

# KDB 552595 TEST REPORT

**Product:** Outdoor CPE

**Model Name:** WF820

**FCC ID:** SRQ-WF820

**Applicant:** ZTE Corporation

**Address:** ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park,  
Nanshan District, Shenzhen, Guangdong, P.R.China

**Manufacturer:** ZTE Corporation

**Address:** ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park,  
Nanshan District, Shenzhen, Guangdong, P.R.China

**Prepared by:** Bureau Veritas Shenzhen Co., Ltd. Dongguan Branch

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**Report No.:** RF160226W001-1

**Received Date:** Apr. 12, 2016

**Test Date:** May 13, 2016 ~ May 16, 2016

**Issued Date:** May 19, 2016

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF160226W001-1	Original release	May 19, 2016



# 1 CERTIFICATION

**PRODUCT:** Outdoor CPE  
**BRAND NAME:** ZTE  
**MODEL NAME:** WF820  
**APPLICANT:** ZTE Corporation  
**TESTED DATE:** May 13, 2016 ~ May 16, 2016  
**TEST SAMPLE:** Identical Prototype  
**STANDARDS:** **FCC Part 90 Subpart Z**  
**KDB 552295 D01 CBP Guidance for 3650 3700**  
**Band v02r02**

The above equipment has been tested by **Bureau Veritas Shenzhen Co., Ltd. Dongguan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY :** , **DATE:** May 19, 2016  
( Amyee Qian / Engineer)

**APPROVED BY :** , **DATE:** May 19, 2016  
( William Chung / Manager)



## 2 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Outdoor CPE	
<b>BRAND NAME</b>	ZTE	
<b>MODEL NAME</b>	WF820	
<b>PRODUCT TYPE</b>	Fixed Station	
<b>POWER SUPPLY</b>	48Vdc (POE adapter)	
<b>MODULATION TECHNOLOGY</b>	LTE Band 43, QPSK, 16QAM	
<b>FREQUENCY RANGE</b>	<b>LTE Band 43 (Channel Bandwidth: 5MHz)</b>	3652.5MHz ~ 3697.5MHz
	<b>LTE Band 43 (Channel Bandwidth: 10MHz)</b>	3655.0MHz ~ 3695.0MHz
	<b>LTE Band 43 (Channel Bandwidth: 15MHz)</b>	3657.5MHz ~ 3692.5MHz
	<b>LTE Band 43 (Channel Bandwidth: 20MHz)</b>	3660.0MHz ~ 3690.0MHz
<b>ANTENNA TYPE</b>	Fixed Internal antenna with 13dBi gain	
<b>HW VERSION</b>	B1	
<b>SW VERSION</b>	WF820V2.0.0B02	
<b>DATA CABLE</b>	N/A	
<b>I/O PORTS</b>	Refer to user's manual	

**NOTE:**

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The EUT was powered by the following adapters:

<b>POE ADAPTER</b>	
<b>BRAND:</b>	N/A
<b>MODEL:</b>	N/A
<b>INPUT:</b>	AC 100-240V, 1000mA
<b>OUTPUT:</b>	DC 48V, 320mA



### **3 TEST TYPES AND RESULTS**

#### **3.1 UNRESTRICTED CONTENTION BASED PROTOCOL DESCRIPTION**

The device uses spectrum sensing to determine if the other devices are transmitting and then find ways to share the bandwidth.

##### **3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT**

To check if the UUT can meet the threshold level detection, a CW tone and a bandwidth limited AWGN signal were used to simulate other occupations in 3650-3700MHz band. Observe if the UUT will detect the interference signals and interrupt transmit or not.

## 3.1.2 TEST PROCEDURES

### CW Tone Testing

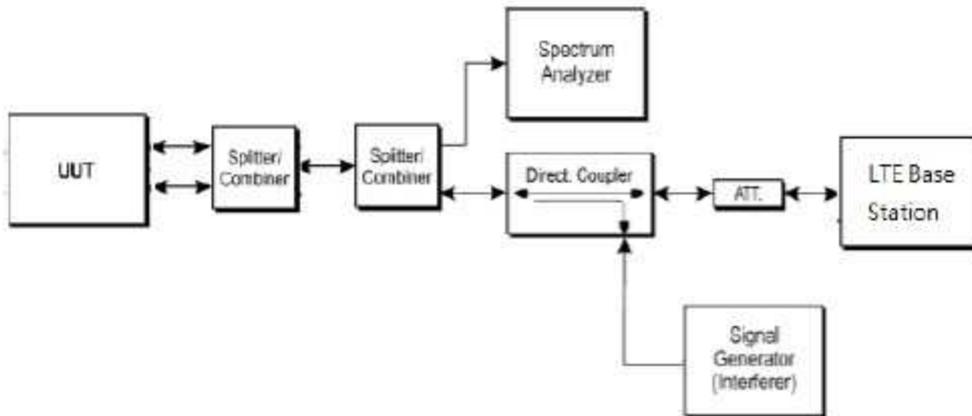
- a. UUT links to the LTE base station with maximum declaration output power.
- b. Check the UUT signal by the spectrum analyzer with zero span setting.
- c. Inject CW tone signal by generator at specified frequency.
- d. Raise the signal level in step c. until UUT transmission stops.
- e. Record the CW tone signal frequency and level.
- f. Repeat step a. to e. with each LTE bandwidth and CW tone frequencies.

### Bandwidth limited AWGN level Testing

- a. UUT links to the LTE base station with maximum declaration output power..
- b. Check the UUT signal by the spectrum analyzer with zero span setting.
- c. Inject band limited AWGN signal by signal generator at specified frequency.
- d. Raise the signal level in step c. until UUT transmission stops.
- e. Record the band limited AWGN signal frequency and level.
- f. Repeat step a. to e. with each LTE bandwidth.



### 3.1.3 TEST SETUP



### 3.1.4 EUT OPERATING CONDITIONS

- 1) Upload test waveform to signal generator and produce test signal to link up with EUT.
- 2) Execute test tool to control EUT transmit at specific modulation, RB size, frequency and output power level continuously.

### 3.1.5 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	BRAND	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum	FSV7	R&S	Nov. 04, 2015	Nov. 03, 2016
Signal generator	8645A	Agilent	Aug. 19, 2015	Aug. 18, 2016



### 3.1.6 TEST RESULTS

#### Low Channel

Channel	UUT LTE_BW (MHz)	UUT Frequency (MHz)	SG Frequency (MHz)	CW LEVEL (dBm)	SG Frequency (MHz)	AWGN Bandwidth (MHz)	AWGN LEVEL (dBm/MHz)
44115	5	3652.5			3650.34	5	-60
	5	3652.5	3652.5	-14	3652.5	5	-60
	5	3652.5			3654.66	5	-60
44140	10	3655			3650.59	10	-60
	10	3655	3655	-14	3655	10	-60
	10	3655			3659.41	10	-60
44165	15	3657.5			3650.84	15	-60
	15	3657.5	3657.5	-14	3657.5	15	-60
	15	3657.5			3664.16	15	-60
44190	20	3660			3651.09	20	-60
	20	3660	3660	-14	3660	20	-60
	20	3660			3668.91	20	-60

#### High Channel

Channel	UUT LTE_BW (MHz)	UUT Frequency (MHz)	SG Frequency (MHz)	CW LEVEL (dBm)	SG Frequency (MHz)	AWGN Bandwidth (MHz)	AWGN LEVEL (dBm/MHz)
44565	5	3697.5			3695.34	5	-60
	5	3697.5	3697.5	-14	3697.5	5	-60
	5	3697.5			3699.66	5	-60
44540	10	3695			3690.59	10	-60
	10	3695	3695	-14	3695	10	-60
	10	3695			3699.41	10	-60
44515	15	3692.5			3685.84	15	-60
	15	3692.5	3692.5	-14	3692.5	15	-60
	15	3692.5			3699.16	15	-60
44490	20	3690			3681.09	20	-60
	20	3690	3690	-14	3690	20	-60
	20	3690			3698.91	20	-60

