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TEST –Results			Order-No.: T35222-06-05HS				
Client	Siemens AG, Industrial Automation Division						
Manufacturer	Siemens AG, Sensors & Communication						
Product Description	Module for industrial WLAN applications 2.4 / 5 GHz						
Type / Model Name	WLAN n-module MPCIE-R1-ABGN-U3						
Date received	2012-05-18	Date returned	2012-06-06	Serial - No.:	#45		
		Tests are made according to FCC Part 15.247 and RSS 210					
Type of test			Limits		Test Results		
Transmission mode fall back to Cyclic Delay Diversity (CDD)			Margin (dB)	exceeded by (dB)	ok	not ok	meet criterion
Ch1 – MCS23 to MCS15, power reduction			n/a	n/a	X	-	-
Ch1 – MCS23 to MCS7, power reduction			n/a	n/a	X	-	-
Ch11 – MCS23 to MCS15, power reduction			n/a	n/a	X	-	-
Ch11 – MCS23 to MCS7, power reduction			n/a	n/a	X	-	-
Ch149 – MCS23 to MCS15, power reduction			n/a	n/a	X	-	-
Ch149 – MCS23 to MCS7, power reduction			n/a	n/a	X	-	-
Ch165 – MCS23 to MCS15, power reduction			n/a	n/a	X	-	-
Ch165 – MCS23 to MCS7, power reduction			n/a	n/a	X	-	-

Remarks: The test is only a performance test to verify the CDD mechanism of the EUT.

Test description:

The test setup was performed under the following conditions:

- Three of three output chains were activated.
- The transmission was set to HT20 transmission mode, with a power setting of P10.
- The MCS rates being used were MCS23 (three output streams), MCS15 (two output streams) and MCS7 (one output stream).
- The tested channels are: CH1 (2412 MHz), CH11 (2462 MHz), CH149 (5745 MHz) and CH165 (5825 MHz).
- The transmission was measured conducted on output chain one, chains two and three were terminated with 50 Ω .
- Visualisation and measuring of the transmission was performed using a spectrum analyser

Test procedure:

- The first generated signal in each tested channel was set to MCS23 to perform three separate streams. The resulting level is the reference to compare the MCS23 with MCS15 rate and MCS23 with MCS7 rate.
- Using the trace mode max hold the maximum level was recorded in trace one, the level for MCS15 was recorded in trace 2 and the level for MCS7 was recorded in trace 3.
- MCS15 and MCS7 were recorded separately on the analyser's second channel to measure the emission level.

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This test result consists of 10 page(s). The test result only corresponds to the tested sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

Date	Tested by	Checked by	Result
2012-06-11			☒ passed ☐ not passed

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Test results:

Ch1 MCS23 and MCS15



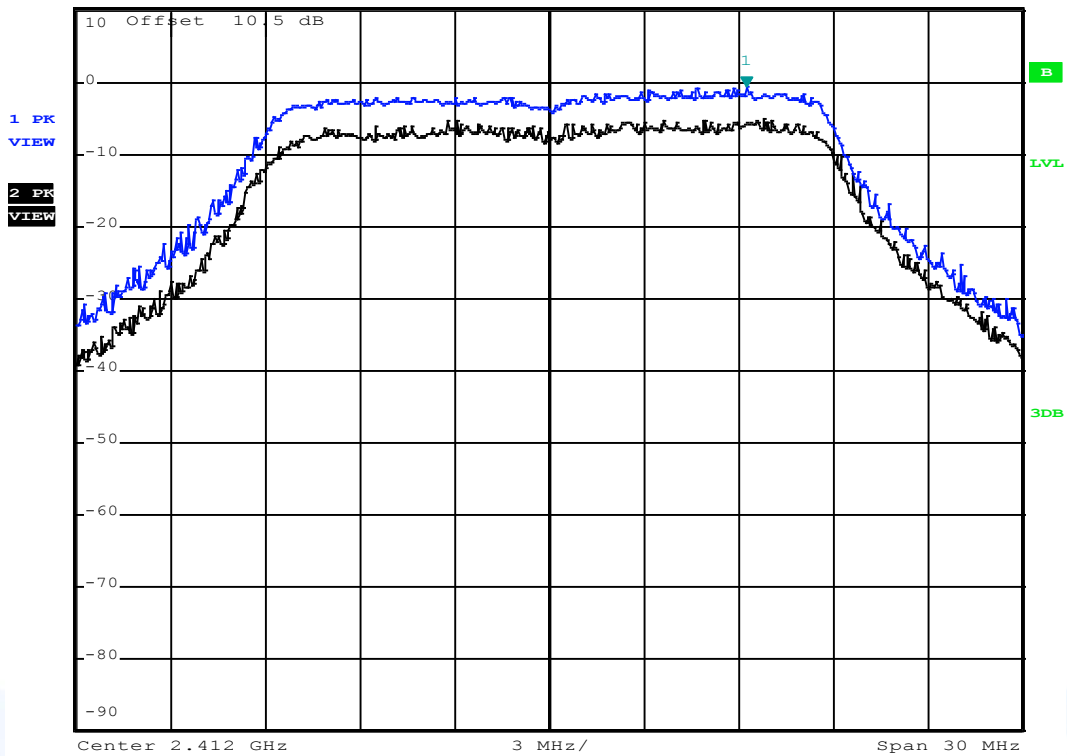
*RBW 1 MHz
*VBW 1 MHz
Marker 1 [T1]
-0.74 dBm
2.418240000 GHz

