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**Re: FCC ID:** QC8-AN80IE

**Applicant:** Redline Communications Inc.

**Correspondence Reference Number:** 38948

**Form 731 Confirmation Number:** EA527999

**Date of Original E-mail:** 06/16/2010

**Re: FCC ID:** QC8-AN80IE

Dear Carlos,

Thank you for your email dated June 16, 2010 (ref # 38948). Redline is pleased to provide the following answers to the questions.

**Question 1:**

Please submit test results that demonstrate threshold parameters. In this test you should use a single tone interference signal in and out of band. Tests may include spectrum analyzer screen captures and tabulated data.

**Answer 1:**

The **Appendix** below describes the test equipment used, the test set-up and the test results to demonstrate the threshold parameters.

**Question 2:**

Please clarify how 32 usecs is enough listening time period under light load conditions. Does your device only listen for 32 usecs under light load conditions?

**Answer 2:**

The AN80i master performs the interference level measurement for 32 $\mu$ s prior to every transmission. The measurement is done just before the RF chain is switched into TX mode. If interference is detected, then the master will defer its downlink transmission and the RF chain will not be switched into TX mode.

The listening interval of 32 $\mu$ s was chosen to be long enough to accurately measure the level of interference. This interval is used regardless of the traffic load. Increasing the listening interval under light traffic conditions would not help improving the collision-avoidance mechanism since the channel is shared with other uncoordinated wireless systems.

Under light-load conditions, the AN80i master and the AN80i clients do not occupy the channel with unnecessary transmissions to let other systems utilize the channel. However, prior to attempting any transmission, the master will check the channel occupancy. If the master detects interference in the RF channel, it will not transmit during that frame, the AN80i clients will not have to respond and, thus, the AN80i clients will not transmit anything during that wireless frame. The AN80i clients do not transmit unless they are instructed to do so by the AN80i master.

Sincerely yours,

A handwritten signature in black ink that reads "Rod Cronin". The signature is written in a cursive, slightly slanted style.

Rod Cronin  
Director, Product Management  
Redline Communications

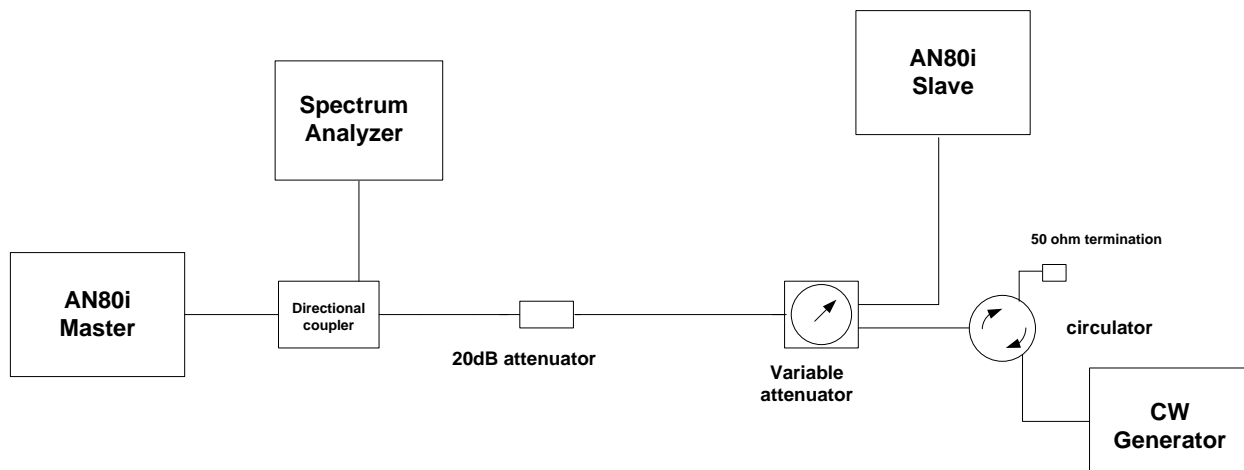
## Appendix: Transmitter Unrestricted Contention Based Protocol Test

### 1. Test Equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	Rhode & Schwarz	FSQ 8	RLC-1260-511-00027	Sept 17-2010	Sept 17-2011
Signal Generator	Rhode & Schwarz	SMR 20	RLC-1260-525-00004	Sept-16-2010	Sept-16-2011
Directional Coupler	Pasternak	PE 2210-10	-	COU	COU
Fixed Attenuator 20dB	Mini-Circuits	UNAT-20	-	COU	COU
50 ohm termination	Mini-Circuits	MLC ANNE -50	-	COU	COU
Variable Attenuator 0 – 80 dB	ARRA Inc.	5955-80	SN: 914	COU	COU
Circulator	JQL	B01260267		COU	COU

\*COU-calibrate on use

### 2. Test Setup



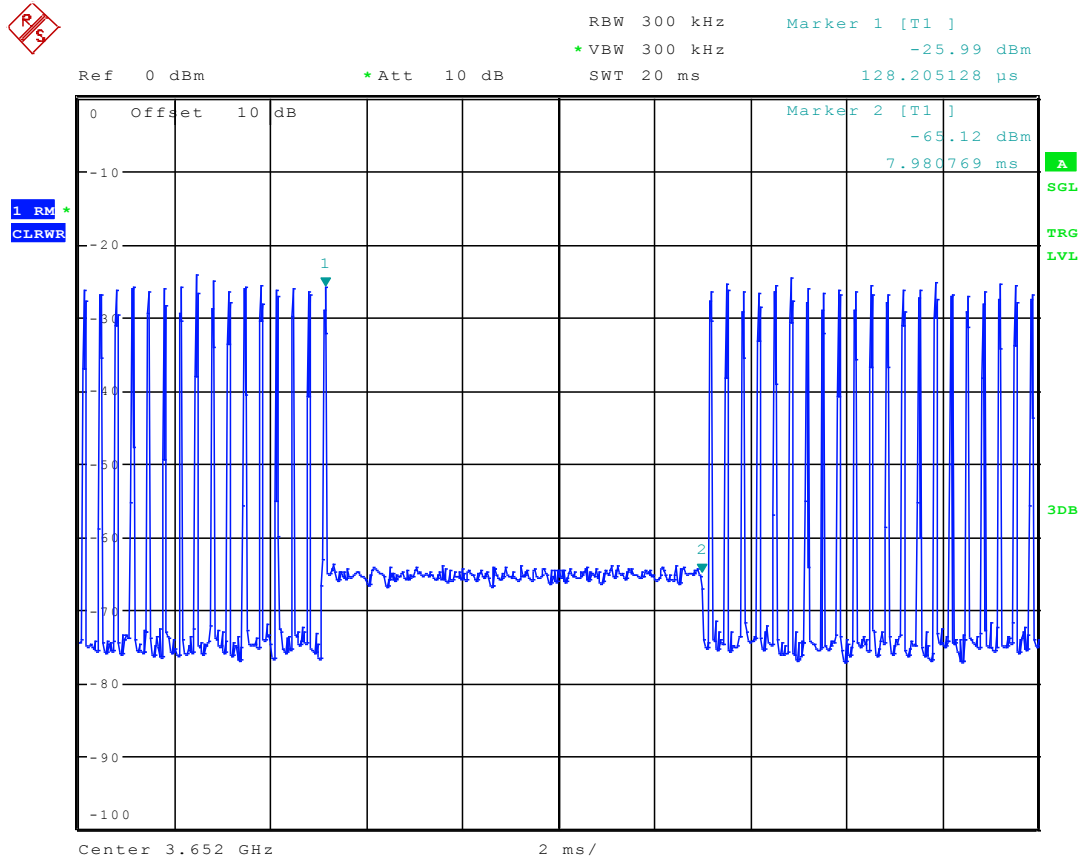
### 3. Test Results

The following tables show the results of the tests for co-channel and adjacent channel interference.