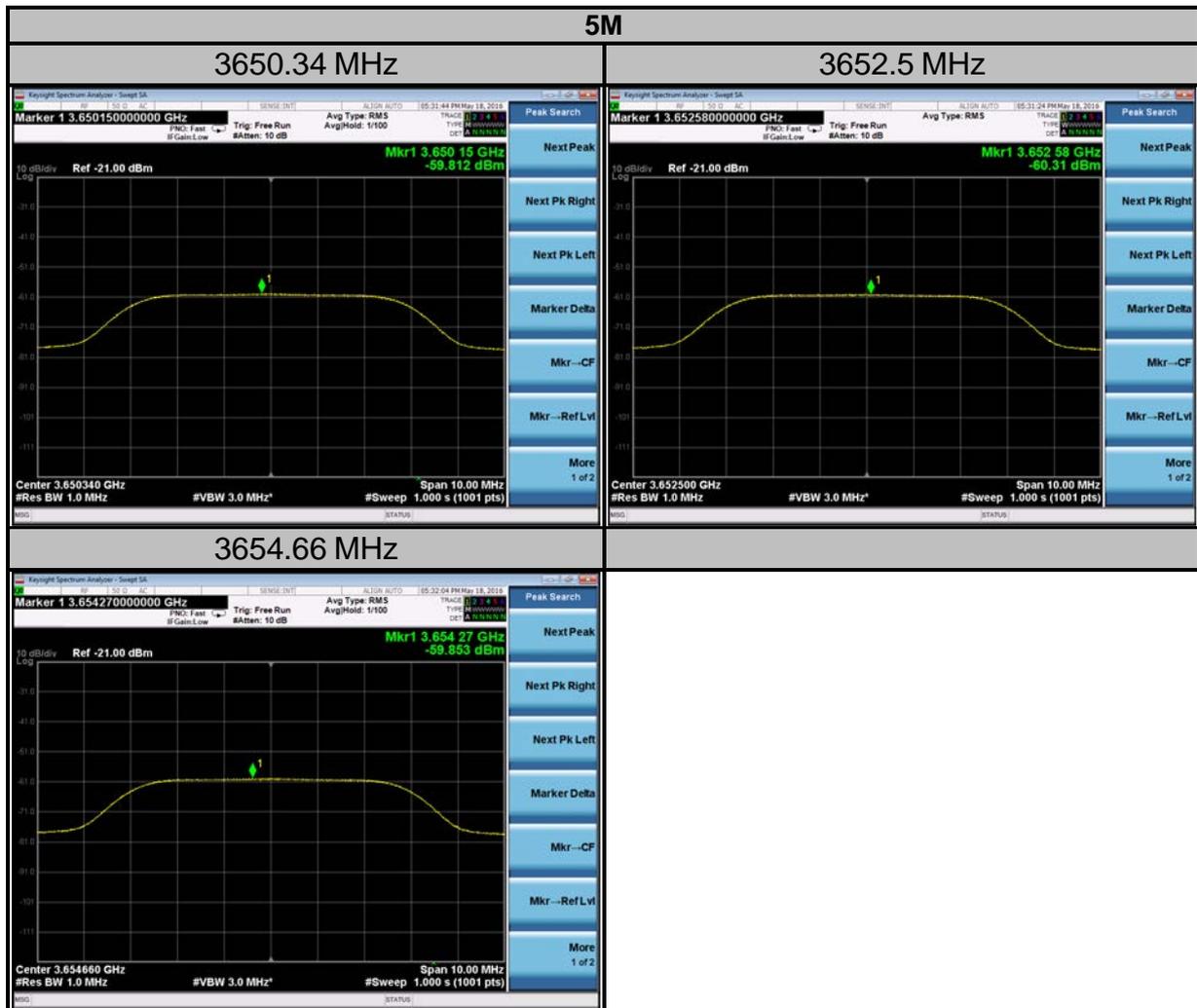


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### 3.1.7 TEST PLOTS OF ADAPTIVITY TEST

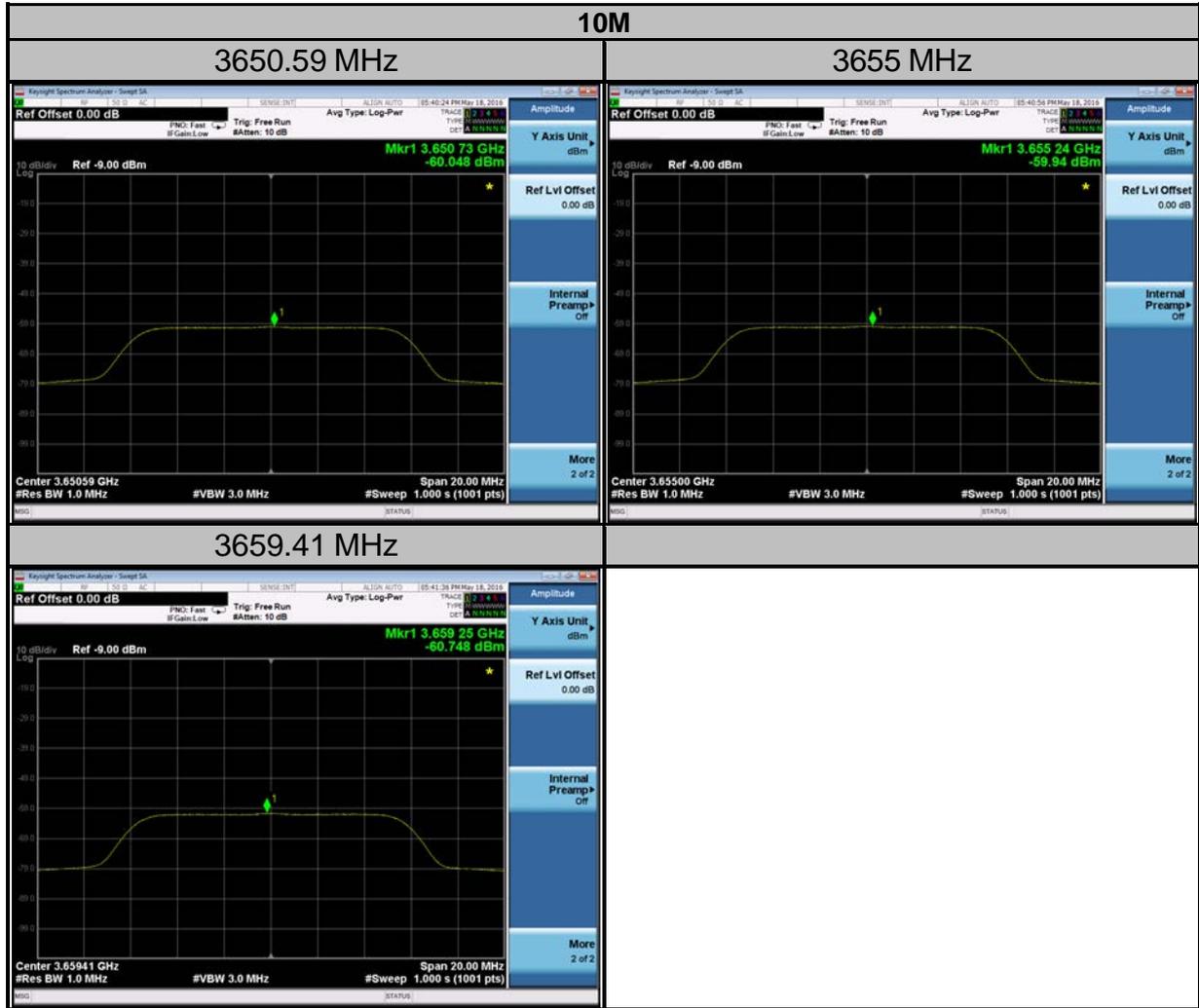
#### Low Channel AWGN interference signal level