Ref 10 dBm

*Att 10 dB

SWT 2.5 ms

2.418240000 GHz



Ch1 MCS23 and MCS7



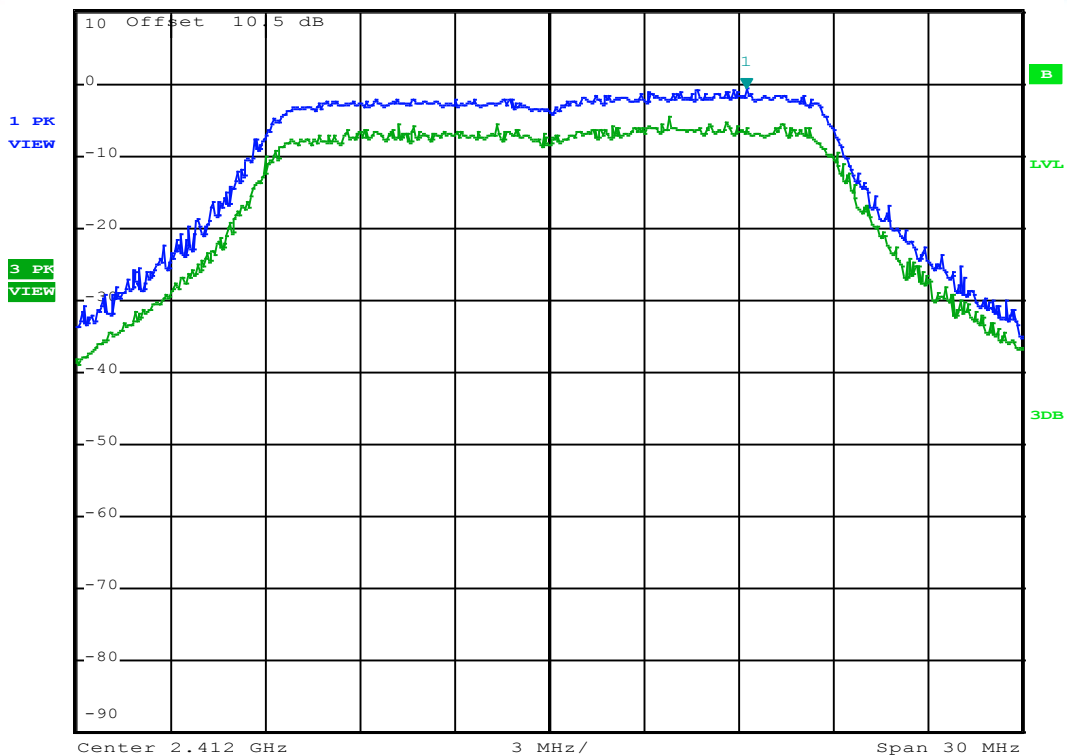
*RBW 1 MHz
*VBW 1 MHz
Marker 1 [T1]
-0.74 dBm
2.418240000 GHz

Ref 10 dBm

*Att 10 dB

SWT 2.5 ms

2.418240000 GHz

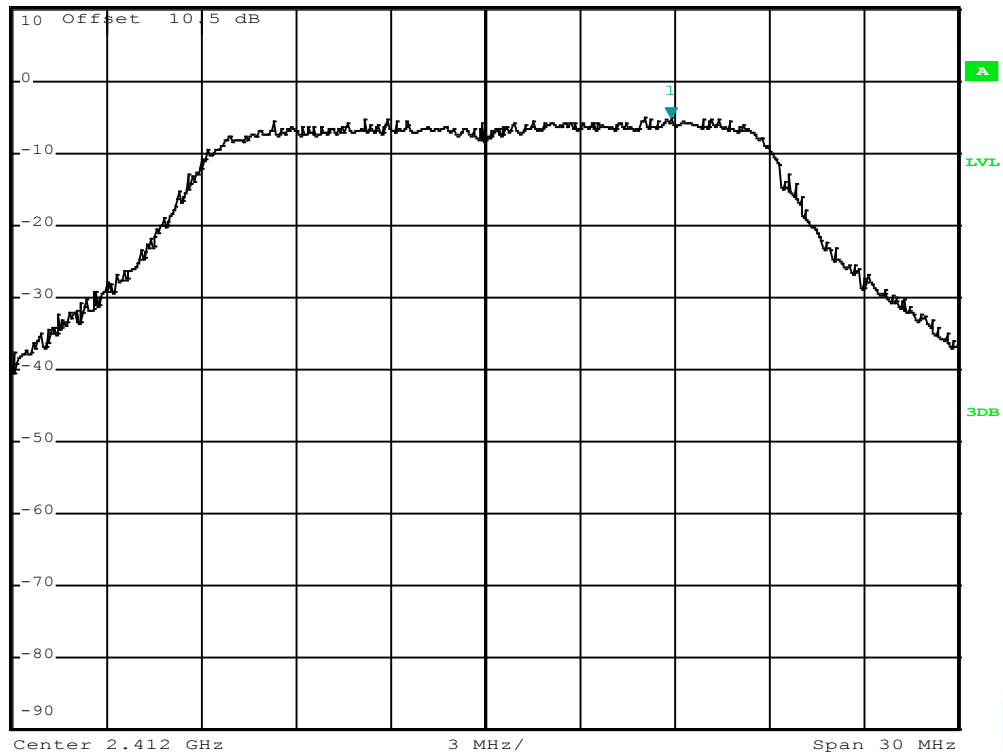


Ch1 MCS15



*RBW 1 MHz Marker 1 [T2]
*VBW 1 MHz -5.12 dBm
Ref 10 dBm *Att 10 dB SWT 2.5 ms 2.417880000 GHz