**Table 1: 3.5MHz Channel Bandwidth**

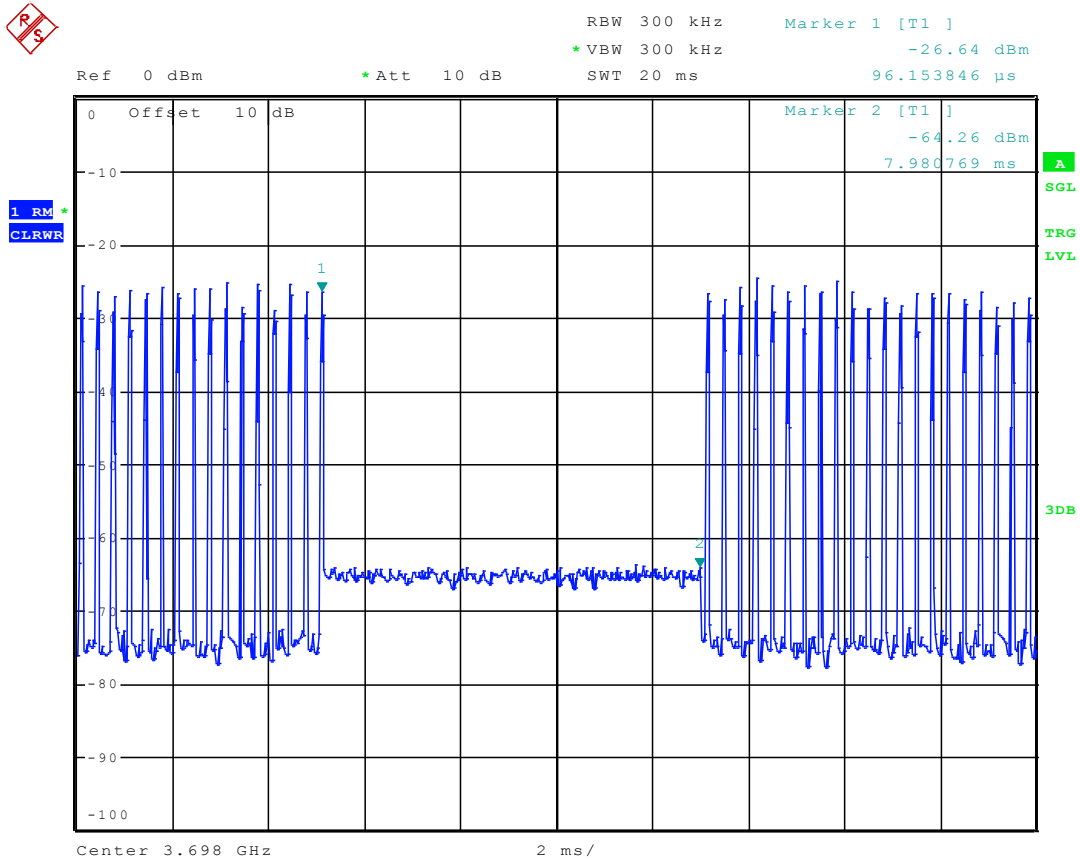
Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency Offset (MHz)	Interferer level (dBm)	Tx-Off
1	3652	3.5	-65	0	-65	Y
2	3652	3.5	-65	0	-70	N
3	3652	3.5	-65	-1.75	-65	Y
4	3652	3.5	-65	+1.75	-65	Y
5	3652	3.5	-65	-3.5	-60	N
6	3652	3.5	-65	+3.5	-60	N
7	3652	3.5	-100	0	-100	Y
8	3652	3.5	-100	0	-105	N
9	3652	3.5	-100	-1.75	-100	Y
10	3652	3.5	-100	+1.75	-100	Y
11	3652	3.5	-100	-3.5	-95	N
12	3652	3.5	-100	+3.5	-95	N
13	3698	3.5	-65	0	-65	Y
14	3698	3.5	-65	0	-70	N
15	3698	3.5	-65	-1.75	-65	Y
16	3698	3.5	-65	+1.75	-65	Y
17	3698	3.5	-65	-3.5	-60	N
18	3698	3.5	-65	+3.5	-60	N
19	3698	3.5	-100	0	-100	Y
20	3698	3.5	-100	0	-105	N
21	3698	3.5	-100	-1.75	-100	Y
22	3698	3.5	-100	+1.75	-100	Y
23	3698	3.5	-100	-3.5	-95	N
24	3698	3.5	-100	+3.5	-95	N

Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency offset (MHz)	Interferer level (dBm)	Tx-Off
1	3652	3.5	-65	0	-65	Y



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Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency offset (MHz)	Interferer level (dBm)	Tx-Off
13	3698	3.5	-65	0	-65	Y