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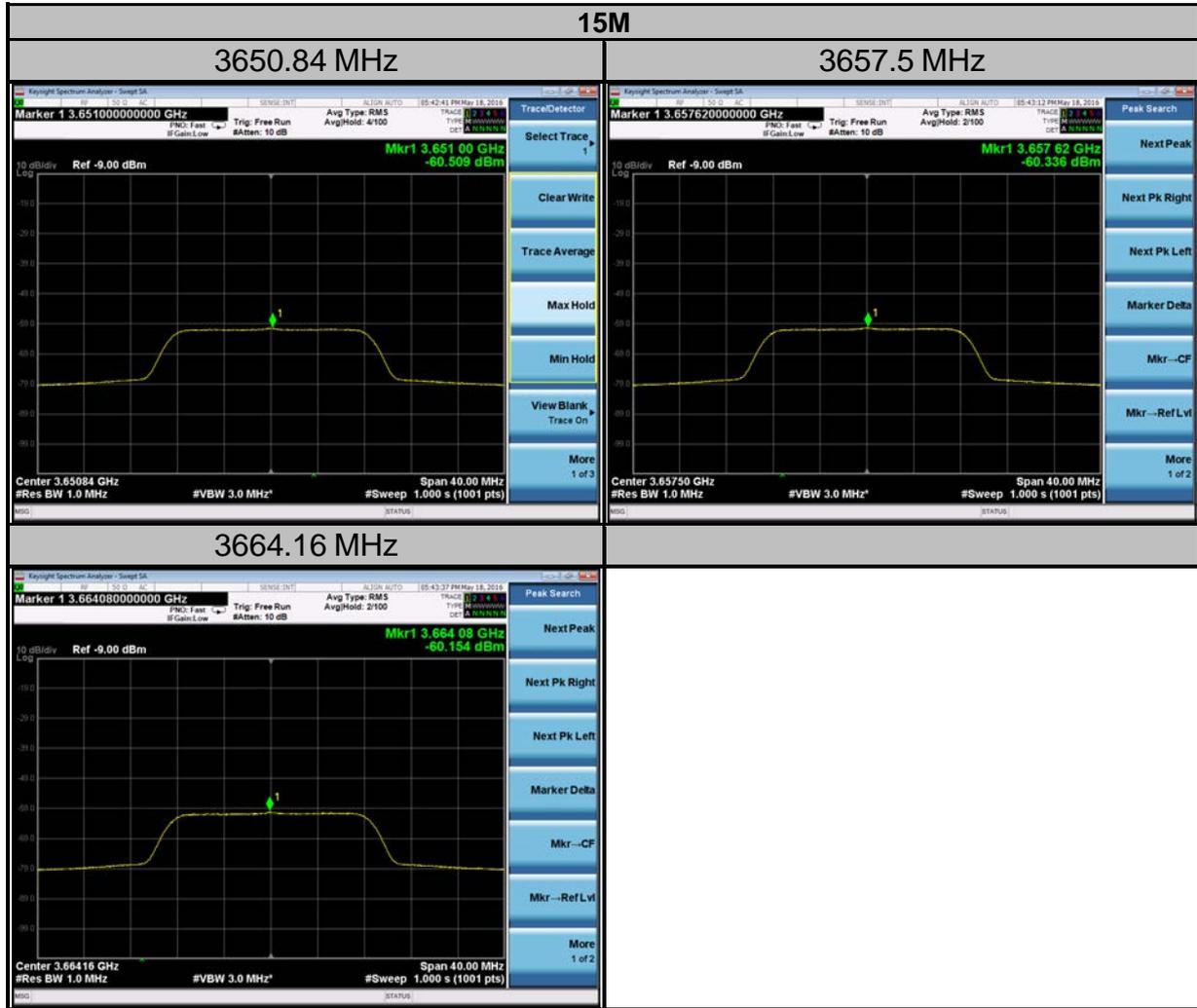
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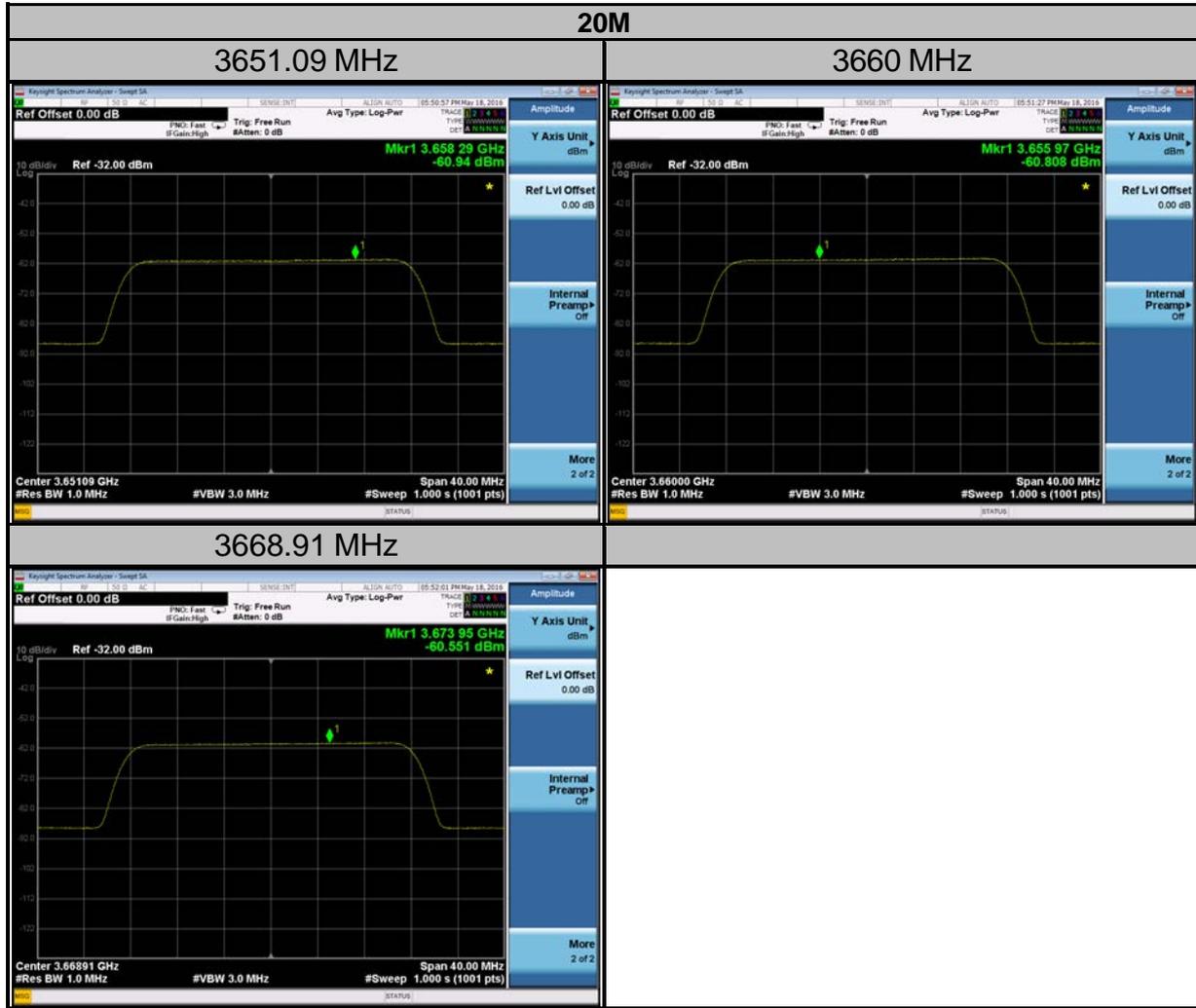




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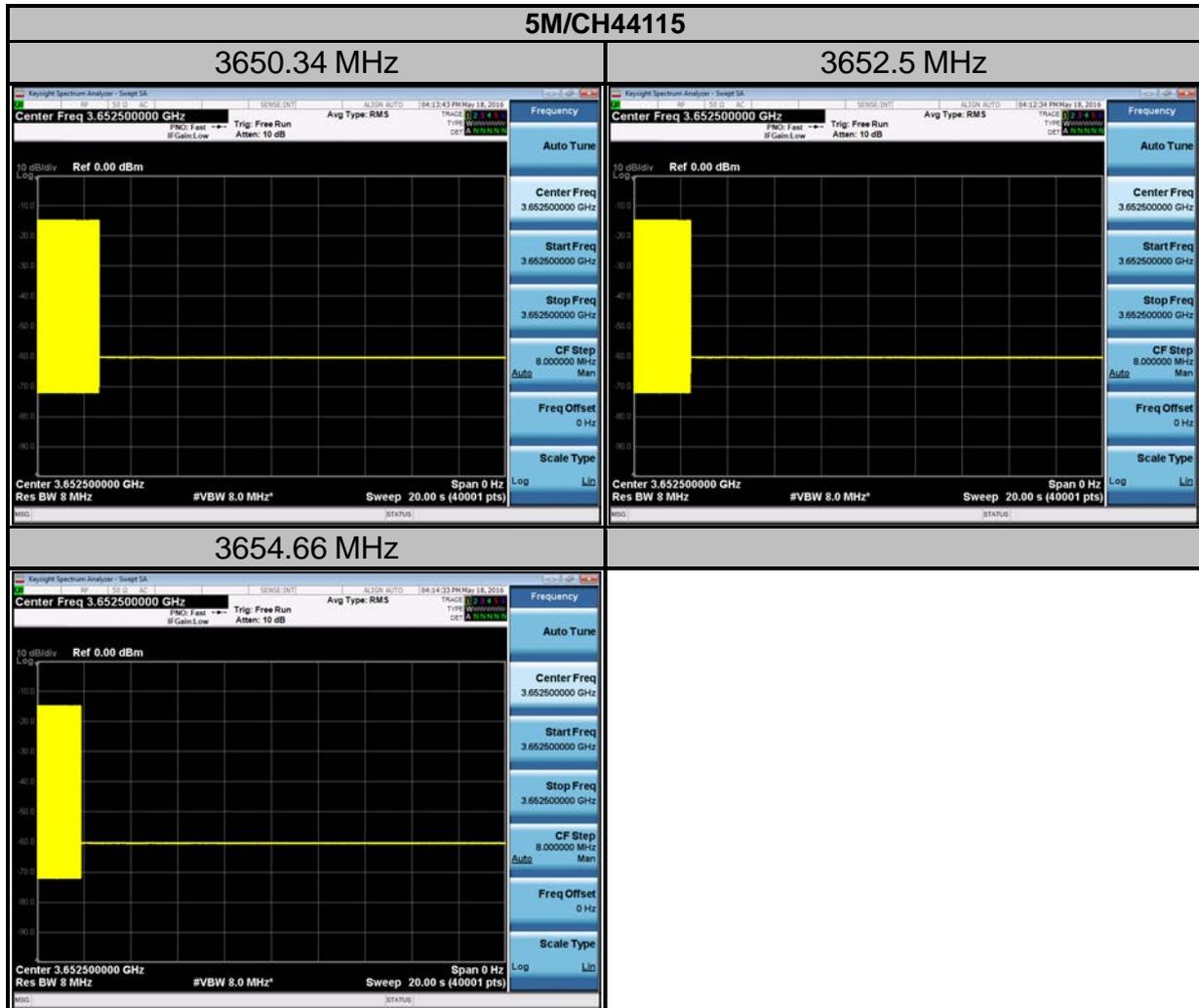




