High-Power THz Systems Brochure

High-Power 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

High-Power AMC and Source Systems Brochure

Contents

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

High-Power AMC and Source Systems Brochure

1. HIGH-POWER INTEGRATED SYSTEM

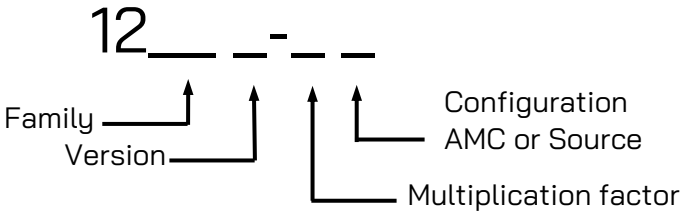
1.1 PRODUCT DESCRIPTION

This document is focused on the available product catalogue of high-power integrated systems able to provide RF power up to 1.41 GHz. 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), tapers, or waveguide sections compatible with the output RF-port may be integrated on customer request.

Figure 1. Illustration of a THz Integrated System at ACST

1.2 ORDERING INFORMATION

Modular Subsystem Example: A 300GHz AMC Standard system **1213C-24A**



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

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

2. PRODUCT LIST

ACST offers Standard and Modular system types. Modular versions allow 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 HIGH-POWER SYSTEMS PRODUCT LIST

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

Band Designation	System Name	Frequency (GHz)	Typical Output Power (mW)	Configuration	System Type	Multiplication Factor
WR-6.5	1210A	135-158	100	1210A	Standard	8
WR-5.1	1210B	155-175	100	1210B	Standard	12
WR-5.1	1210B-L	155-185	80	1210B-L	Standard	12
WR-3.4	1211A	275-315	10	1211A	Standard	16
WR-2.8	1211B	310-345	10	1211B	Standard	24
WR-2.8	1211B-L	310-370	10	1211B-L	Standard	24
WR-4.3	1213A	200-235	45	1213A	Standard	12
WR-3.4	1213B	230-260	40	1213B	Standard	18
WR-3.4	1213C	265-300	40	1213C	Standard	24
WR-2.2	1215A	410-470	8	1210A+215A	Modular	24
WR-1.9	1215B	470-520	4	1210B+215B	Modular	36
WR-1.9	1215B-L	470-540	8	1210B-L+215B	Modular	36
WR-1.5	1229A	600-700	1.6	1213A+229A	Modular	36
WR-1.2	1229C	810-900	0.65	1213C+229C	Modular	72
WR-0.8	1231A	1230-1410	200uW	1215A+231A	Modular	72

Table 1. List of High-Power 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.

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

2.2 PRODUCT OVERVIEW

All High-Power 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

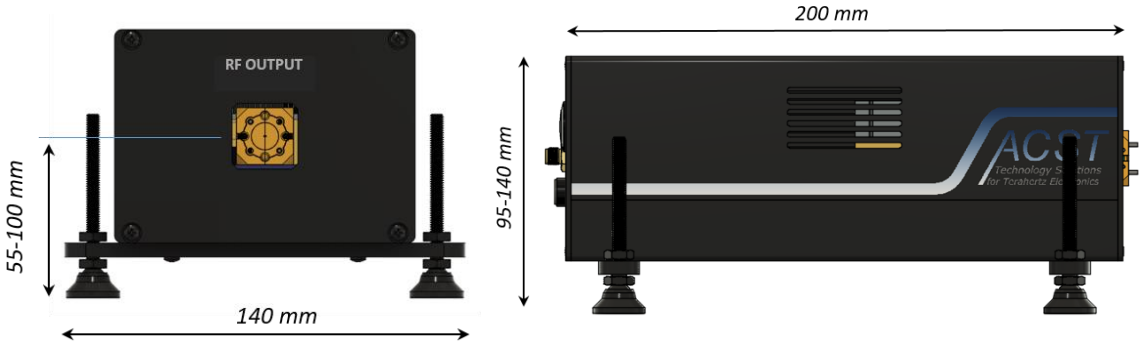


Figure 2. Illustration of the Mechanical Outlines of the high-power systems

2.2.2 MODULAR SYSTEM TYPE

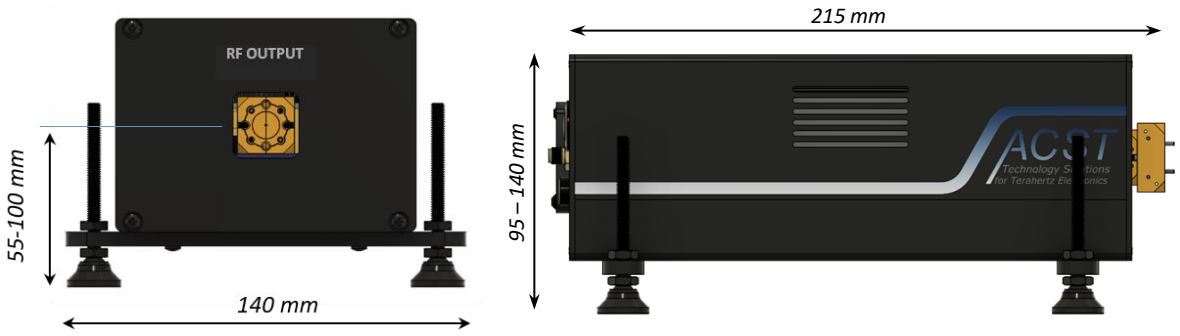


Figure 3. Illustration of the Mechanical Outlines of the high-power systems

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

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 port is included in the standard option.
-A	AMC Mode	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.