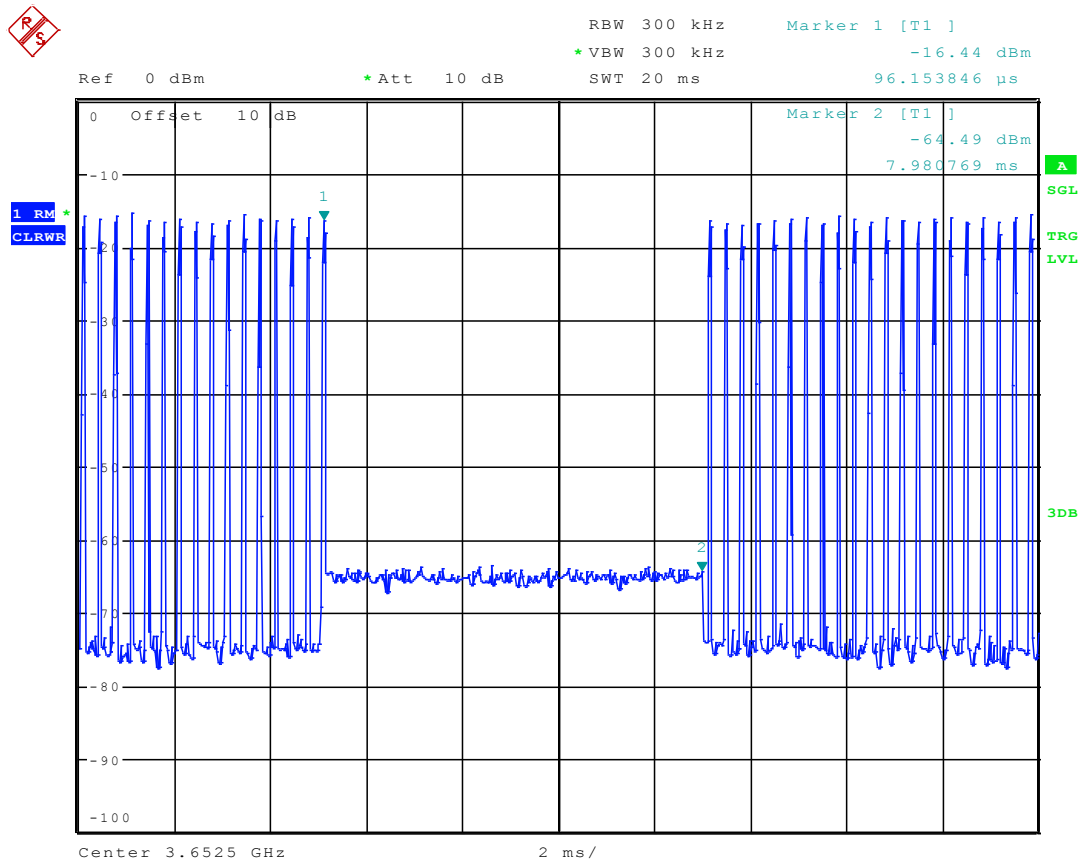


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**Table 2: 5MHz Channel Bandwidth**

Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency Offset (MHz)	Interferer level (dBm)	Tx-Off
1	3652.5	5	-65	0	-65	Y
2	3652.5	5	-65	0	-70	N
3	3652.5	5	-65	-2.5	-65	Y
4	3652.5	5	-65	+2.5	-65	Y
5	3652.5	5	-65	-5	-60	N
6	3652.5	5	-65	+5	-60	N
7	3652.5	5	-99	0	-99	Y
8	3652.5	5	-99	0	-104	N
9	3652.5	5	-99	-2.5	-99	Y
10	3652.5	5	-99	+2.5	-99	Y
11	3652.5	5	-99	-5	-94	N
12	3652.5	5	-99	+5	-94	N
13	3697.5	5	-65	0	-65	Y
14	3697.5	5	-65	0	-70	N
15	3697.5	5	-65	-2.5	-65	Y
16	3697.5	5	-65	+2.5	-65	Y
17	3697.5	5	-65	-5	-60	N
18	3697.5	5	-65	+5	-60	N
19	3697.5	5	-99	0	-99	Y
20	3697.5	5	-99	0	-104	N
21	3697.5	5	-99	-2.5	-99	Y
22	3697.5	5	-99	+2.5	-99	Y
23	3697.5	5	-99	-5	-94	N
24	3697.5	5	-99	+5	-94	N

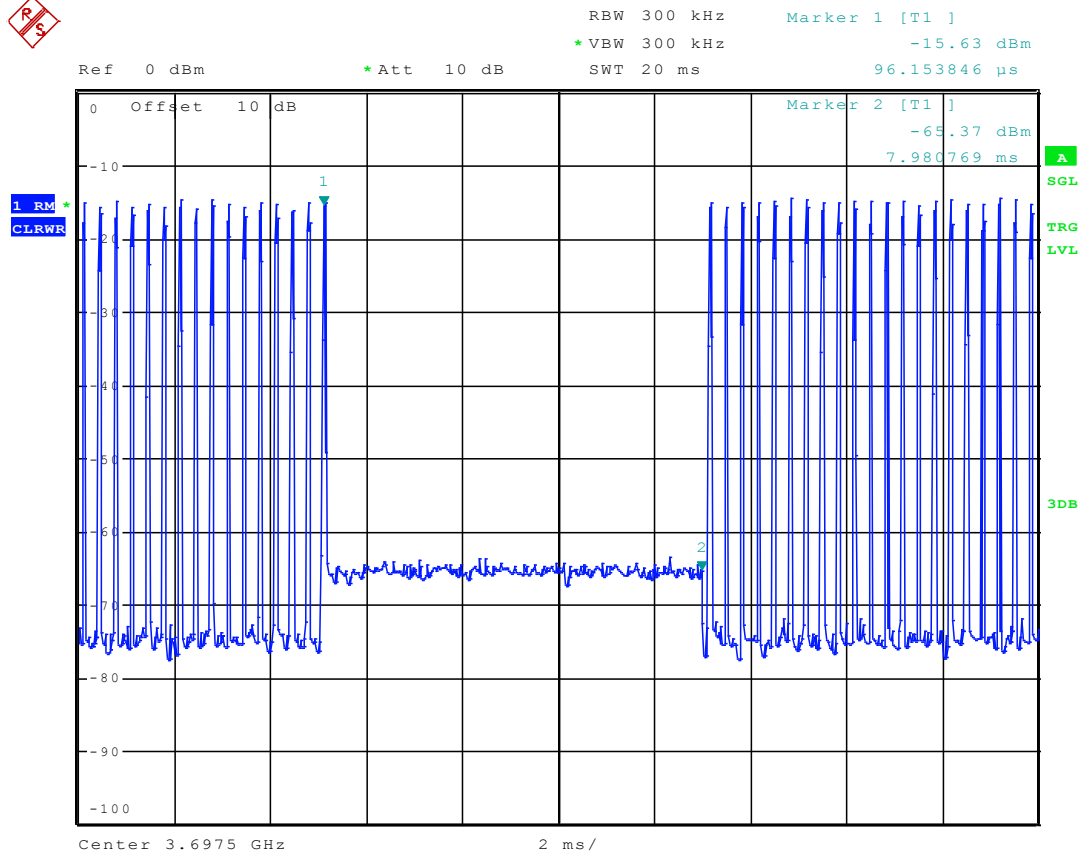
Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency offset (MHz)	Interferer level (dBm)	Tx-Off
1	3652.5	5	-65	0	-65	Y



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Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency offset (MHz)	Interferer level (dBm)	Tx-Off
13	3697.5	5	-65	0	-65	Y

