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Cell Bounce
TEST REPORT

SCOPE OF WORK
EMC TESTING –CB34U

REPORT NUMBER
104295343LEX-001

ISSUE DATE

4/27/2020

PAGES
72

DOCUMENT CONTROL NUMBER
Non-Specific EMC Report Shell Rev. December 2017

EMC TEST REPORT

(FULL COMPLIANCE)

Report Number: 104295343LEX-001
Project Number: G104295343

Report Issue Date: 4/27/2020

Product Tested: CB34U

Standards: FCC Part 22, 24
RSS-132 Issue 3, RSS-133 Issue 6

Tested by:
Intertek Testing Services NA, Inc.
731 Enterprise Dr.
Lexington, KY 40510
USA

Client:
Cell Bounce
2055 Corte Del Nogal
Carlsbad, CA 92011
USA

Report prepared by

Brandon Norris,
Engineer

Report reviewed by

Bryan Taylor,
Team Leader

1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

2 Test Summary

Page	Test Name	Result
10	Output Power	Compliant
17	Occupied Bandwidth	Compliant
37	Conducted Spurious Emissions and Band Edge at Antenna Terminals	Compliant
49	Radiated Output Power	Compliant
52	Radiated Spurious Emissions (Transmitter)	Compliant
69	Frequency Stability	Compliant

3 Client Information

This product was tested at the request of the following:

Client Information	
Client Name:	Cell Bounce
Address:	2055 Corte Del Nogal Carlsbad, CA 92011 USA
Contact:	Gary Hu
Telephone:	+1 469 939 7899
Email:	Gary@cellbounce.com
Manufacturer Information	
Manufacturer Name:	Cell Bounce
Manufacturer Address:	2055 Corte Del Nogal Carlsbad, CA 92011 USA

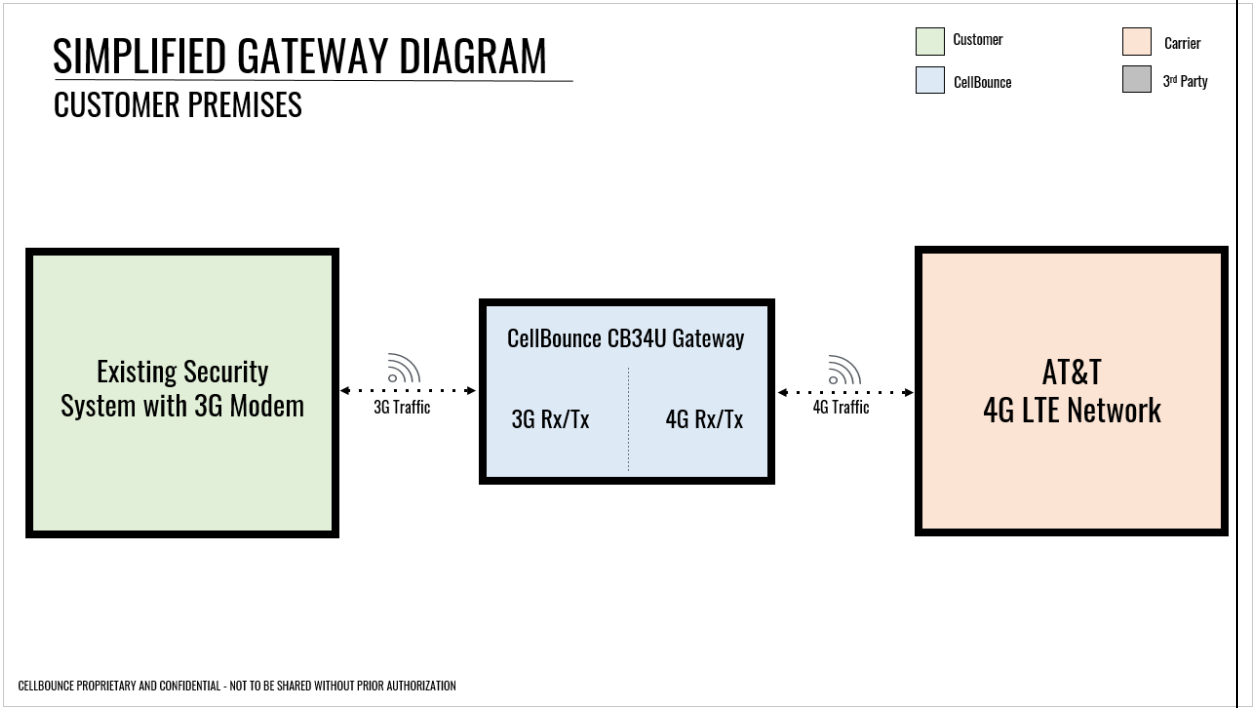
4 Description of Equipment under Test and Variant Models

Equipment Under Test			
Product Name	CB34U		
Model Number	CellBounce Gateway/CB34U		
Test Start Date	4/13/2020		
Test End Date	4/21/2020		
Device Received Condition	Good		
Test Sample Type	Production		
Rated Voltage	12VDC Via AC/DC Power Adapter		
Software Version	CB34UR01S		
Hardware Version	CB34UHW01		
Frequency Bands and Maximum Output Power (dBm)	**Band**	**Peak (dBm)**	**Average (dBm)**
	Low Band 2	-0.4	-11.95
	Mid Band 2	-0.42	-11.96
	High Band 2	-0.58	-12.12
	Low Band 5	-1.77	-13.57
	Mid Band 5	-1.61	-13.03
	High Band 5	-1.61	-13.25

Description of Equipment Under Test (provided by client)

The Alarm Panel industry is facing a major challenge: As carriers retire their 3G networks the numerous existing 3G Alarm Panels will no longer be able to connect to a carrier network. CellBounce's cellular experts and engineers have developed patent-pending technology specifically designed to keep 3G Alarm Panels connected through future network changes, with no technician required.
The CB34U Gateway is a complete RF-to-bits-to-RF gateway, providing a seamless 3G UMTS to 4G LTE connection between an existing 3G Alarm Panel and the carrier's 4G network. The Gateway is simple to activate and can be installed in minutes by the homeowner. The Gateway's simple installation eliminates the need for the Alarm Monitoring company to upgrade or modify the Alarm Panel, or even visit the residence.
The CB34U Gateway establishes a private network between itself and the 3G Alarm Panel—all carrier core network functions are emulated within the CB34U Gateway. Authentication of the 3G Panel is via a dedicated APN to a 3G Authentication Gateway hosted by AT&T.

How It Works



The CB34U Gateway employs an embedded 3G femto base station which connects to a customer's existing 3G Alarm Panel modem. The femto base station attaches only to the Alarm Panel's programmed whitelist IMEI. The 3G RF power link is significantly reduced as to not interfere with new services on B2 & B5 LTE bands. The femto base station supports TR-069 for remote management allowing auto-configuration and monitoring after deployment.

The 4G LTE modem provides connectivity to the 3G femto base station and embedded controller. The 3G femto base station is always on, listening for an attach request from the Alarm Panel. Upon request, the 3G Alarm Panel is attached, authenticated and allowed to connect to the 4G network. Bi-directional data traffic is transferred between the Alarm Panel and monitoring location; no encryption is performed. Voice traffic is established as a Voice over LTE (VoLTE) service.

Installation requires the customer to place the CB34U Gateway within 50 feet of their Alarm Panel. The customer plugs the gateway power adapter into a common household outlet, per UL standards. The gateway then automatically begins the boot up sequence. Several minutes are required for the 4G modem to register on a carrier network, followed by the Alarm panel registering with the 3G femto base station.

The CB34U Gateway's LED indicators for power, 3G connectivity, and 4G connectivity are established.

4.1 Variant Models:

There were no variants included as part of this evaluation.

4.2 Bands Supported:

Band 2 and Band 5

5 System Setup and Method

5.1 Method:

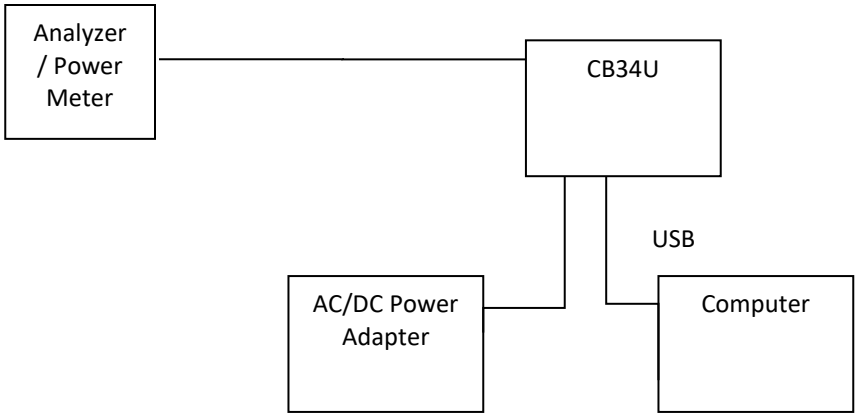
Configuration as required by ANSI C63.26: 2015

No.	Descriptions of EUT Exercising
1	Transmitting a UMTS signal in band 2 or 5 (downlink)
2	Idle, not transmitting

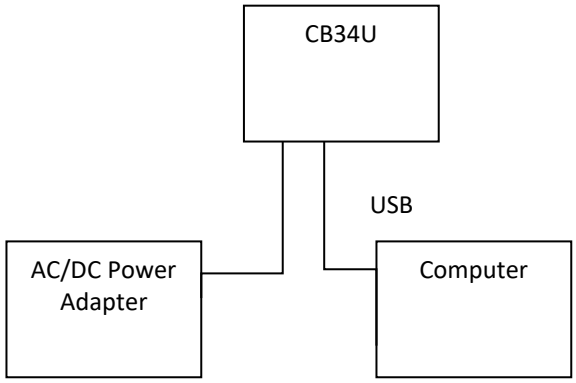
Cables					
ID	Description	Length (m)	Shielding	Ferrites	Termination
1	Power Cord	1	No	No	AC Mains
2	USB-Serial Debug Cable	2	No	No	USB

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
DC Supply	HP	-	-
Computer	Dell	-	-

5.2 EUT Block Diagram:



Setup for conducted measurements



Setup for radiated measurements

6 Output Power

6.1 Test Limits

§ 22.913

(a)(5) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

§ 24.232

(c)Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications

RSS-132(5.4)

The transmitter output power shall be measured in terms of average power. The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts.

RSS-133(4.1)

The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510.

Per SRSP-510 Mobile stations and hand-held portables are limited to 2 watts maximum e.i.r.p. The equipment shall employ means to limit the power to the minimum necessary for successful communication.

6.2 Test Method

The transmitter output was connected to a coaxial cable, the other end of which was connected to a power meter. The 3G radio of the transmitter was turned on and was programmed to transmit at max power. The power output at the transmitter antenna port was determined by adding the value of the cable insertion loss to the power reading. Tests were performed at three frequencies (low, middle, and high channels) and on the highest power levels, which can be setup on the transmitters.
In measuring the peak to average power ratio (PAPR) a spectrum analyzer was attached where the power meter was previously located at. The CCDF function of the spectrum analyzer was used to measure the PAPR with a sufficient number of samples (100,000) was used to determine the PAPR.

6.3 Test Equipment Used

Description	Asset	Manufacturer	Model	Cal Date	Cal Due
Power Meter	3213	Rohde & Schwarz	NRP-Z3	9/17/2019	9/17/2020
Spectrum Analyzer	3099	Rohde & Schwarz	FSP 7	9/21/2019	9/21/2020

6.4 Test Results

The device was found to be **compliant**. The average output power was less than 1W. The peak to average power ratio was less than 13dB.

6.5 Test Conditions

Test Personnel:	Brandon Norris	Test Date:	04/14/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	See Section 6.1
Product Standard:	ANSIC63.26	Ambient Temperature:	22.8°C
Input Voltage:	12VDC via AC/DC Power Adapter	Relative Humidity:	27.8%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.8mbar

6.6 Test Data

Band	Channel	Channel Number	Center Freq (MHz)	Pk (dBm)	Av (dBm)	PAPR (dB) (using CCDF function)
2	Low	9662	1932.4	-0.4	-11.95	9.24
	Mid	9800	1960	-0.42	-11.96	9.08
	High	9938	1987.6	-0.58	-12.12	9.28
5	Low	4357	871.4	-1.77	-13.57	9.24
	Mid	4408	881.6	-1.61	-13.03	9.08
	High	4458	891.6	-1.61	-13.25	8.96

6.7 Peak to Average Power- Ratio Plots

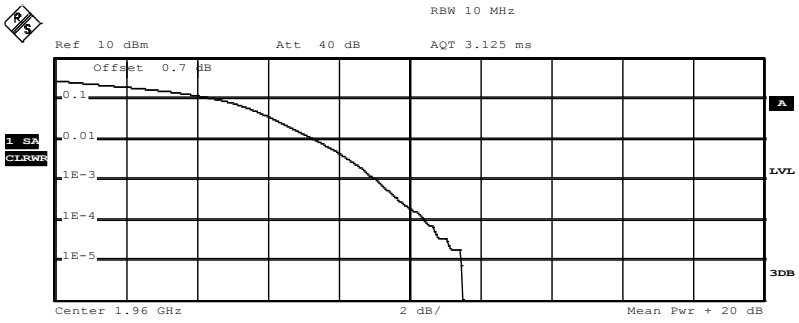
Band 2 Low Channel UARFCN 9662 (PAPR)

Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	-12.11 dBm
Peak	-1.16 dBm
Crest	10.95 dB
10 %	4.64 dB
1 %	7.36 dB
.1 %	9.24 dB
.01 %	10.32 dB

Date: 14.APR.2020 14:01:30

Band 2 Mid Channel UARFCN 9800 (PAPR)

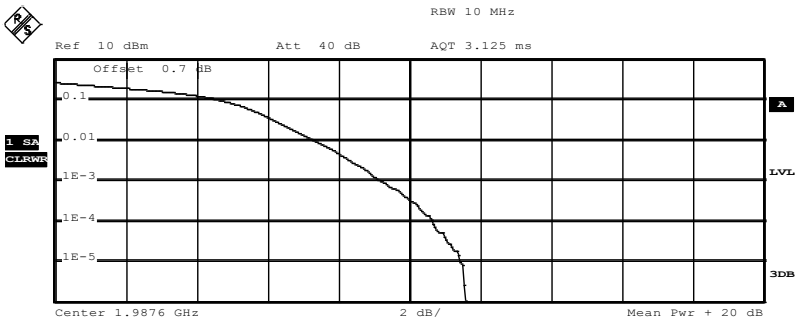


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	-12.22 dBm
Peak	-0.74 dBm
Crest	11.48 dB
10 %	4.72 dB
1 %	7.40 dB
.1 %	9.08 dB
.01 %	10.44 dB

Date: 14.APR.2020 14:07:55

Band 2 High Channel UARFCN 9938 (PAPR)

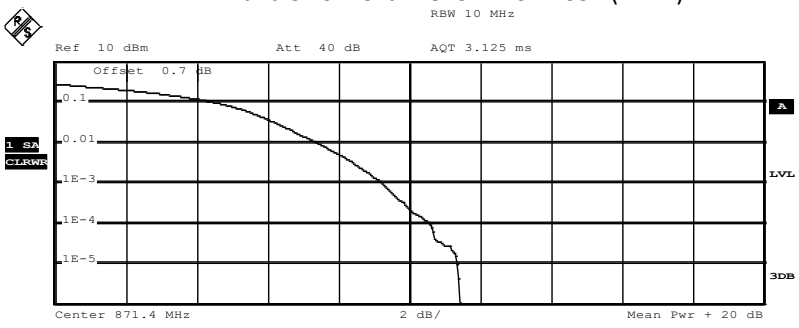


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	-12.36 dBm
Peak	-0.81 dBm
Crest	11.56 dB
10 %	4.84 dB
1 %	7.40 dB
.1 %	9.28 dB
.01 %	10.68 dB

Date: 14.APR.2020 14:13:17

Band 5 Low Channel UARFCN 4357 (PAPR)

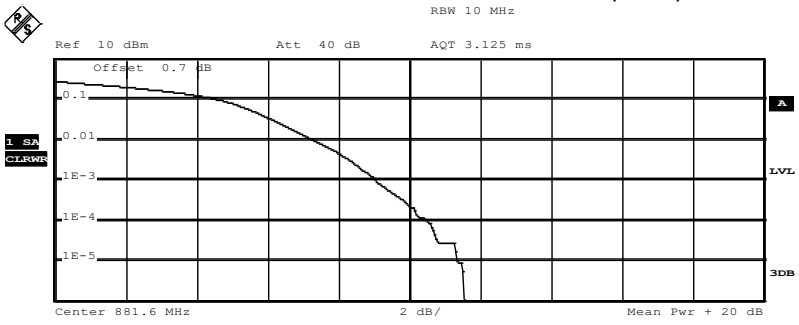


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	-13.13 dBm
Peak	-1.72 dBm
Crest	11.41 dB
10 %	4.72 dB
1 %	7.44 dB
.1 %	9.24 dB
.01 %	10.56 dB

Date: 14.APR.2020 13:45:38

Band 5 Mid Channel UARFCN 4408 (PAPR)

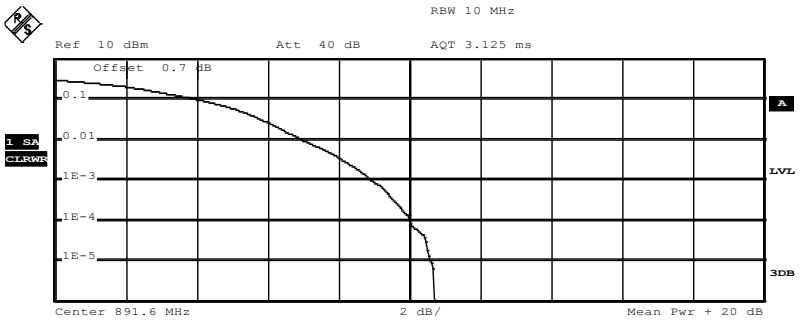


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	-13.19 dBm
Peak	-1.65 dBm
Crest	11.54 dB
10 %	4.76 dB
1 %	7.36 dB
.1 %	9.08 dB
.01 %	10.56 dB

Date: 14.APR.2020 13:50:32

Band 5 High Channel UARFCN 4458 (PAPR)



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	-13.14 dBm
Peak	-2.43 dBm
Crest	10.71 dB
10 %	4.24 dB
1 %	7.04 dB
.1 %	8.96 dB
.01 %	10.04 dB

Date: 14.APR.2020 13:55:36

7 Occupied Bandwidth

7.1 Test Limits

Per FCC 2.1049 and RSS-GEN (6.6) The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

7.2 Test Method

Tests are performed in accordance with ANSI C63.26: 2015 (5.4.3)

7.3 Test Equipment Used

Description	Asset	Manufacturer	Model	Cal Date	Cal Due
EMI Test Receiver	2327	Rohde & Schwarz	ESI26	9/30/2019	9/30/2020
Spectrum Analyzer	3099	Rohde & Schwarz	FSP 7	9/21/2019	9/21/2020

7.4 Test Results

The device was found to be **compliant**. The bandwidth measurements are shown below.

7.5 Test Conditions

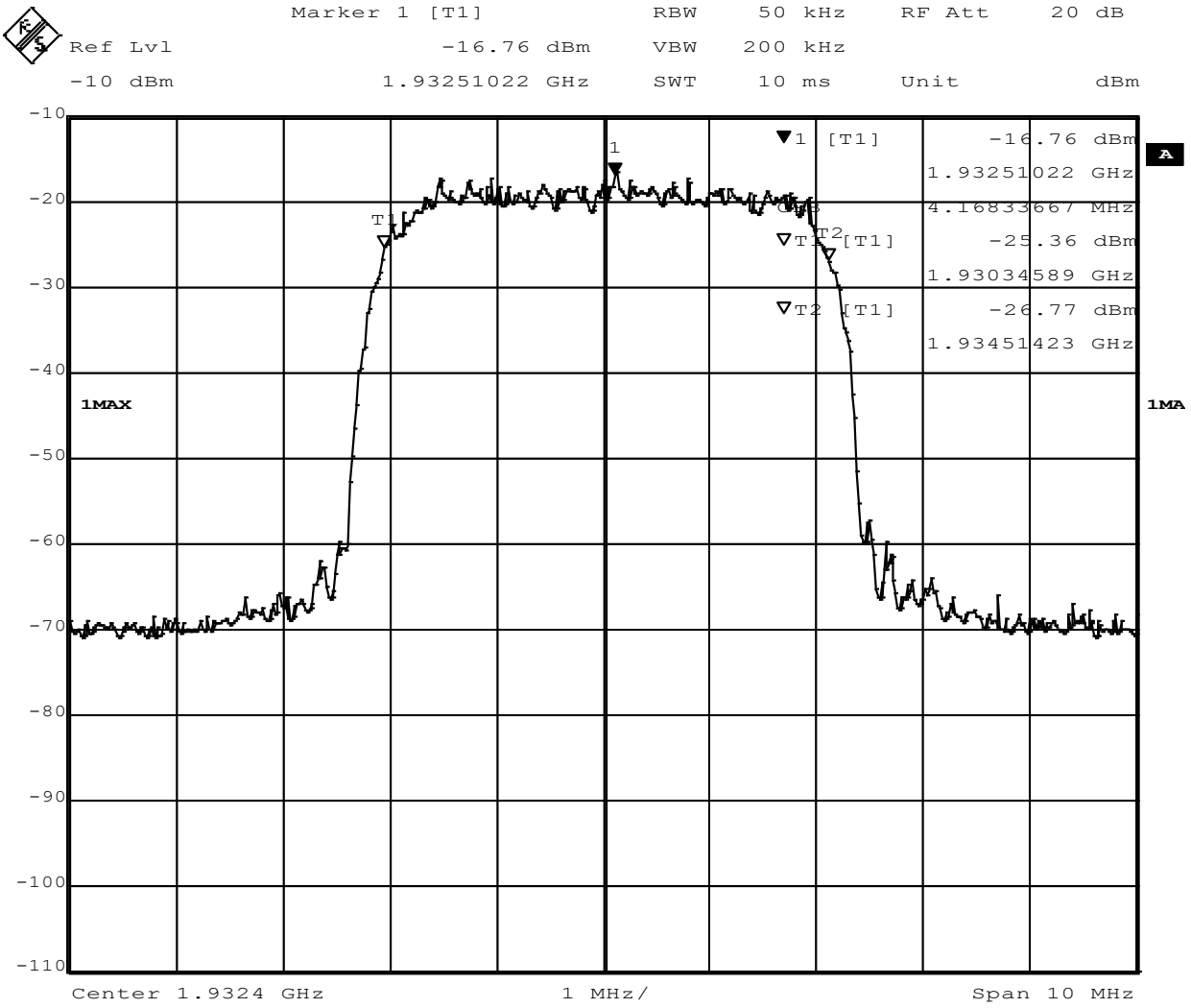
Test Personnel:	Brandon Norris	Test Date:	4/14/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	99% 20dB and 6dB BW Measured
Product Standard:	ANSI C63.26	Ambient Temperature:	22.8°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	27.8%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.8