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

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.

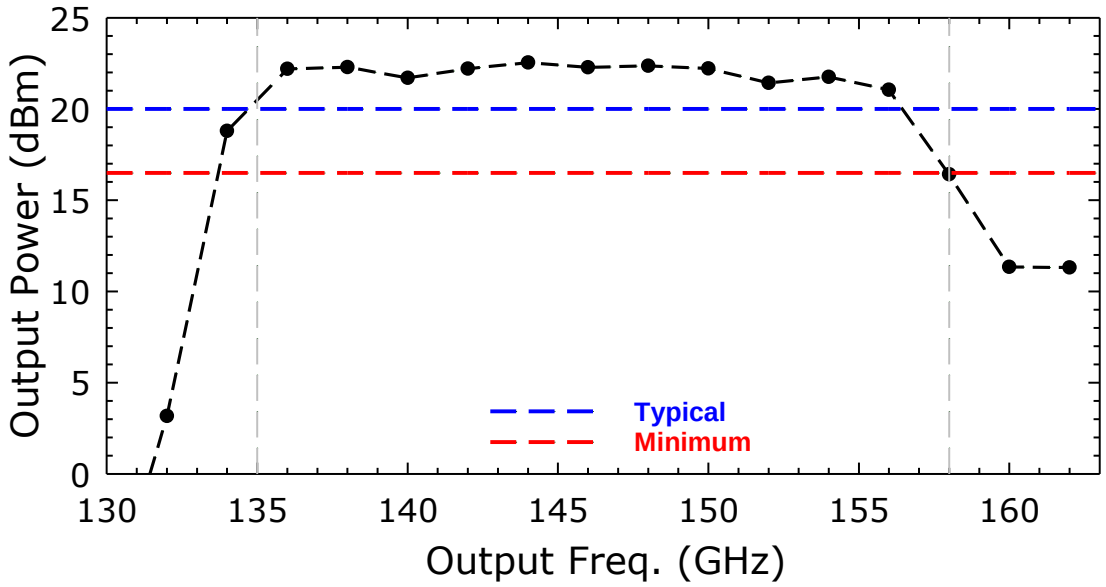
Band Designation	Main Feature	Description
Option 1	Modular System	This option offers the possibility of acquiring a particular system in its **Modular** version. This allows to exchange the available frequency band by connecting a multiplier in the system output port. See Table 1 for more details. For example: **1229A-36A** with Option1, consist of **1213A-12A + 229A** 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** (visit our website for more information on this family of products).
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** (visit our website for more information on this family of products).
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** (visit our website for more information on this family of products). For example: 1229A could include a taper to adapt WR-1.5 to WR-10.

Table 3: List of available Options

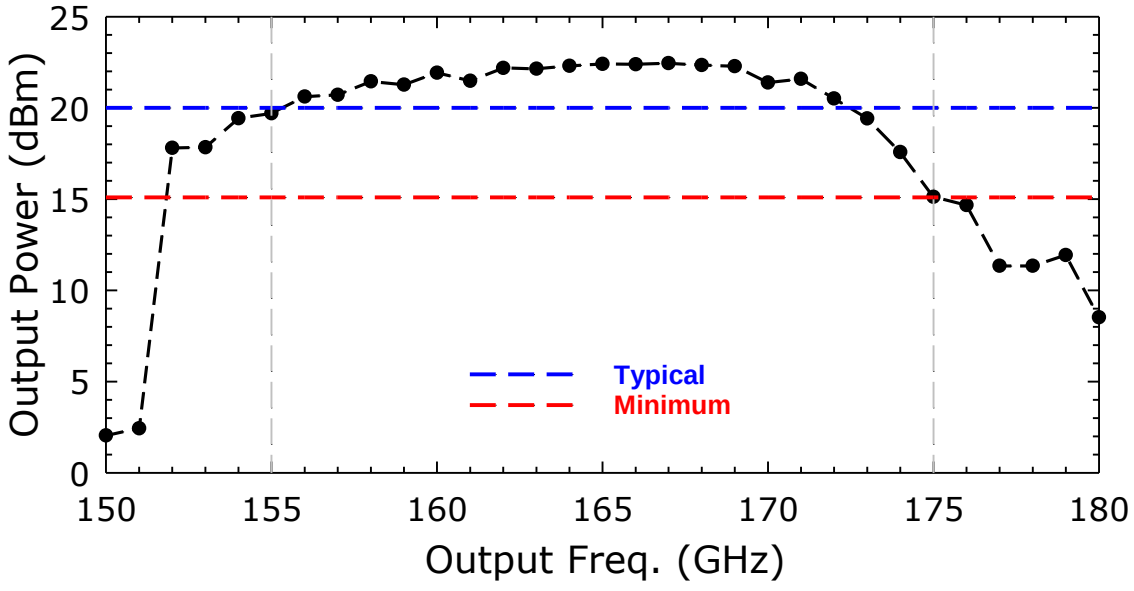
ACST GmbH · Josef-Bautz Str. 15 · DE-63457 Hanau · Germany
Phone: +49 (0) 6181 96 69 86 00 · sales@acst.de · www.acst.de