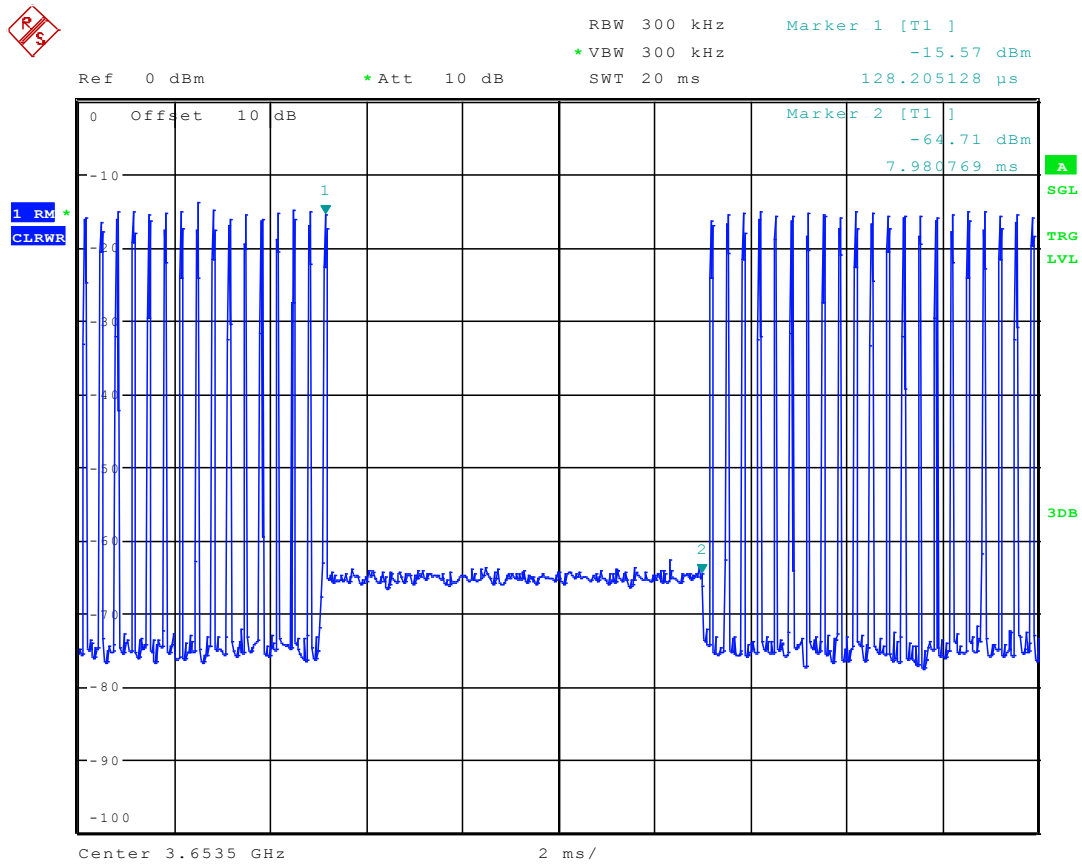


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**Table 3: 7MHz Channel Bandwidth**

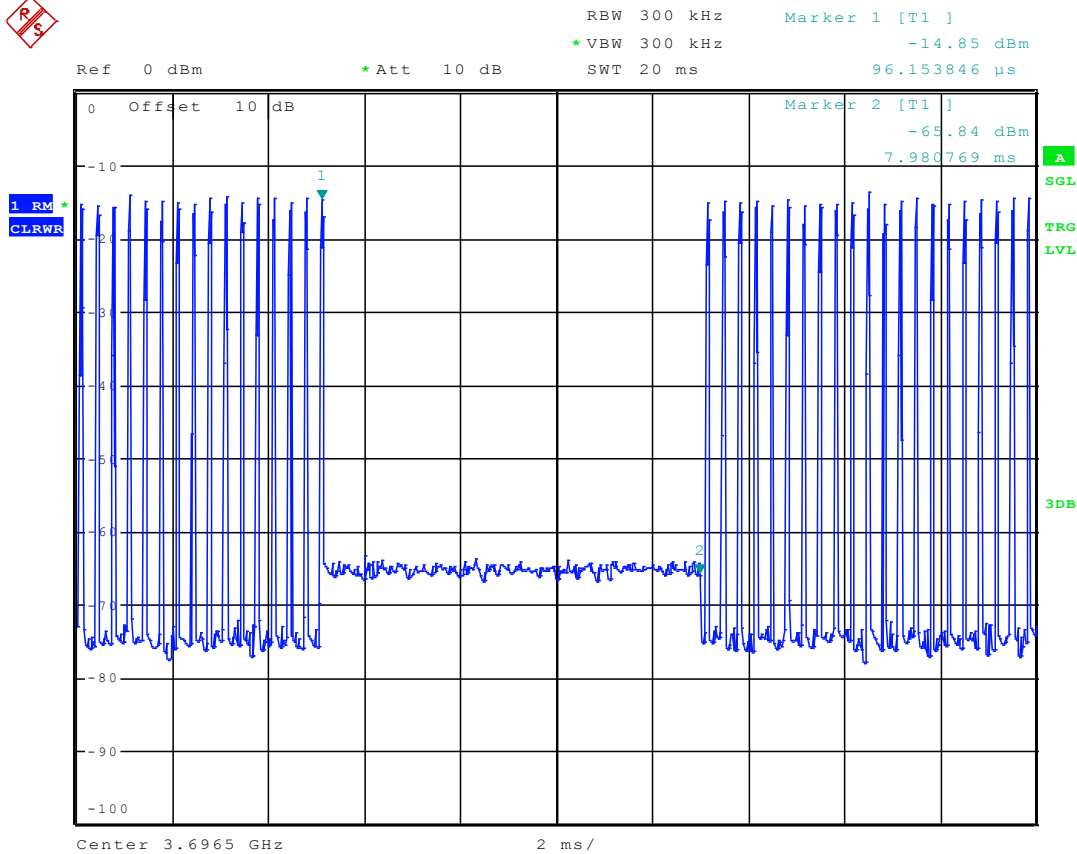
Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency Offset (MHz)	Interferer level (dBm)	Tx-Off
1	3653.5	7	-65	0	-65	Y
2	3653.5	7	-65	0	-70	N
3	3653.5	7	-65	-3.5	-65	Y
4	3653.5	7	-65	+3.5	-65	Y
5	3653.5	7	-65	-7	-60	N
6	3653.5	7	-65	+7	-60	N
7	3653.5	7	-97	0	-97	Y
8	3653.5	7	-97	0	-102	N
9	3653.5	7	-97	-3.5	-97	Y
10	3653.5	7	-97	+3.5	-97	Y
11	3653.5	7	-97	-7	-92	N
12	3653.5	7	-97	+7	-92	N
13	3696.5	7	-65	0	-65	Y
14	3696.5	7	-65	0	-70	N
15	3696.5	7	-65	-3.5	-65	Y
16	3696.5	7	-65	+3.5	-65	Y
17	3696.5	7	-65	-7	-60	N
18	3696.5	7	-65	+7	-60	N
19	3696.5	7	-97	0	-97	Y
20	3696.5	7	-97	0	-102	N
21	3696.5	7	-97	-3.5	-97	Y
22	3696.5	7	-97	+3.5	-97	Y
23	3696.5	7	-97	-7	-92	N
24	3696.5	7	-97	+7	-92	N

Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency offset (MHz)	Interferer level (dBm)	Tx-Off
1	3653.5	7	-65	0	-65	Y



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Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency offset (MHz)	Interferer level (dBm)	Tx-Off
13	3696.5	7	-65	0	-65	Y