7.6 Test Data

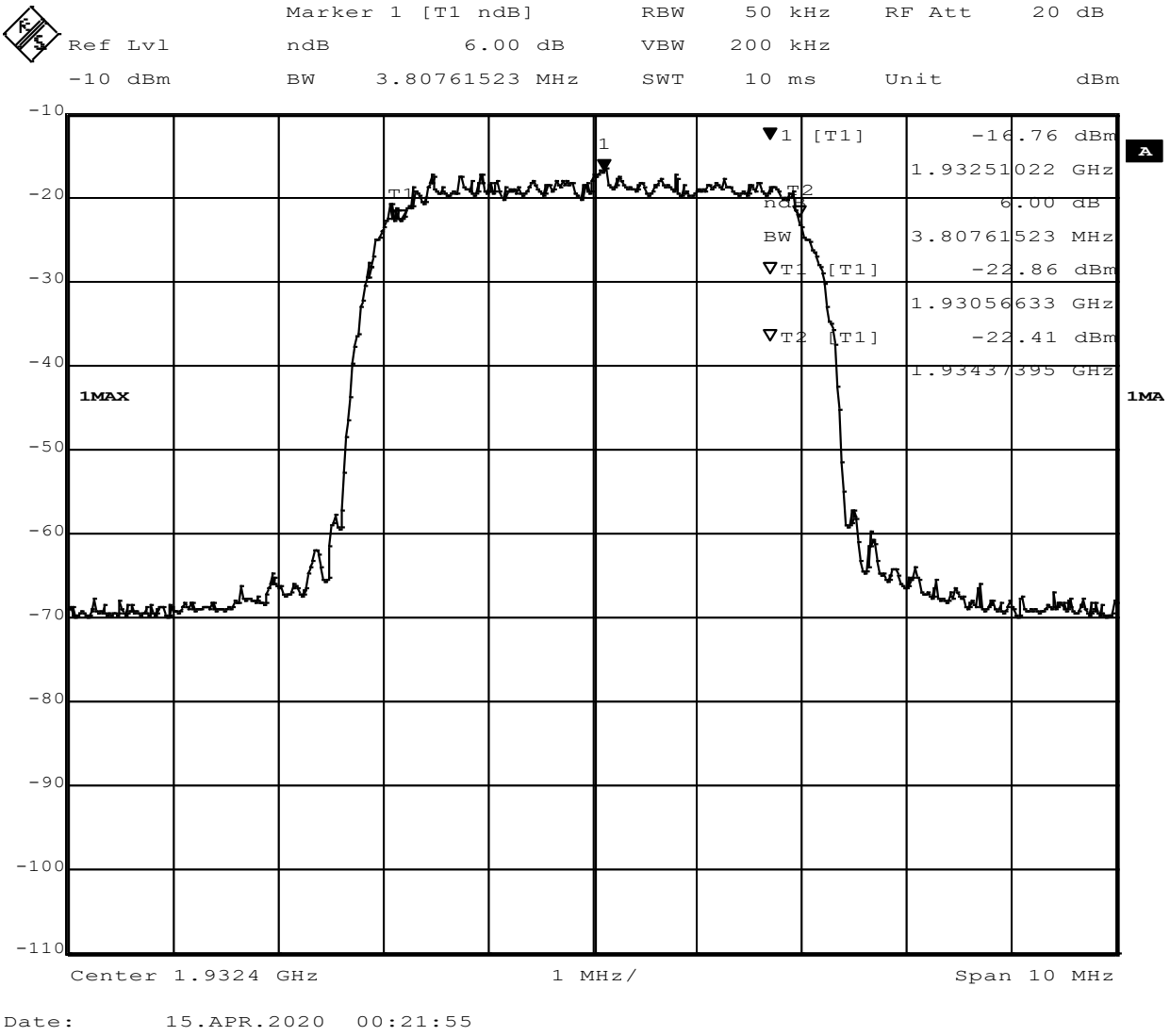
Band	Channel	Channel Number	Center Freq (MHz)	6 dB BW (MHz)	20 dB BW (MHz)	99% BW (MHz)
2	Low	9662	1932.4	3.8076	4.5691	4.1683
	Mid	9800	1960	3.9879	4.5892	4.1683
	High	9938	1987.6	3.8477	4.5892	4.1683
5	Low	4357	871.4	3.9879	4.5691	4.1483
	Mid	4408	881.6	3.9679	4.5691	4.1884
	High	4458	891.6	3.9679	4.5892	4.1883

7.7 Occupied Bandwidth Plots (Band 2)

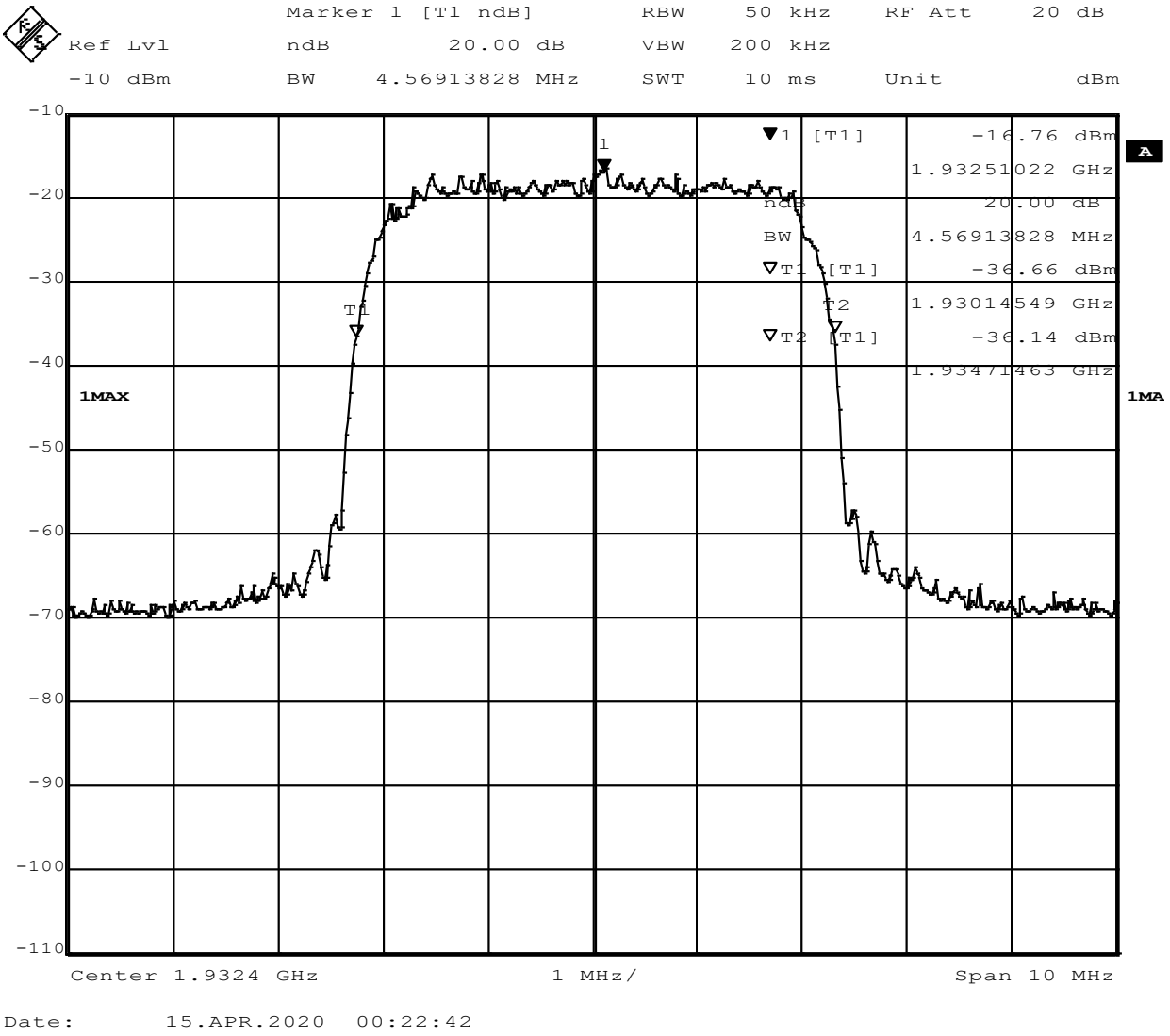
Band 2 Low Channel UARFCN 9662 (99% bandwidth)



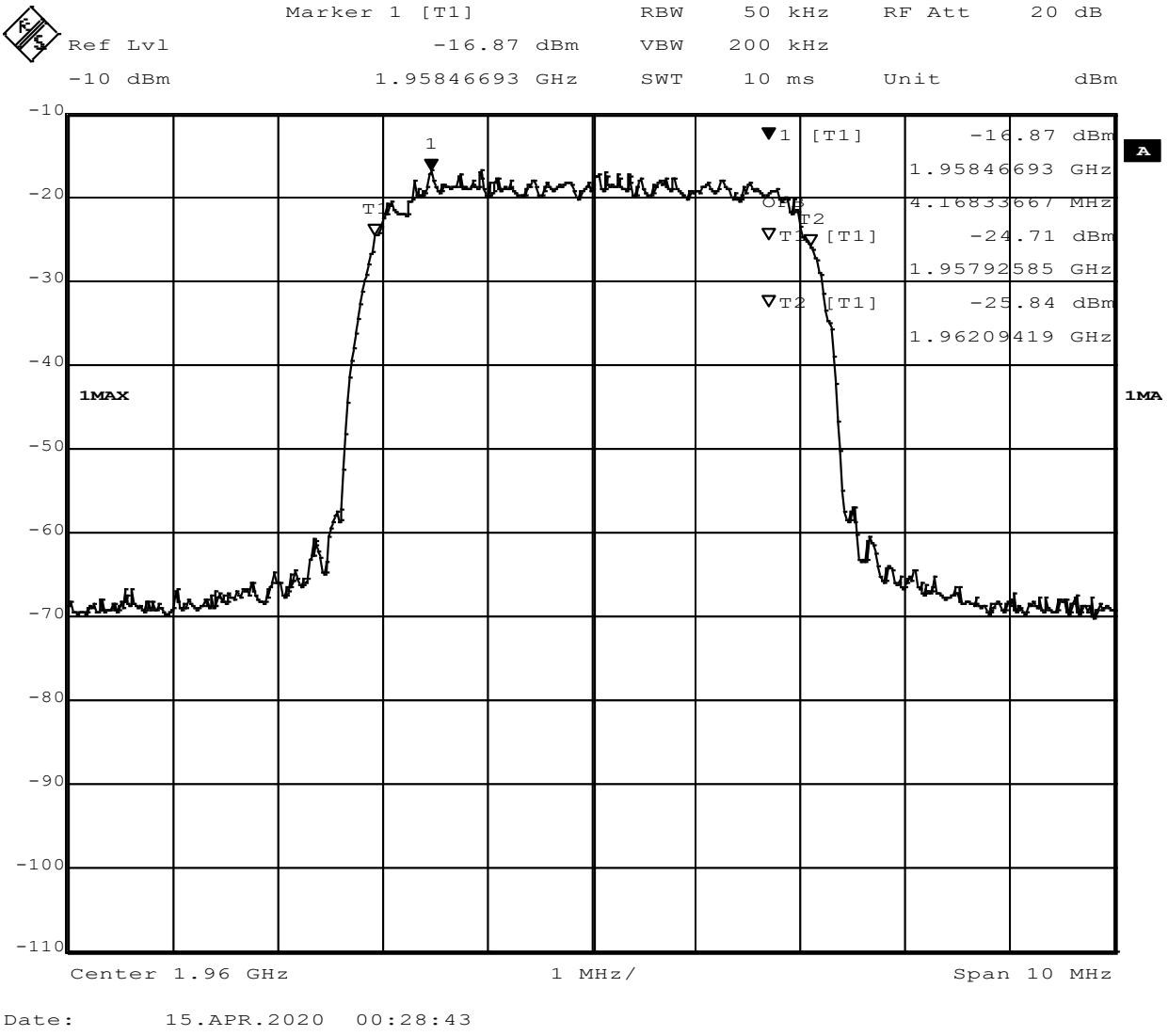
Band 2 Low Channel UARFCN 9662 (6dB down bandwidth)



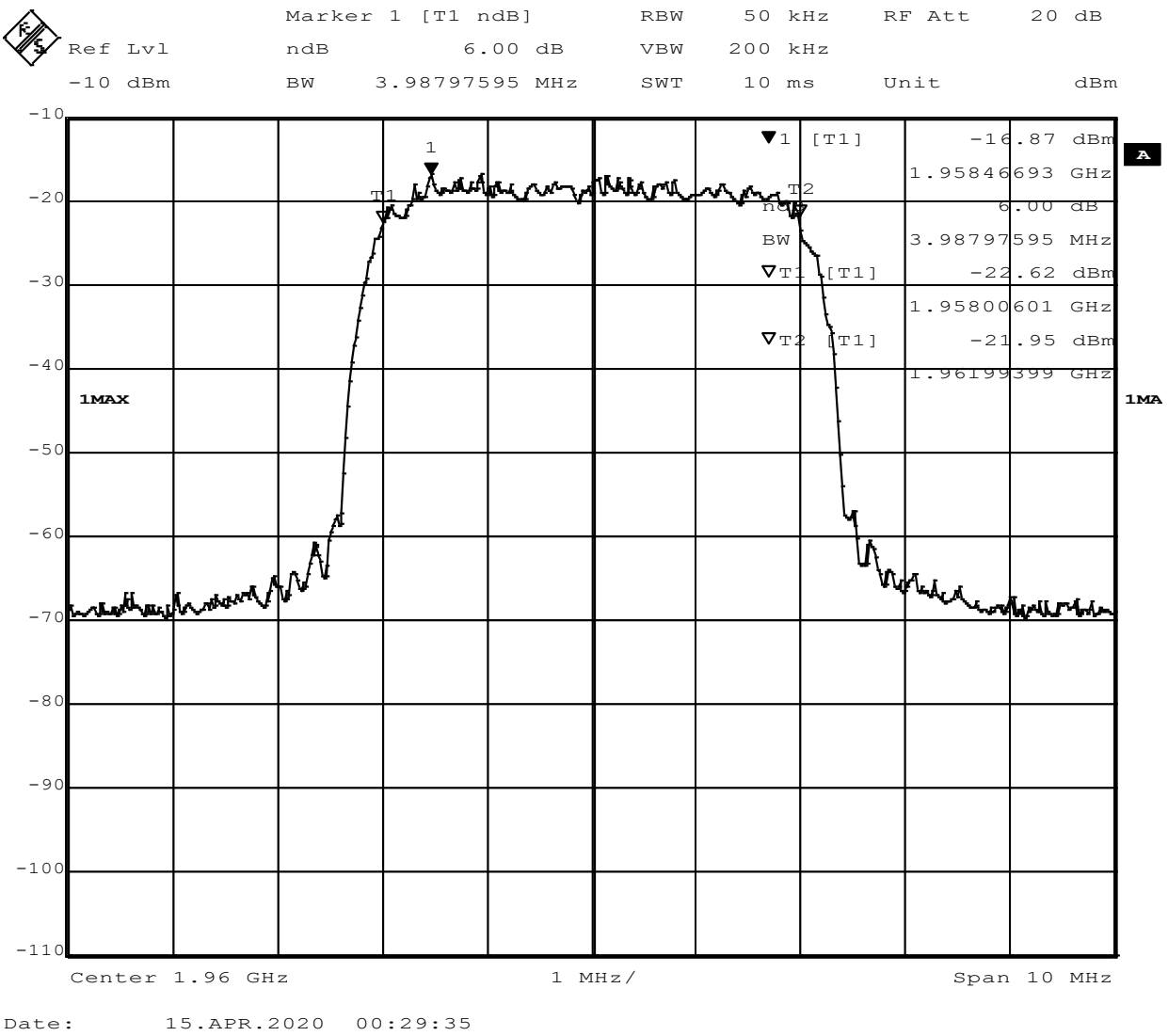
Band 2 Low Channel UARFCN 9662 (20dB down bandwidth)



Band 2 Mid Channel UARFCN 9800 (99% bandwidth)

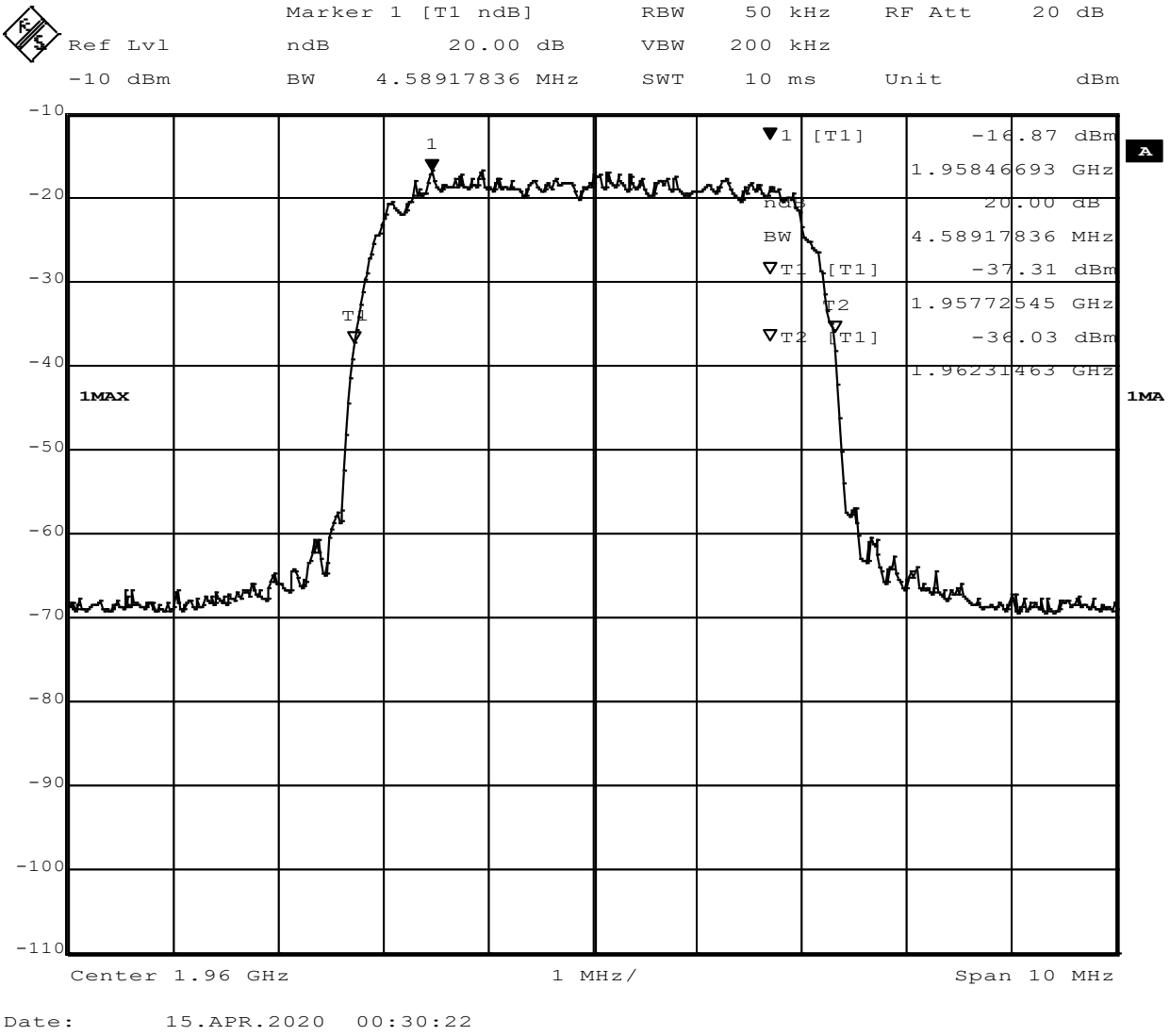


Band 2 Mid Channel UARFCN 9800 (6dB down bandwidth)

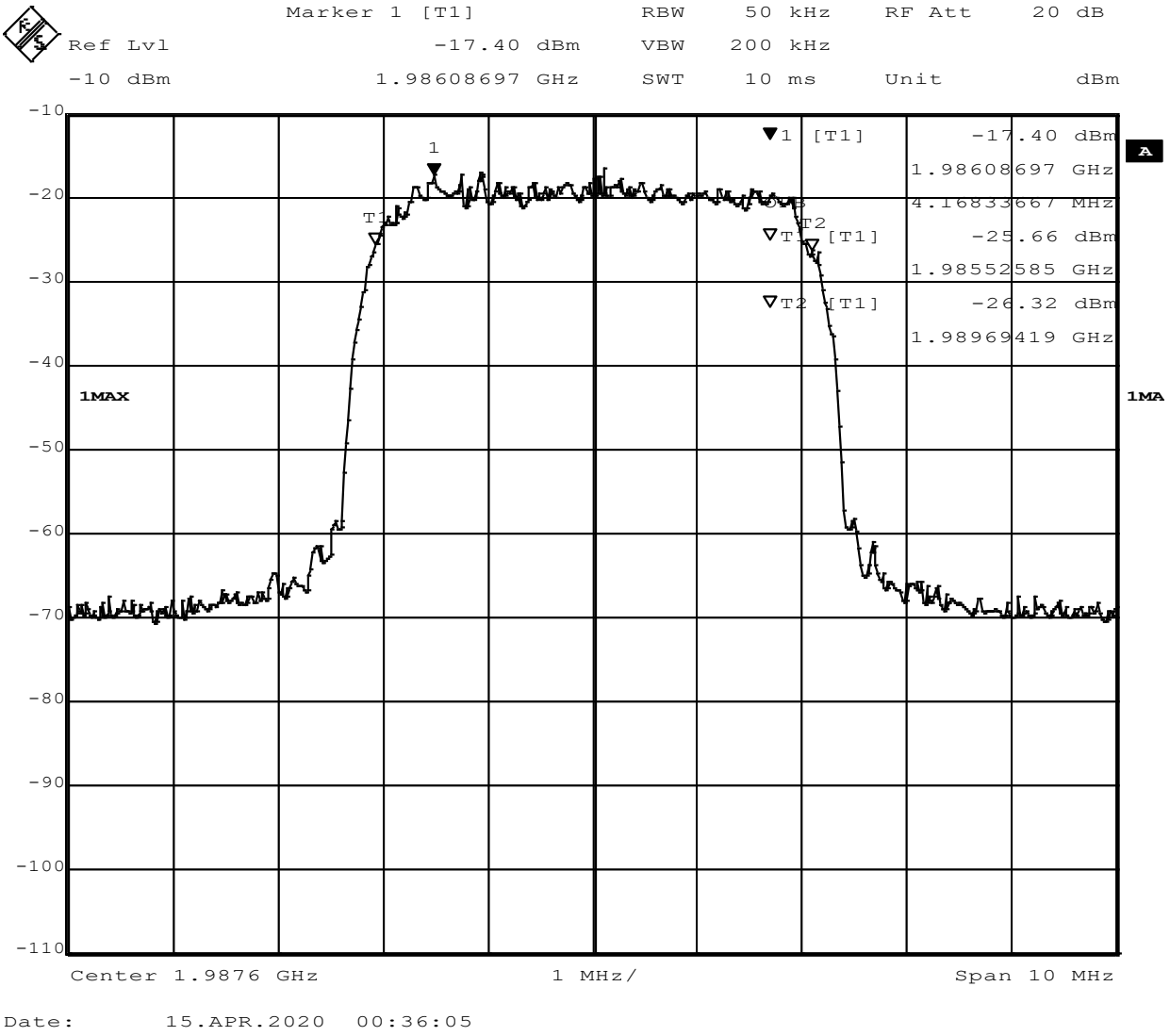


Band 2 Mid Channel UARFCN 9800 (6dB down bandwidth)