5. TYPICAL PERFORMANCE

5.1 1210A

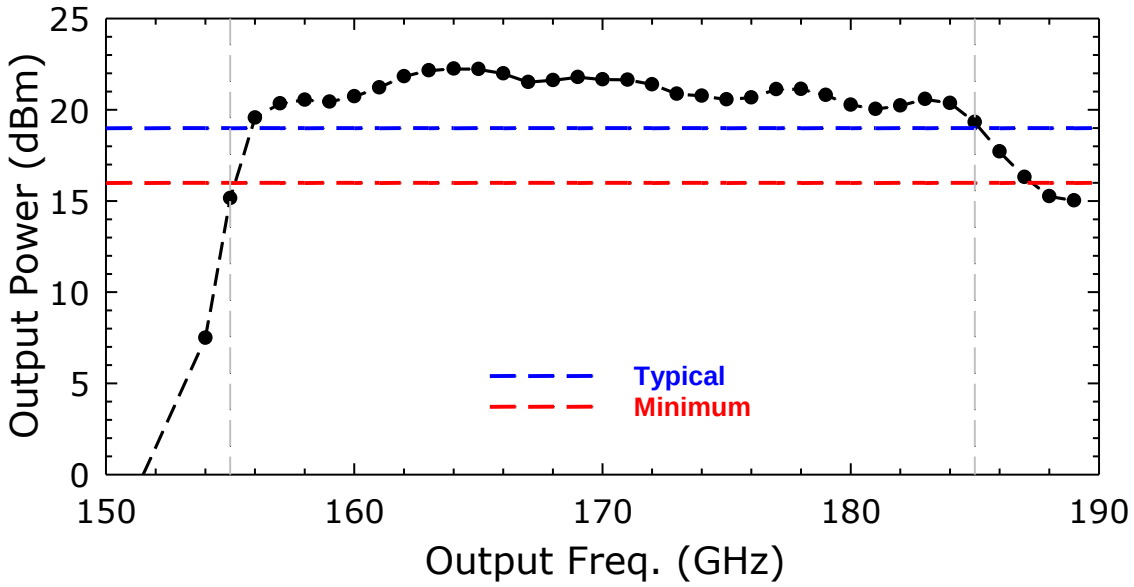


5.2 1210B

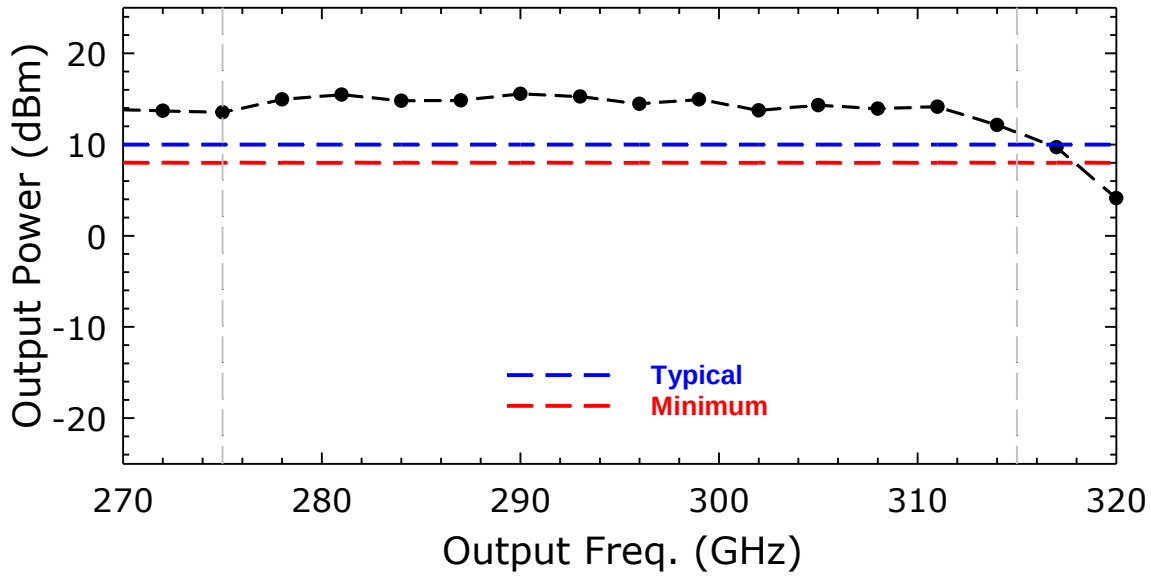


ACST GmbH · Josef-Bautz Str. 15 · DE-63457 Hanau · Germany
Phone: +49 (0) 6181 96 69 86 00 · sales@acst.de · www.acst.de