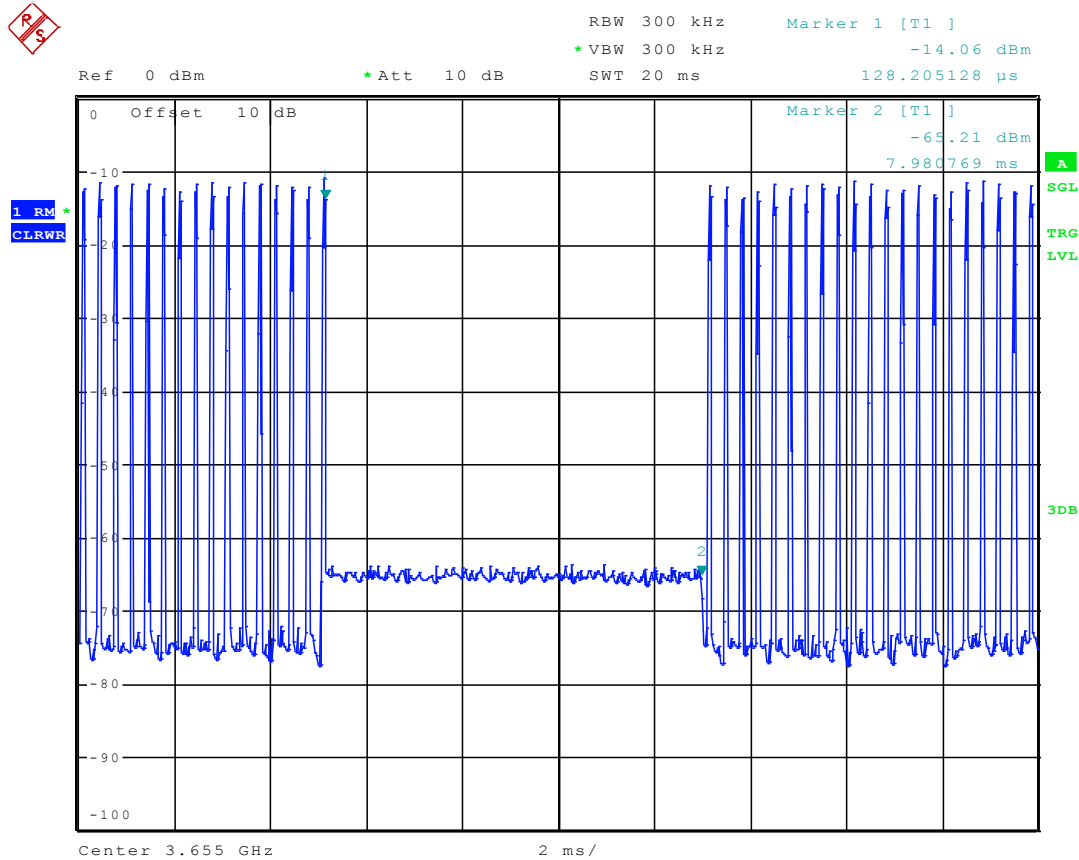


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**Table 4: 10MHz Channel Bandwidth**

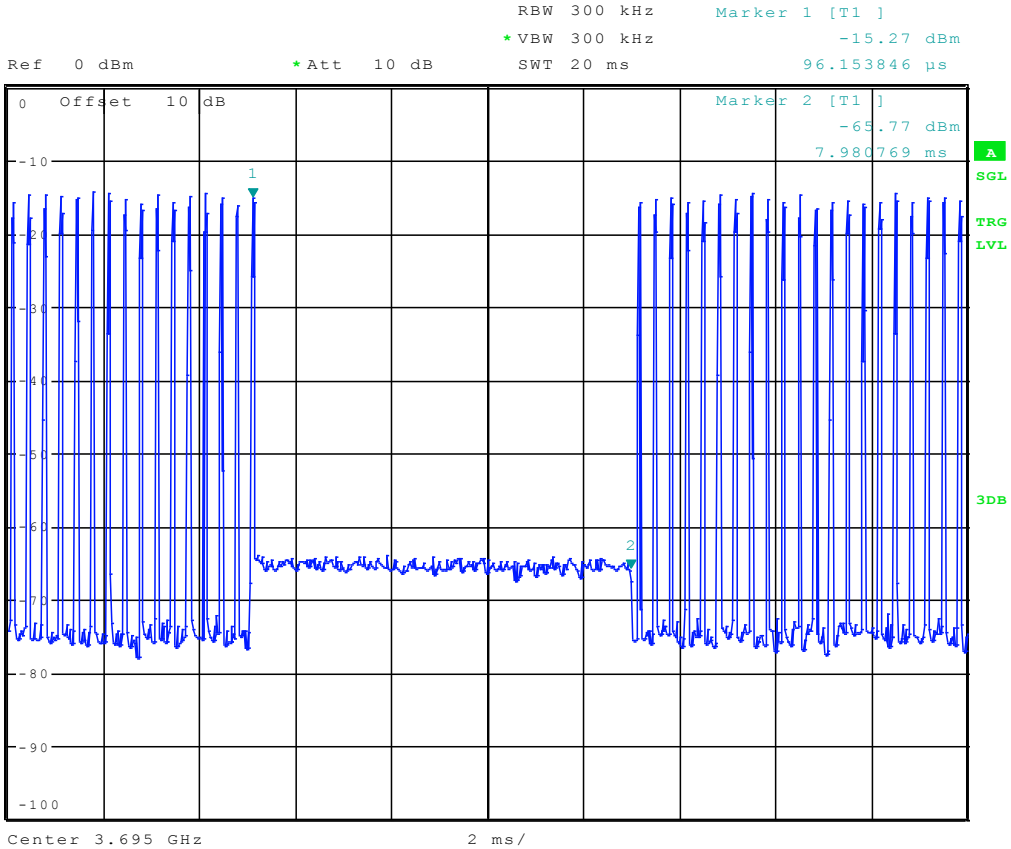
Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency Offset (MHz)	Interferer level (dBm)	Tx-Off
1	3655	10	-65	0	-65	Y
2	3655	10	-65	0	-70	N
3	3655	10	-65	-5	-65	Y
4	3655	10	-65	+5	-65	Y
5	3655	10	-65	-10	-60	N
6	3655	10	-65	+10	-60	N
7	3655	10	-96	0	-96	Y
8	3655	10	-96	0	-101	N
9	3655	10	-96	-5	-96	Y
10	3655	10	-96	+5	-96	Y
11	3655	10	-96	-10	-91	N
12	3655	10	-96	+10	-91	N
13	3695	10	-65	0	-65	Y
14	3695	10	-65	0	-70	N
15	3695	10	-65	-5	-65	Y
16	3695	10	-65	+5	-65	Y
17	3695	10	-65	-10	-60	N
18	3695	10	-65	+10	-60	N
19	3695	10	-96	0	-96	Y
20	3695	10	-96	0	-101	N
21	3695	10	-96	-5	-96	Y
22	3695	10	-96	+5	-96	Y
23	3695	10	-96	-10	-91	N
24	3695	10	-96	+10	-91	N

Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency offset (MHz)	Interferer level (dBm)	Tx-Off
1	3655	10	-65	0	-65	Y



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Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency offset (MHz)	Interferer level (dBm)	Tx-Off
13	3695	10	-65	0	-65	Y