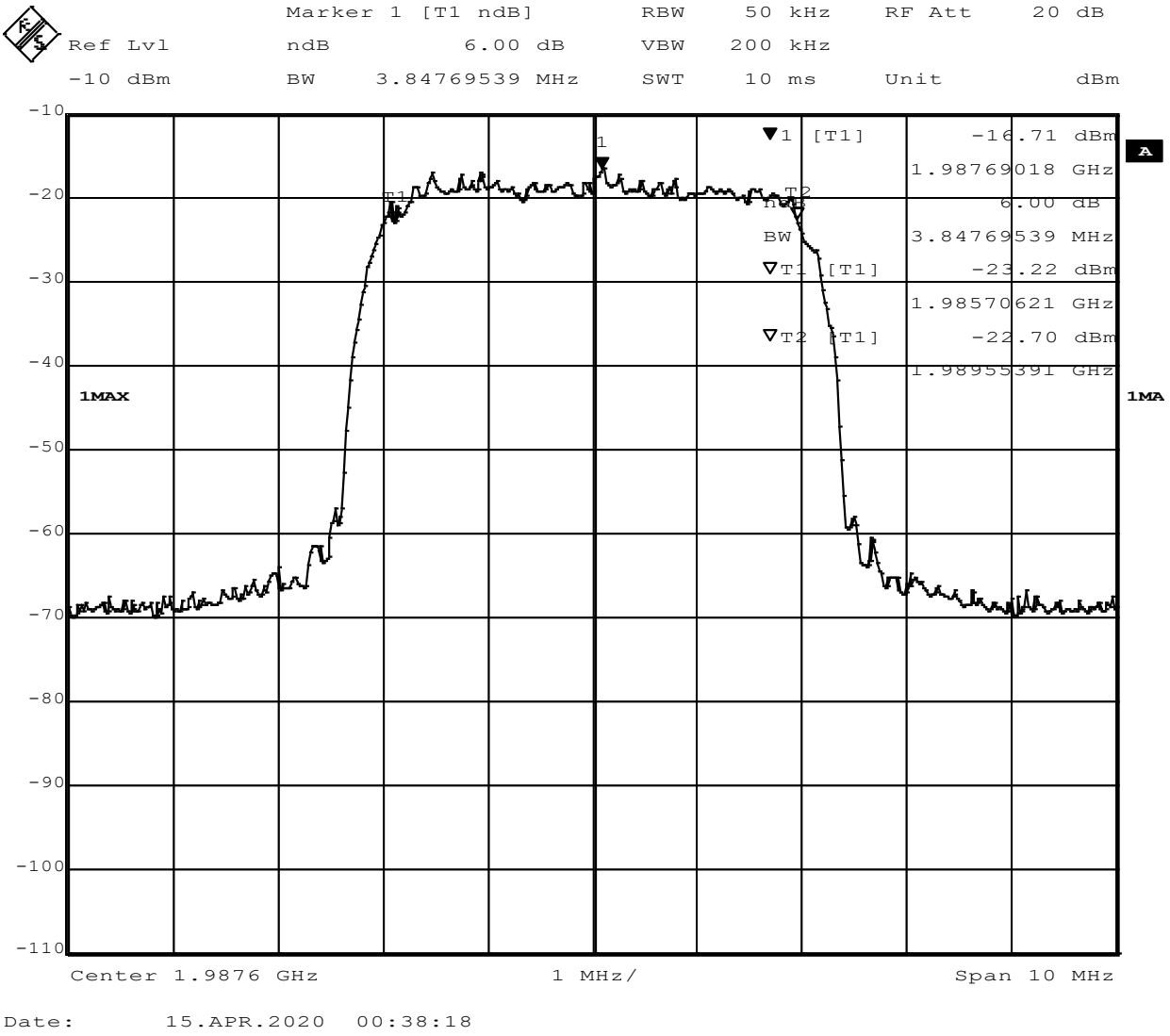
Band 2 Mid Channel UARFCN 9800 (20dB down bandwidth)



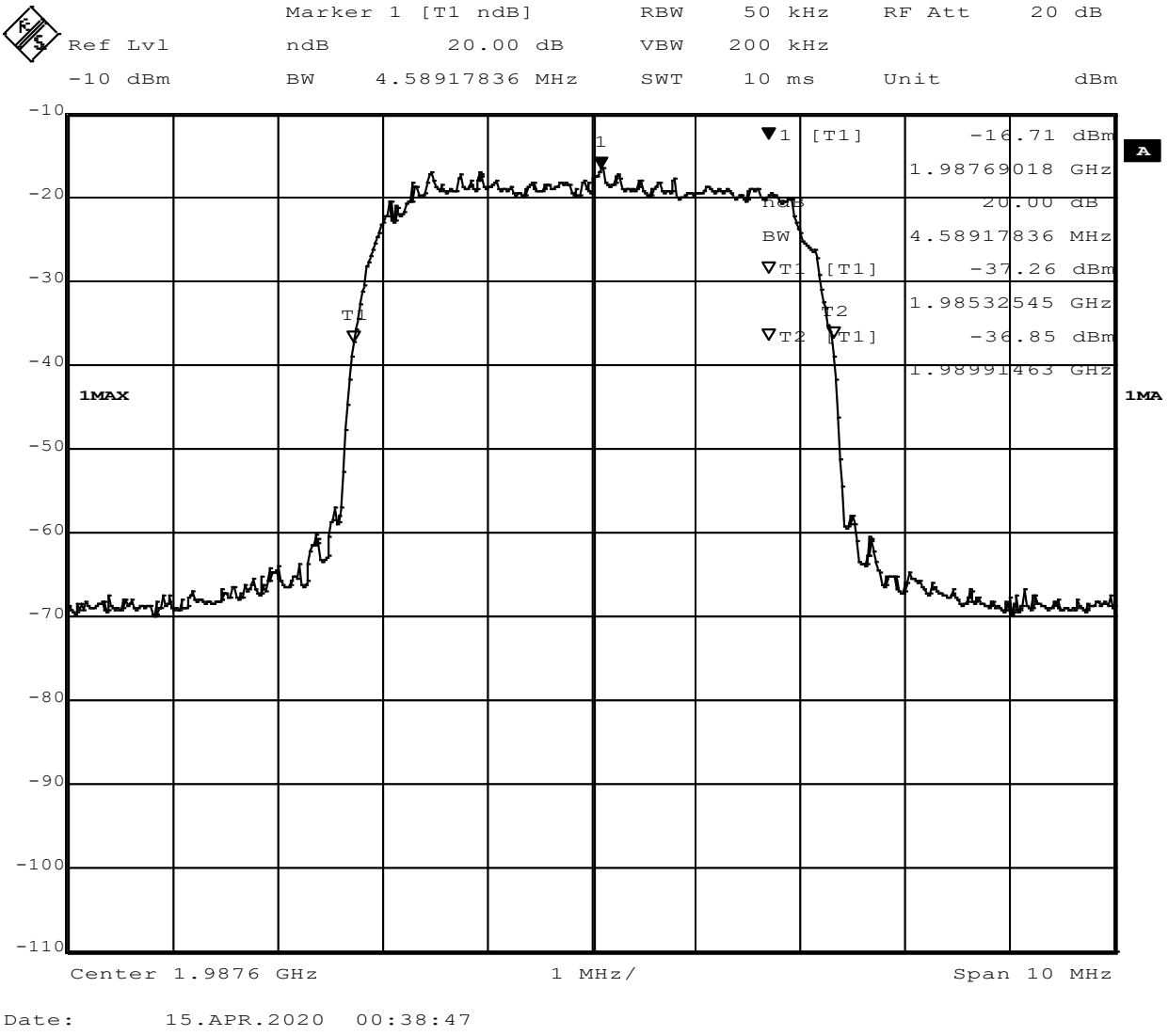
Band 2 High Channel UARFCN 9938 (99% bandwidth)



Band 2 High Channel UARFCN 9938 (6dB down bandwidth)

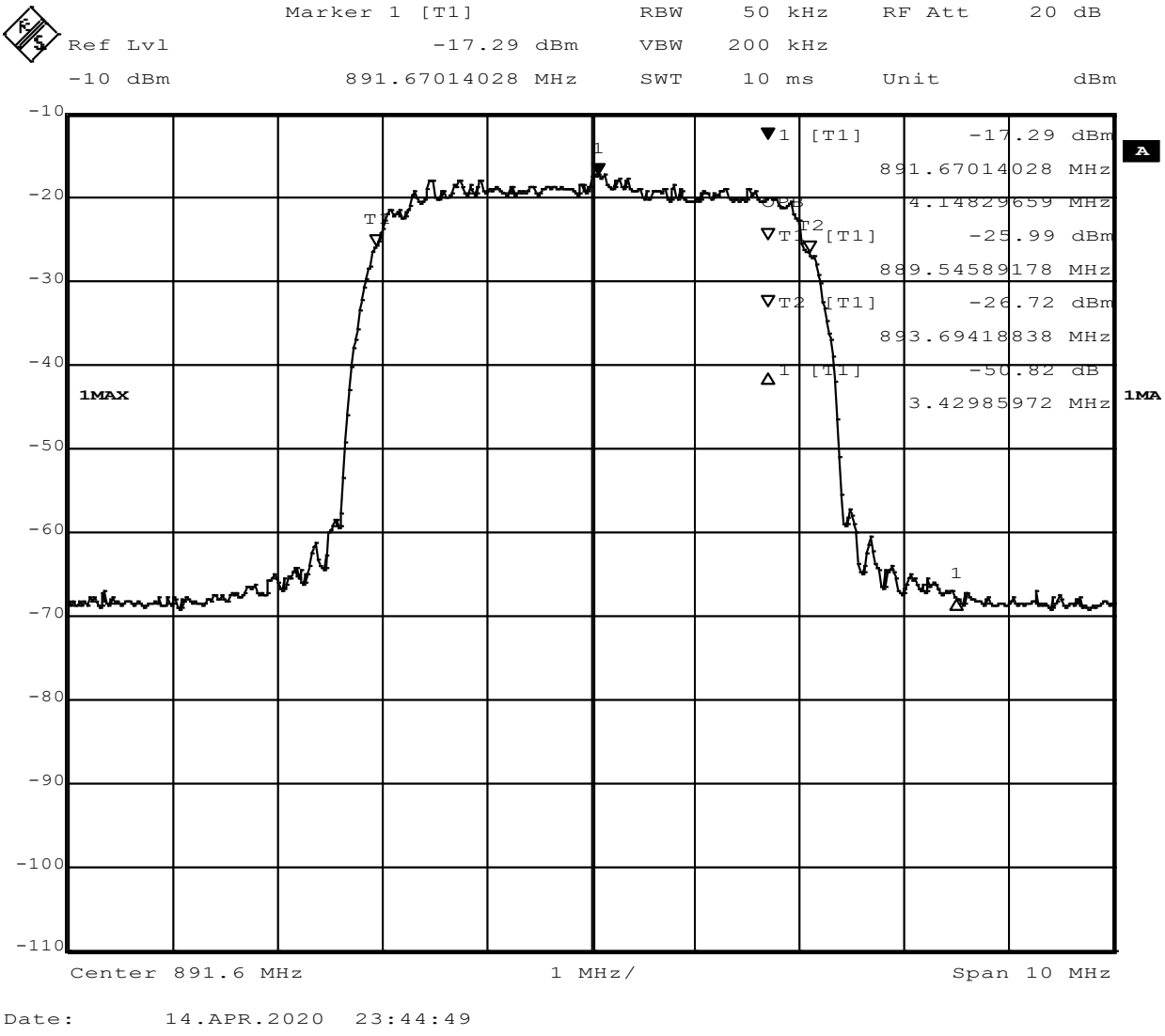


Band 2 High Channel UARFCN 9938 (20dB down bandwidth)

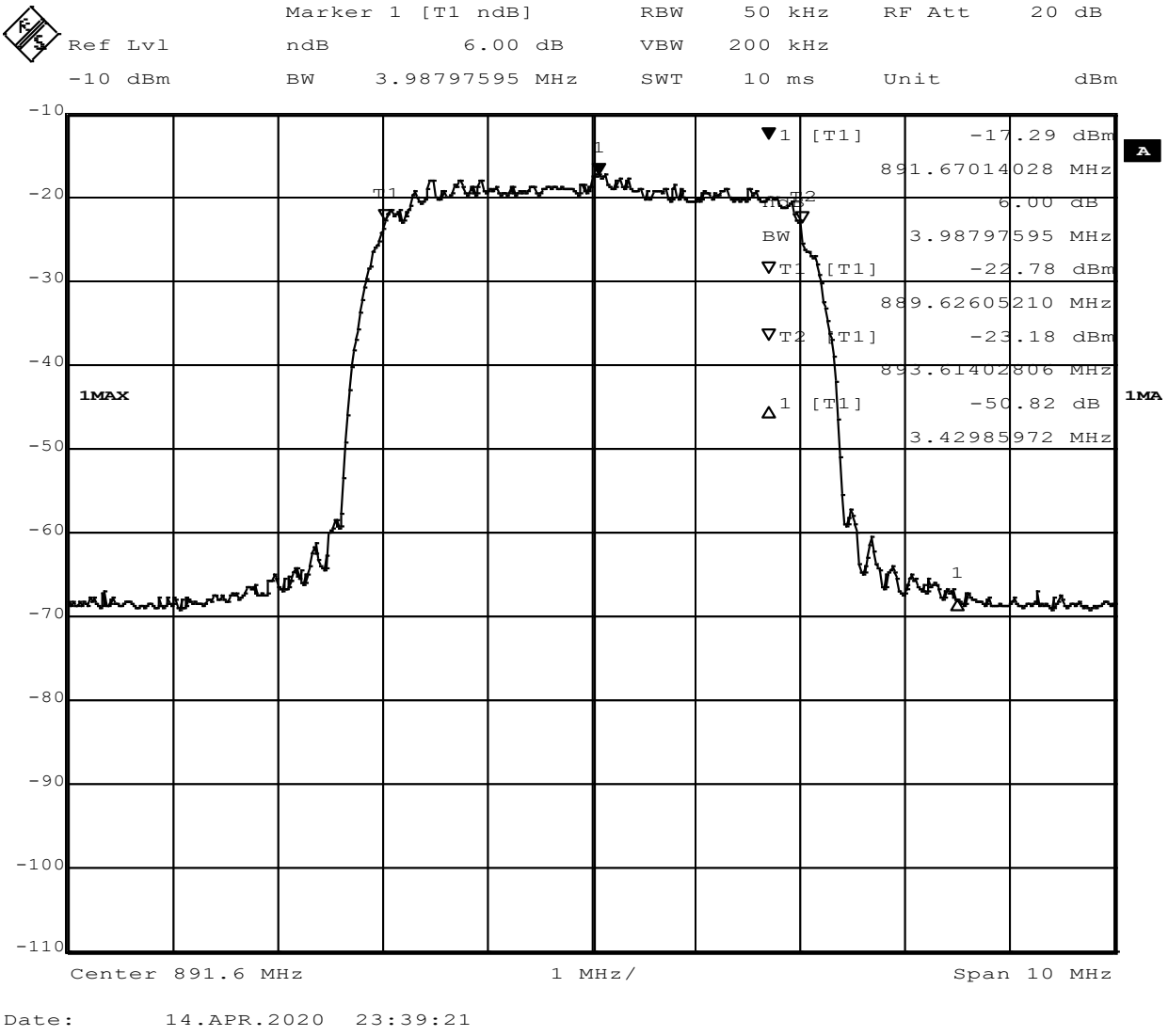


7.8 Occupied Bandwidth Plots (Band 5)

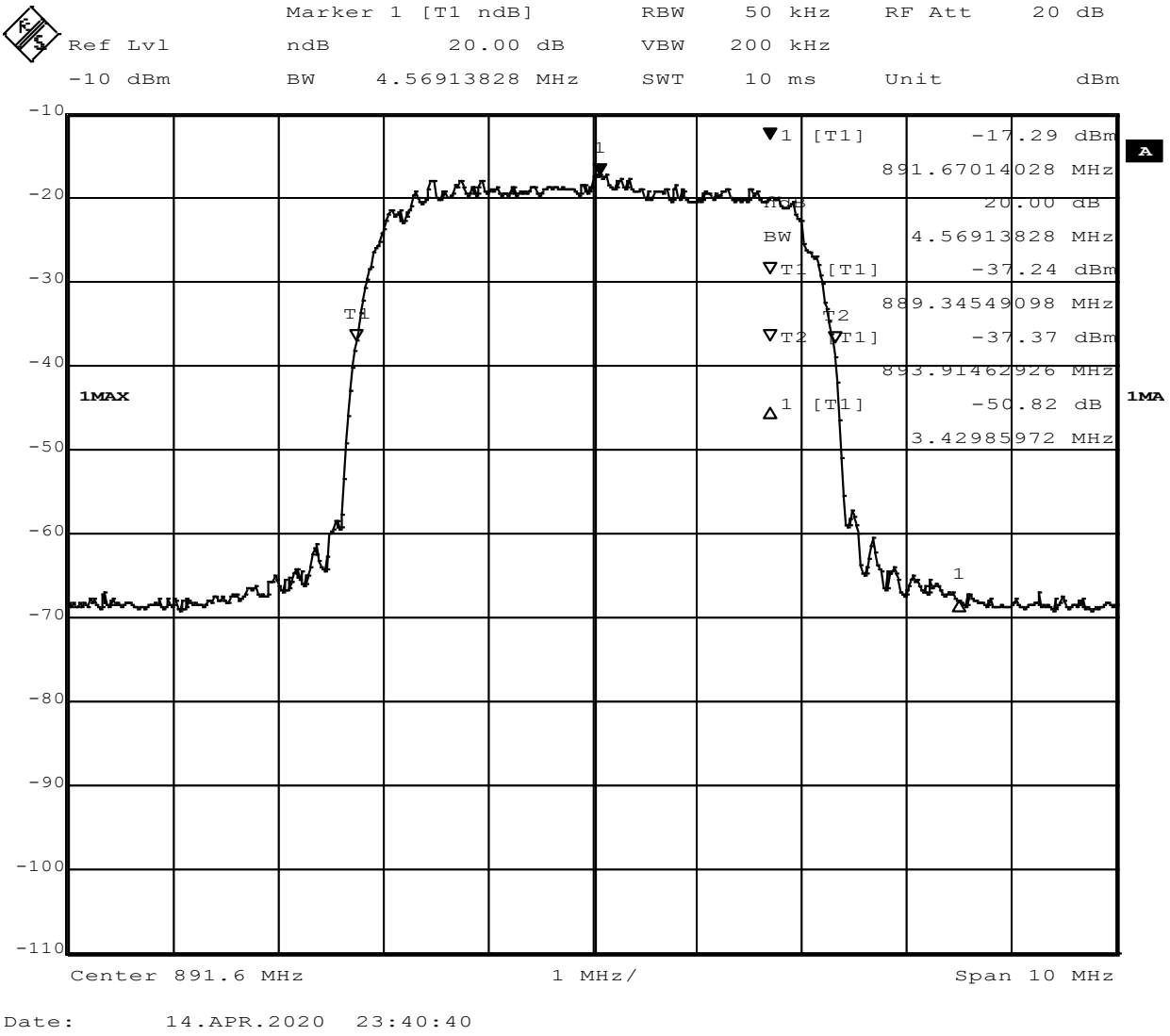
Band 5 High Channel UARFCN 4458 (99% bandwidth)



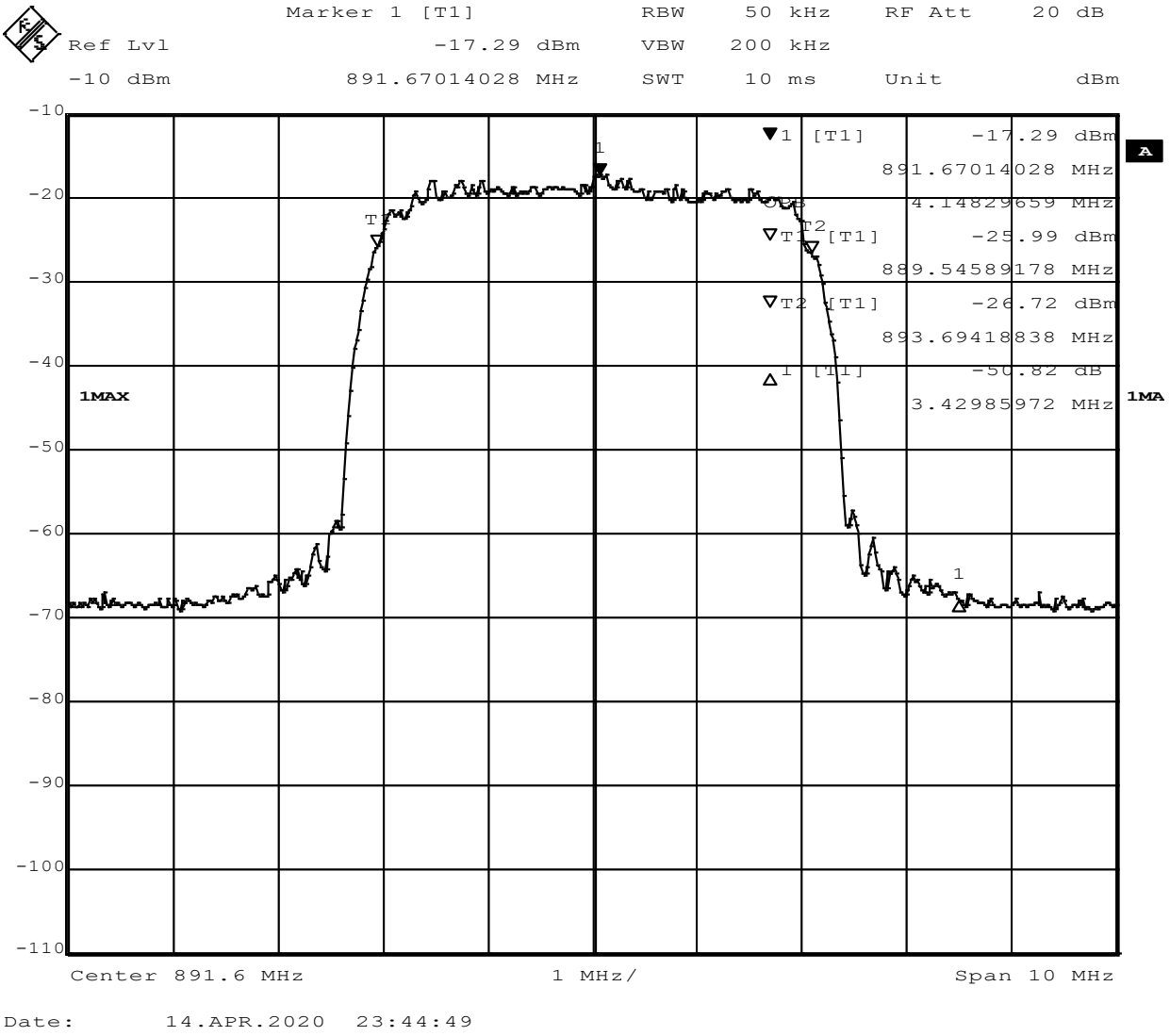
Band 5 High Channel UARFCN 4458 (6dB down bandwidth)