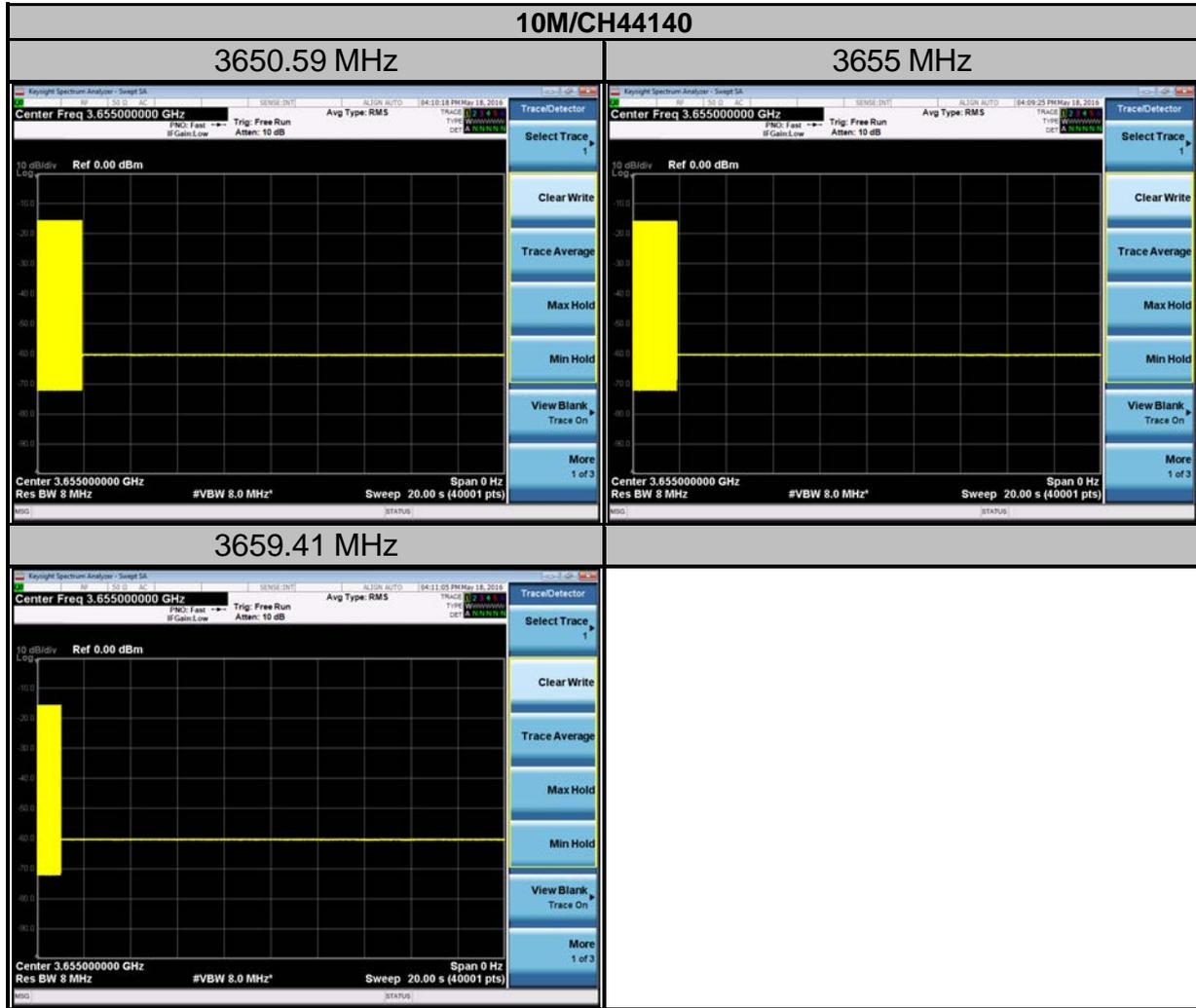
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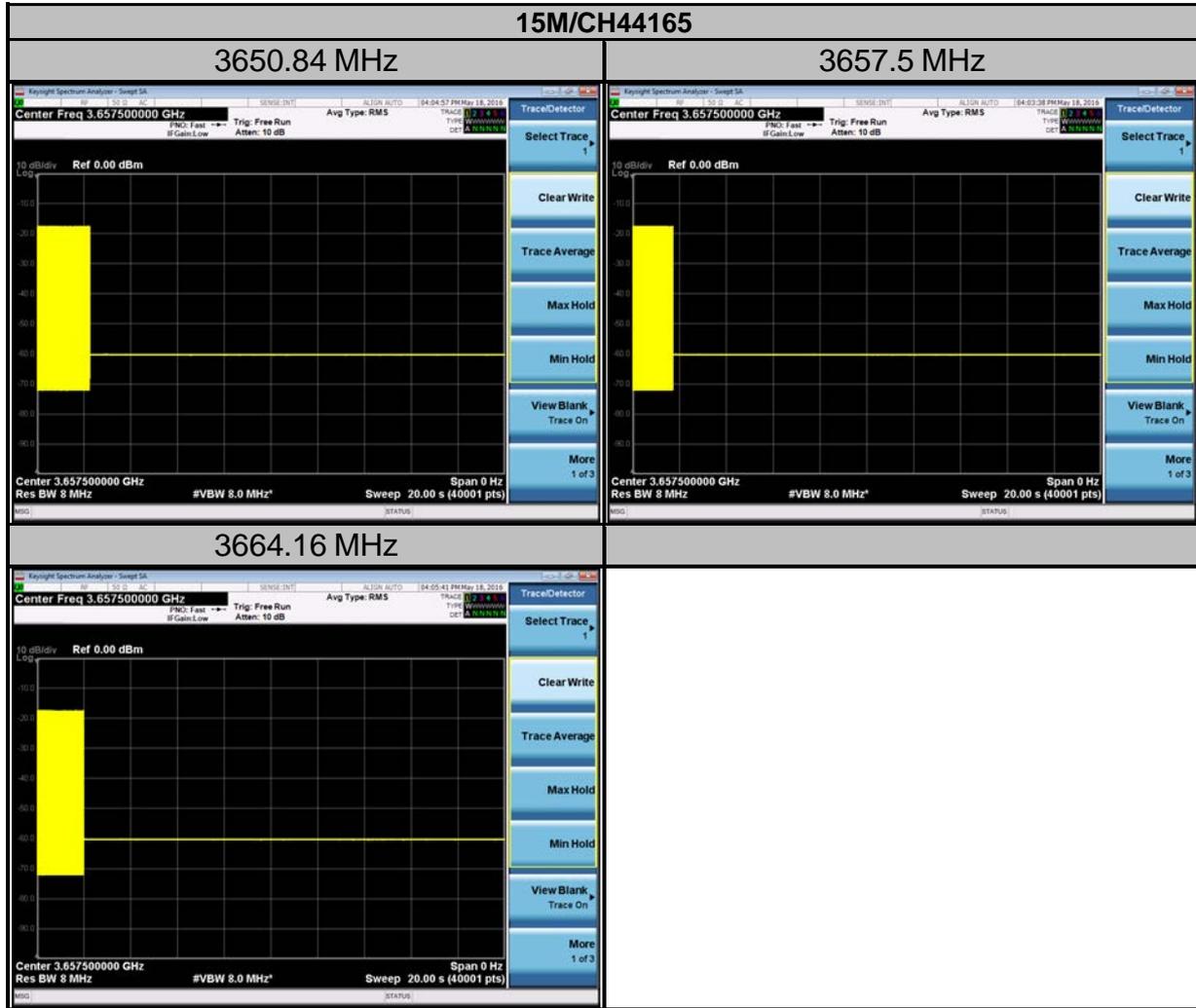
### Low Channel AWGN interruption photo



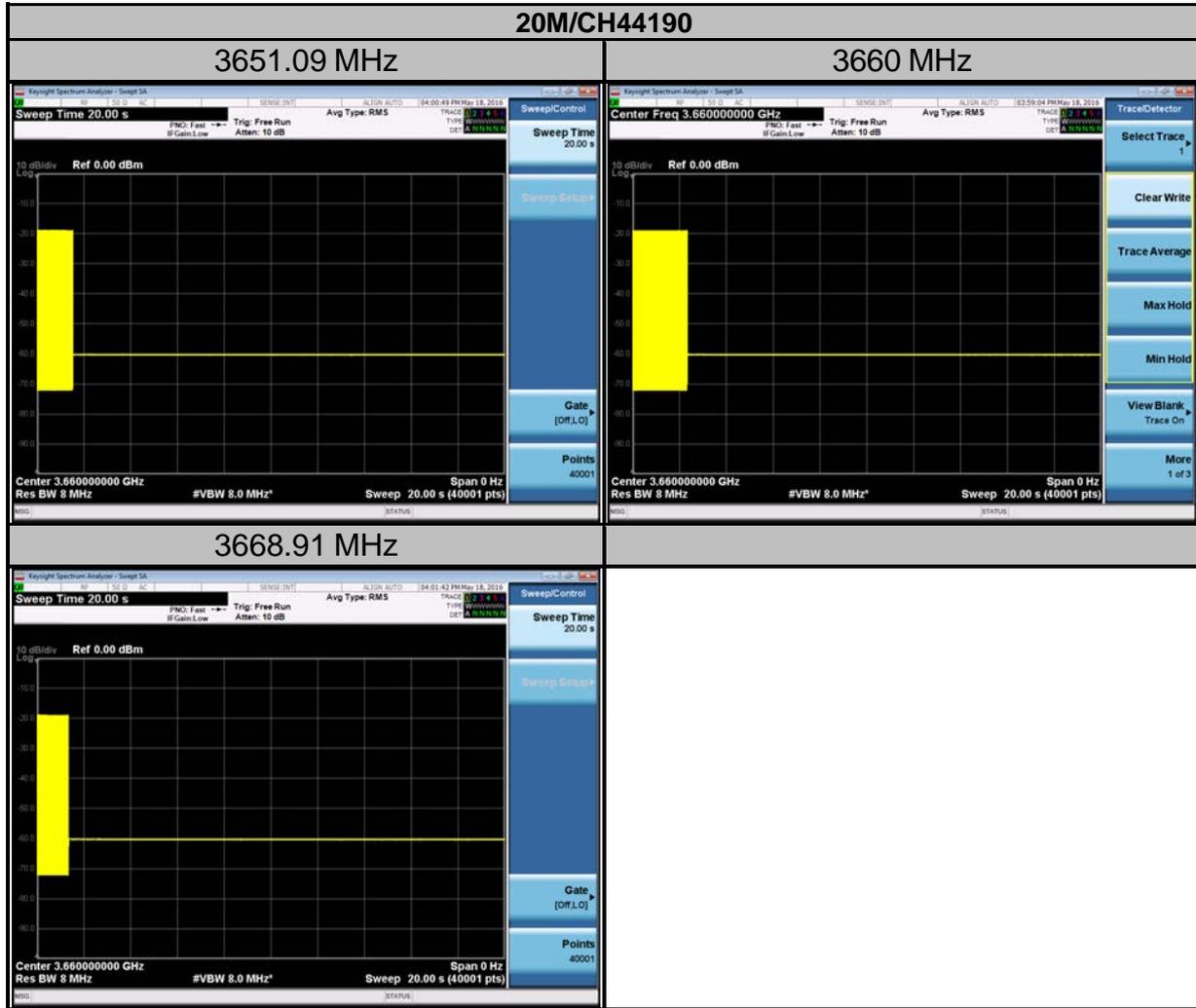
Remark: The UUT transmits signal with BS until adding the interference signal, then the UUT will interrupt the link with BS and stop transmission.