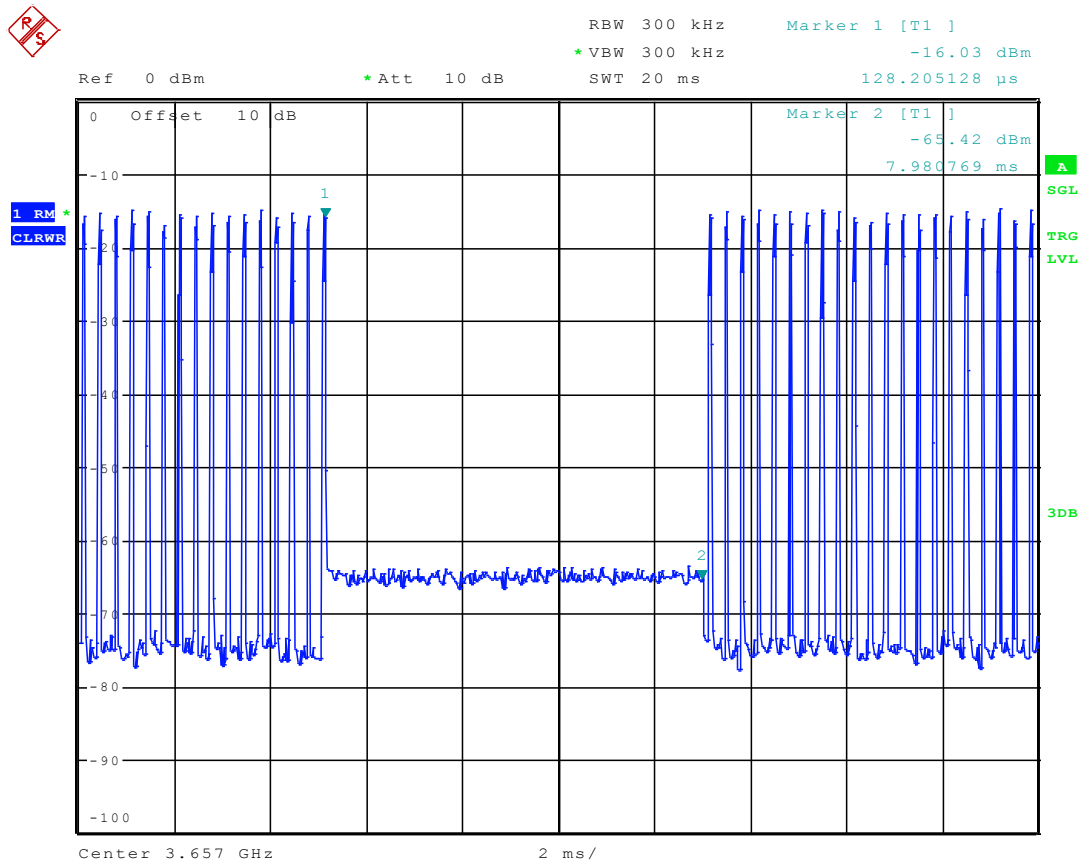
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**Table 5: 14MHz Channel Bandwidth**

Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency Offset (MHz)	Interferer level (dBm)	Tx-Off
1	3657	14	-65	0	-65	Y
2	3657	14	-65	0	-70	N
3	3657	14	-65	-7	-65	Y
4	3657	14	-65	+7	-65	Y
5	3657	14	-65	-14	-60	N
6	3657	14	-65	+14	-60	N
7	3657	14	-94	0	-94	Y
8	3657	14	-94	0	-99	N
9	3657	14	-94	-7	-94	Y
10	3657	14	-94	+7	-94	Y
11	3657	14	-94	-14	-89	N
12	3657	14	-94	+14	-89	N
13	3693	14	-65	0	-65	Y
14	3693	14	-65	0	-70	N
15	3693	14	-65	-7	-65	Y
16	3693	14	-65	+7	-65	Y
17	3693	14	-65	-14	-60	N
18	3693	14	-65	+14	-60	N
19	3693	14	-94	0	-94	Y
20	3693	14	-94	0	-99	N
21	3693	14	-94	-7	-94	Y
22	3693	14	-94	+7	-94	Y
23	3693	14	-94	-14	-89	N
24	3693	14	-94	+14	-89	N

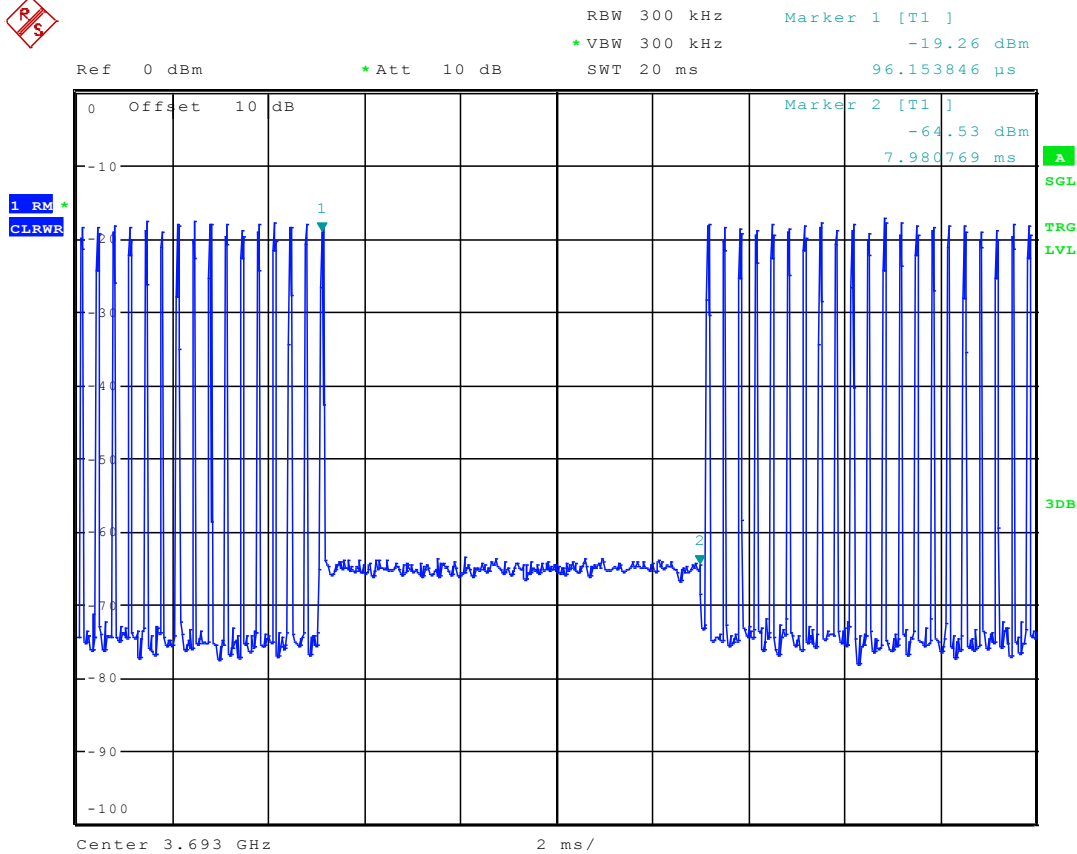


Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency offset (MHz)	Interferer level (dBm)	Tx-Off
1	3657	14	-65	0	-65	Y



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Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency offset (MHz)	Interferer level (dBm)	Tx-Off
13	3693	14	-65	0	-65	Y