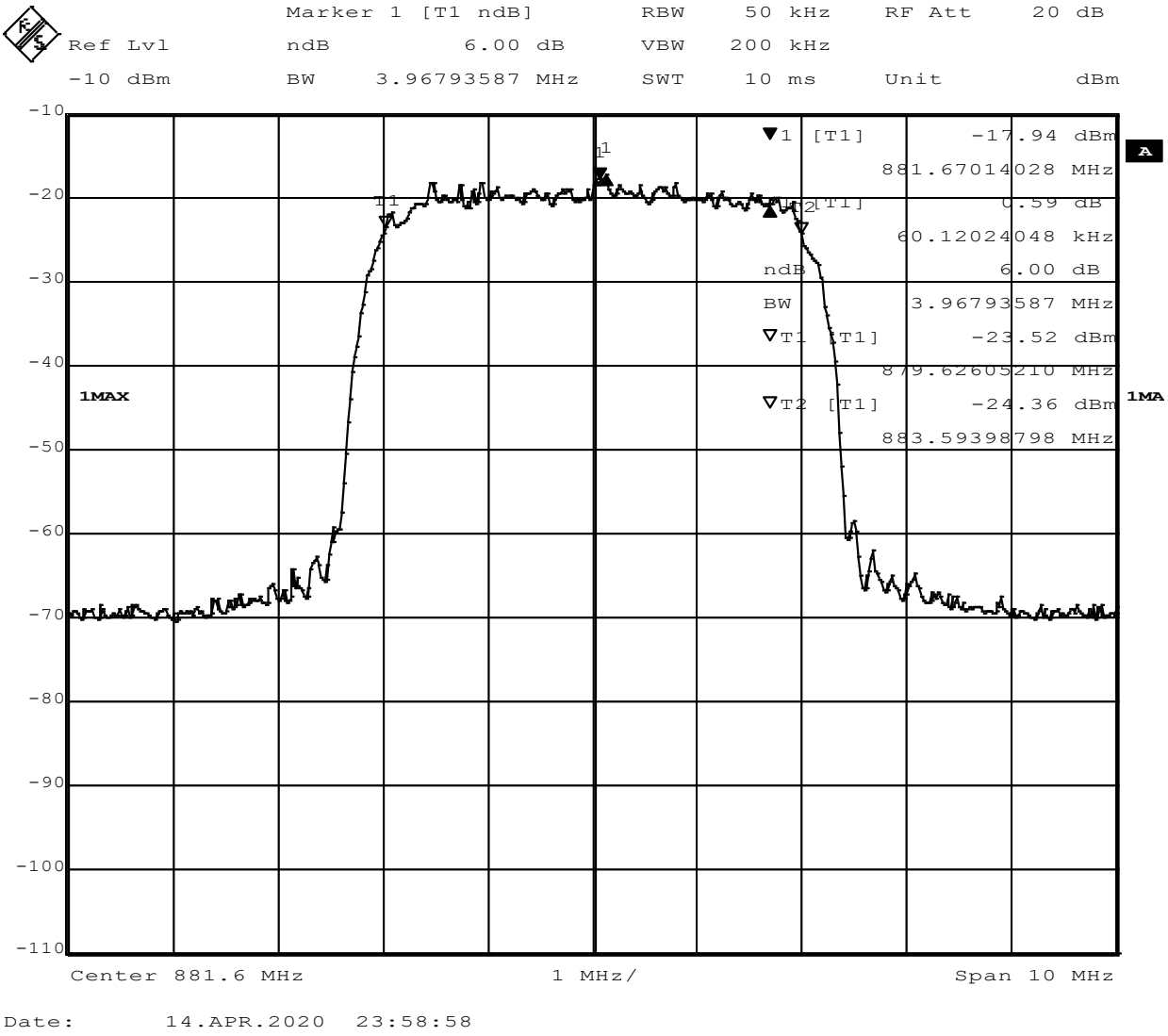
Band 5 High Channel UARFCN 4458 (20dB down bandwidth)



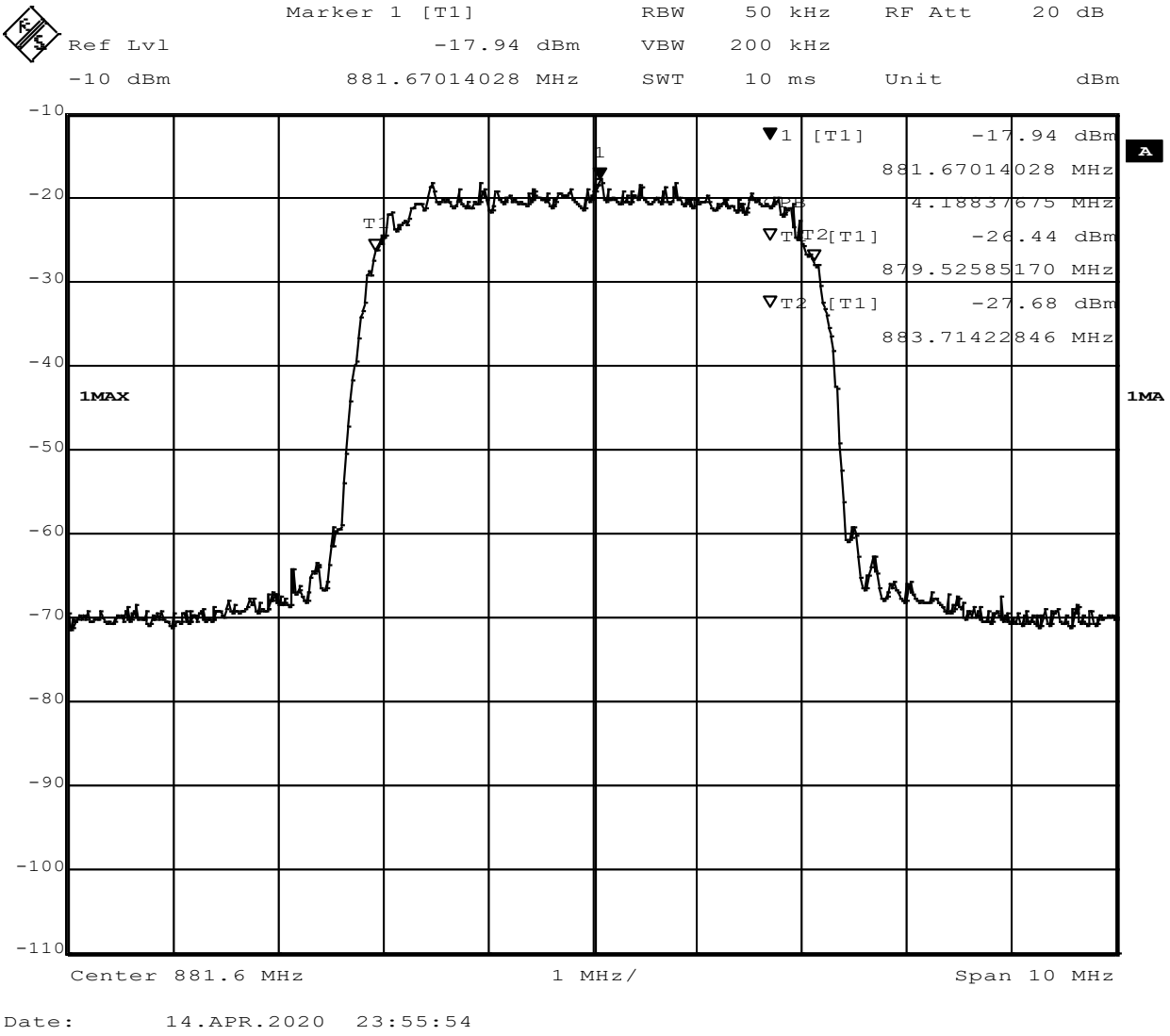
Band 5 Mid Channel UARFCN 4458 (99% bandwidth)



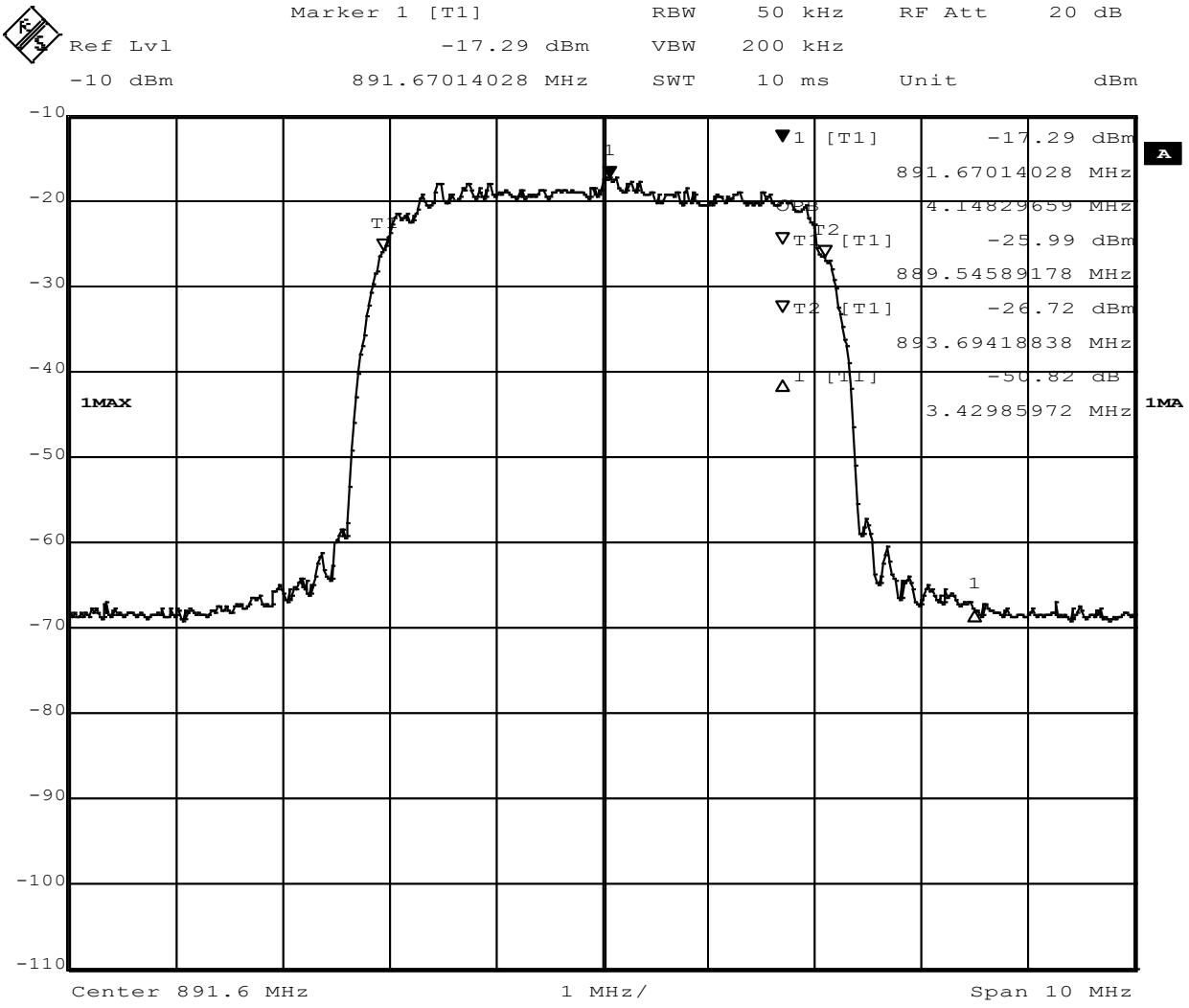
Band 5 Mid Channel UARFCN 4408 (6dB down bandwidth)



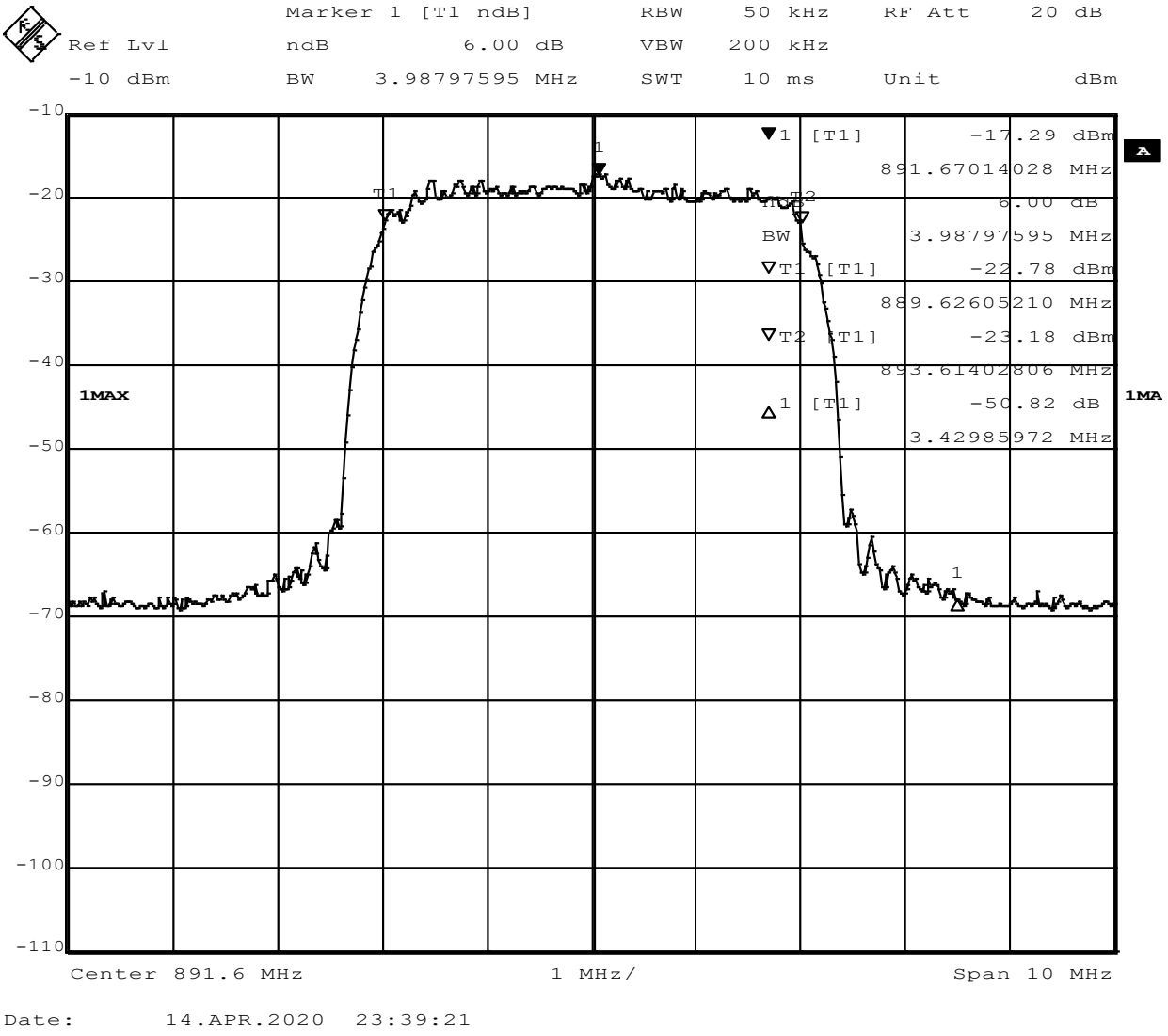
Band 5 Mid Channel UARFCN 4408 (20dB down bandwidth)



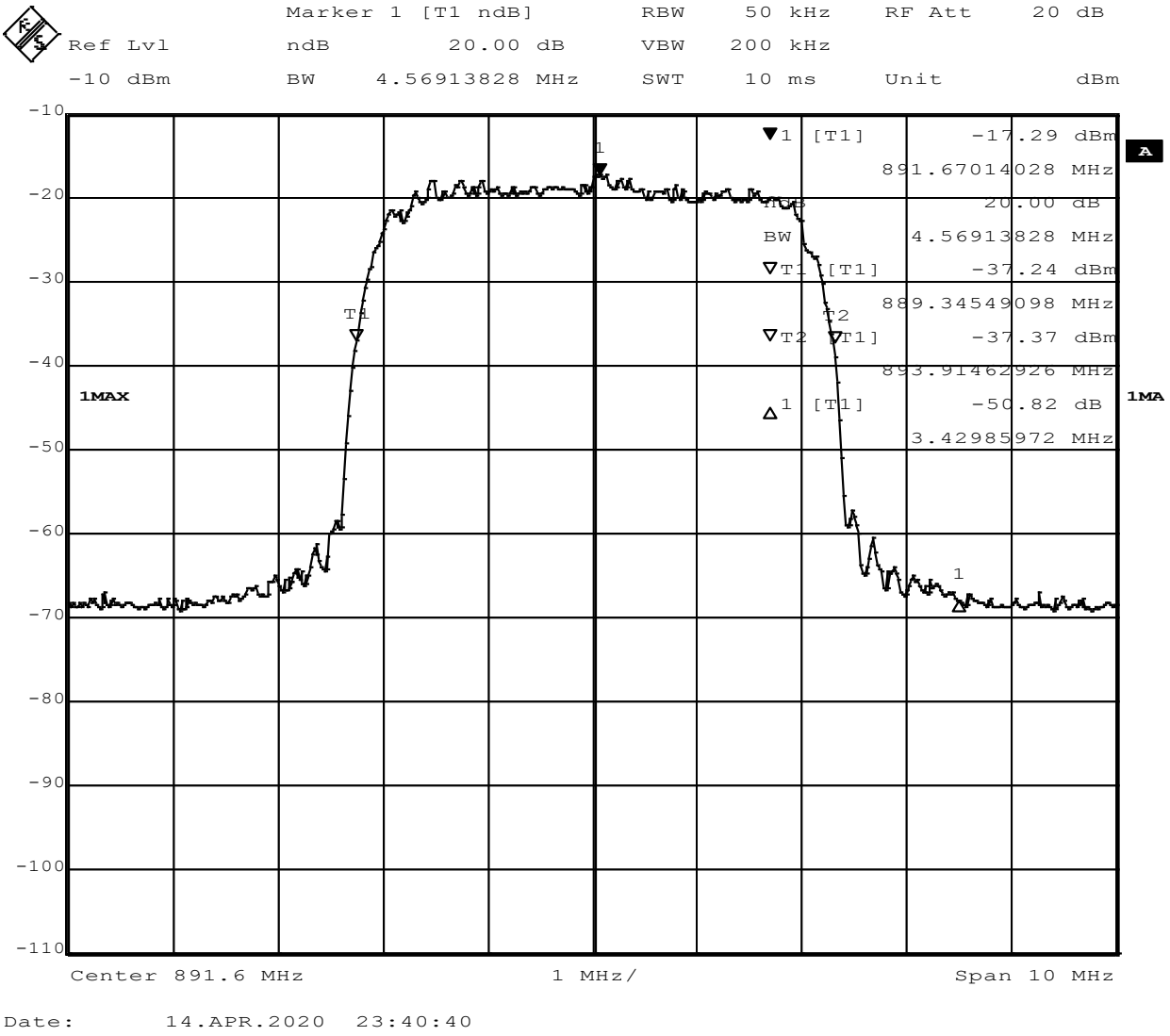
Band 5 High Channel UARFCN 4458 (99% bandwidth)



Band 5 High Channel UARFCN 4458 (6dB down)



Band 5 High Channel UARFCN 4458 (20dB down)



8 Conducted Spurious Emissions and Band Edge at Antenna Terminals

8.1 Test Limits

The power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB.

8.2 Test Procedure

The RF output of the EUT was connected to a spectrum analyzer through appropriate attenuation. The EUT was forced to TX at maximum output power on low, medium and high channels. The resolution bandwidth of the spectrum analyzer was set at 100kHz or 1MHz depending on the transmit band and the detector was set to peak detection for general scans up to the 10th harmonic. Emissions scans near the fundamental were measured using an RMS detector. Sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

8.3 Test Equipment Used:

Description	Asset	Manufacturer	Model	Cal Date	Cal Due
EMI Test Receiver	2327	Rohde & Schwarz	ESI26	9/30/2019	9/30/2020
Spectrum Analyzer	3099	Rohde & Schwarz	FSP 7	9/21/2019	9/21/2020

8.4 Results:

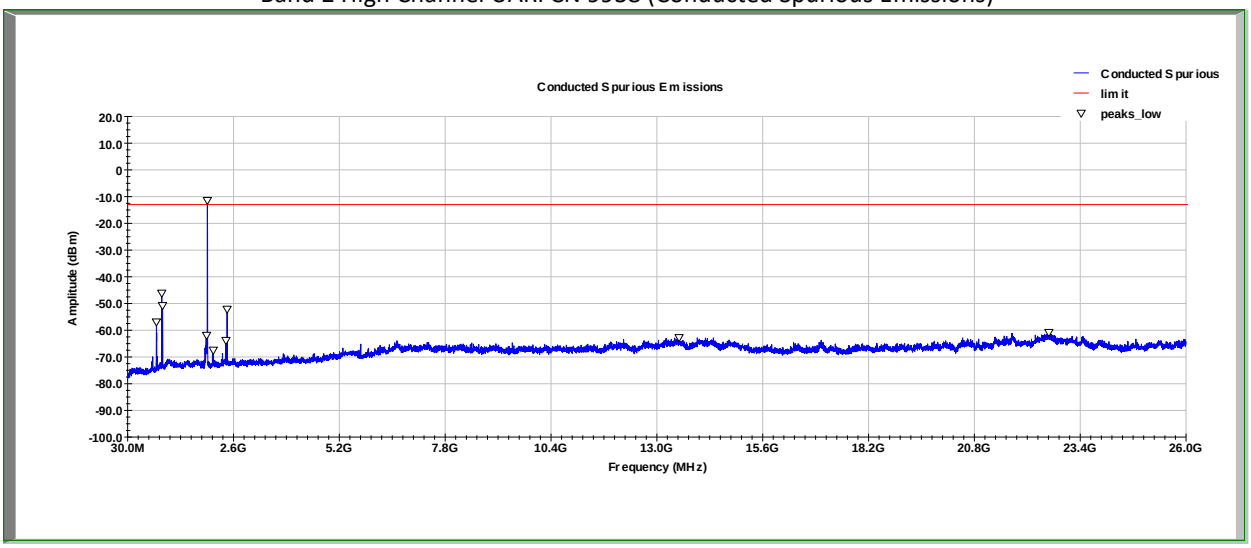
The following plots show that all spurious emissions are attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. Plots for emissions within 1MHz of the transmit block edge as well as for emission outside of this range are shown.

