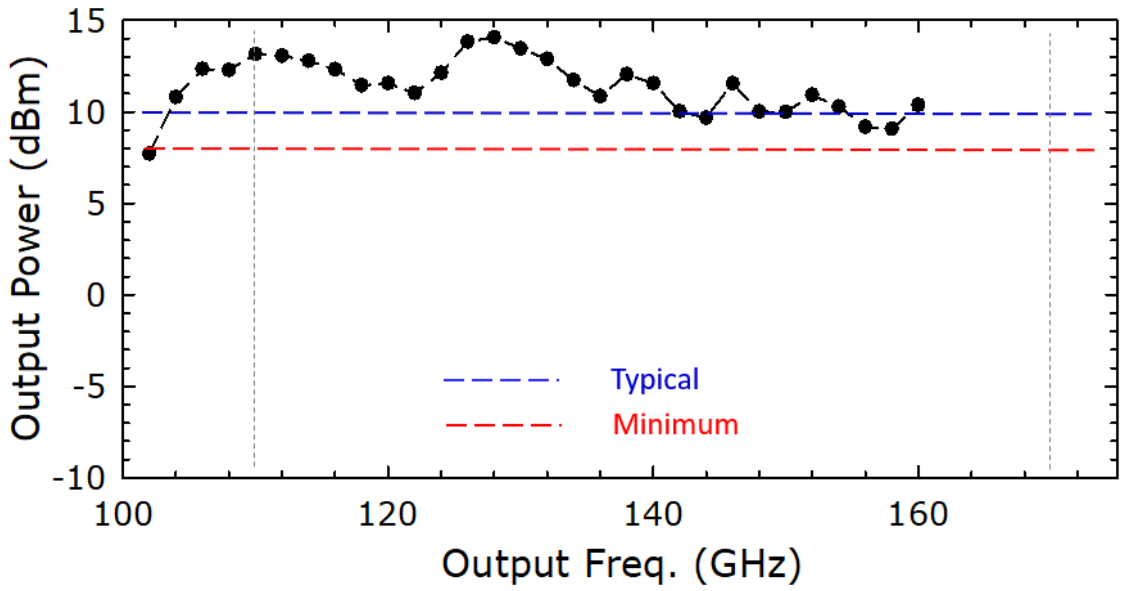
5.5 1214G



5.6 1214B



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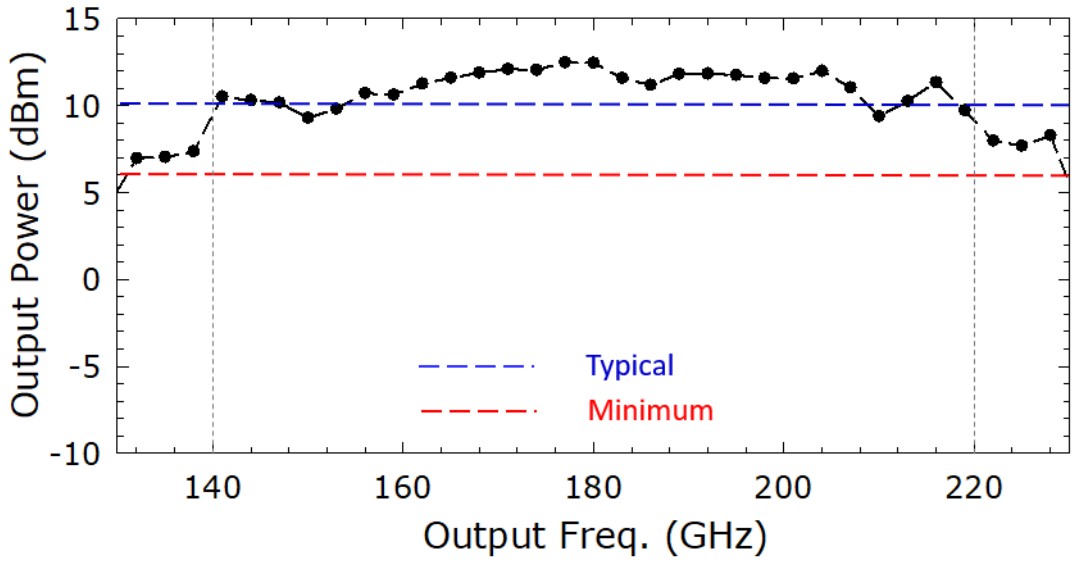
5.7 1223D