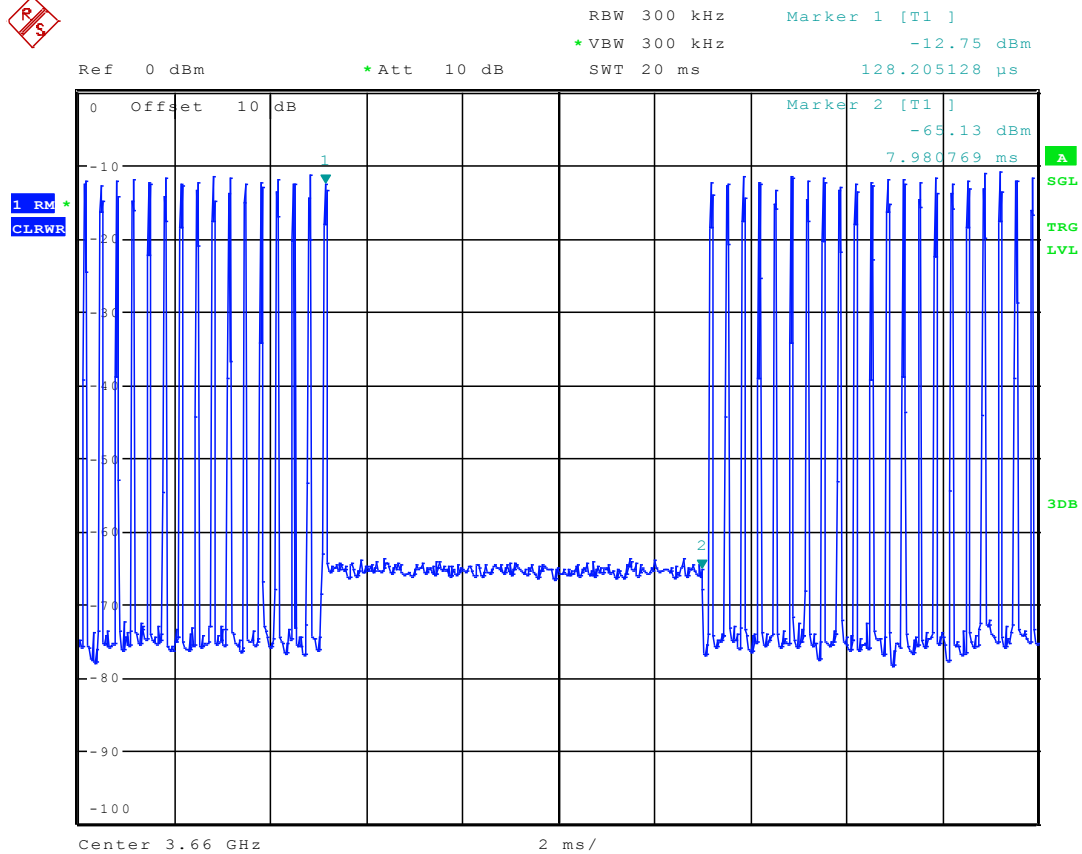


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**Table 6: 20MHz Channel Bandwidth**

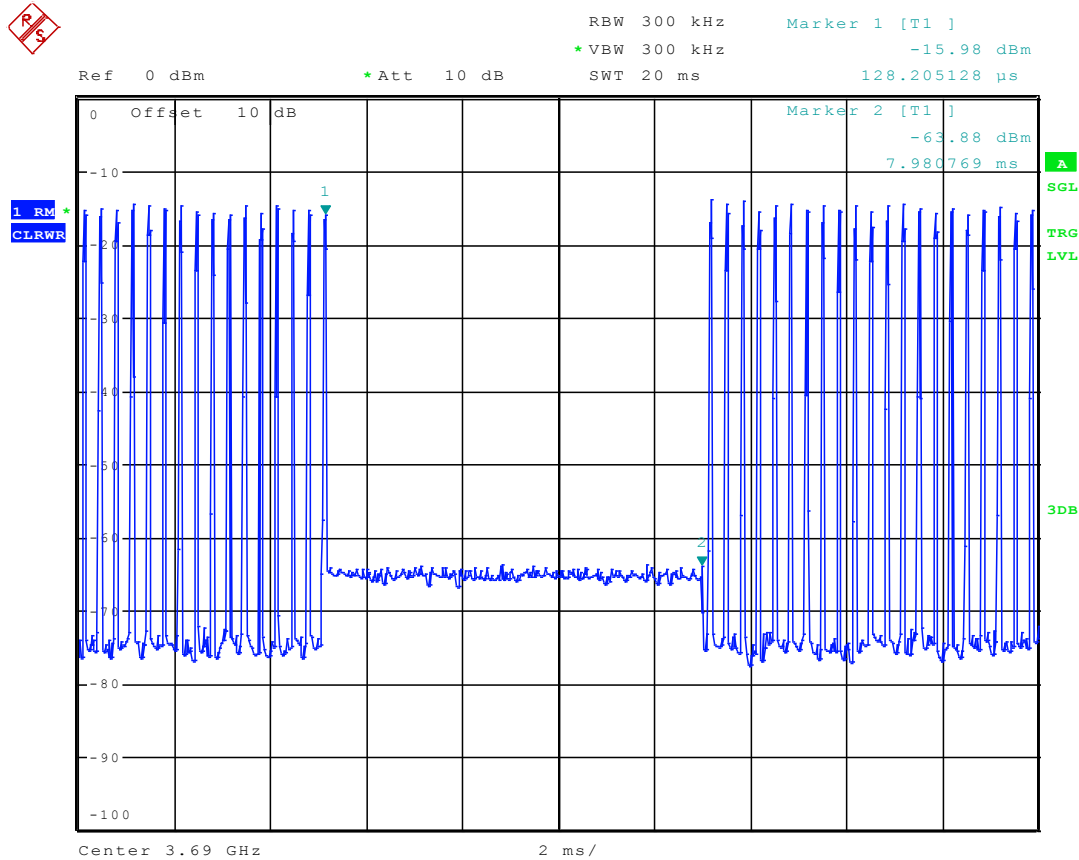
Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency Offset (MHz)	Interferer level (dBm)	Tx-Off
1	3660	20	-65	0	-65	Y
2	3660	20	-65	0	-70	N
3	3660	20	-65	-10	-65	Y
4	3660	20	-65	+10	-65	Y
5	3660	20	-65	-20	-60	N
6	3660	20	-65	+20	-60	N
7	3660	20	-93	0	-93	Y
8	3660	20	-93	0	-98	N
9	3660	20	-93	-10	-93	Y
10	3660	20	-93	+10	-93	Y
11	3660	20	-93	-20	-88	N
12	3660	20	-93	+20	-88	N
13	3690	20	-65	0	-65	Y
14	3690	20	-65	0	-70	N
15	3690	20	-65	-10	-65	Y
16	3690	20	-65	+10	-65	Y
17	3690	20	-65	-20	-60	N
18	3690	20	-65	+20	-60	N
19	3690	20	-93	0	-93	Y
20	3690	20	-93	0	-98	N
21	3690	20	-93	-10	-93	Y
22	3690	20	-93	+10	-93	Y
23	3690	20	-93	-20	-88	N
24	3690	20	-93	+20	-88	N

Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency offset (MHz)	Interferer level (dBm)	Tx-Off
1	3660	20	-65	0	-65	Y



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Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency offset (MHz)	Interferer level (dBm)	Tx-Off
13	3690	20	-65	0	-65	Y