5.3 1210B-L

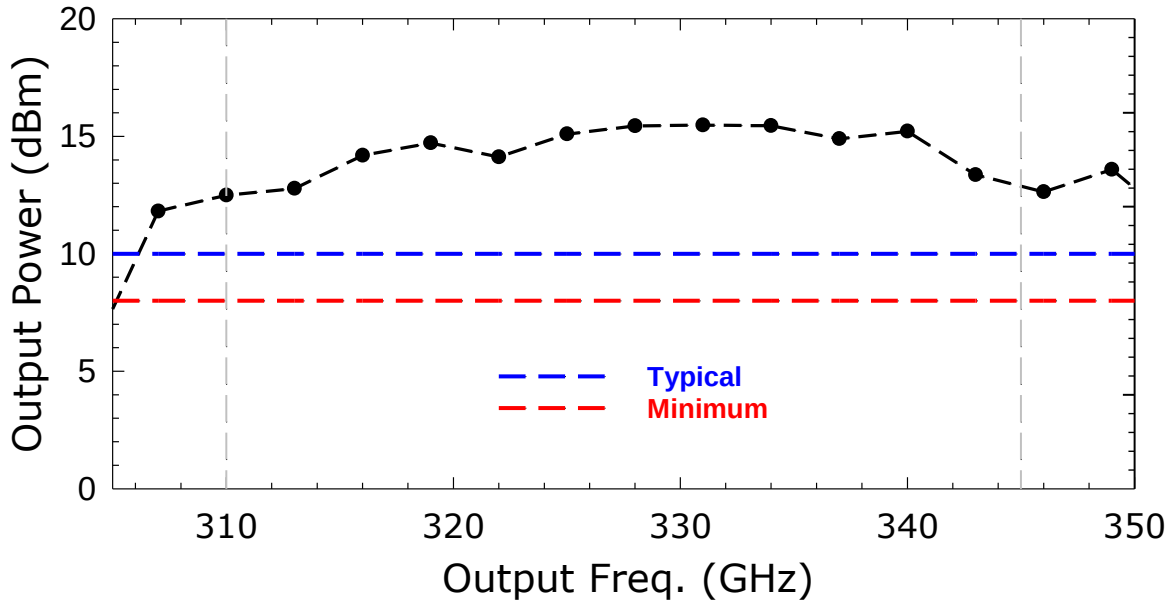


5.4 1211A

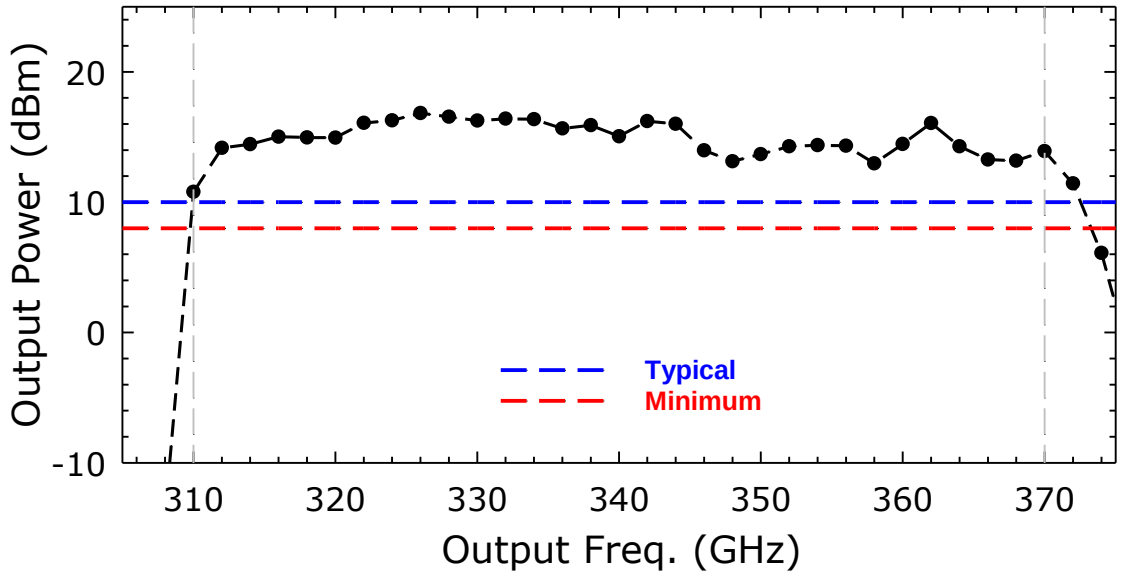


ACST GmbH · Josef-Bautz Str. 15 · DE-63457 Hanau · Germany
Phone: +49 (0) 6181 96 69 86 00 · sales@acst.de · www.acst.de