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### High Channel AWGN interference signal level



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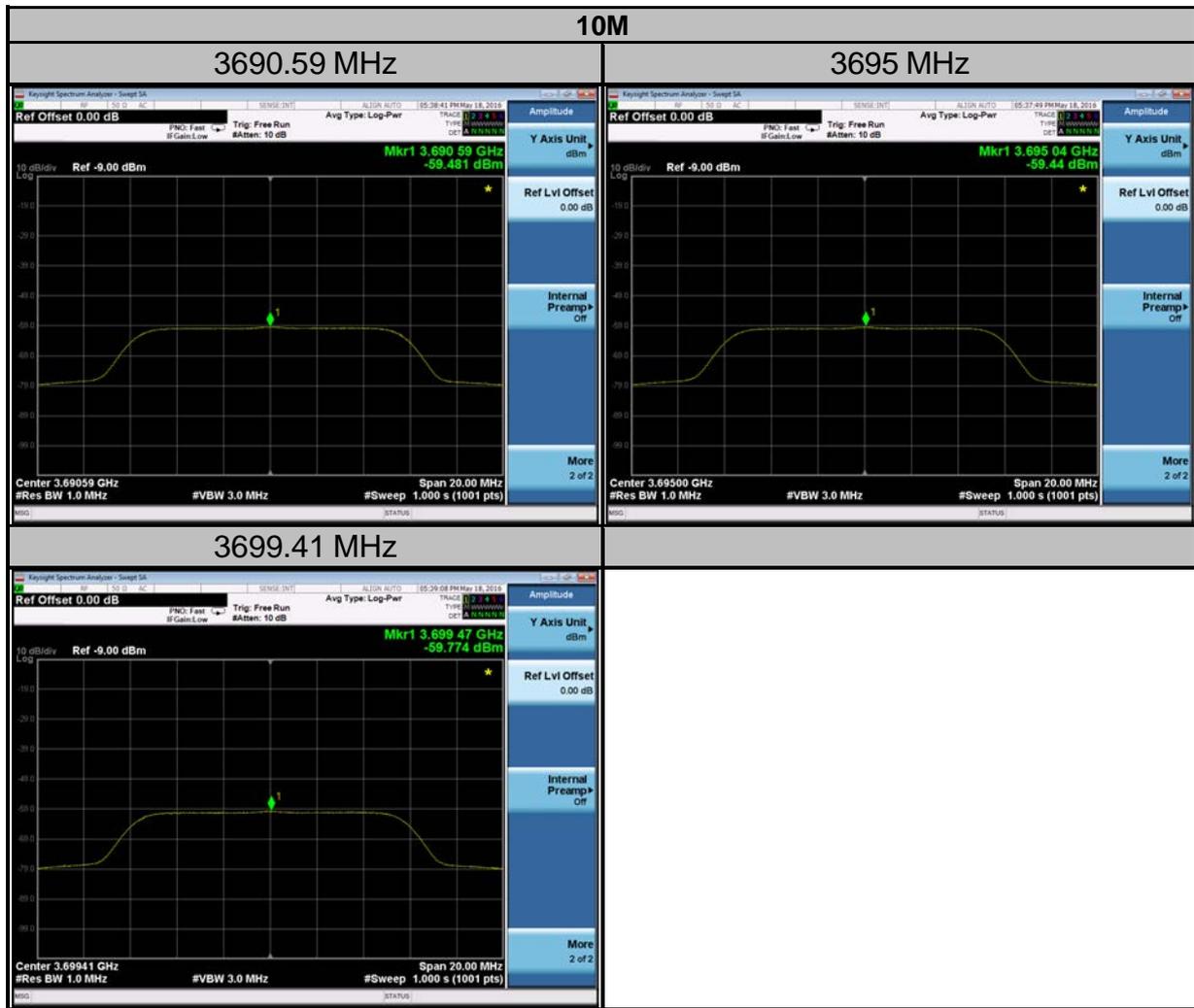
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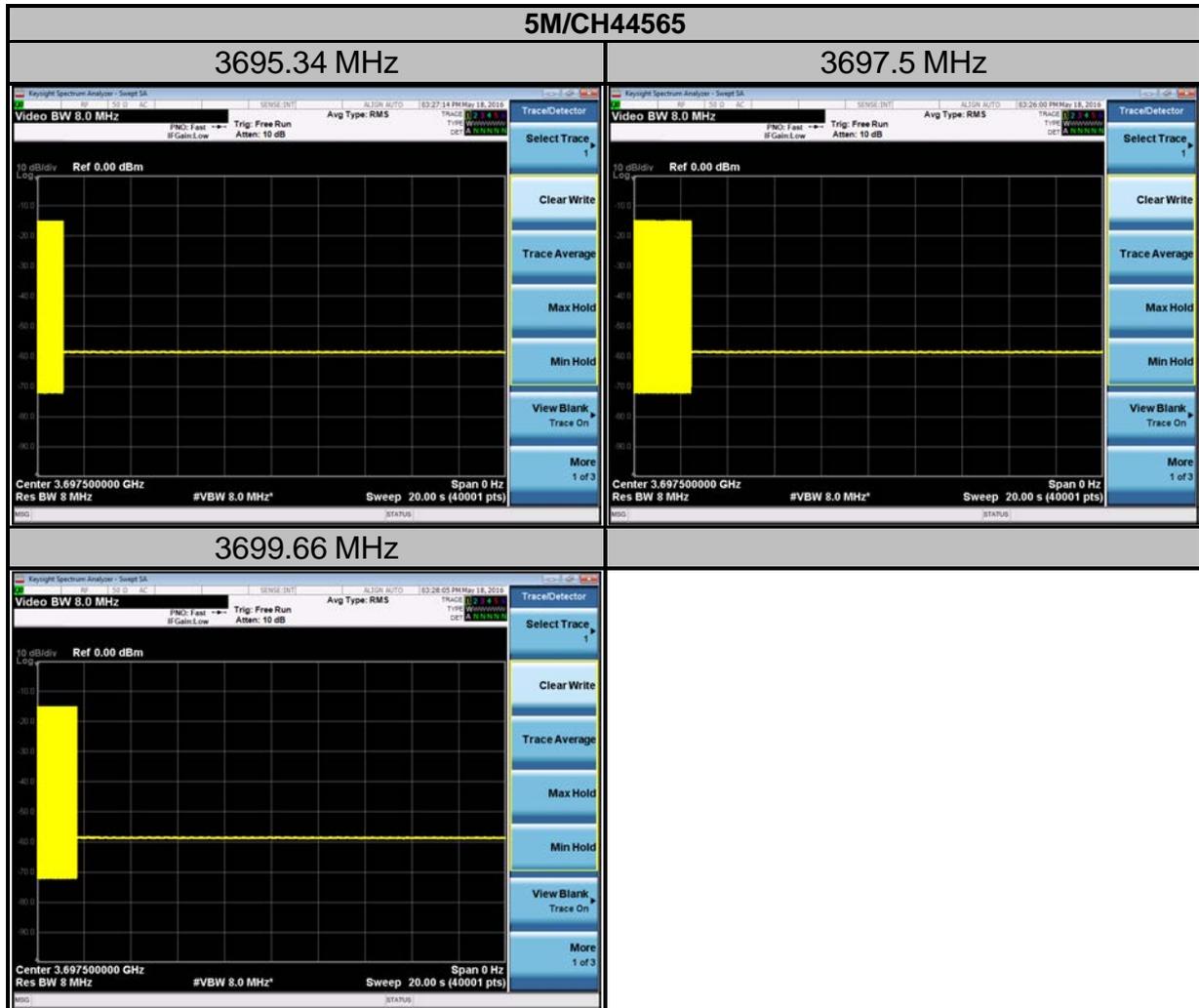
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### High Channel AWGN interruption photo