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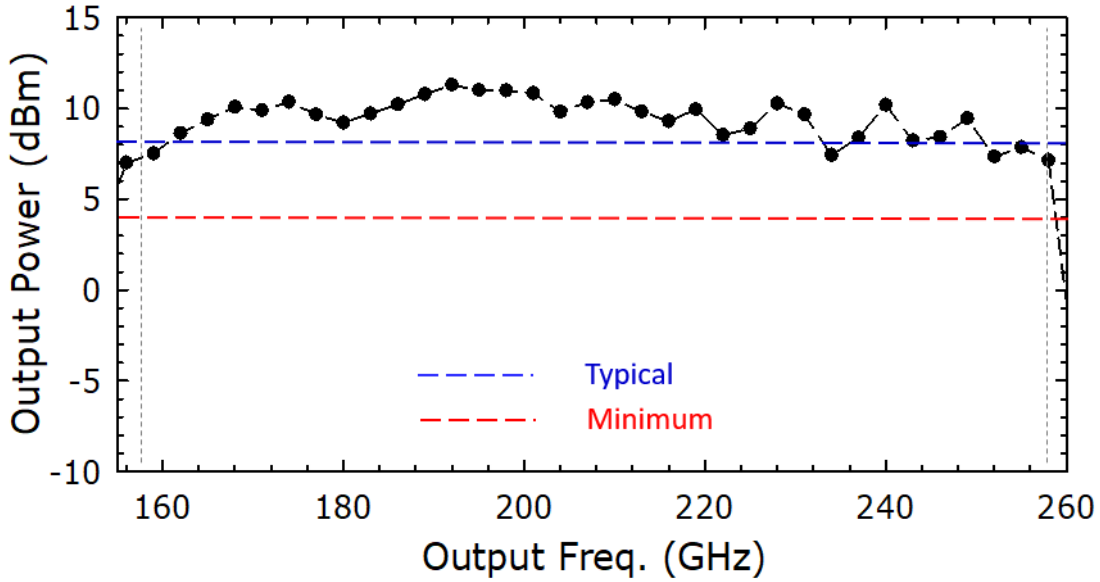

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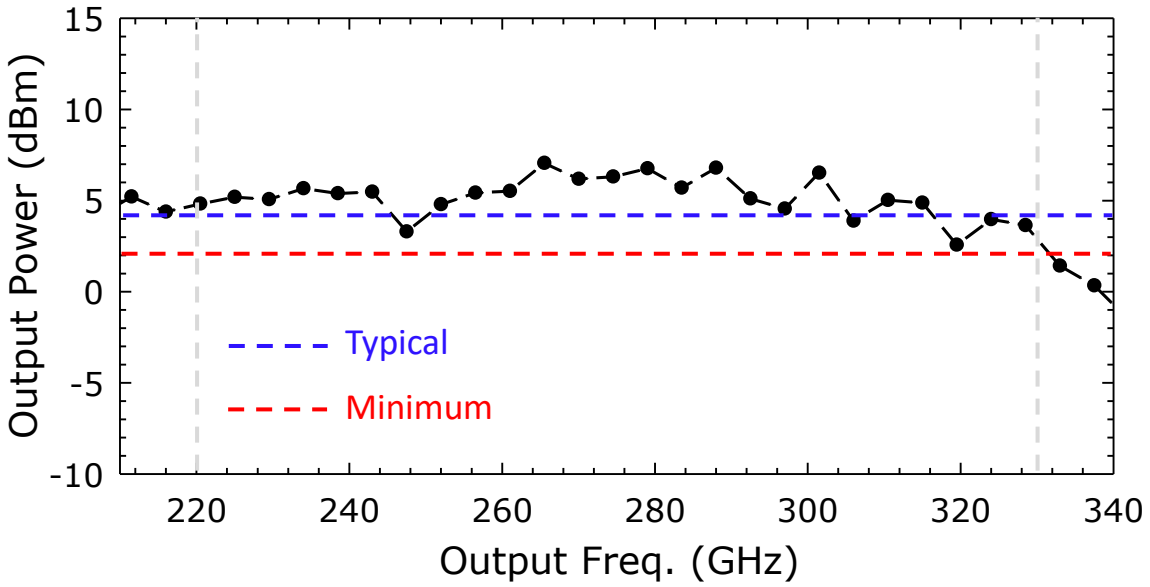
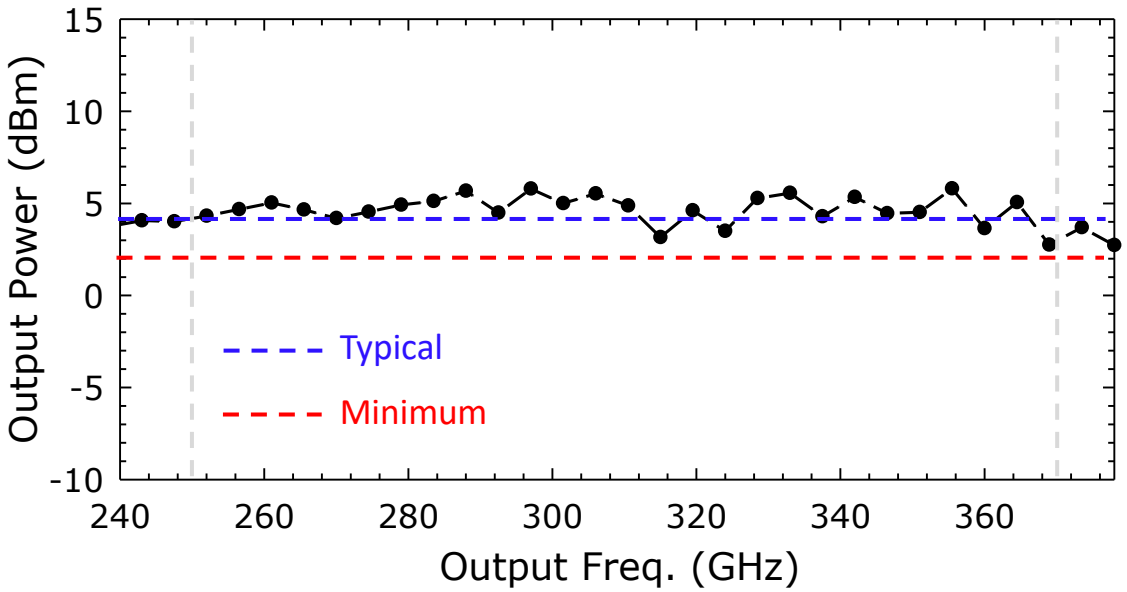
5.9 1219E