5.5 1211B

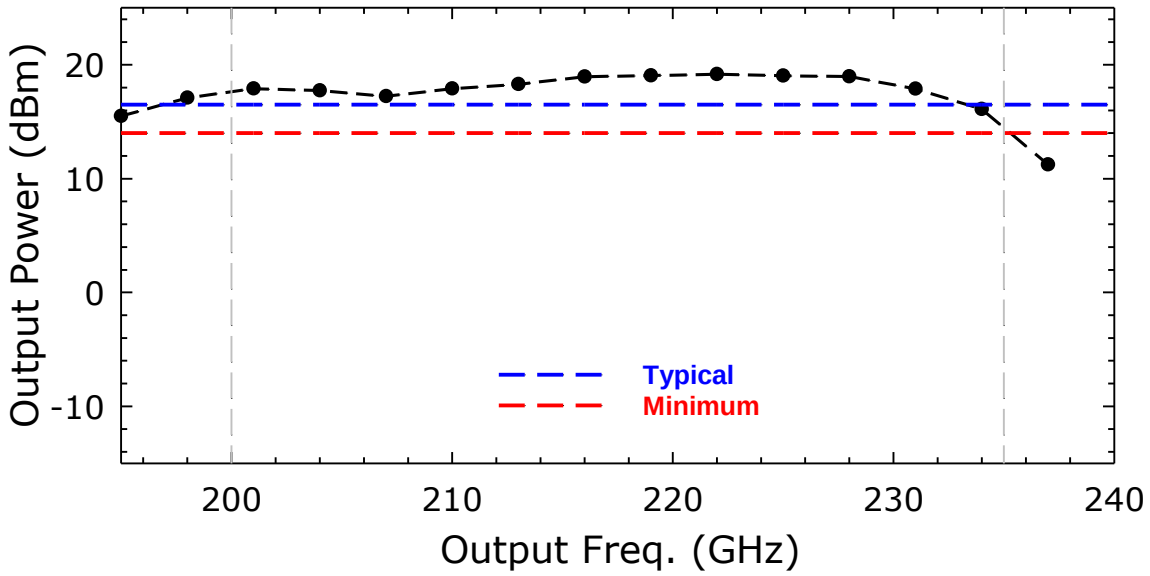


5.6 1211B-L

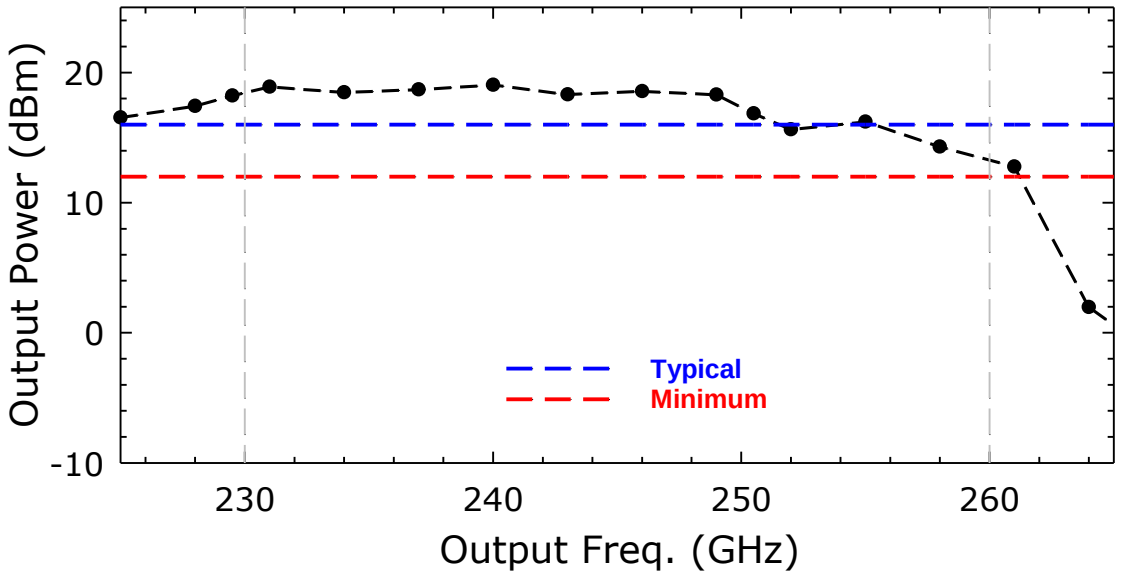


ACST GmbH · Josef-Bautz Str. 15 · DE-63457 Hanau · Germany
Phone: +49 (0) 6181 96 69 86 00 · sales@acst.de · www.acst.de