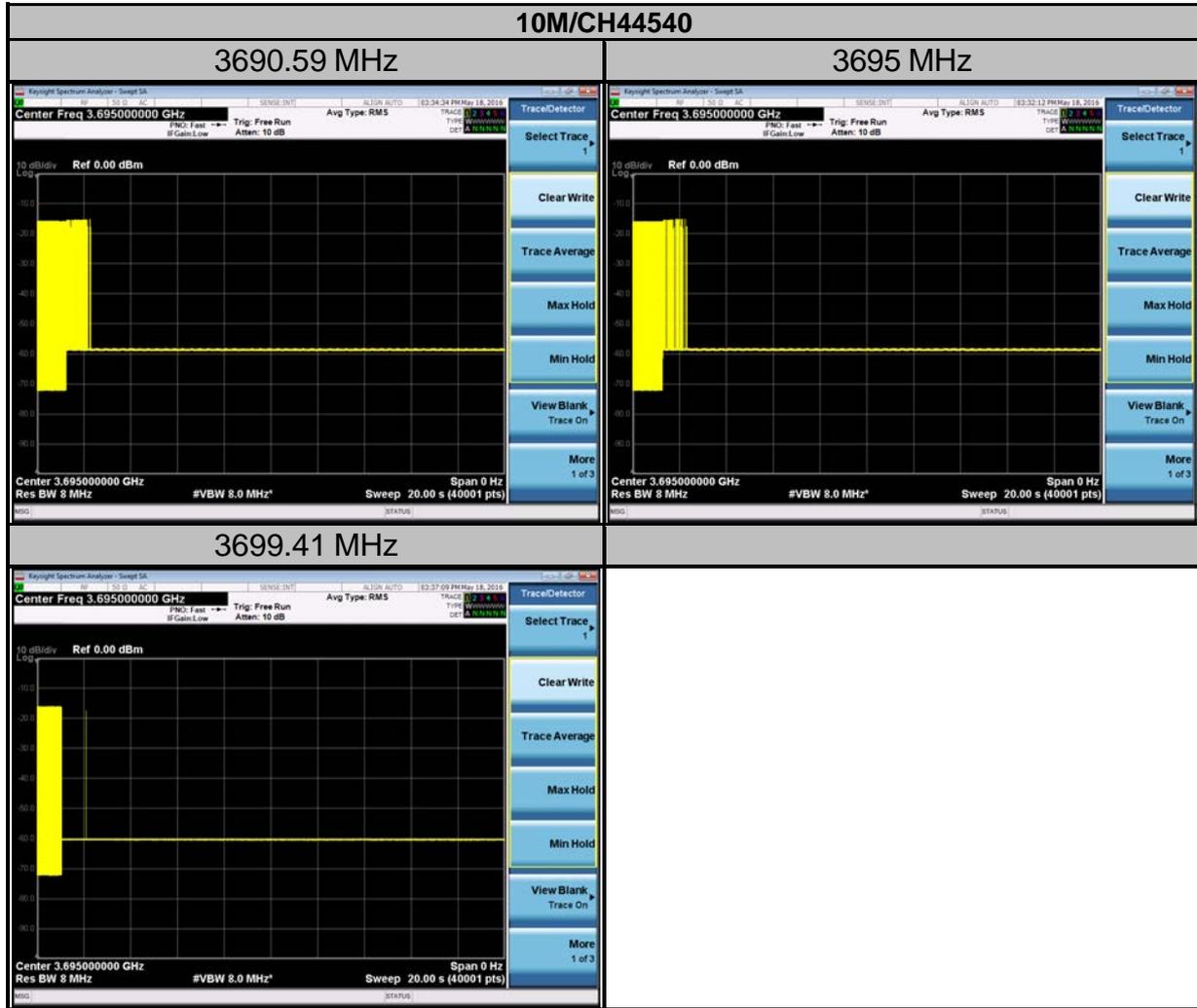


Remark: The UUT transmits signal with BS until adding the interference signal, then the UUT will interrupt the link with BS and stop transmission.