8.5 Test Conditions

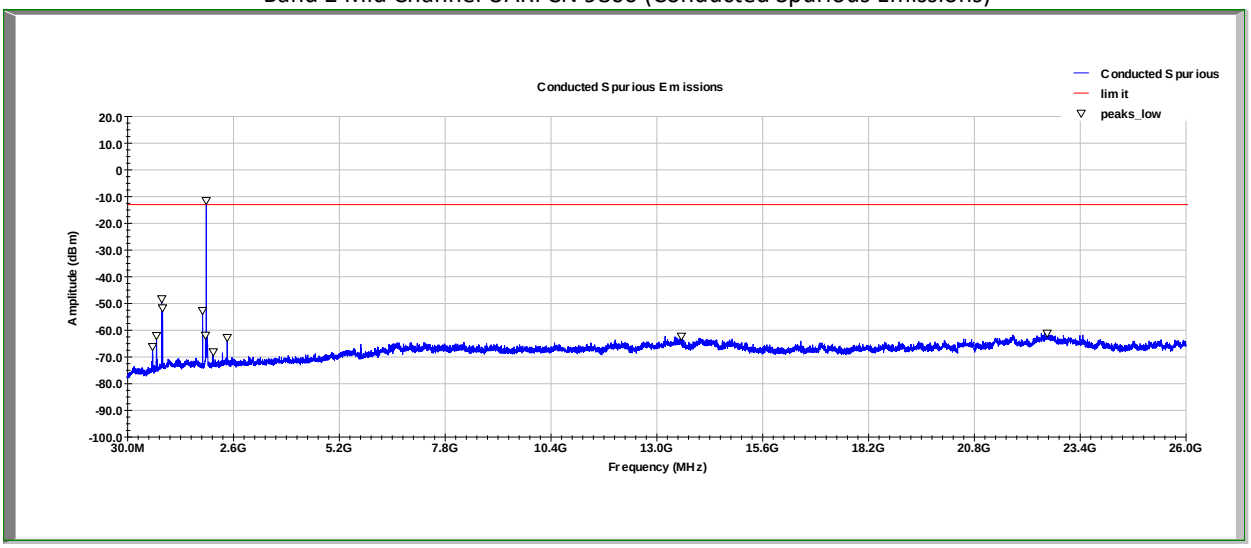
Test Personnel:	Brandon Norris	Test Date:	4/15/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	99% 20dB and 6dB BW Measured
Product Standard:	ANSI C63.26	Ambient Temperature:	23.5°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	22.3%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	985.4

8.6 Conducted Spurious Emission Plots:

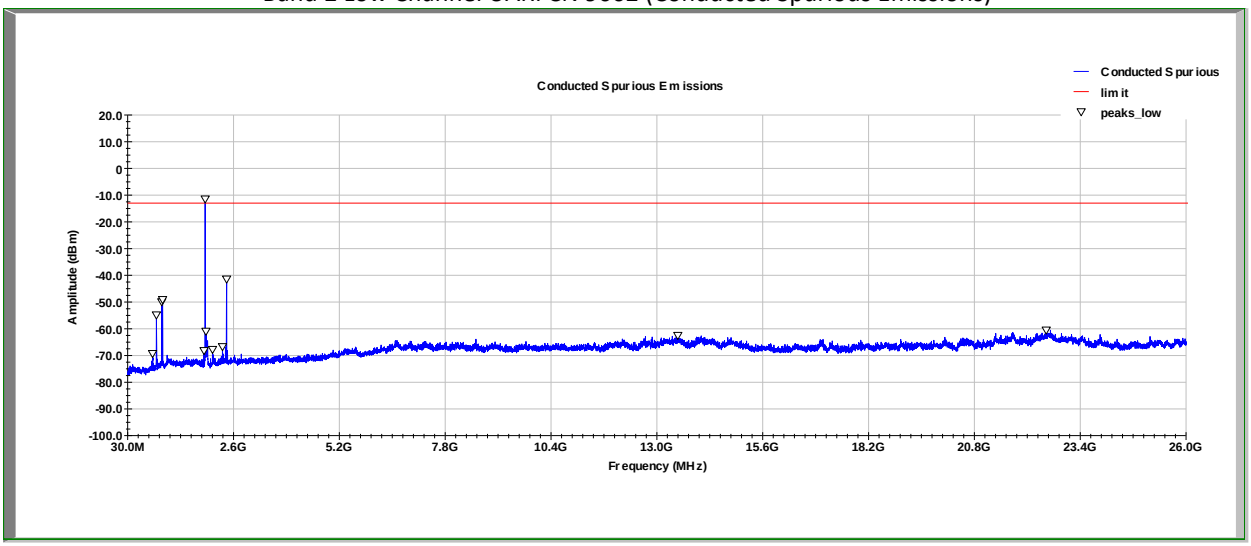
Band 2 High Channel UARFCN 9938 (Conducted Spurious Emissions)



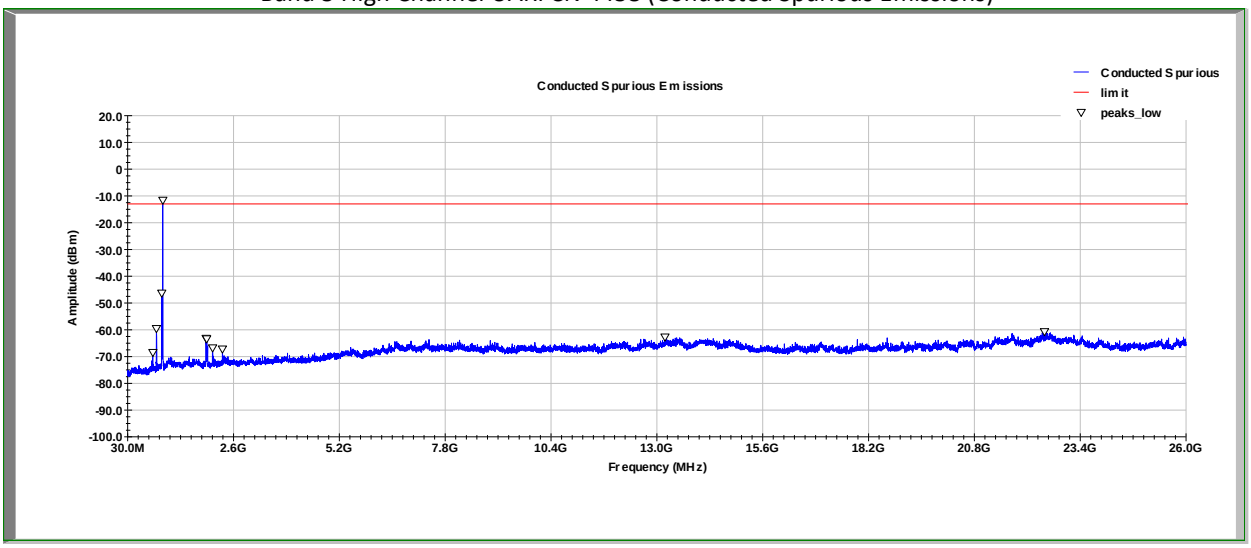
Band 2 Mid Channel UARFCN 9800 (Conducted Spurious Emissions)



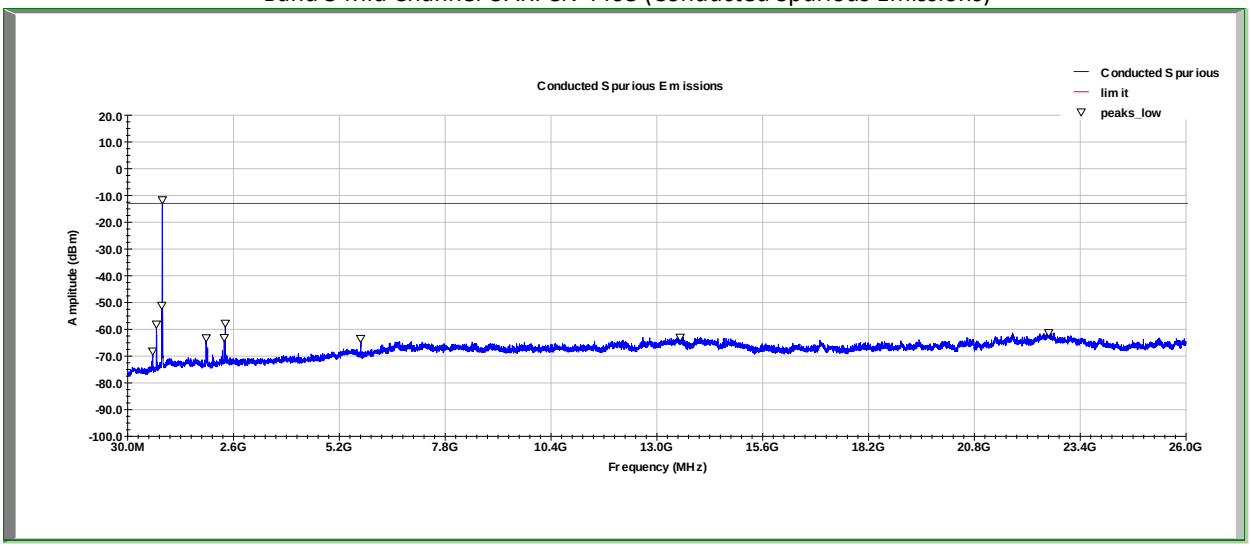
Band 2 Low Channel UARFCN 9662 (Conducted Spurious Emissions)



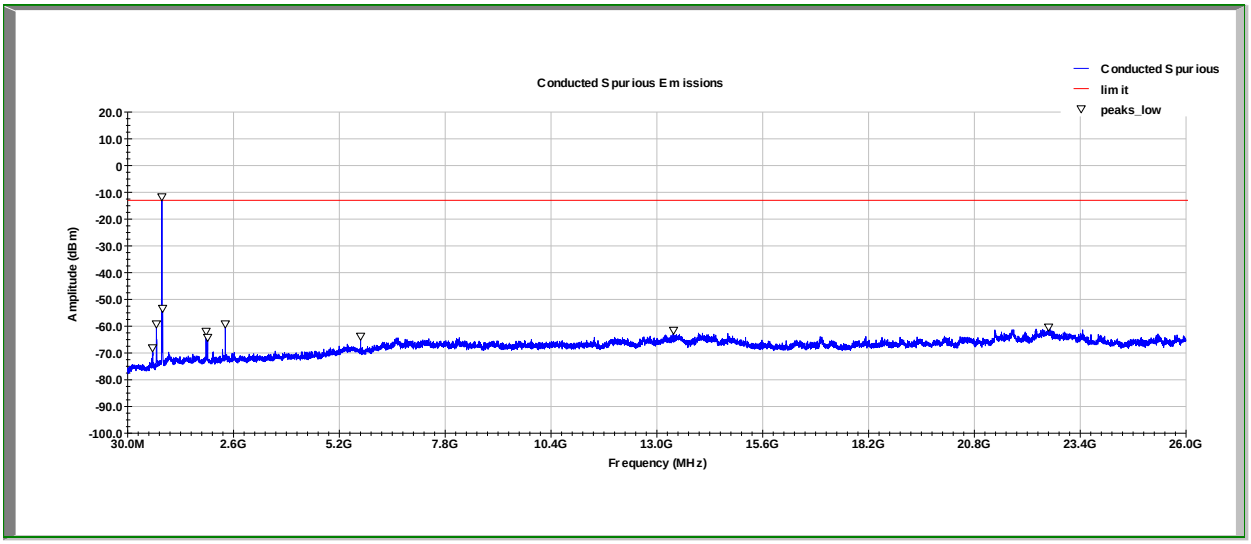
Band 5 High Channel UARFCN 4458 (Conducted Spurious Emissions)



Band 5 Mid Channel UARFCN 4408 (Conducted Spurious Emissions)

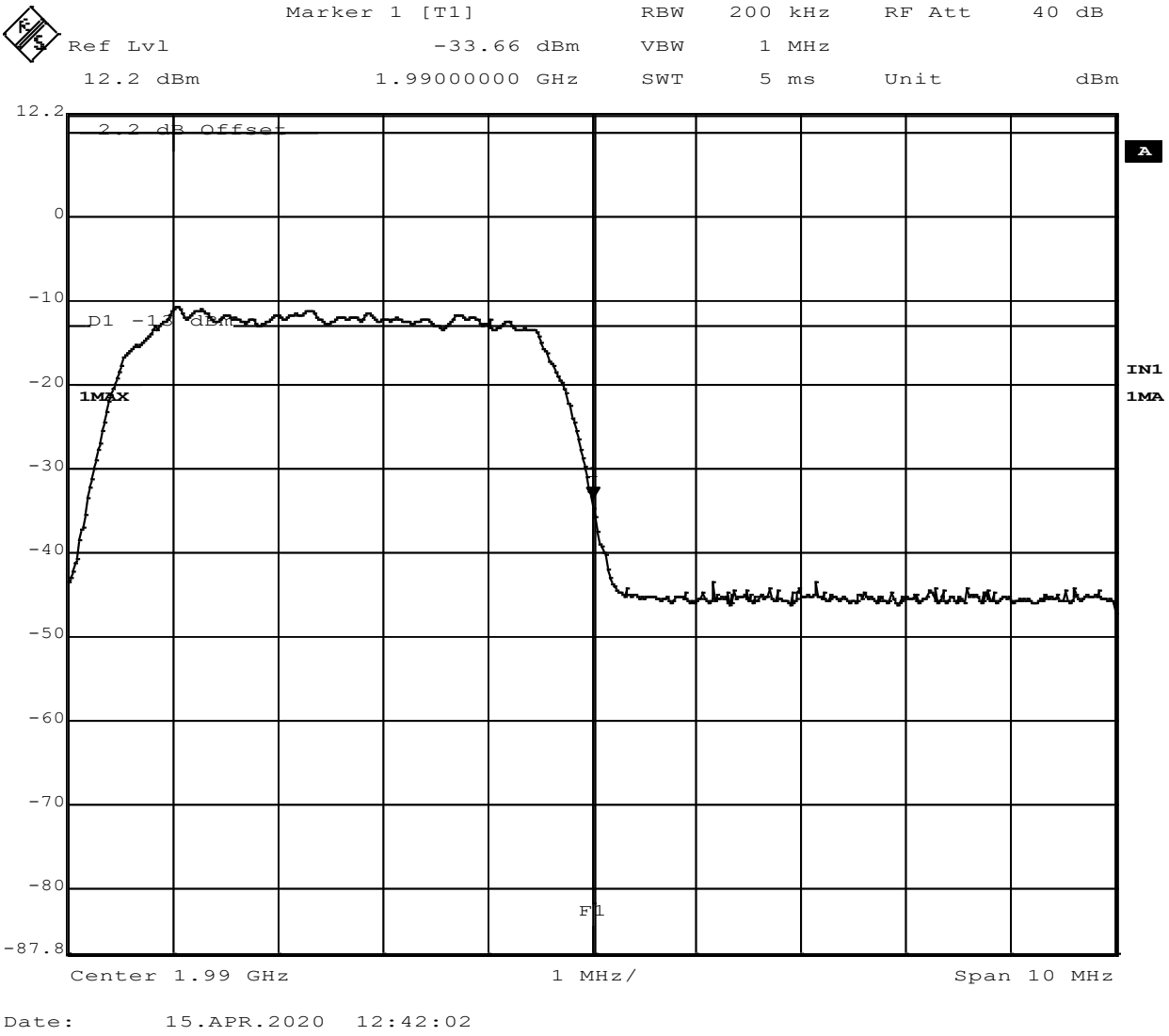


Band 5 Low Channel UARFCN 4357 (Conducted Spurious Emissions)

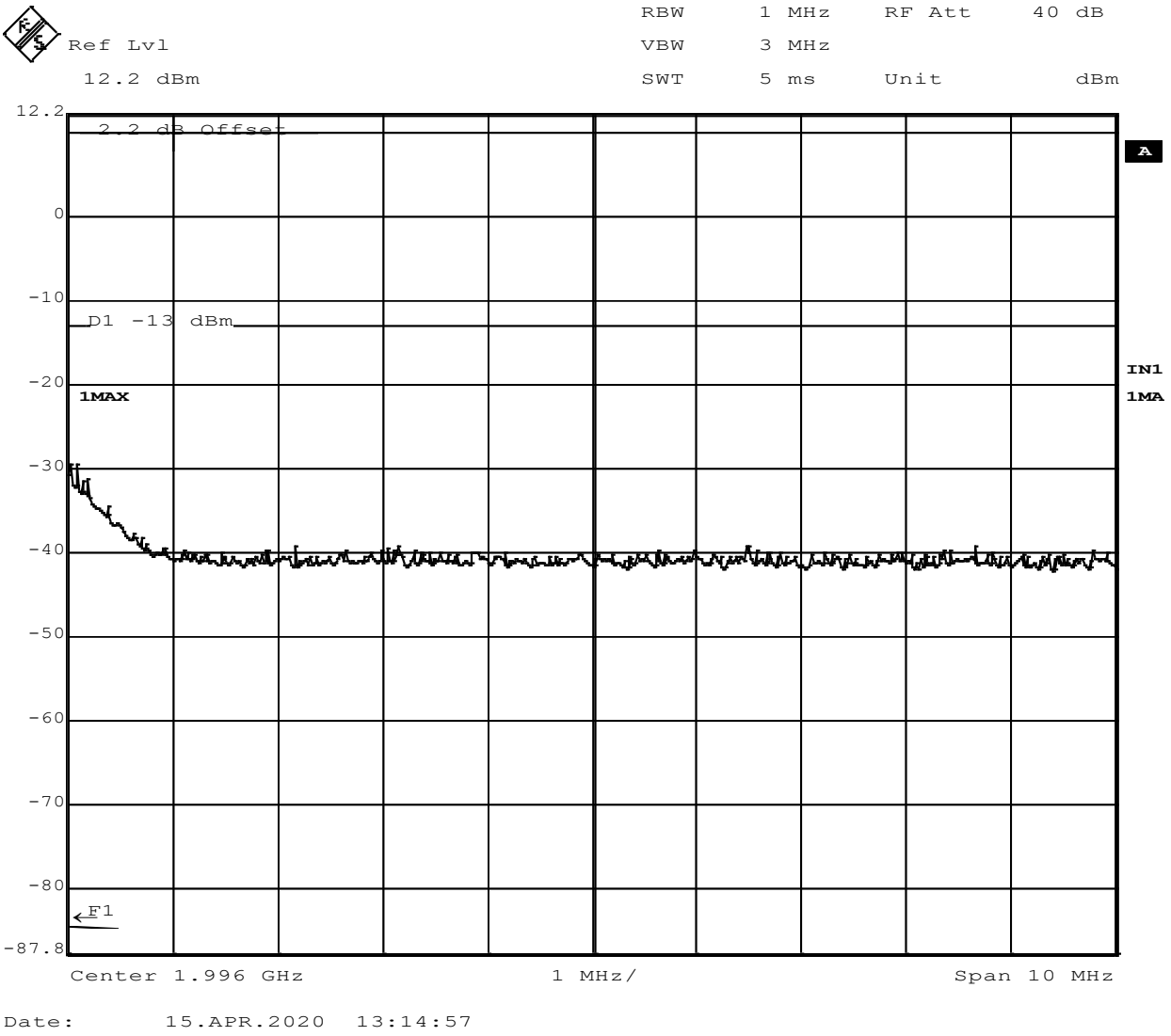


8.1 Band Edge Emission Plots:

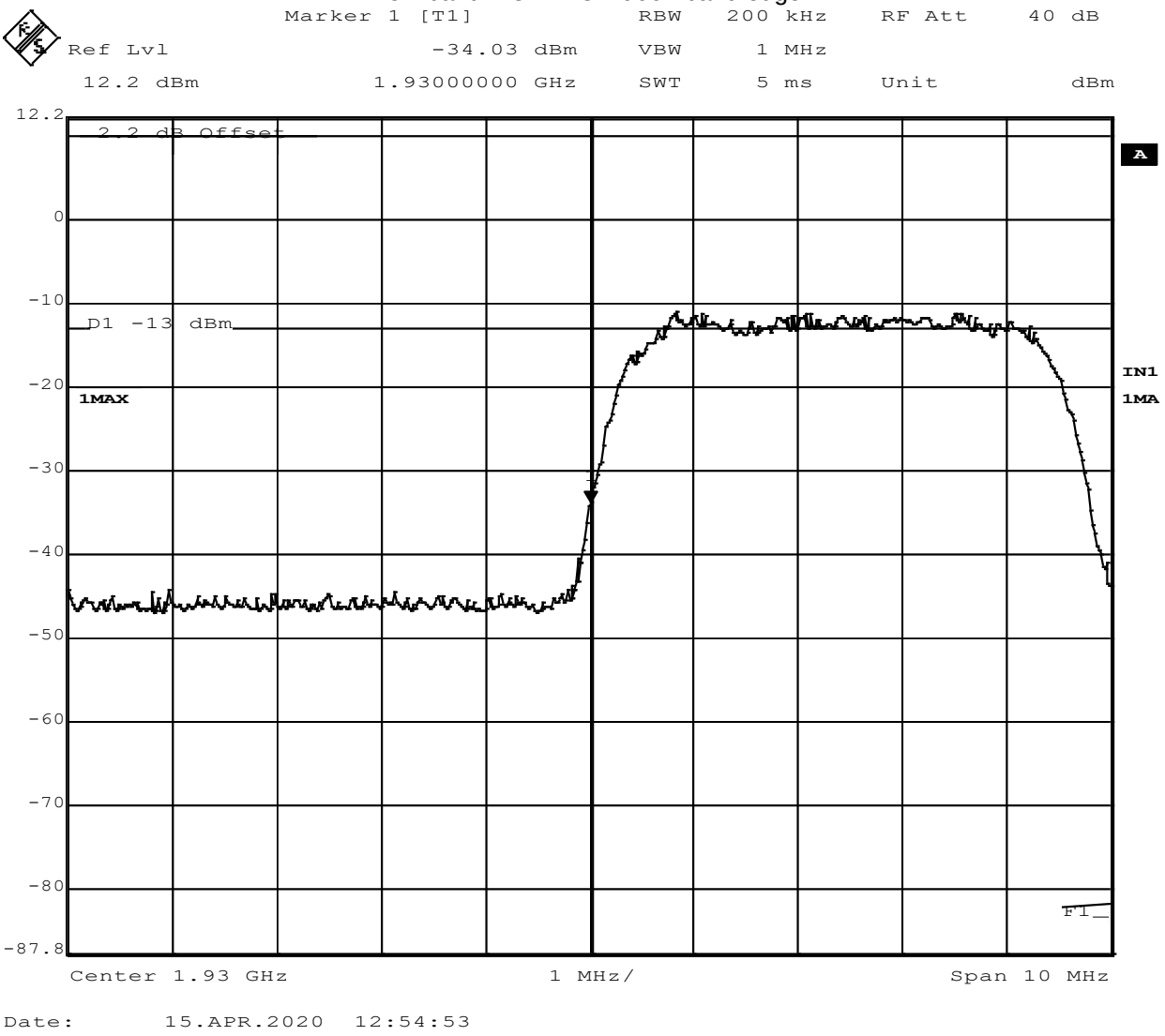
High band 2 UARFCN 9938 band edge



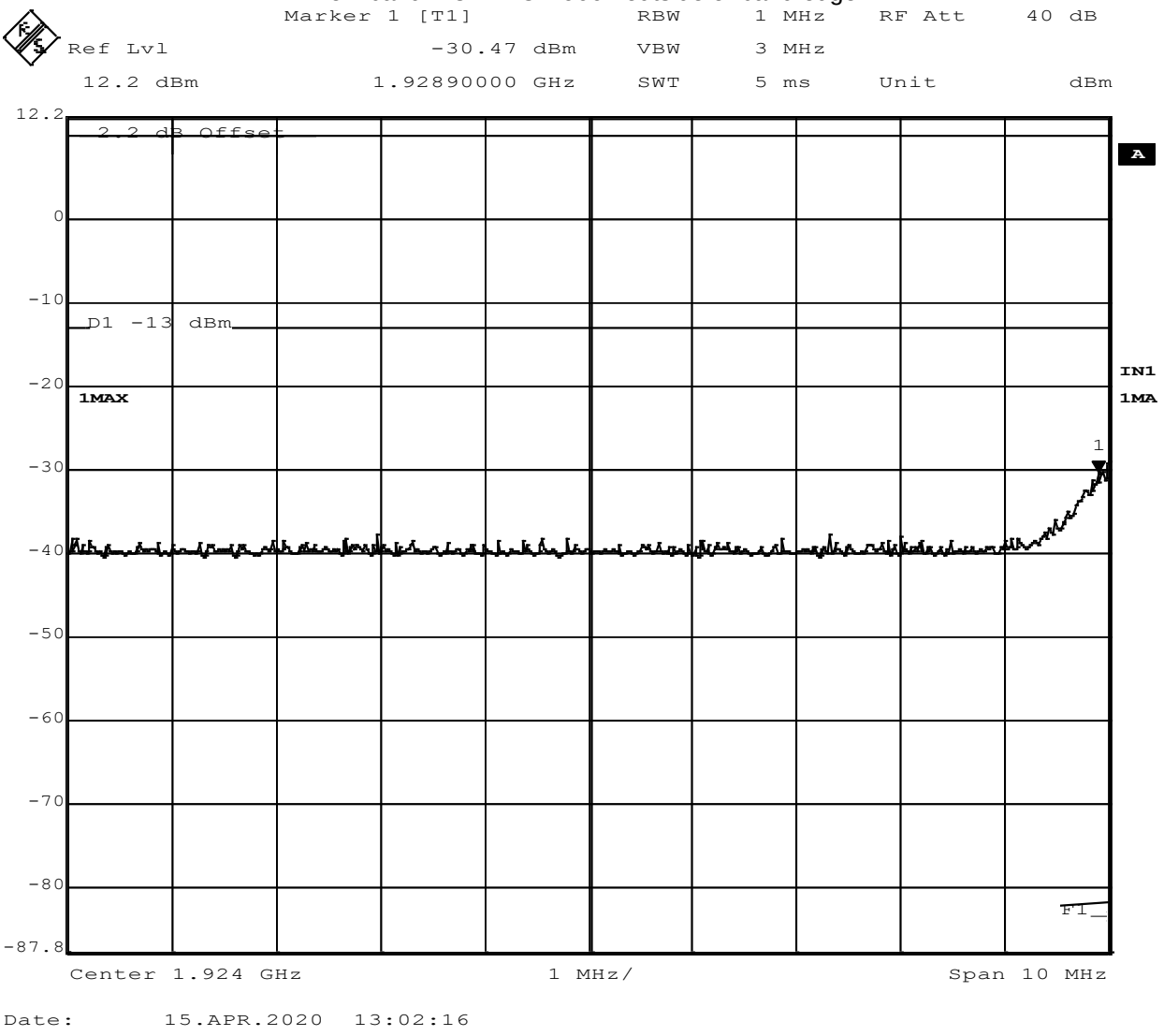
High band 2 UARFCN 9938 outside of band edge