2 PK
VIEW

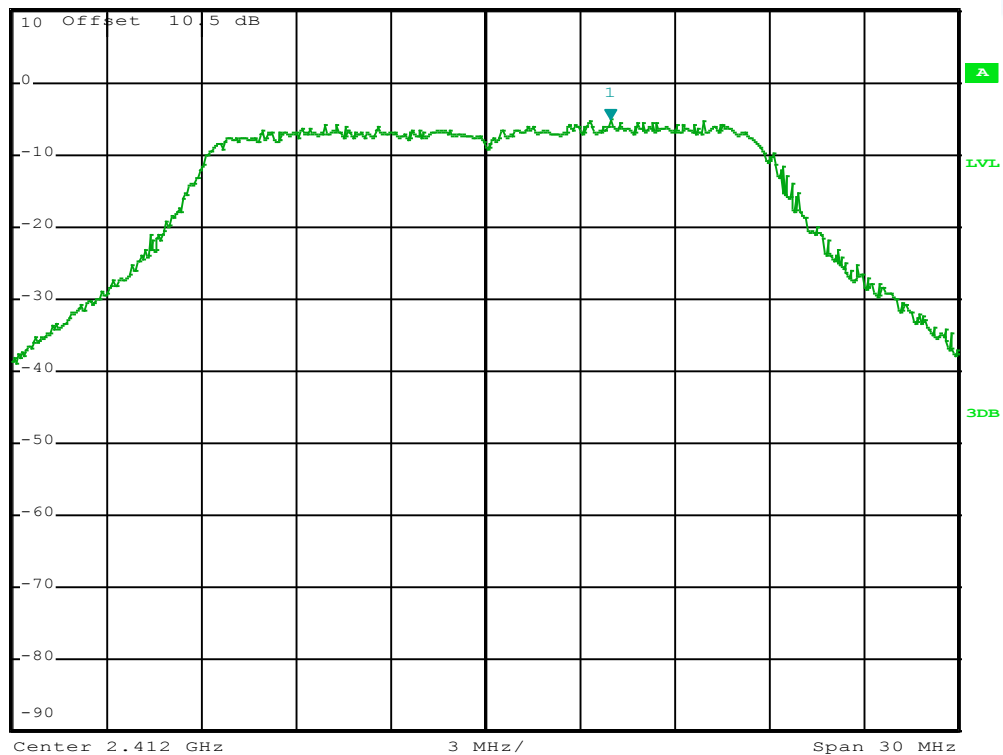


Ch1 MCS15

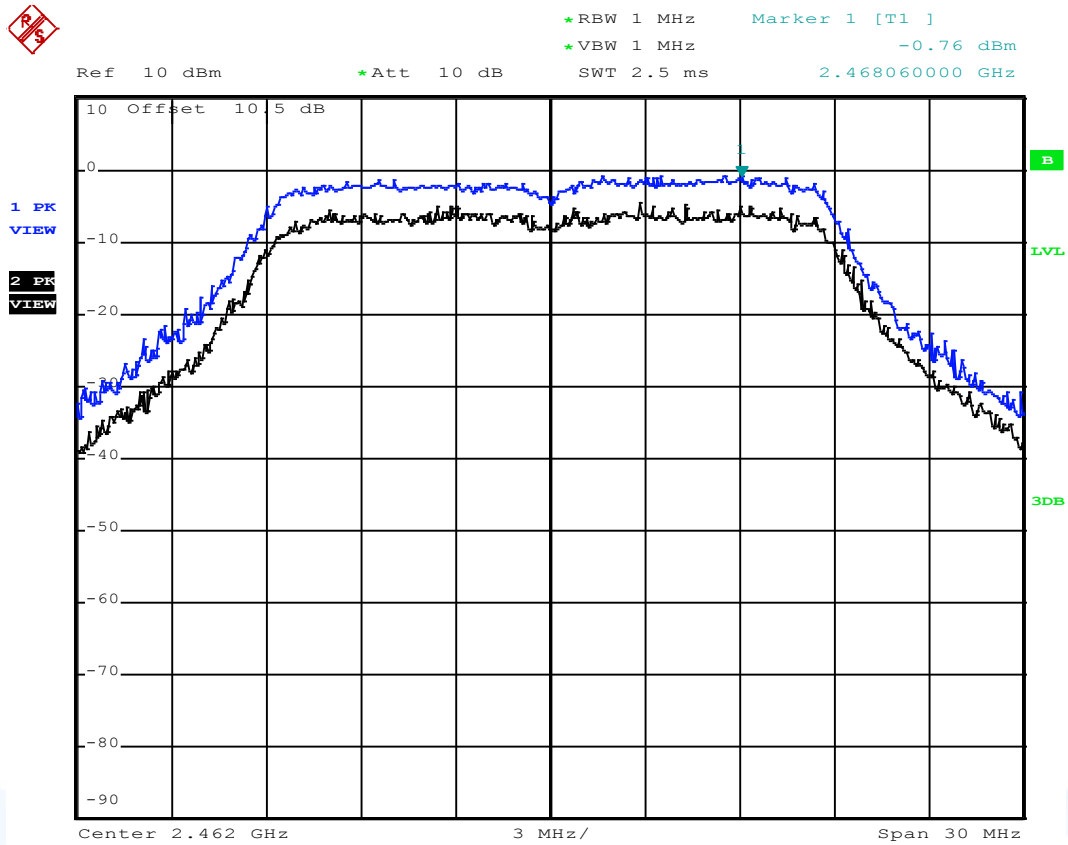


*RBW 1 MHz Marker 1 [T3]
*VBW 1 MHz -5.15 dBm
Ref 10 dBm *Att 10 dB SWT 2.5 ms 2.415960000 GHz