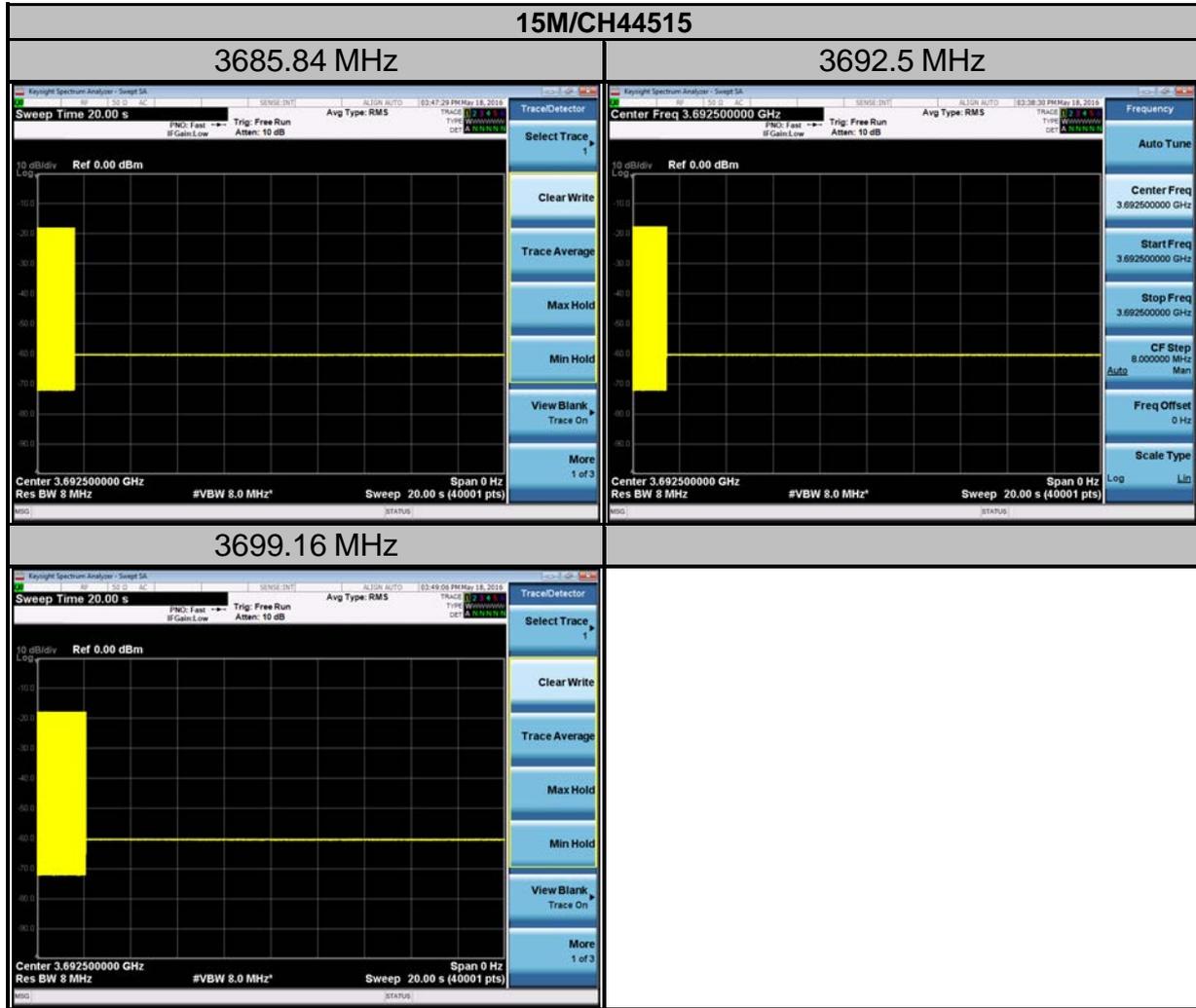


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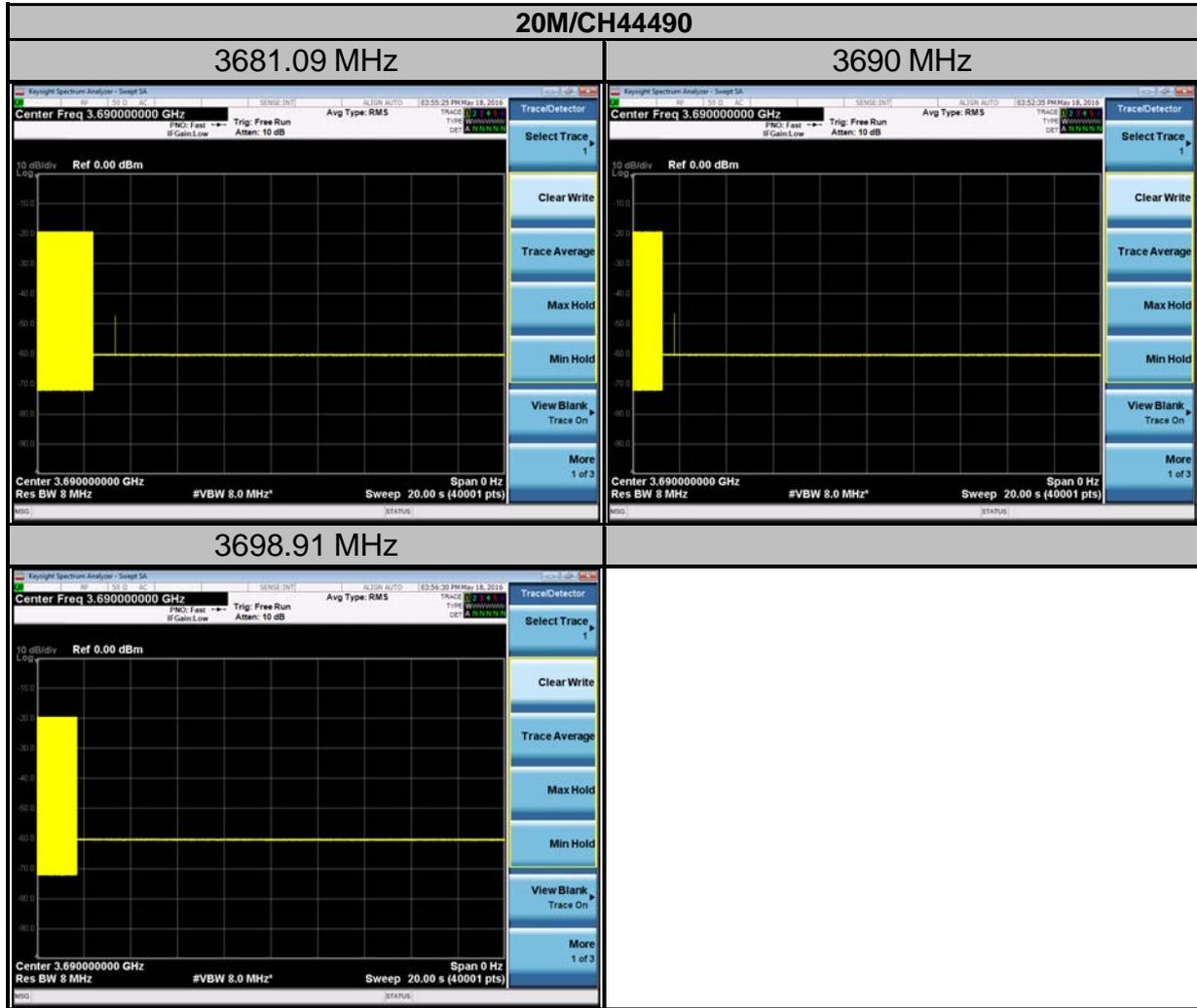
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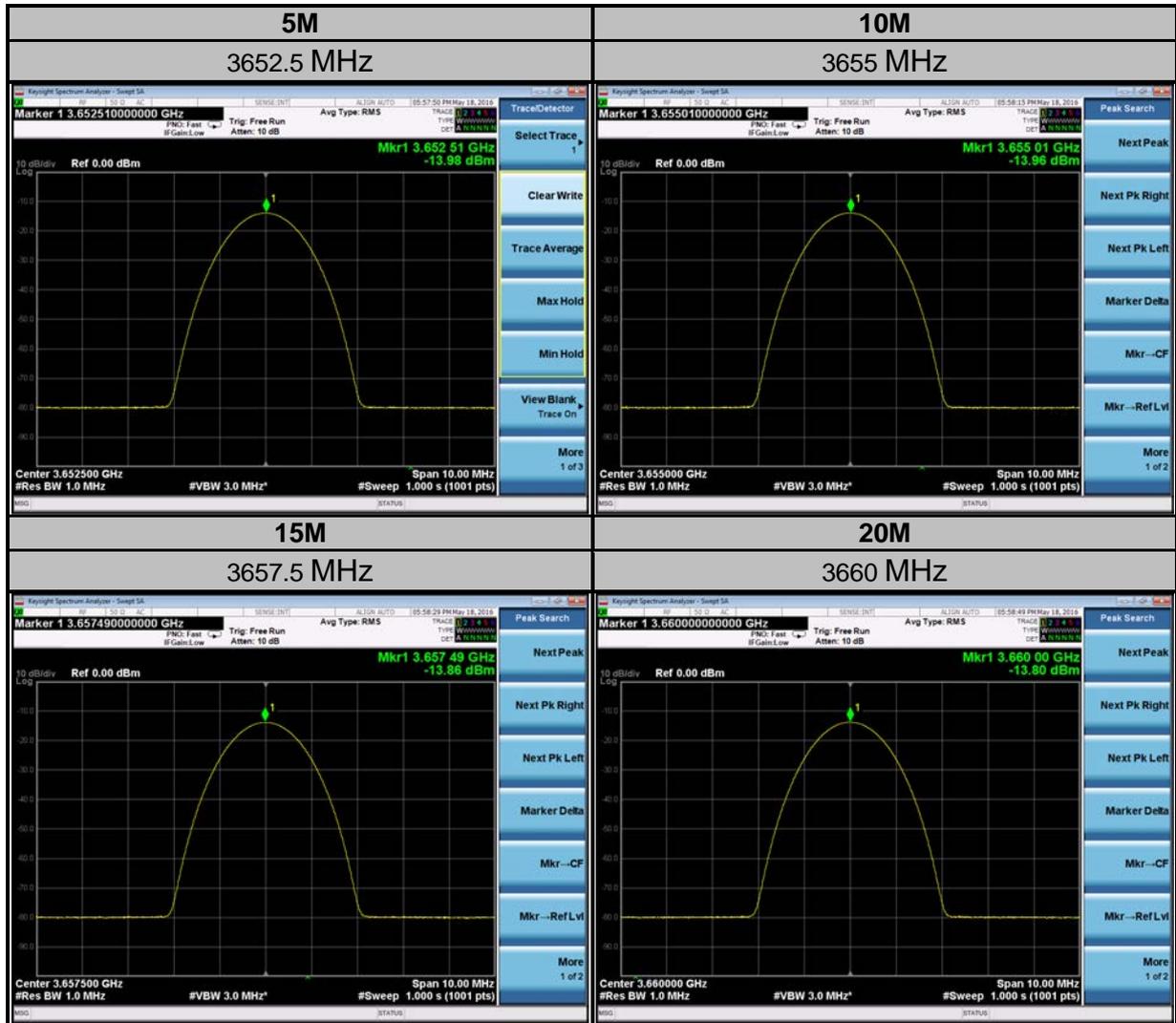
Remark: The UUT transmits signal with BS until adding the interference signal, then the UUT will interrupt the link with BS and stop transmission.



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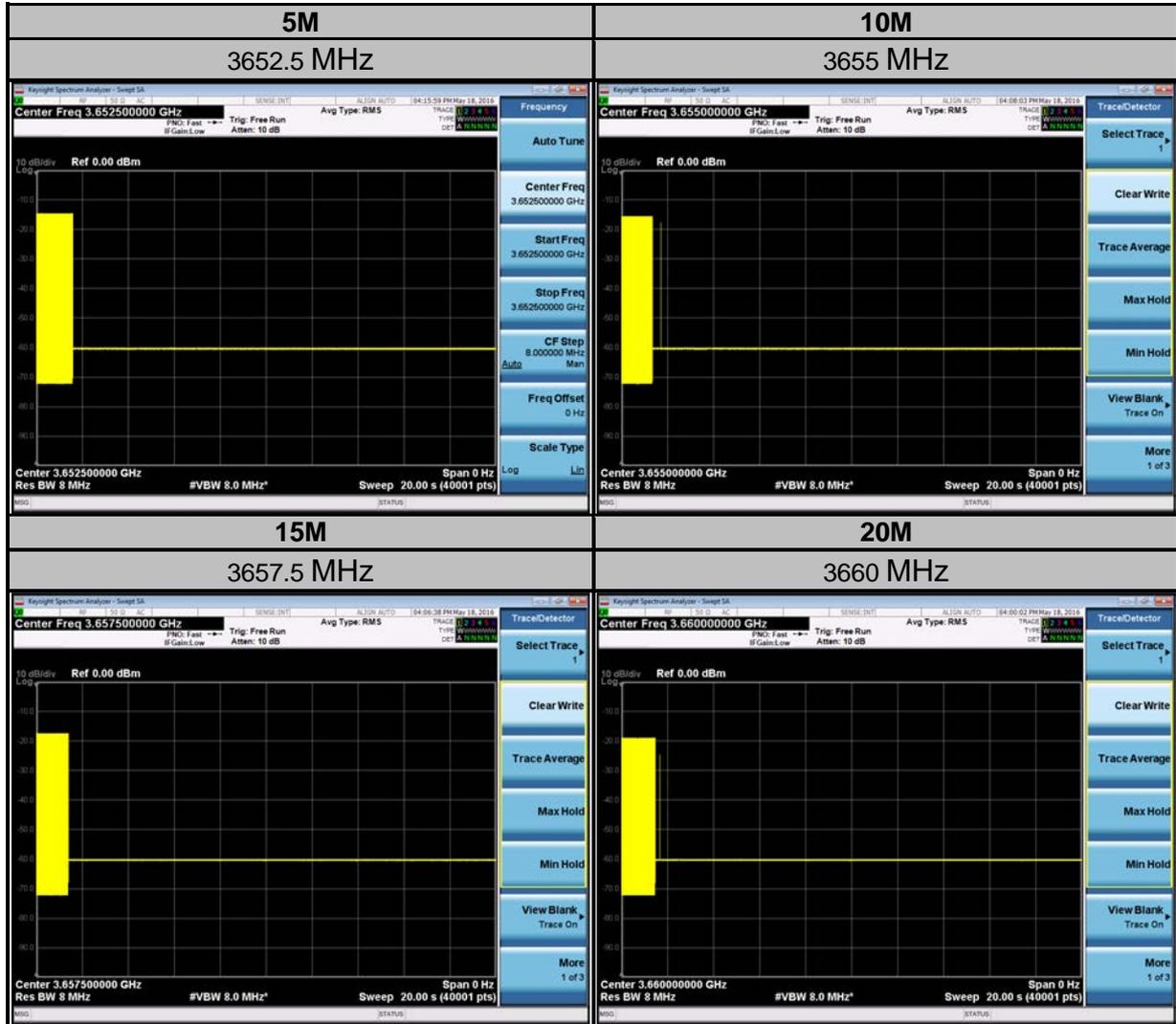
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### Low Channel CW interference signal level