5.7 1213A

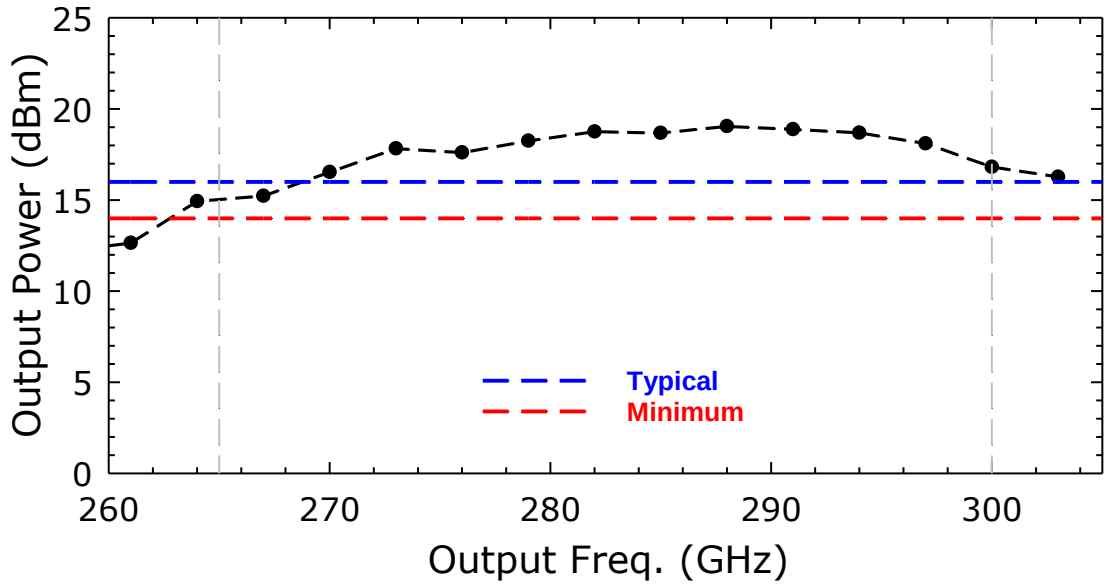


5.8 1213B

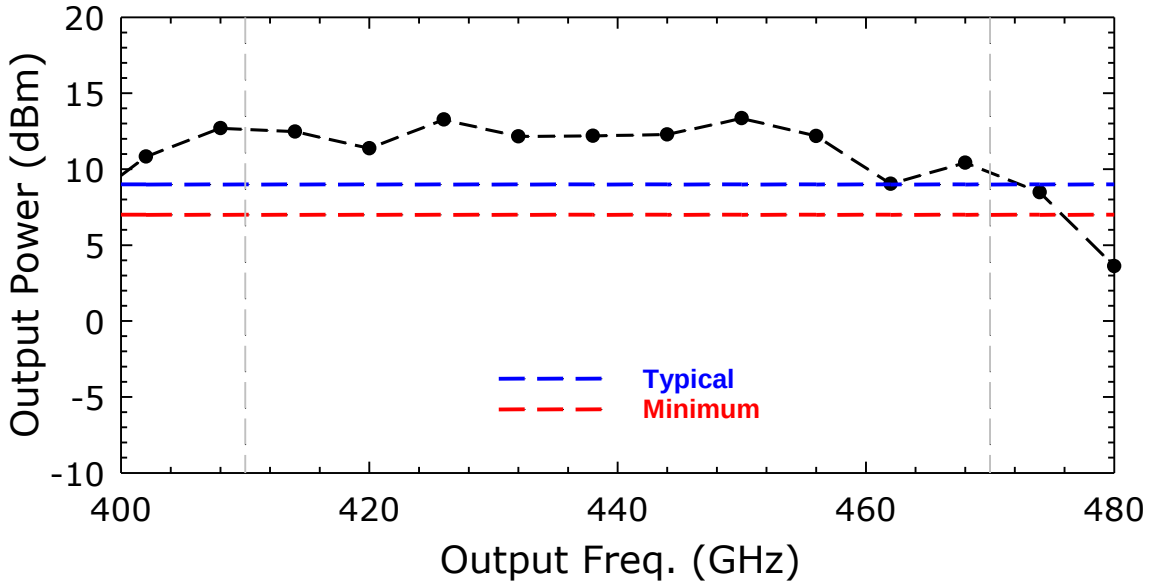


ACST GmbH · Josef-Bautz Str. 15 · DE-63457 Hanau · Germany
Phone: +49 (0) 6181 96 69 86 00 · sales@acst.de · www.acst.de