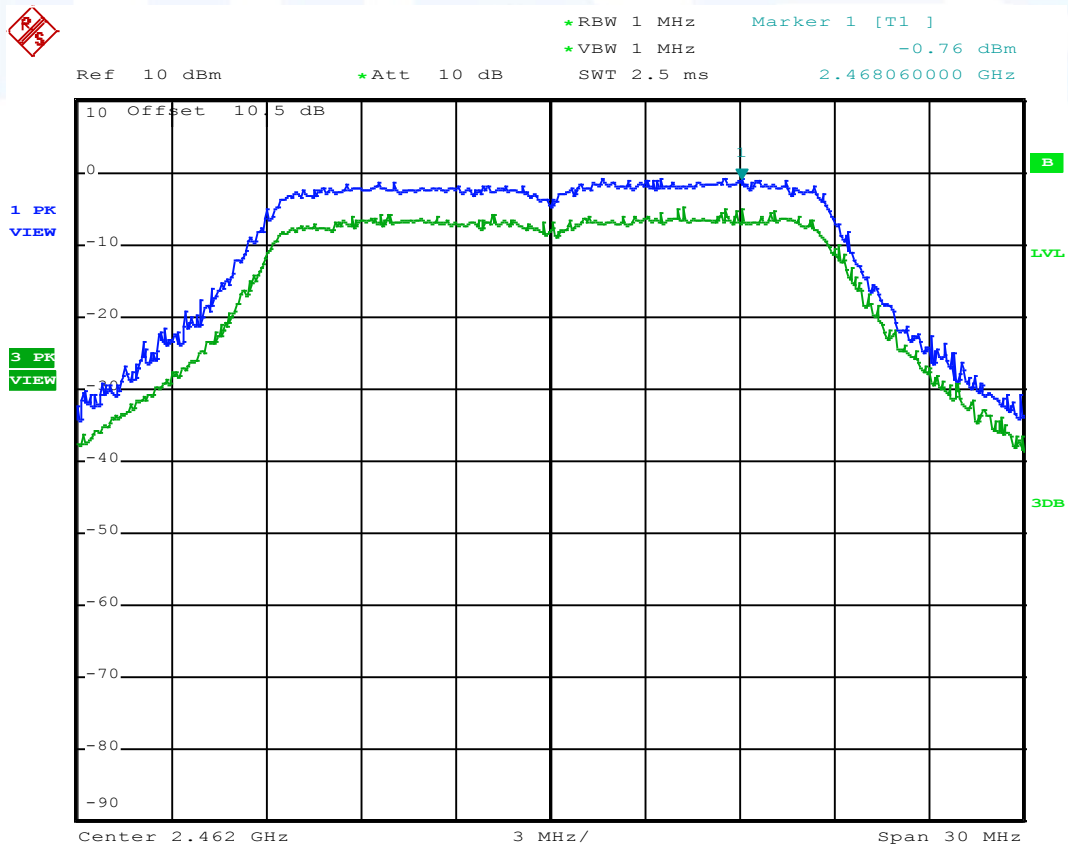
3 PK
VIEW



Ch11 MCS23 and MCS15



Ch11 MCS23 and MCS7



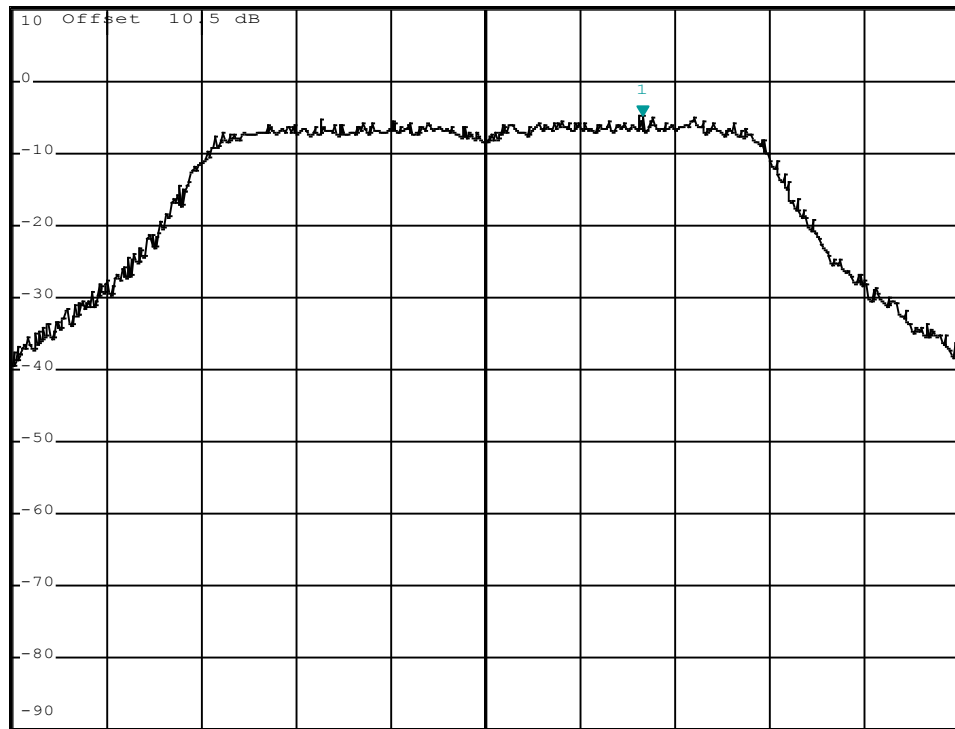
Ch11 MCS15



*RBW 1 MHz Marker 1 [T2]
*VBW 1 MHz -4.86 dBm
*Att 10 dB
SWT 2.5 ms 2.466980000 GHz