### Low Channel CW interruption photo



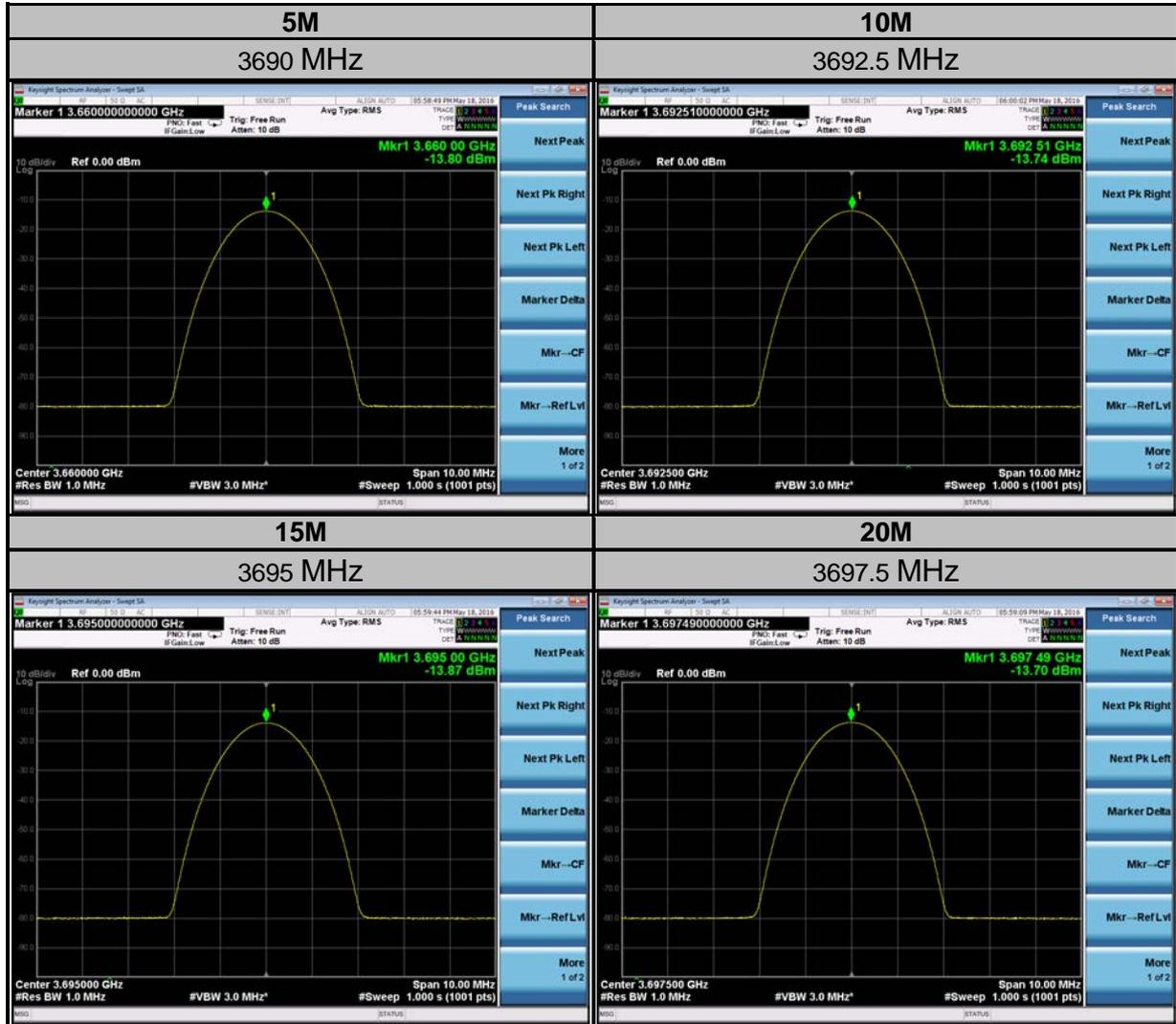
Remark: The UUT transmits signal with BS until adding the interference signal, then the UUT will interrupt the link with BS and stop transmission.



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### High Channel CW interference signal level



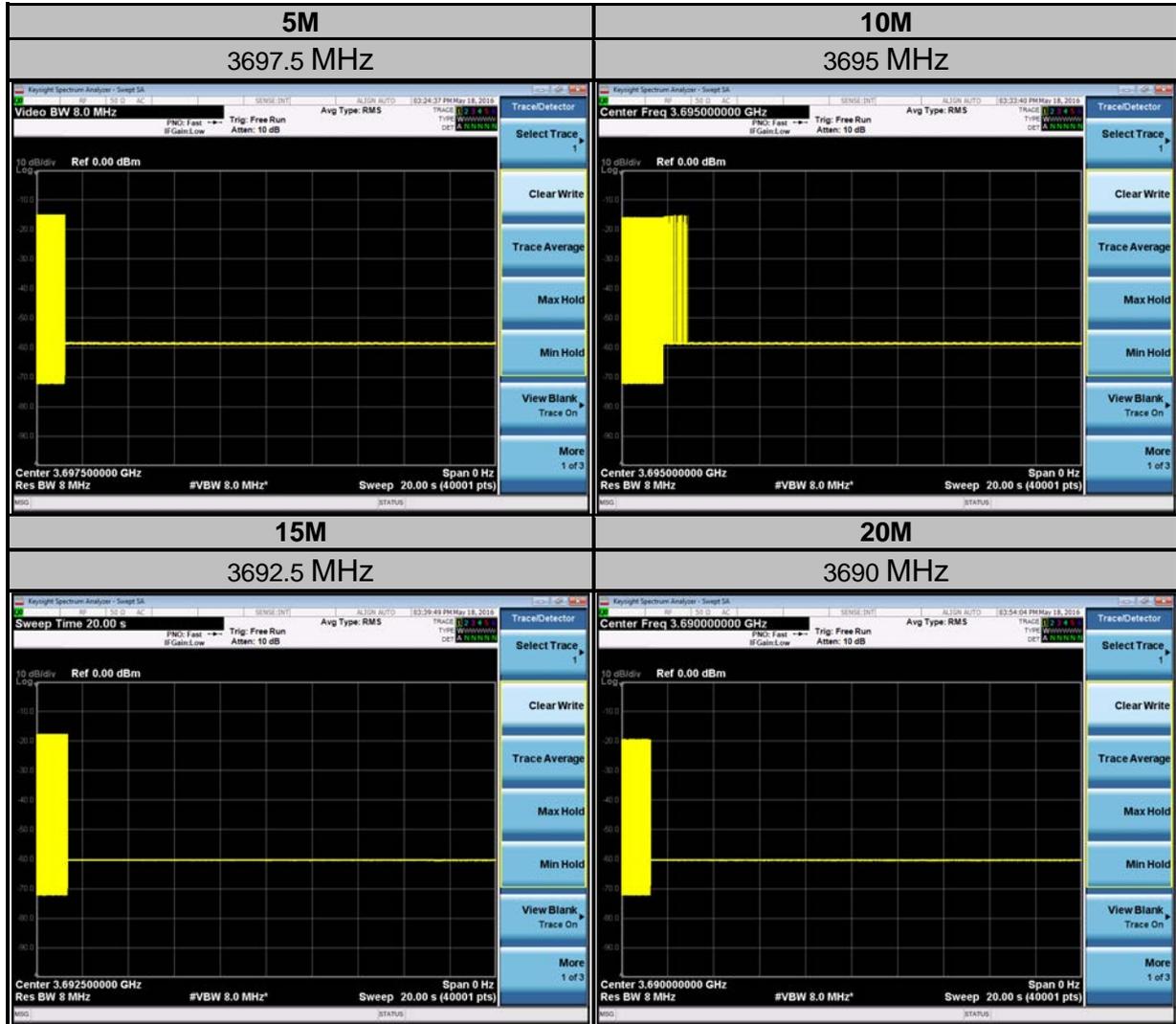
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High Channel CW interruption photo



Remark: The UUT transmits signal with BS until adding the interference signal, then the UUT will interrupt the link with BS and stop transmission.



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### 3.1.8 CONCLUSION

According the test result, the UUT can detect the interference and interrupt its transmission when a CW tone level above -14dBm is detected or a bandwidth limited AWGN level above -60dBm/MHz is detected.

Note: UUT were set to maximum declaration power level during the test.



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## 4 INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Shenzhen Co., Ltd. Dongguan Branch, were founded in 2002 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.



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## **5 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No any modifications are made to the EUT by the lab during the test.

**---END---**