5.9 1213C

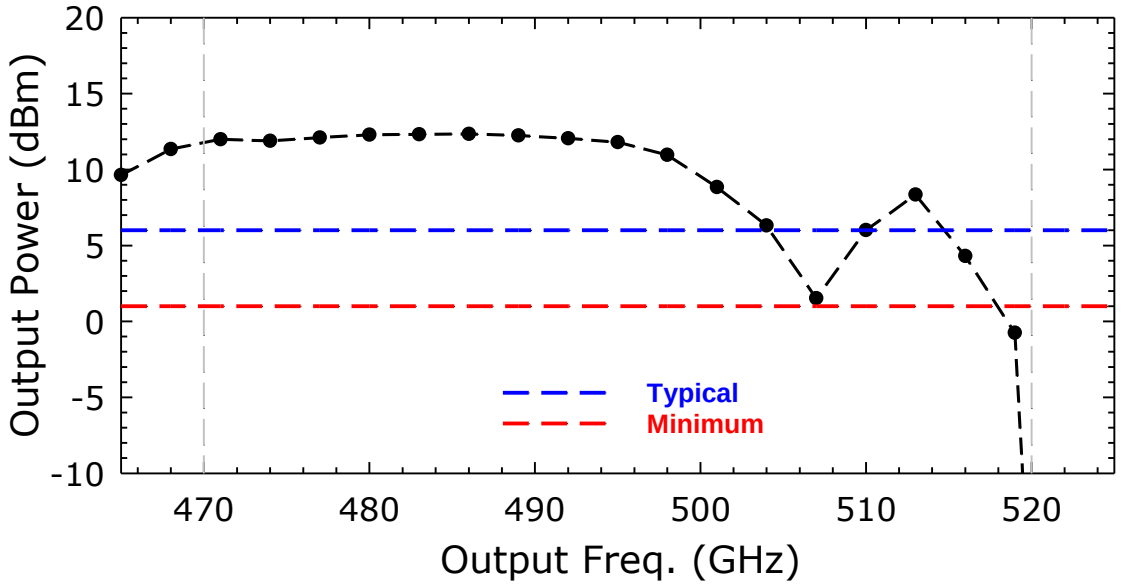


5.10 1215A

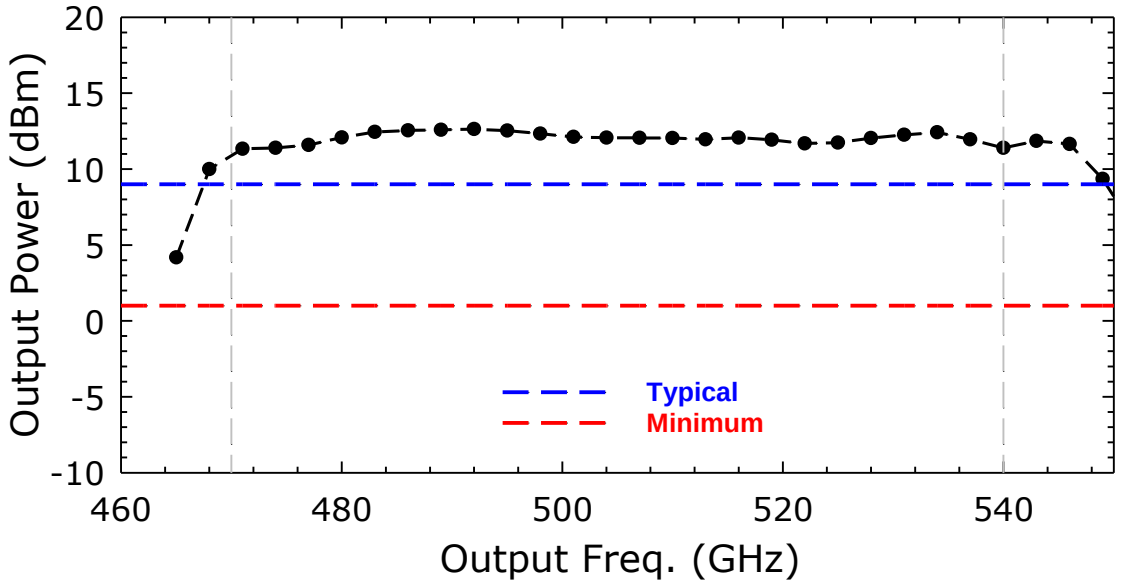


ACST GmbH · Josef-Bautz Str. 15 · DE-63457 Hanau · Germany
Phone: +49 (0) 6181 96 69 86 00 · sales@acst.de · www.acst.de