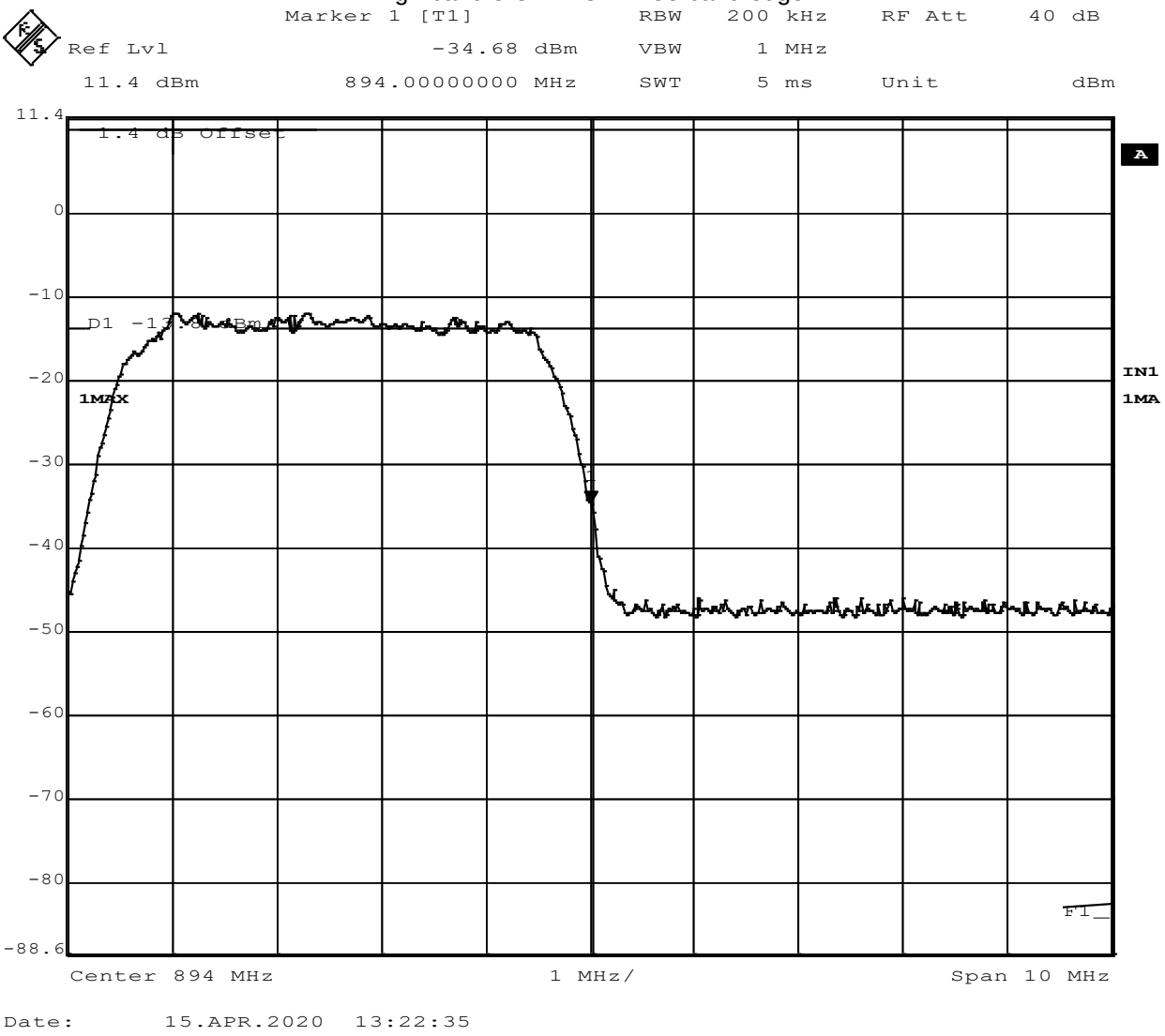
Low band 2 UARFCN 9662 band edge



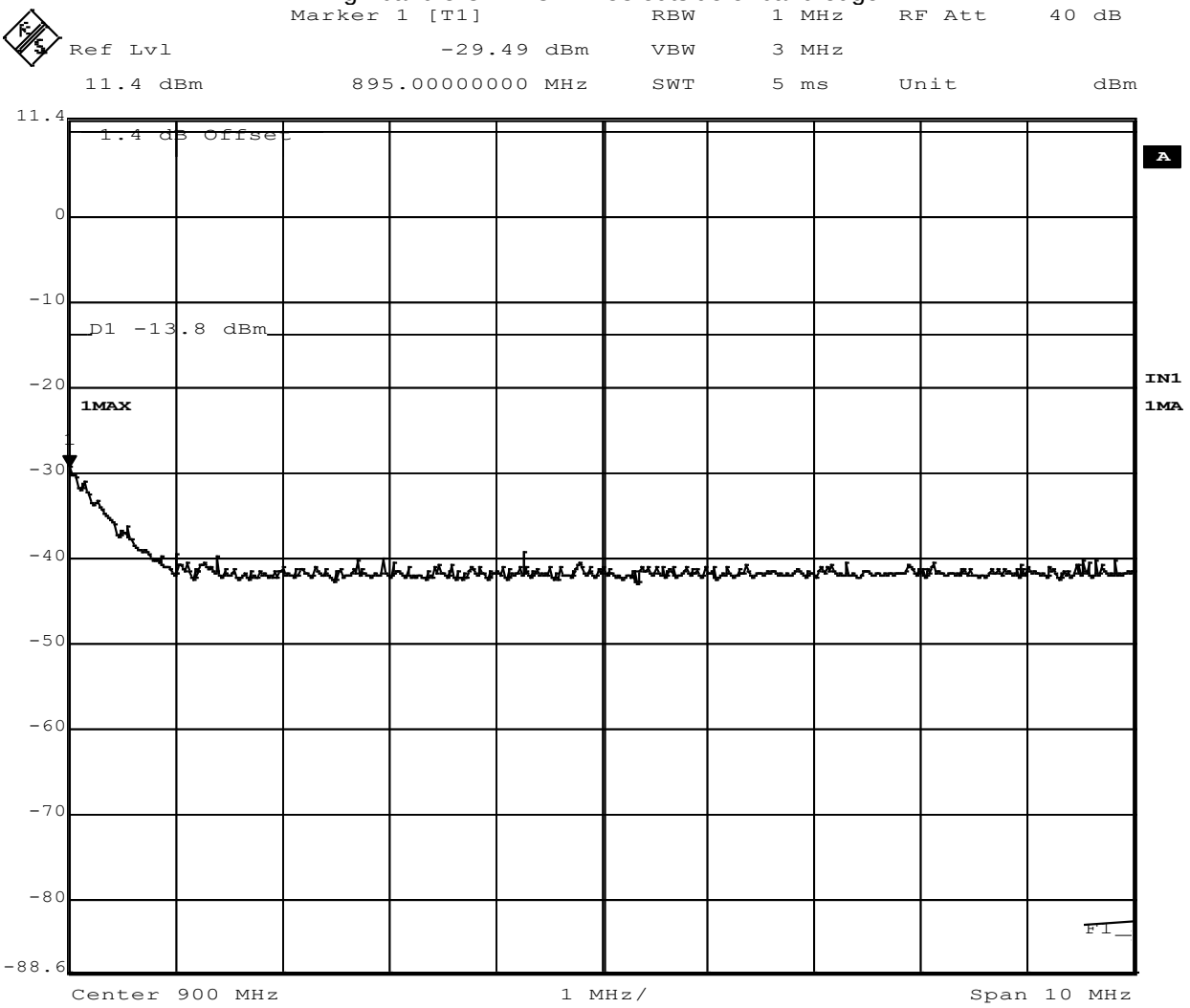
Low band 2 UARFCN 9662 outside of band edge



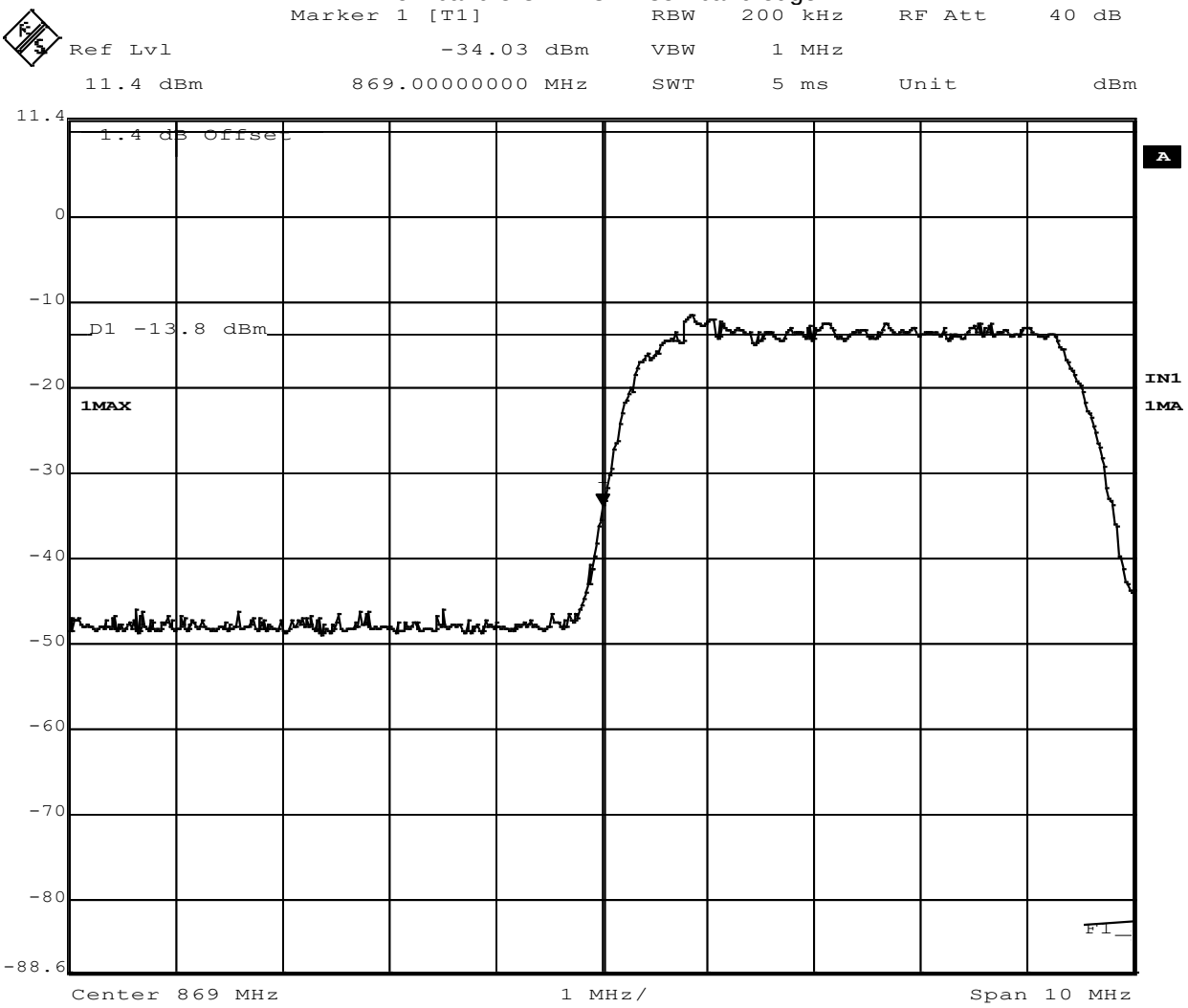
High band 5 UARFCN 4458 band edge



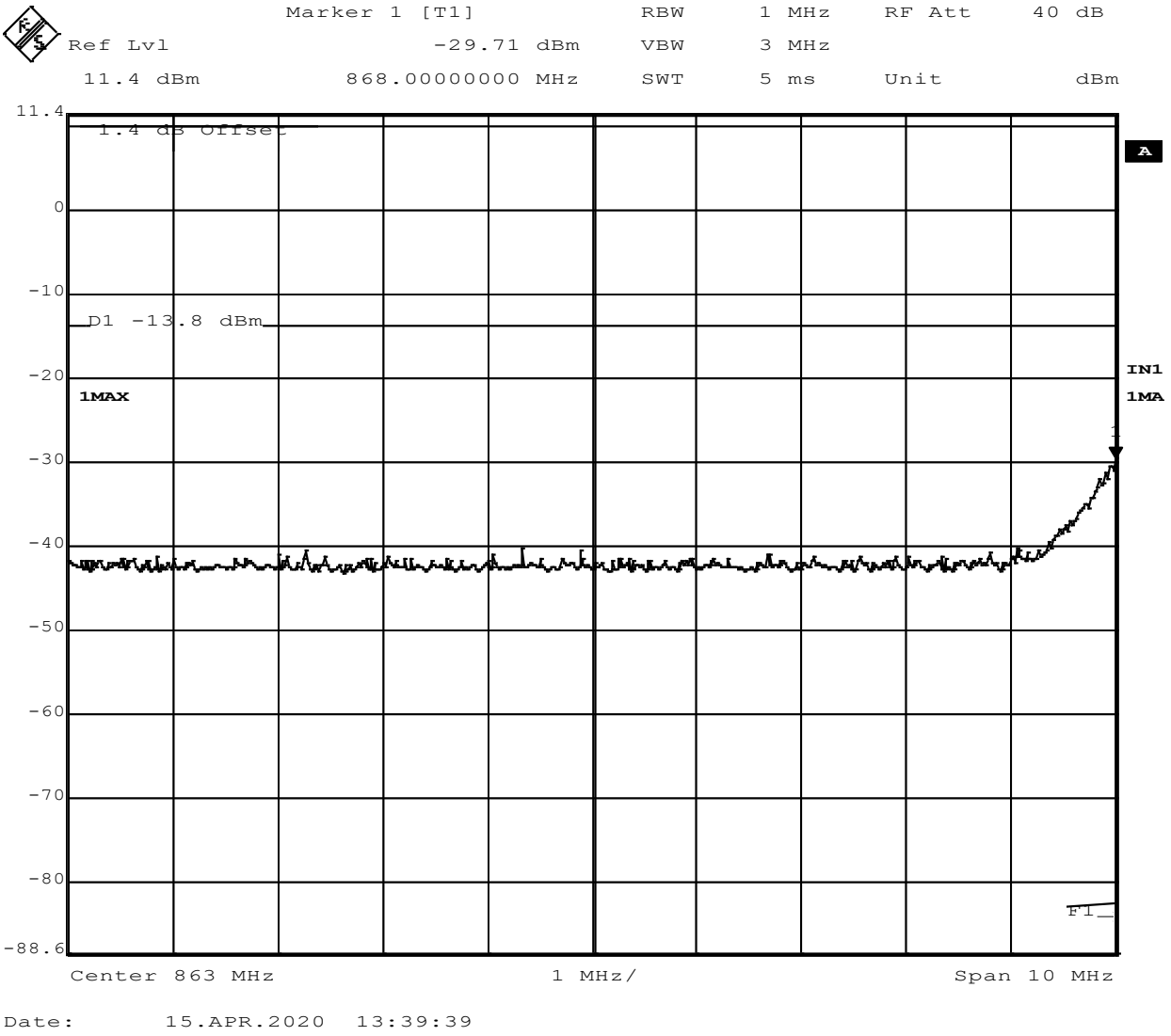
High band 5 UARFCN 4458 outside of band edge



Low band 5 UARFCN 4357 band edge



Low band 5 UARFCN 4357 outside of band edge



9 Radiated Output Power

9.1 Test Limits

§ 22.913

(a)(5) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

§ 24.232

(c)Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications

RSS-132(5.4)

The transmitter output power shall be measured in terms of average power. The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts.

RSS-133(4.1)

The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510.

Per SRSP-510 Mobile stations and hand-held portables are limited to 2 watts maximum e.i.r.p. The equipment shall employ means to limit the power to the minimum necessary for successful communication.

9.2 Test Equipment Used

Description	Asset	Manufacturer	Model	Cal Date	Cal Due
Power Meter	3213	Rohde & Schwarz	NRP-Z3	9/17/2019	9/17/2020
Spectrum Analyzer	3099	Rohde & Schwarz	FSP 7	9/21/2019	9/21/2020

9.3 Test Conditions

Test Personnel:	Brandon Norris	Test Date:	04/14/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	See Section 9.1
Product Standard:	ANSIC63.26	Ambient Temperature:	22.8°C
Input Voltage:	12VDC via AC/DC Power Adapter	Relative Humidity:	27.8%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	988.8mbar

9.4 Test Procedure

The radiated output power was determined by adding the peak antenna gain (in dBi) to the highest declared conducted output power to determine the maximum effective radiated power.

For frequencies below 1GHz the power limits are in terms of ERP. The output power was converted to ERP by subtracting 2.15dB from the EIRP value as shown below.

$$ERP = ConductedOutputPower(dBm) + AntennaGain(dBi) - 2.15$$

$$EIRP = ConductedOutputPower(dBm) + AntennaGain(dBi)$$

9.5 Results:

The CB34U meets the radiated power requirements. The ERP / EIRP results are all below the applicable limits.

9.6 Test Data (FCC)

Band	Channel	Channel Number	Center Freq (MHz)	Peak Power (dBm)	Antenna Gain (dBi)	Maximum Power ERP or EIRP (W)	ERP or EIRP Limit (W)
2	Low	9662	1932.4	-0.4	4.1	0.002344	2
	Mid	9800	1960	-0.42	4.1	0.002333	2
	High	9938	1987.6	-0.58	4.1	0.002249	2
5	Low	4357	871.4	-1.77	1.2	0.000535	7
	Mid	4408	881.6	-1.61	1.2	0.000555	7
	High	4458	891.6	-1.61	1.2	0.000555	7

Band	Channel	Channel Number	Center Freq (MHz)	Average Power (dBm)	Antenna Gain (dBi)	Maximum Power ERP or EIRP (W)	ERP or EIRP Limit (W)
2	Low	9662	1932.4	-11.95	4.1	0.000164	2
	Mid	9800	1960	-11.96	4.1	0.000164	2
	High	9938	1987.6	-12.12	4.1	0.000158	2
5	Low	4357	871.4	-13.57	1.2	0.0000353	7
	Mid	4408	881.6	-13.03	1.2	0.00004	7
	High	4458	891.6	-13.25	1.2	0.000038	7

Note: Band 2 power is in terms of EIRP
Band 5 power is in terms of ERP

9.7 Test Data (ISED)

Band	Channel	Channel Number	Center Freq (MHz)	Peak Power (dBm)	Antenna Gain (dBi)	Maximum Power ERP or EIRP (W)	ERP or EIRP Limit (W)
2	Low	9662	1932.4	-0.4	4.1	0.002344	2
	Mid	9800	1960	-0.42	4.1	0.002333	2
	High	9938	1987.6	-0.58	4.1	0.002249	2
5	Low	4357	871.4	-1.77	1.2	0.000535	11.5
	Mid	4408	881.6	-1.61	1.2	0.000555	11.5
	High	4458	891.6	-1.61	1.2	0.000555	11.5

Band	Channel	Channel Number	Center Freq (MHz)	Average Power (dBm)	Antenna Gain (dBi)	Maximum Power ERP or EIRP (W)	ERP or EIRP Limit (W)
2	Low	9662	1932.4	-11.95	4.1	0.000164	2
	Mid	9800	1960	-11.96	4.1	0.000164	2
	High	9938	1987.6	-12.12	4.1	0.000158	2
5	Low	4357	871.4	-13.57	1.2	0.0000353	11.5
	Mid	4408	881.6	-13.03	1.2	0.00004	11.5
	High	4458	891.6	-13.25	1.2	0.000038	11.5

Note: Band 2 power is in terms of EIRP
Band 5 power is in terms of ERP

10 Radiated Spurious Emissions (Transmitter)

10.1 Test Limits

The power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB.

10.2 Test Procedure

The EUT was placed on a non-conductive turntable. The measurement antenna was placed at a distance of 3 meters from the EUT. The EUT was forced to transmit at its maximum output power setting. During the tests, the antenna height and EUT azimuth were varied in order to identify the maximum level of emissions from the EUT.

The frequency range up to tenth harmonic was investigated in order to identify the spurious emission.
As allowable by ANSI C63.26: 2015 section 5.2.7, the output power of unwanted emissions can be calculated from a field strength measurement. The transmitter measurements that follow in this report have applied the following calculation to the -13dBm limit to arrive an equivalent field strength limit at 3 meters as follows:

E (dBµV/m) = EIRP (dBm) − 20log(D) + 104.8; where D is the measurement distance (in the far field region) in m.