Ref 10 dBm

2 PK
VIEW



A

LVL

3dB

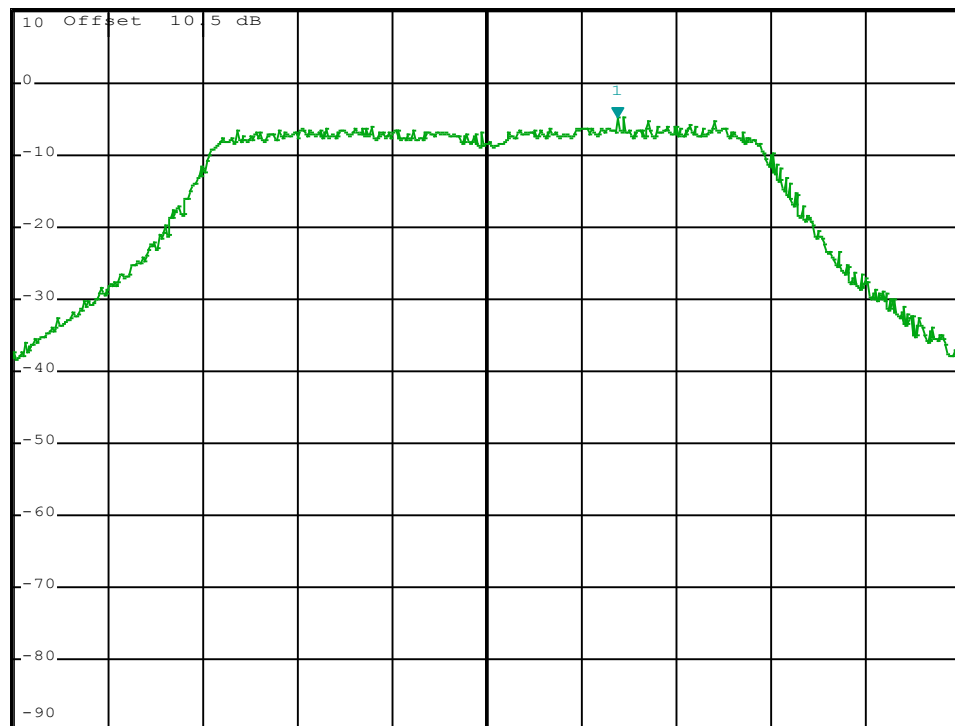
Ch11 MCS7



*RBW 1 MHz Marker 1 [T3]
*VBW 1 MHz -4.91 dBm
*Att 10 dB
SWT 2.5 ms 2.466140000 GHz