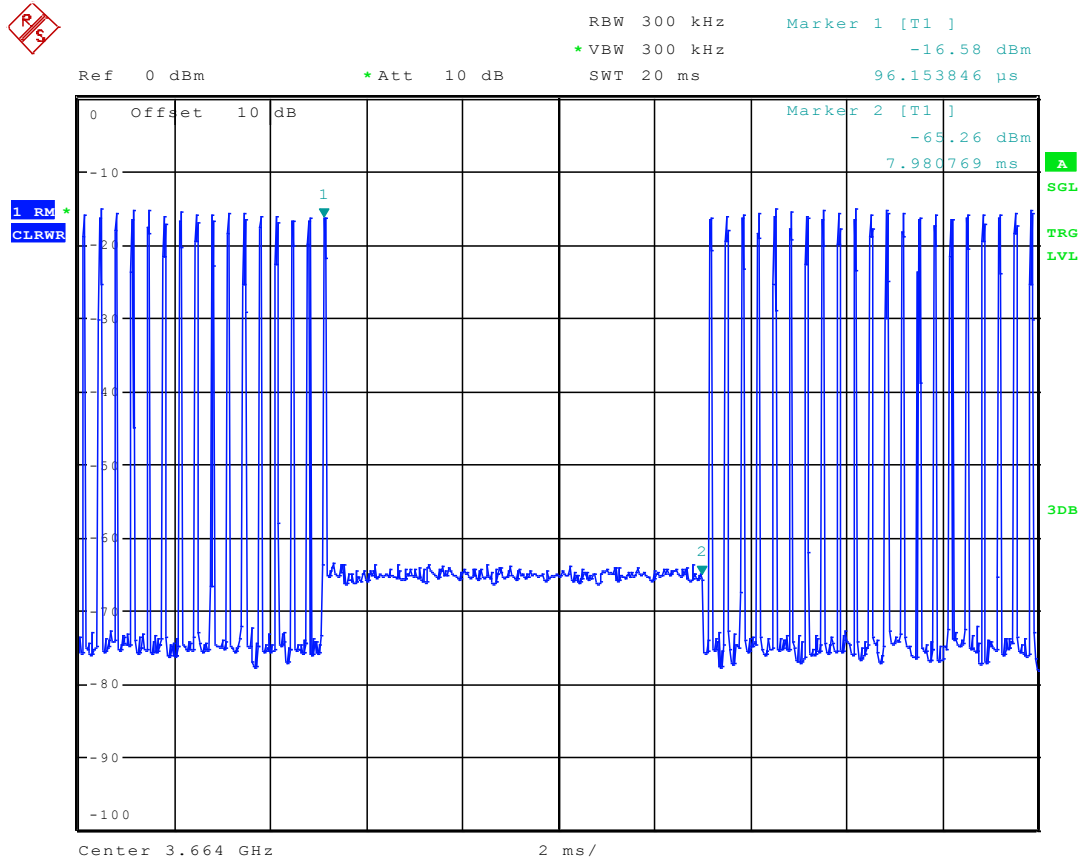


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**Table 7: 28MHz Channel Bandwidth**

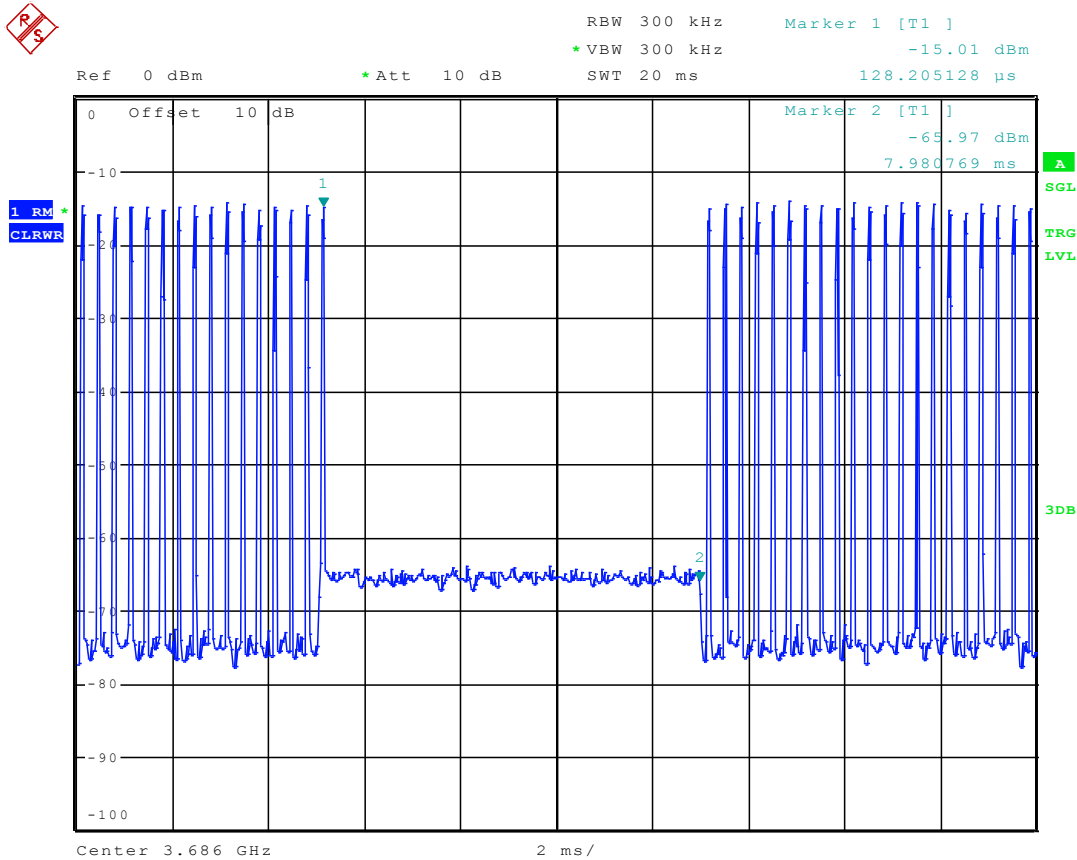
Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency Offset (MHz)	Interferer level (dBm)	Tx-Off
1	3664	28	-65	0	-65	Y
2	3664	28	-65	0	-70	N
3	3664	28	-65	-14	-65	Y
4	3664	28	-65	+14	-65	Y
5	3664	28	-65	-28	-60	N
6	3664	28	-65	+28	-60	N
7	3664	28	-91	0	-91	Y
8	3664	28	-91	0	-96	N
9	3664	28	-91	-14	-91	Y
10	3664	28	-91	+14	-91	Y
11	3664	28	-91	-28	-86	N
12	3664	28	-91	+28	-86	N
13	3686	28	-65	0	-65	Y
14	3686	28	-65	0	-70	N
15	3686	28	-65	-14	-65	Y
16	3686	28	-65	+14	-65	Y
17	3686	28	-65	-28	-60	N
18	3686	28	-65	+28	-60	N
19	3686	28	-91	0	-91	Y
20	3686	28	-91	0	-96	N
21	3686	28	-91	-14	-91	Y
22	3686	28	-91	+14	-91	Y
23	3686	28	-91	-28	-86	N
24	3686	28	-91	+28	-86	N

Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency offset (MHz)	Interferer level (dBm)	Tx-Off
1	3664	28	-65	0	-65	Y



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Test No.	Channel Frequency (MHz)	Channel Bandwidth (MHz)	Noise Threshold (dBm)	Interferer Frequency offset (MHz)	Interferer level (dBm)	Tx-Off
13	3686	28	-65	0	-65	Y



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