Example:
Limit (dBuV/m) = -13 -20log(3) + 104.8 = 82.25dBuV/m

10.3 Test Equipment Used:

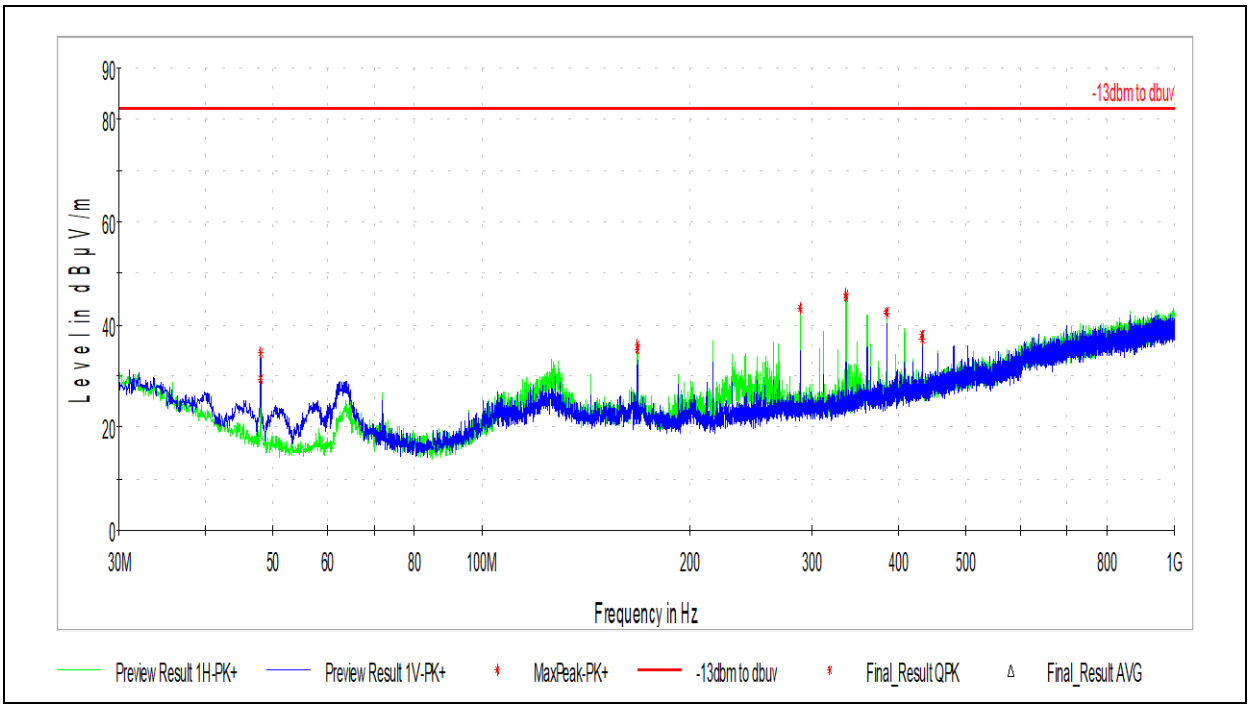
Description	Asset	Manufacturer	Model	Cal Date	Cal Due
EMI Test Receiver	3900	Rohde & Schwarz	ESU40	9/18/2019	9/18/2020
Bilog Antenna (30MHz-1GHz)	7085	SunAR	JB6	8/8/2019	8/8/2020
Horn Antenna (1-18GHz)	3780	ETS	3117	6/7/2019	6/7/2020
Multi-Device Controller	6029	EMCO	2090	Verify at Time of Use	Verify at Time of Use
System Controller	3957	Sunol Sciences	SC110V	Verify at Time of Use	Verify at Time of Use
Coaxial Cable	3074			12/6/2019	12/6/2020
Preamplifier (1-18GHz)	3918	Rohde & Schwarz	TS-PR18	12/6/2019	12/6/2020
Coaxial Cable	2588			12/6/2019	12/6/2020
Coaxial Cable	2593			12/6/2019	12/6/2020
Coaxial Cable	2592			12/6/2019	12/6/2020
Coaxial Cable	3339			12/6/2019	12/6/2020
Coaxial Cable	3172			12/6/2019	12/6/2020
Coaxial Cable	2590			12/6/2019	12/6/2020
Coaxial Cable	2589			12/6/2019	12/6/2020
Coaxial Cable (40GHz)	7020			12/4/2019	12/4/2020
Coaxial Cable (40GHz)	7021			12/4/2019	12/4/2020
Preamplifier (18-40GHz)	3921	Rohde & Schwarz	TS-PR40	12/4/2019	12/4/2020
Horn Antenna (18-40GHz)	3779	ETS	3116c	6/10/2019	6/10/2020

10.4 Results:

All radiated spurious emissions were attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB which is equivalent to -13dBm or 82.5dBuV/m at a measurement distance of 3m.

10.5 Test Data (Band 2)

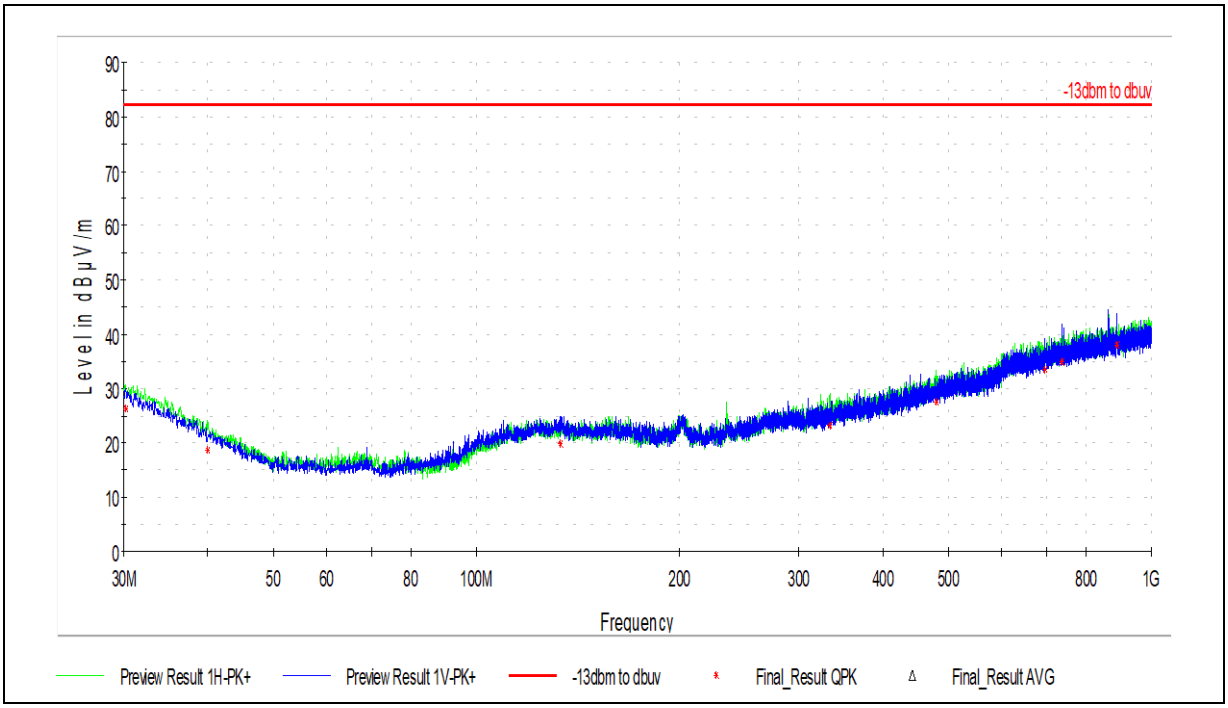
Low Channel UARFCN 9962



Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.998889	33.74	82.25	48.51	120.000	104.9	V	81.0	16.3
287.966111	40.20	82.25	42.05	120.000	100.0	H	258.0	23.9
312.000556	38.80	82.25	43.45	120.000	100.0	H	64.0	24.6
336.035000	44.16	82.25	38.09	120.000	99.9	H	81.0	25.1
360.015556	40.05	82.25	42.20	120.000	100.0	H	82.0	25.9
407.976667	38.03	82.25	44.22	120.000	100.0	H	64.0	27.3
989.060556	38.13	82.25	44.12	120.000	153.8	H	138.0	38.0

Test Personnel:	Brandon Norris	Test Date:	04/15/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	-13dbm to dbuv
Product Standard:	ANSIC63.26	Ambient Temperature:	19.0°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	34.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	987.7mbar

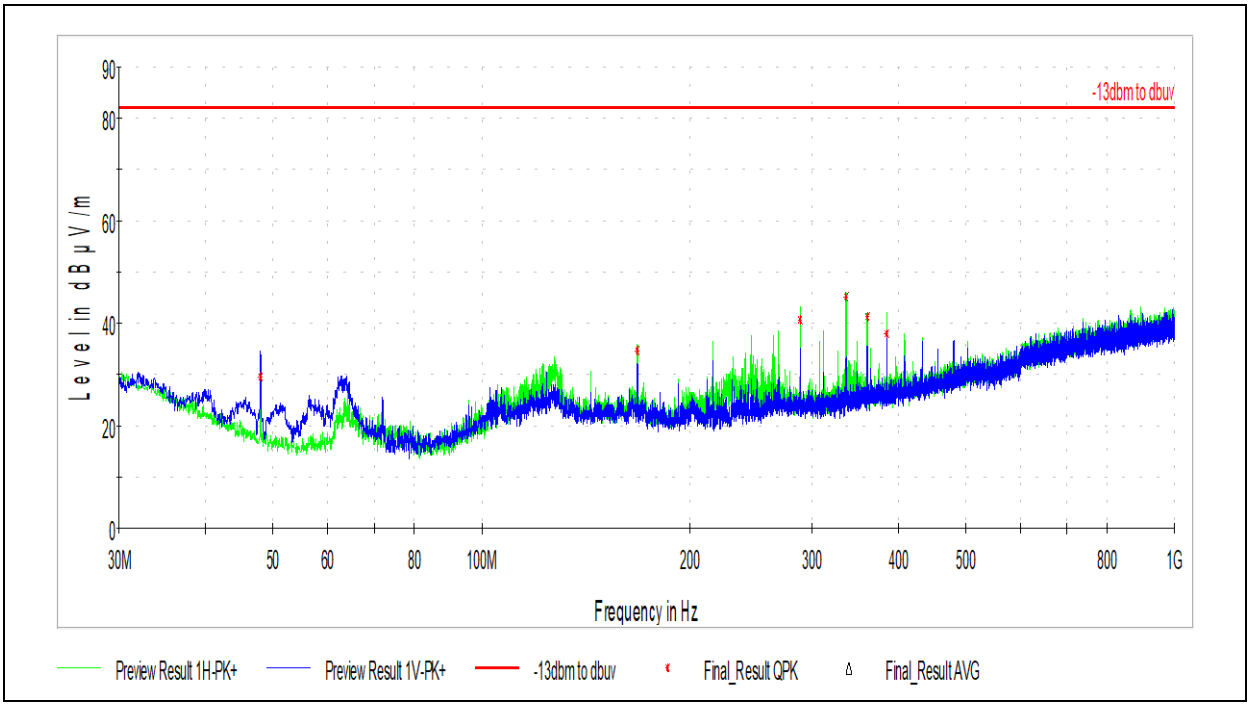
Mid Channel UARFCN 9800



Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.215556	26.25	82.25	56.00	120.000	100.1	H	212.0	28.6
39.969445	18.62	82.25	63.63	120.000	225.0	H	294.0	21.5
132.981667	19.85	82.25	62.40	120.000	399.9	V	300.0	22.4
333.448333	23.33	82.25	58.92	120.000	154.3	H	73.0	25.1
479.325556	27.64	82.25	54.61	120.000	356.9	H	6.0	29.3
696.443889	33.55	82.25	48.70	120.000	202.5	V	312.0	33.5
736.537222	34.92	82.25	47.33	120.000	202.4	V	0.0	34.1
889.258333	38.03	82.25	44.22	120.000	400.0	V	339.0	36.2

Test Personnel:	Brandon Norris	Test Date:	04/8/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	-13dbm to dbuv
Product Standard:	ANSIC63.26	Ambient Temperature:	24.6°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	53.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	976.8mbar

High Channel UARFCN 9938

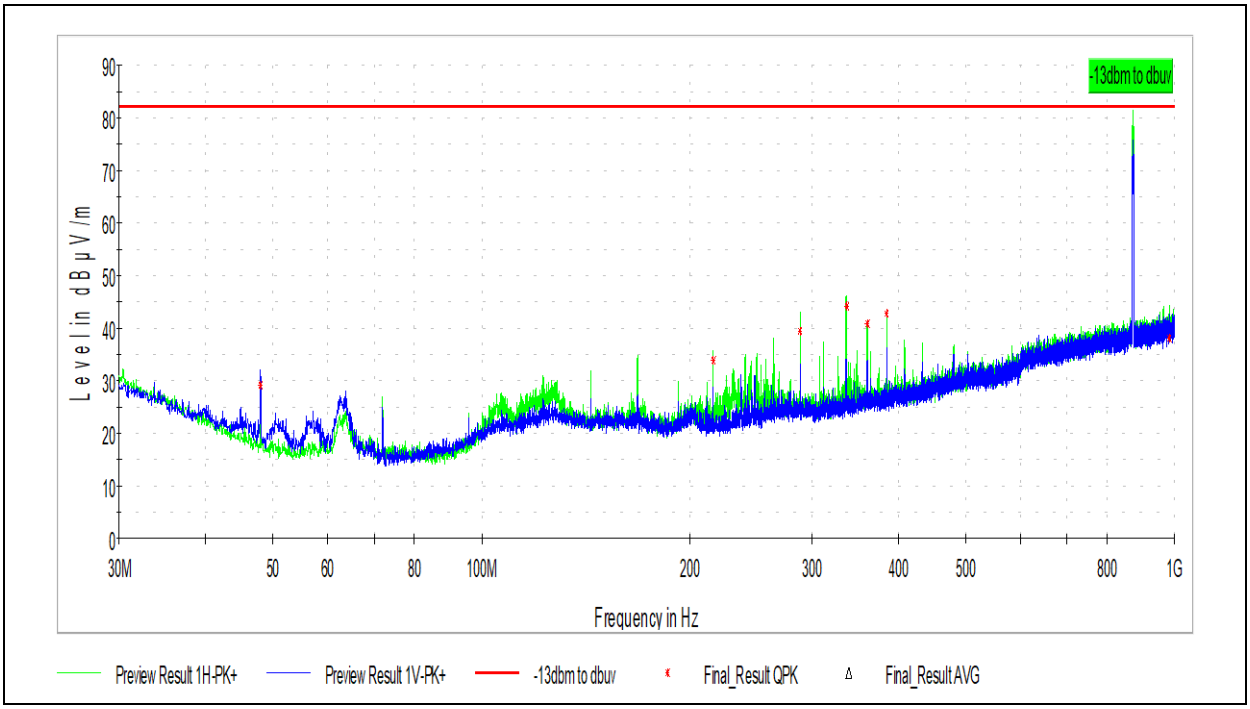


Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.945000	29.61	82.25	52.64	120.000	100.0	V	72.0	16.4
167.955556	34.47	82.25	47.78	120.000	141.9	H	294.0	21.5
287.966111	40.58	82.25	41.67	120.000	100.1	H	267.0	23.9
335.981111	45.27	82.25	36.98	120.000	100.1	H	82.0	25.1
360.015556	41.20	82.25	41.05	120.000	105.0	H	102.0	25.9
383.942222	38.03	82.25	44.22	120.000	99.9	H	312.0	26.5

Test Personnel:	Brandon Norris	Test Date:	04/15/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	-13dbm to dbuv
Product Standard:	ANSIC63.26	Ambient Temperature:	19.0°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	34.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	987.7mbar

10.6 Test Data (Band 5)

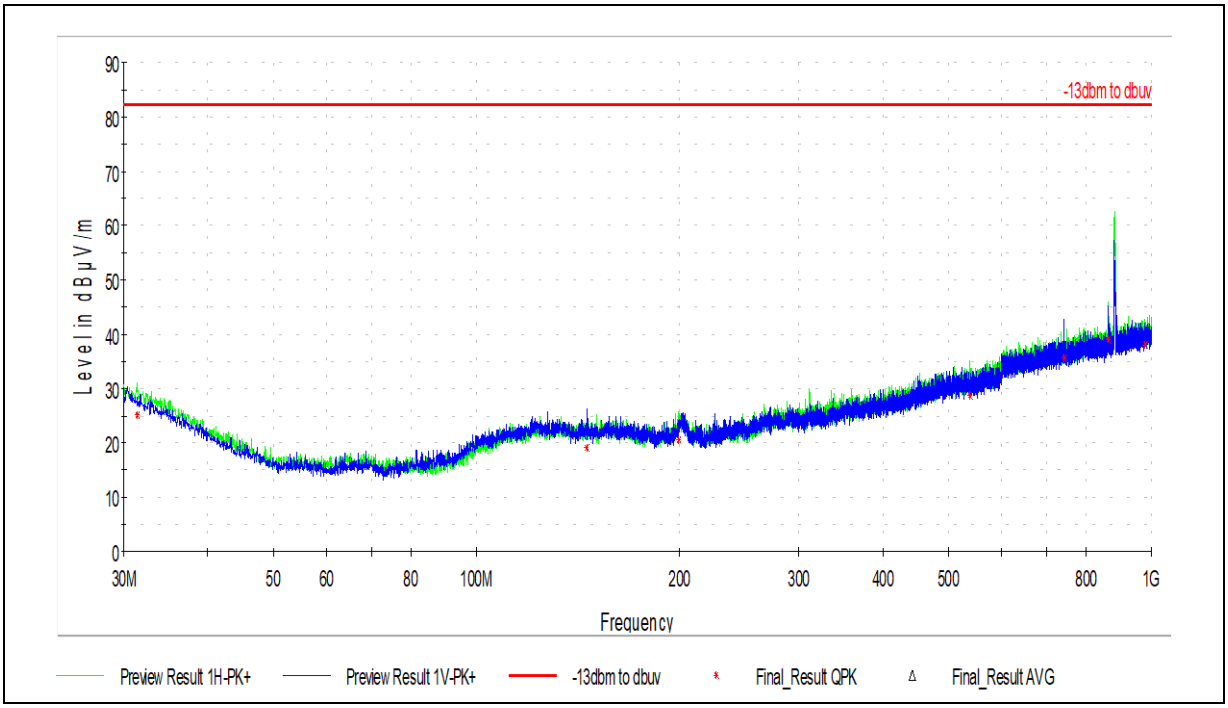
Low Channel UARFCN 4357



Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.945000	29.04	82.25	53.21	120.000	104.7	V	26.0	16.4
215.970556	33.94	82.25	48.31	120.000	105.0	H	282.0	20.5
287.966111	39.38	82.25	42.87	120.000	110.2	H	254.0	23.9
336.035000	44.04	82.25	38.21	120.000	100.0	H	84.0	25.1
360.015556	40.87	82.25	41.38	120.000	100.0	H	101.0	25.9
383.996111	42.72	82.25	39.53	120.000	99.9	H	314.0	26.5
981.839444	37.98	82.25	44.27	120.000	216.4	H	10.0	37.8

Test Personnel:	Brandon Norris	Test Date:	04/15/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	-13dbm to dbuv
Product Standard:	ANSIC63.26	Ambient Temperature:	19.0°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	34.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	987.7mbar

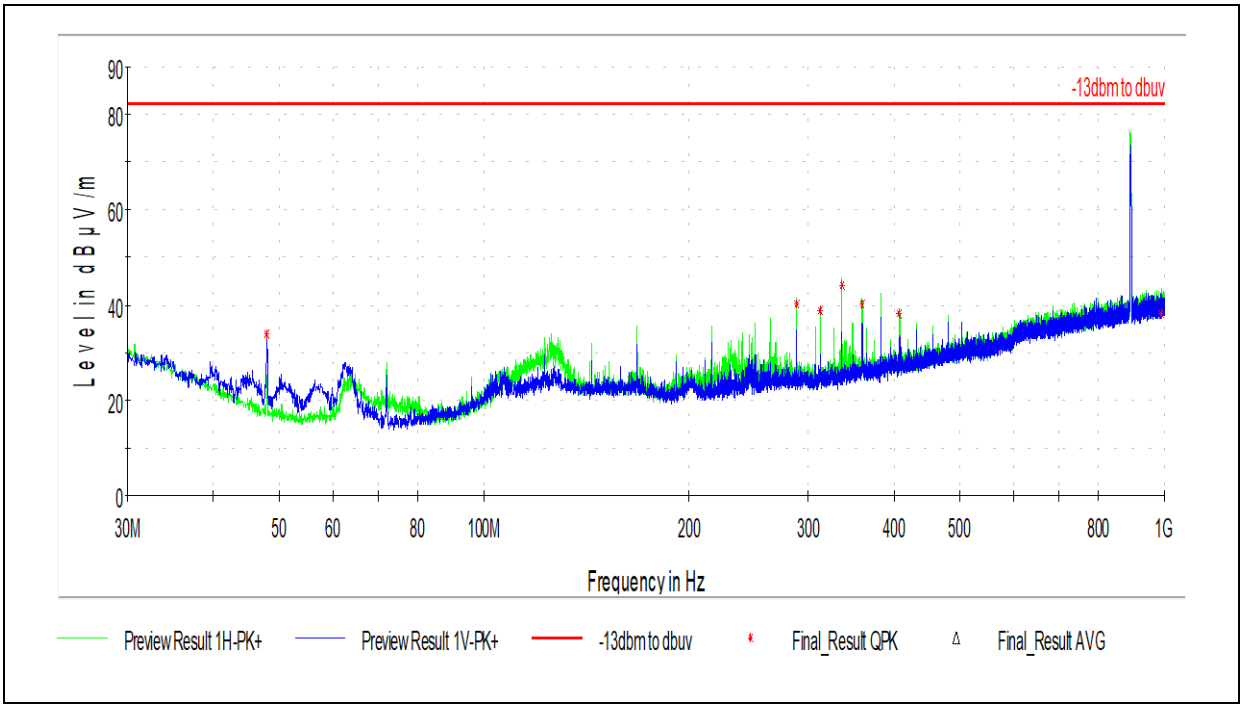
Mid Channel UARFCN 4408



Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.945000	29.04	82.25	53.21	120.000	104.7	V	26.0	16.4
215.970556	33.94	82.25	48.31	120.000	105.0	H	282.0	20.5
287.966111	39.38	82.25	42.87	120.000	110.2	H	254.0	23.9
336.035000	44.04	82.25	38.21	120.000	100.0	H	84.0	25.1
360.015556	40.87	82.25	41.38	120.000	100.0	H	101.0	25.9
383.996111	42.72	82.25	39.53	120.000	99.9	H	314.0	26.5
981.839444	37.98	82.25	44.27	120.000	216.4	H	10.0	37.8

Test Personnel:	Brandon Norris	Test Date:	04/8/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	-13dbm to dbuv
Product Standard:	ANSIC63.26	Ambient Temperature:	24.6°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	53.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	976.8mbar