5.11 1215B

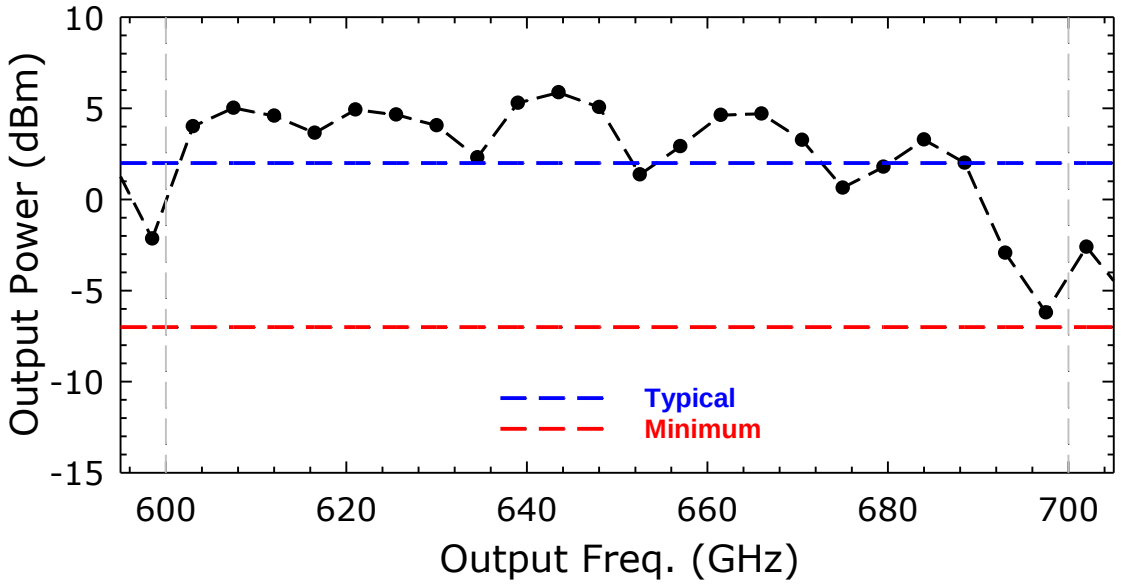


5.12 1215B-L

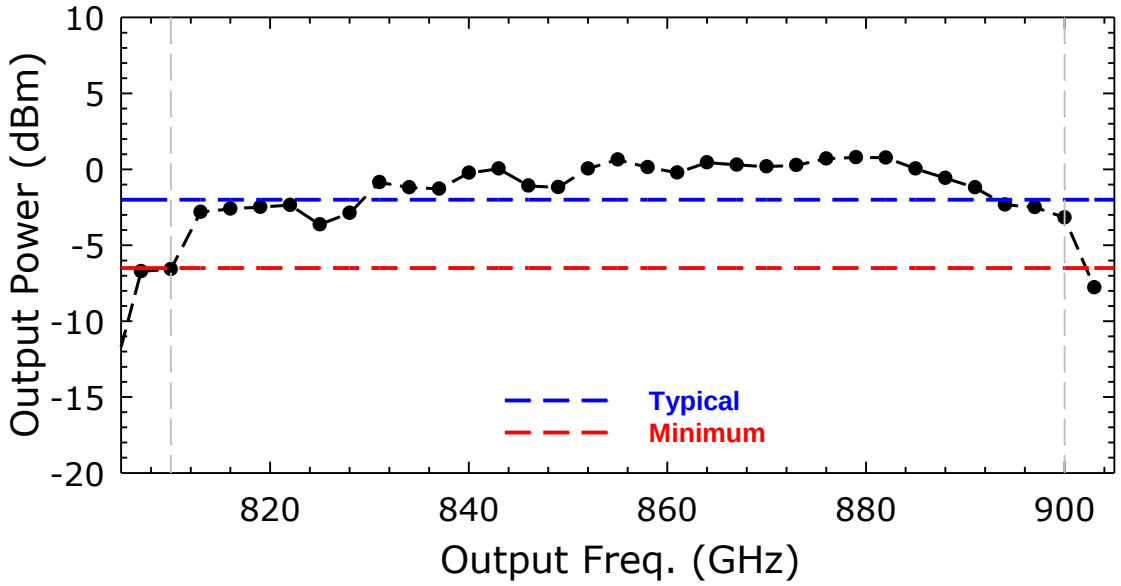


ACST GmbH · Josef-Bautz Str. 15 · DE-63457 Hanau · Germany
Phone: +49 (0) 6181 96 69 86 00 · sales@acst.de · www.acst.de

5.13 1229A

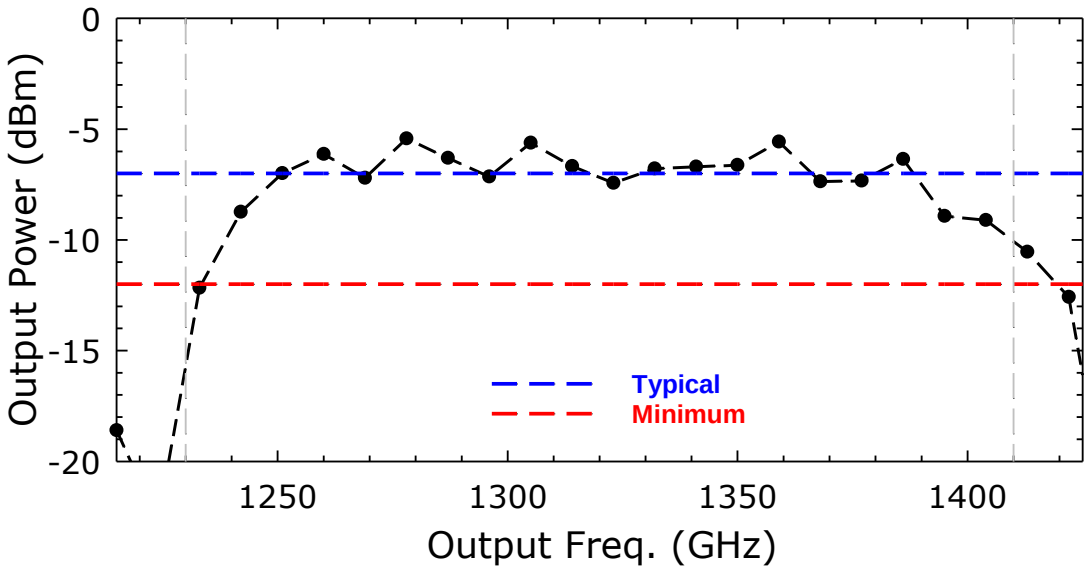


5.14 1229C



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

5.15 1231A



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

6. ANNEX

6.1 OPTION PICTURES

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

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