Ref 10 dBm

3 PK
VIEW

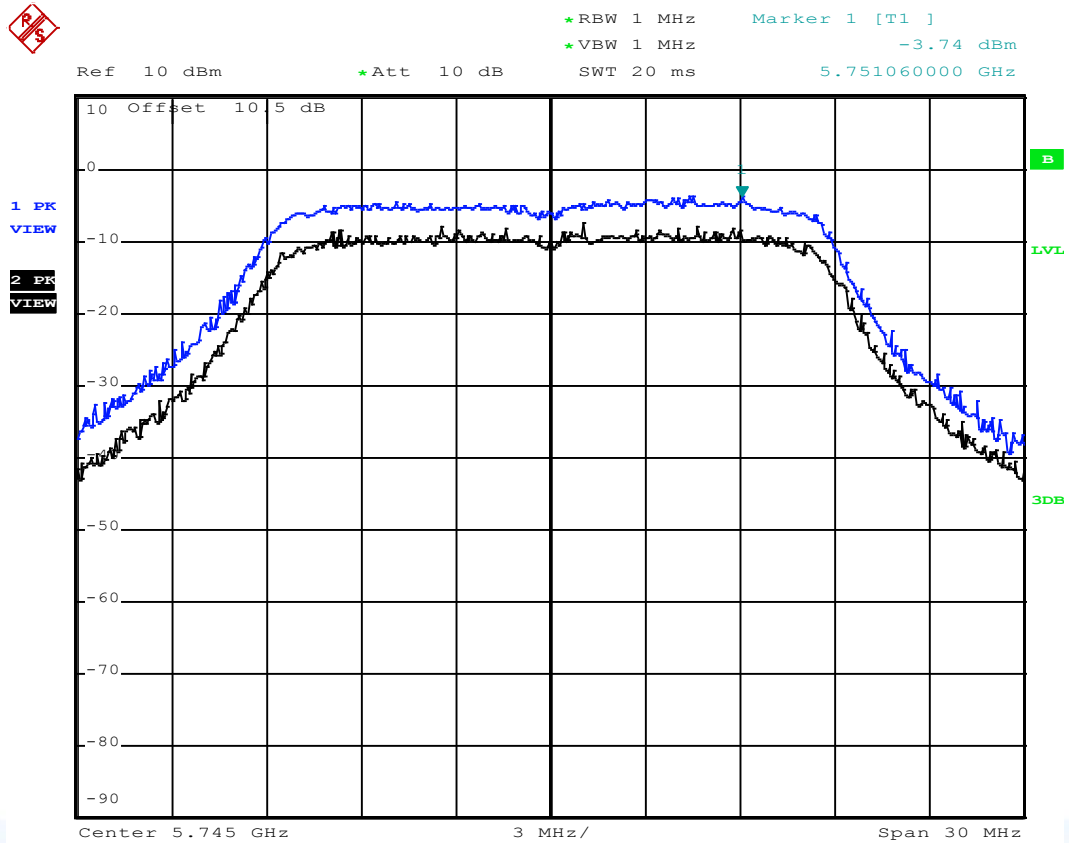


A

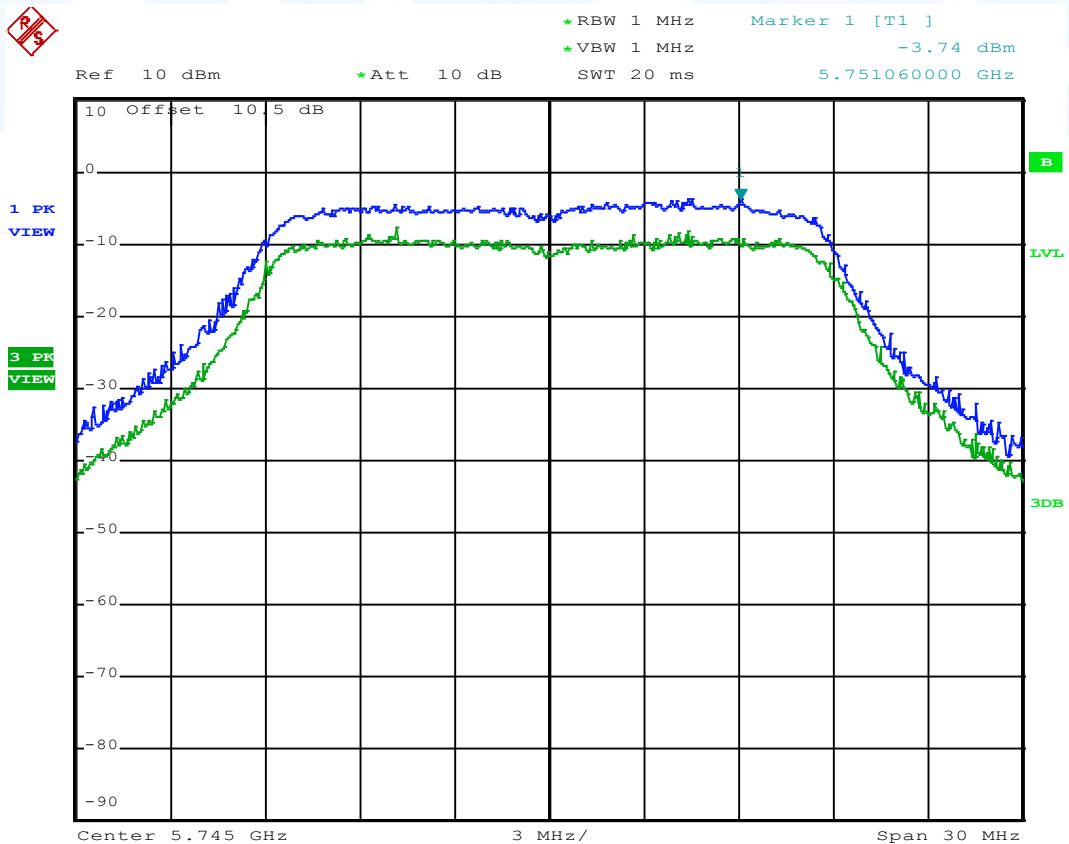
LVL

3dB

Ch149 MCS23 and MCS15



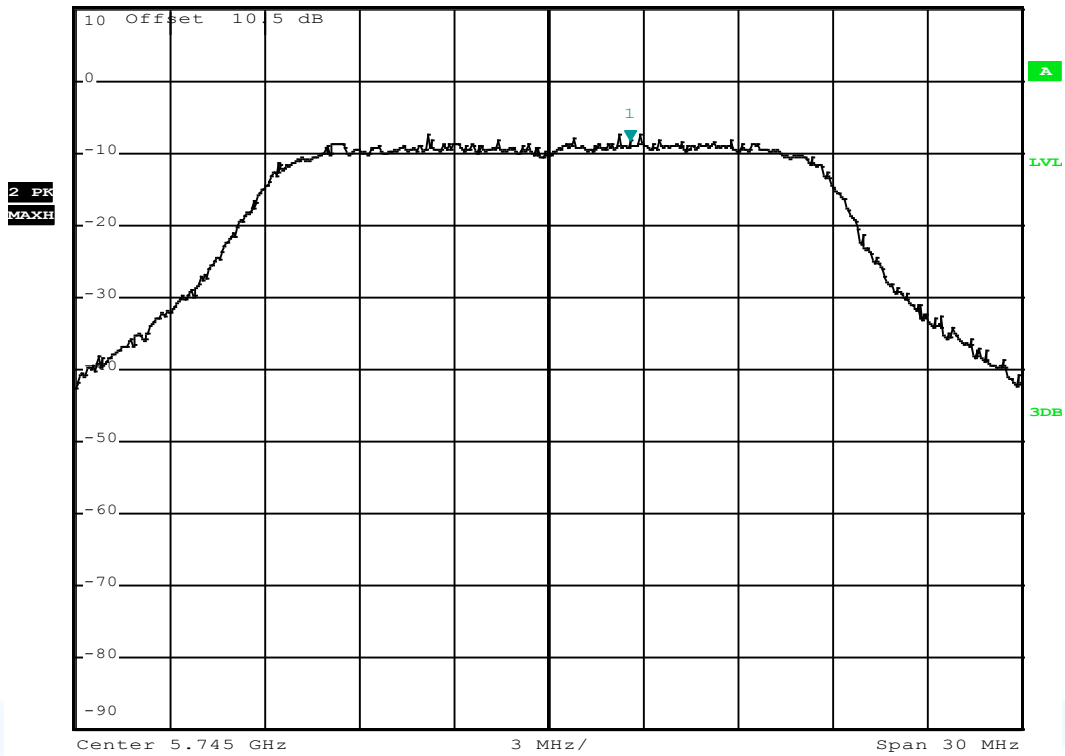
Ch149 MCS23 and MCS7



Ch149 MCS15



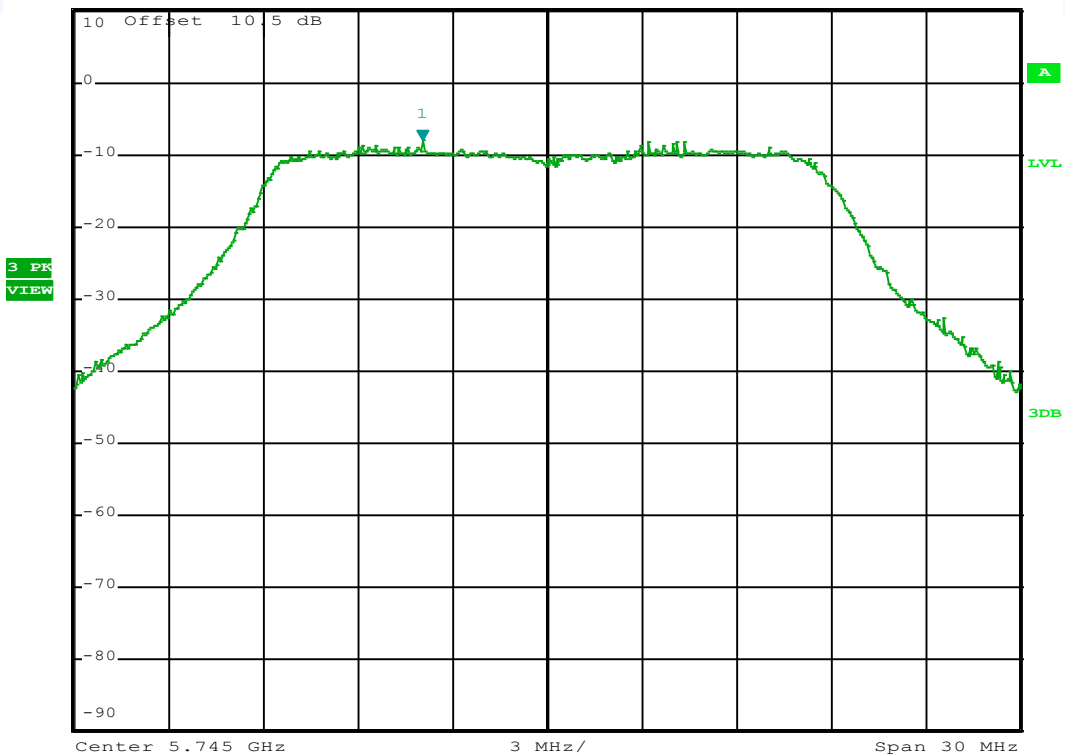
*RBW 1 MHz Marker 1 [T2]
*VBW 1 MHz -8.16 dBm