5.10 1219H



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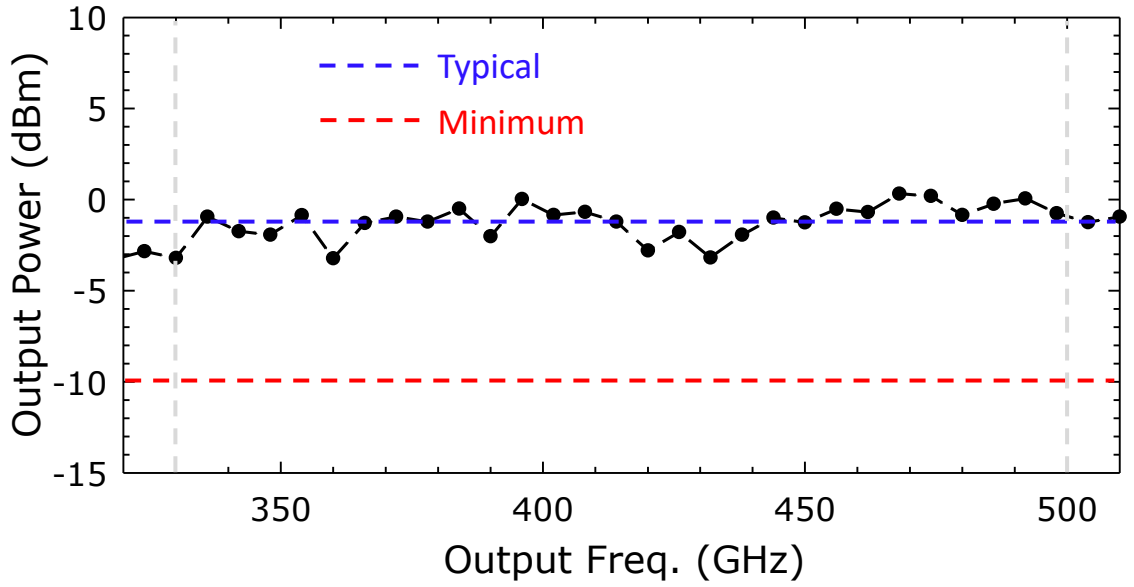
5.11 1218B