Ref 10 dBm *Att 10 dB SWT 20 ms 5.747580000 GHz



Ch149 MCS7



*RBW 1 MHz Marker 1 [T3]
*VBW 1 MHz -8.10 dBm
Ref 10 dBm *Att 10 dB SWT 20 ms 5.741040000 GHz



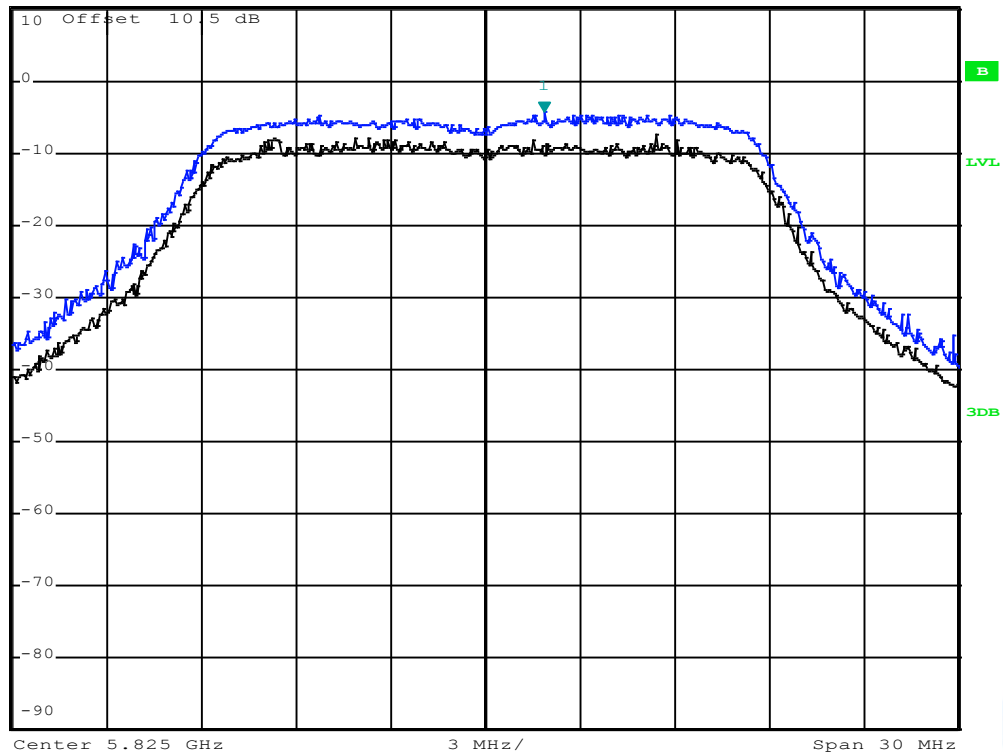


Ch165 MCS23 and MCS15

*RBW 1 MHz Marker 1 [T1]
*VBW 1 MHz -4.43 dBm
Ref 10 dBm *Att 10 dB SWT 20 ms 5.826860000 GHz

1 PK
VIEW

2 PK
VIEW

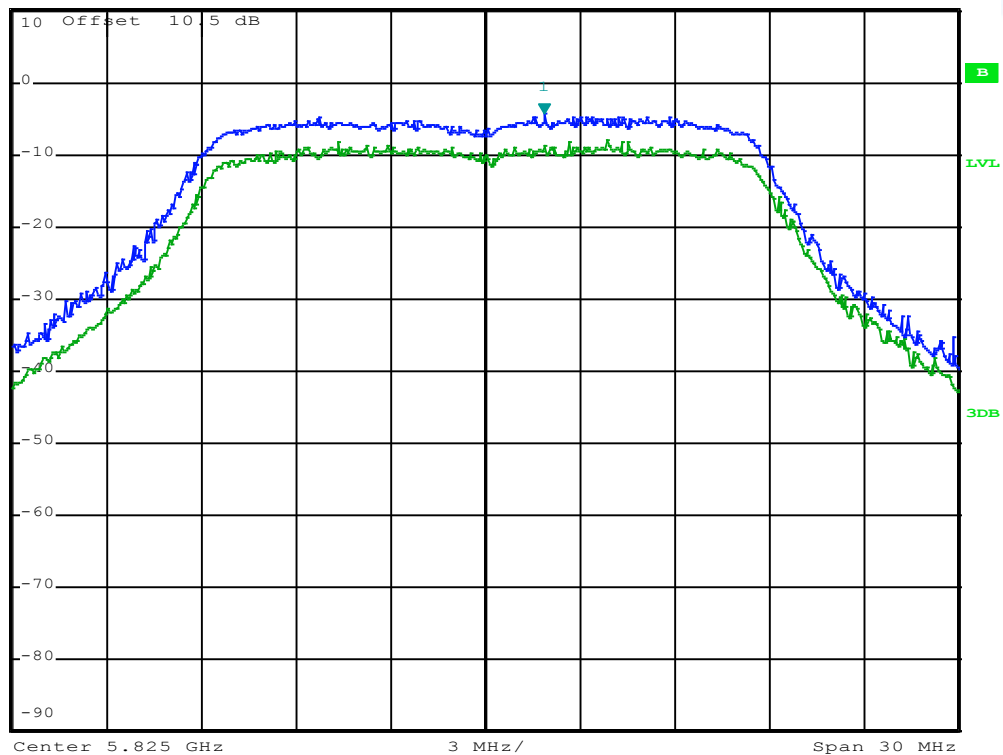


Ch165 MCS23 and MCS7

*RBW 1 MHz Marker 1 [T1]
*VBW 1 MHz -4.43 dBm
Ref 10 dBm *Att 10 dB SWT 20 ms 5.826860000 GHz

1 PK
VIEW

3 PK
VIEW



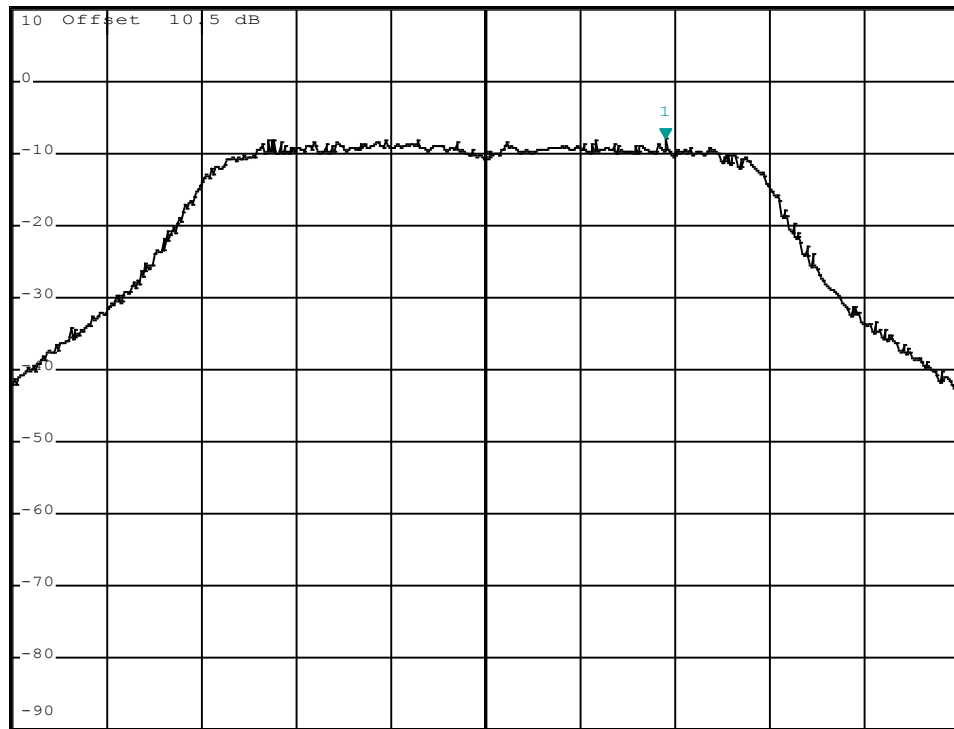
Ch165 MCS15



*RBW 1 MHz Marker 1 [T2]
*VBW 1 MHz -8.05 dBm
*Att 10 dB SWT 20 ms 5.830700000 GHz

Ref 10 dBm

2 PK
VIEW



Ch165 MCS7



*RBW 1 MHz Marker 1 [T3]
*VBW 1 MHz -7.05 dBm
*Att 10 dB SWT 20 ms 5.827460000 GHz

Ref 10 dBm

3 PK
VIEW