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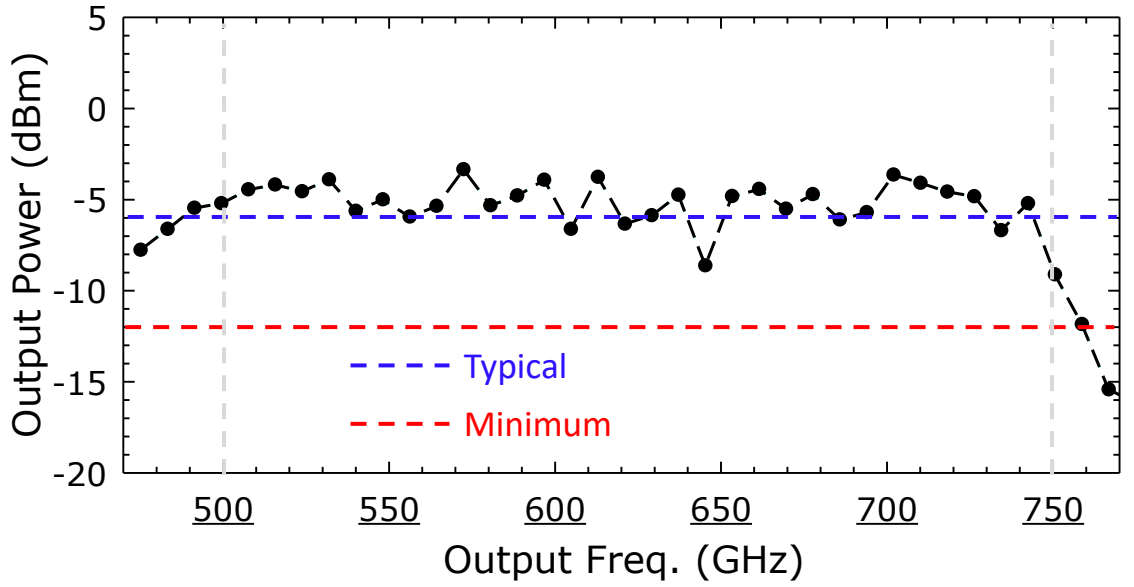

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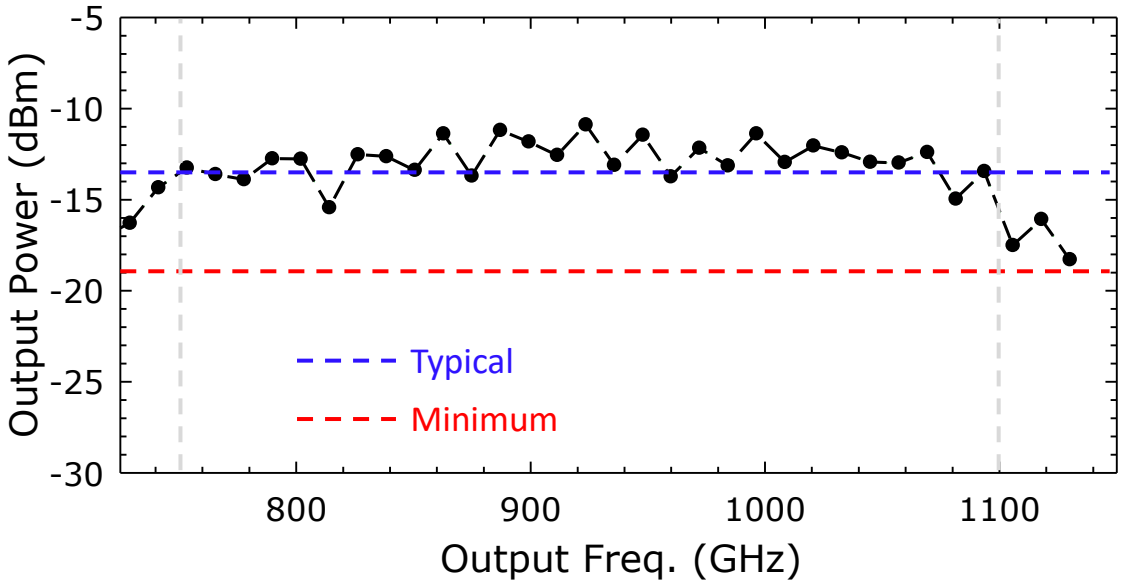
5.13 1221A



5.14 1227D

Coming Soon

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6. ANNEX

6.1 SETUP PICTURES

Figure 4. Illustrative image of a system with Option 3.

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