High Channel UARFCN 4458

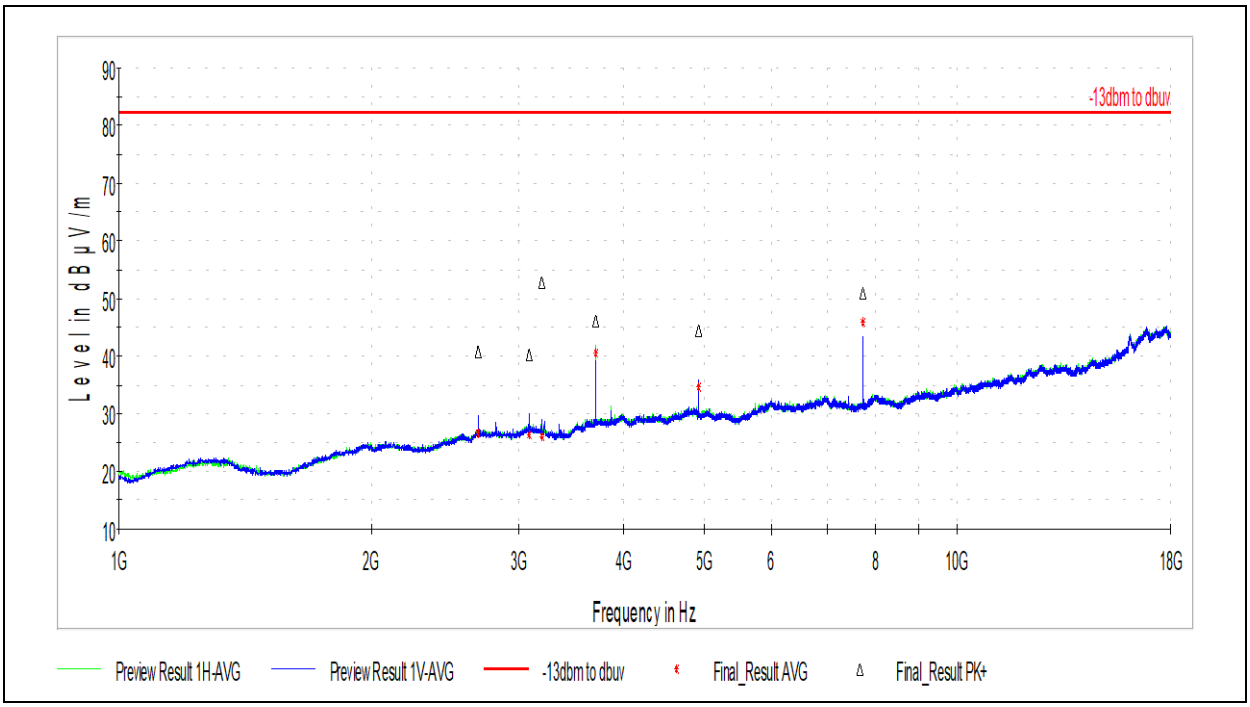


Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.998889	33.74	82.25	48.51	120.000	104.9	V	81.0	16.3
287.966111	40.20	82.25	42.05	120.000	100.0	H	258.0	23.9
312.000556	38.80	82.25	43.45	120.000	100.0	H	64.0	24.6
336.035000	44.16	82.25	38.09	120.000	99.9	H	81.0	25.1
360.015556	40.05	82.25	42.20	120.000	100.0	H	82.0	25.9
407.976667	38.03	82.25	44.22	120.000	100.0	H	64.0	27.3
989.060556	38.13	82.25	44.12	120.000	153.8	H	138.0	38.0

Test Personnel:	Brandon Norris	Test Date:	04/15/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	-13dbm to dbuv
Product Standard:	ANSIC63.26	Ambient Temperature:	19.0°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	34.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	987.7mbar

10.7 Test Data (Band 2) (1-18GHz)

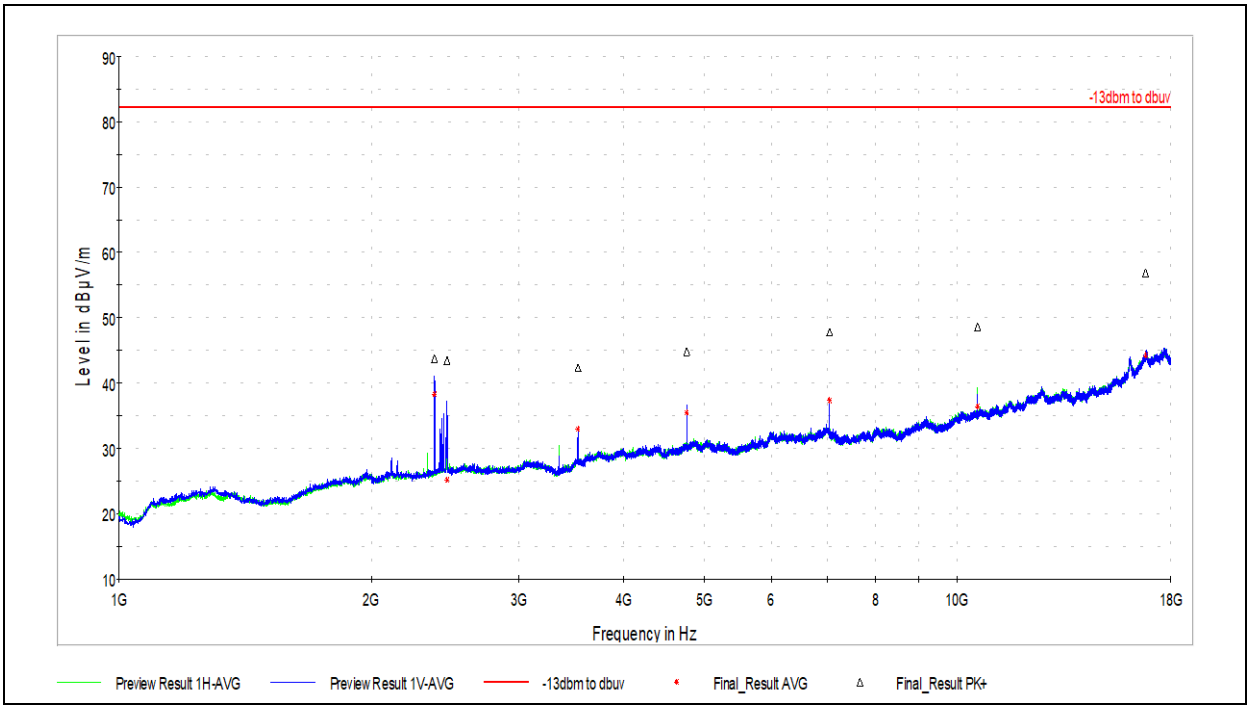
Low Channel UARFCN 9662



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2681.000000	26.72	82.25	55.53	1000.000	271.0	V	337.0	4.2
3084.500000	26.28	82.25	55.97	1000.000	272.0	V	18.0	5.2
3196.000000	25.96	82.25	56.29	1000.000	410.0	V	35.0	5.4
3704.500000	40.52	82.25	41.73	1000.000	100.0	H	156.0	6.4
4915.000000	34.59	82.25	47.66	1000.000	271.0	V	0.0	8.2
7729.500000	45.88	82.25	36.37	1000.000	339.0	V	192.0	12.0

Test Personnel:	Brandon Norris	Test Date:	04/15/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	-13dbm to dbuv
Product Standard:	ANSIC63.26	Ambient Temperature:	19.0°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	34.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	987.7mbar

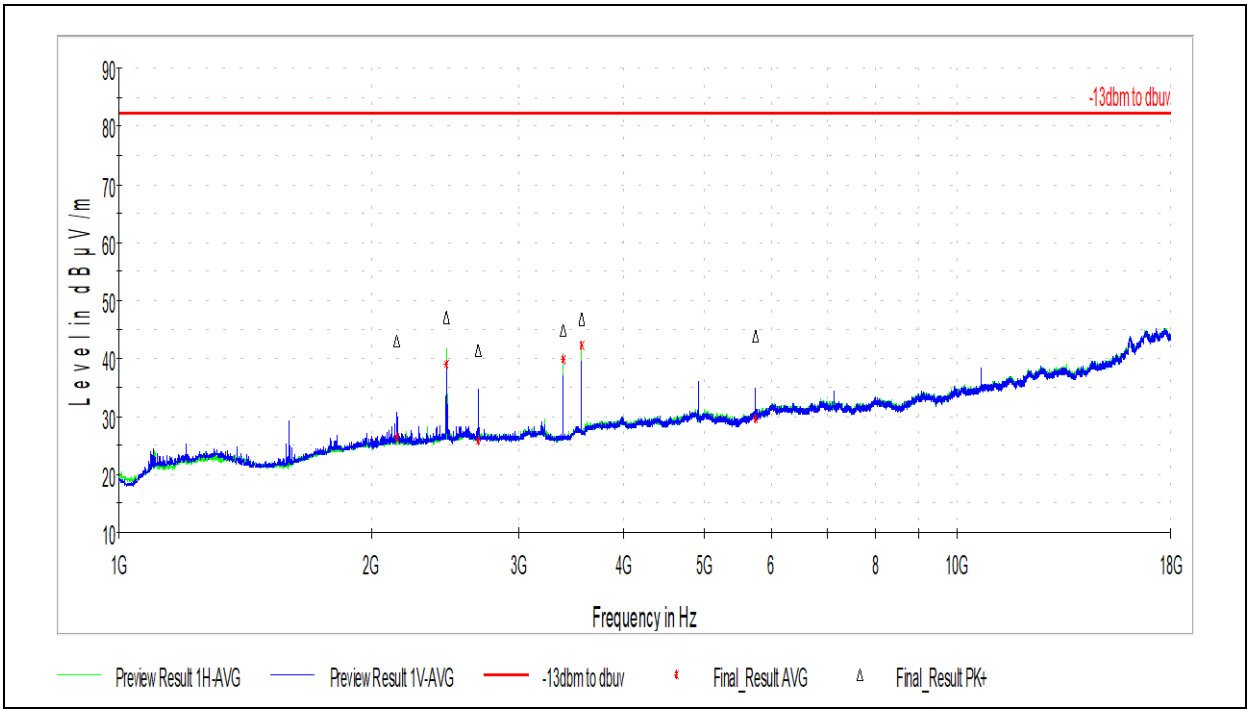
Mid Channel UARFCN 9800



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2380.500000	38.35	82.25	43.90	1000.000	299.0	V	132.0	4.0
2462.000000	25.19	82.25	57.06	1000.000	184.0	V	333.0	3.9
3526.500000	32.98	82.25	49.27	1000.000	294.0	V	0.0	6.0
4761.500000	35.52	82.25	46.73	1000.000	329.0	V	324.0	8.0
7053.000000	37.34	82.25	44.91	1000.000	333.0	V	302.0	11.3
10579.000000	36.43	82.25	45.82	1000.000	410.0	H	294.0	16.2
16803.500000	44.26	82.25	37.99	1000.000	410.0	V	328.0	26.1

Test Personnel:	Brandon Norris	Test Date:	04/8/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	-13dbm to dbuv
Product Standard:	ANSIC63.26	Ambient Temperature:	24.6°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	53.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	976.8mbar

High Channel UARFCN 9938

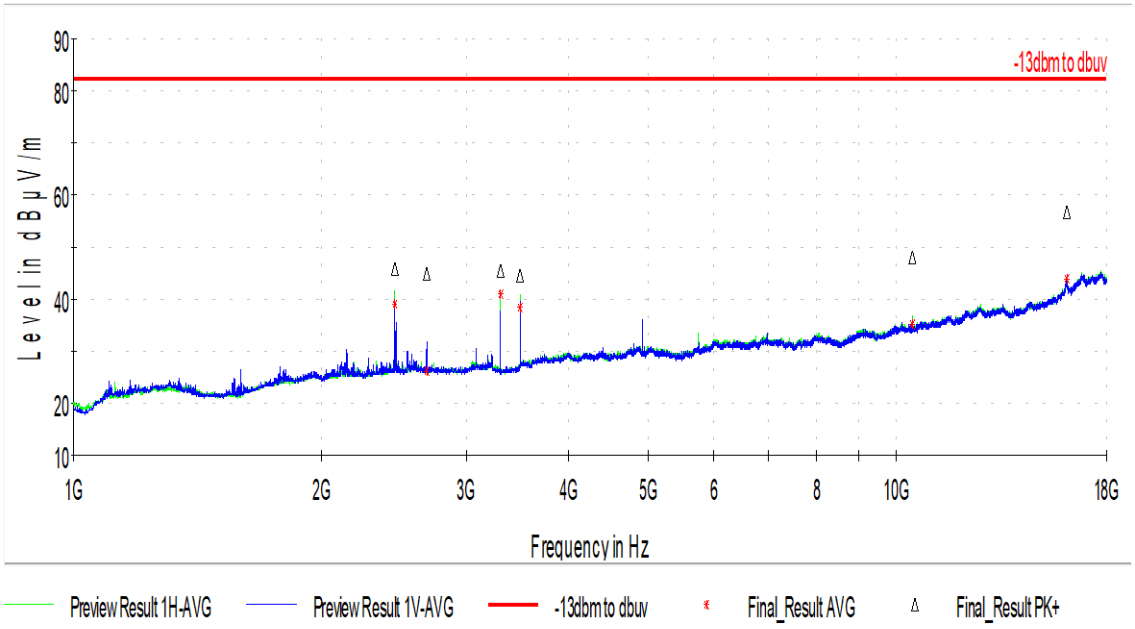


Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2145.500000	26.32	82.25	55.93	1000.000	296.0	V	20.0	2.7
2457.500000	39.04	82.25	43.21	1000.000	366.0	H	269.0	4.1
2683.000000	25.72	82.25	56.53	1000.000	410.0	V	180.0	4.3
3386.500000	39.78	82.25	42.47	1000.000	348.0	H	114.0	5.4
3566.500000	42.11	82.25	40.14	1000.000	142.0	H	44.0	6.0
5750.000000	29.53	82.25	52.72	1000.000	410.0	V	245.0	9.6

Test Personnel:	Brandon Norris	Test Date:	04/15/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	-13dbm to dbuv
Product Standard:	ANSIC63.26	Ambient Temperature:	19.0°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	34.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	987.7mbar

10.8 Test Data (Band 5) (1-18GHz)

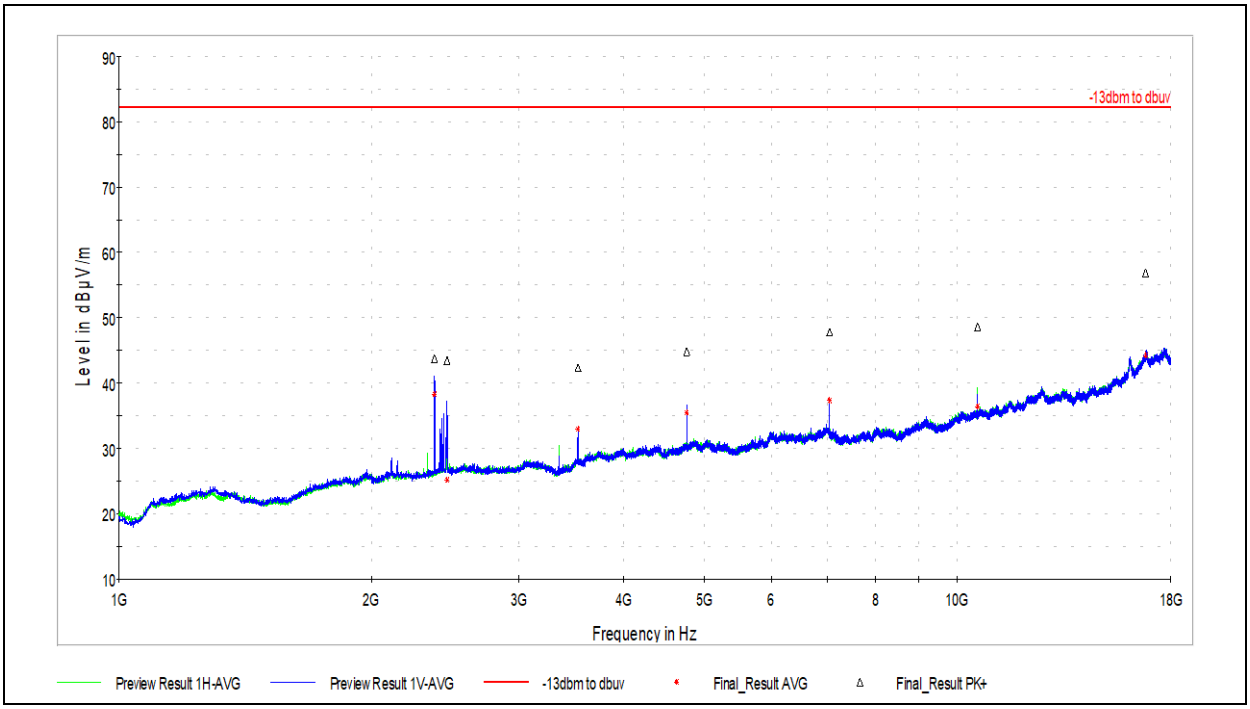
Low Channel UARFCN 4357



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2457.500000	38.90	82.25	43.35	1000.000	361.0	H	265.0	4.1
2684.000000	26.17	82.25	56.08	1000.000	369.0	V	0.0	4.3
3305.500000	40.88	82.25	41.37	1000.000	367.0	H	118.0	5.3
3485.500000	38.48	82.25	43.77	1000.000	410.0	V	31.0	5.8
10456.500000	35.32	82.25	46.93	1000.000	410.0	H	310.0	16.2
16099.500000	43.99	82.25	38.26	1000.000	363.0	V	200.0	26.2

Test Personnel:	Brandon Norris	Test Date:	04/15/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	-13dbm to dbuv
Product Standard:	ANSIC63.26	Ambient Temperature:	19.0°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	34.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	987.7mbar

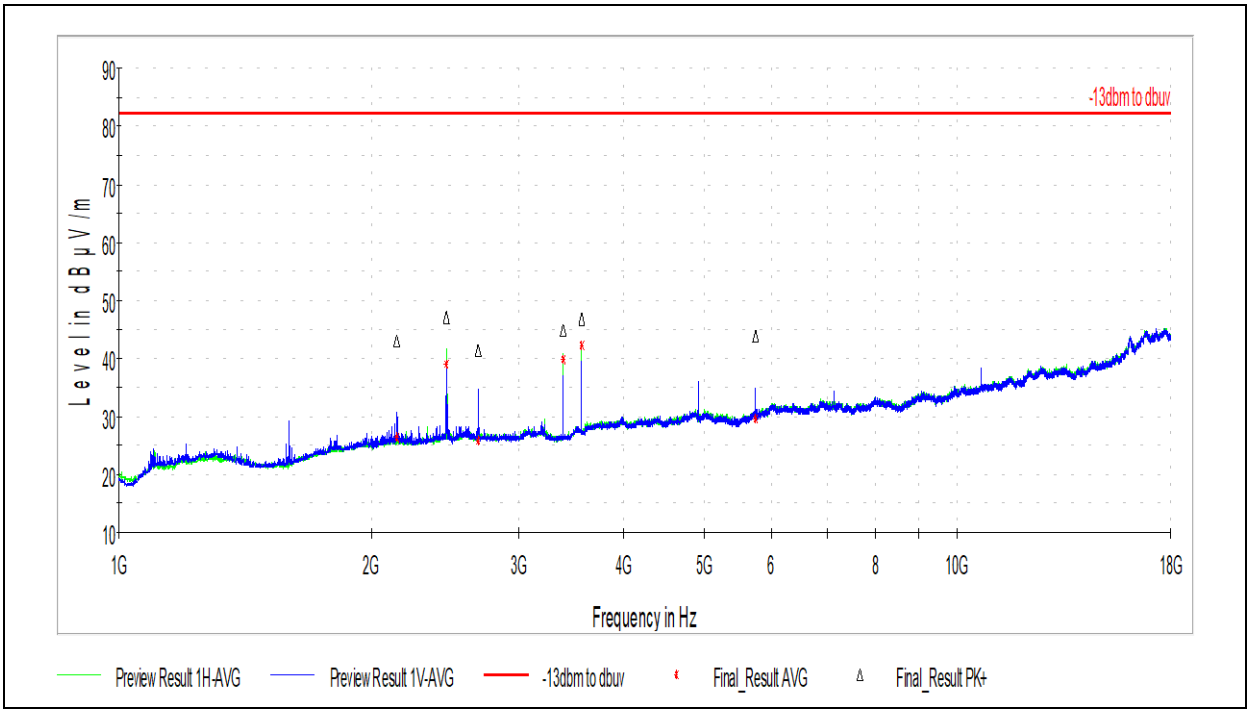
Mid Channel UARFCN 4408



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2380.500000	38.35	82.25	43.90	1000.000	299.0	V	132.0	4.0
2462.000000	25.19	82.25	57.06	1000.000	184.0	V	333.0	3.9
3526.500000	32.98	82.25	49.27	1000.000	294.0	V	0.0	6.0
4761.500000	35.52	82.25	46.73	1000.000	329.0	V	324.0	8.0
7053.000000	37.34	82.25	44.91	1000.000	333.0	V	302.0	11.3
10579.000000	36.43	82.25	45.82	1000.000	410.0	H	294.0	16.2
16803.500000	44.26	82.25	37.99	1000.000	410.0	V	328.0	26.1

Test Personnel:	Brandon Norris	Test Date:	04/8/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	-13dbm to dbuv
Product Standard:	ANSIC63.26	Ambient Temperature:	24.6°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	53.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	976.8mbar

High Channel UARFCN 4458

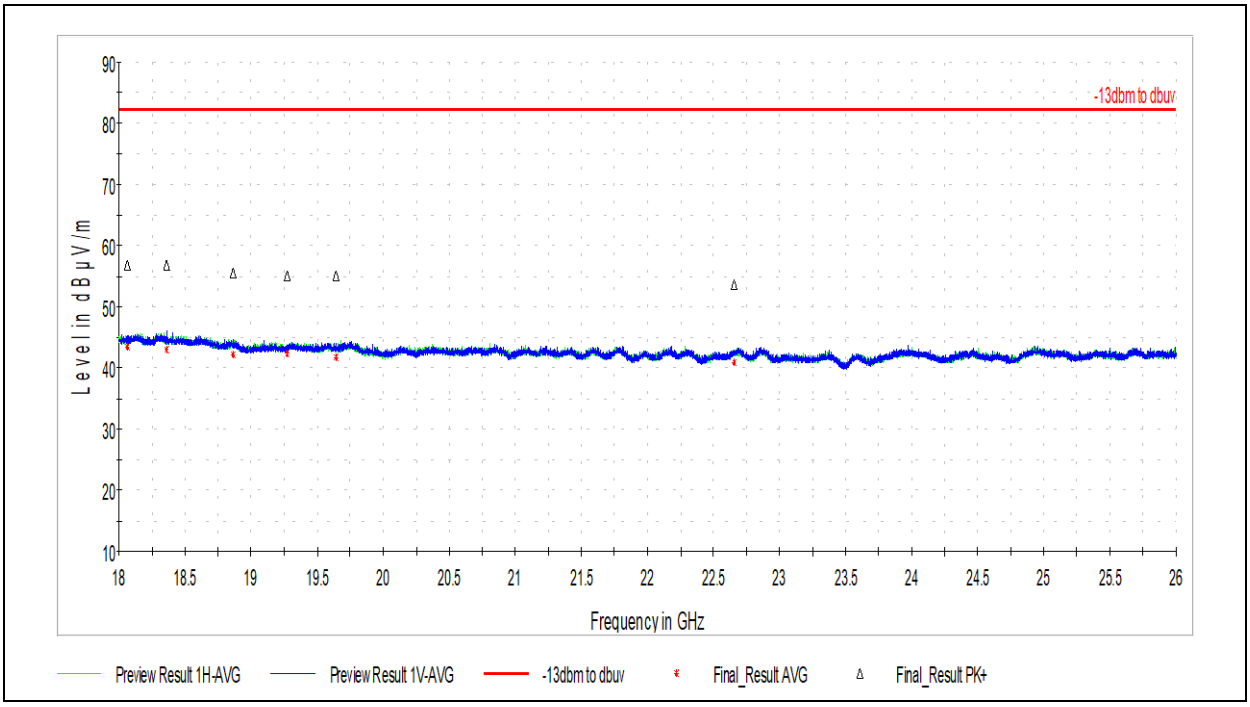


Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2145.500000	26.32	82.25	55.93	1000.000	296.0	V	20.0	2.7
2457.500000	39.04	82.25	43.21	1000.000	366.0	H	269.0	4.1
2683.000000	25.72	82.25	56.53	1000.000	410.0	V	180.0	4.3
3386.500000	39.78	82.25	42.47	1000.000	348.0	H	114.0	5.4
3566.500000	42.11	82.25	40.14	1000.000	142.0	H	44.0	6.0
5750.000000	29.53	82.25	52.72	1000.000	410.0	V	245.0	9.6

Test Personnel:	Brandon Norris	Test Date:	04/15/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	-13dbm to dbuv
Product Standard:	ANSIC63.26	Ambient Temperature:	19.0°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	34.5%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	987.7mbar

10.9 Test Data (Band 2) (18-26GHz)

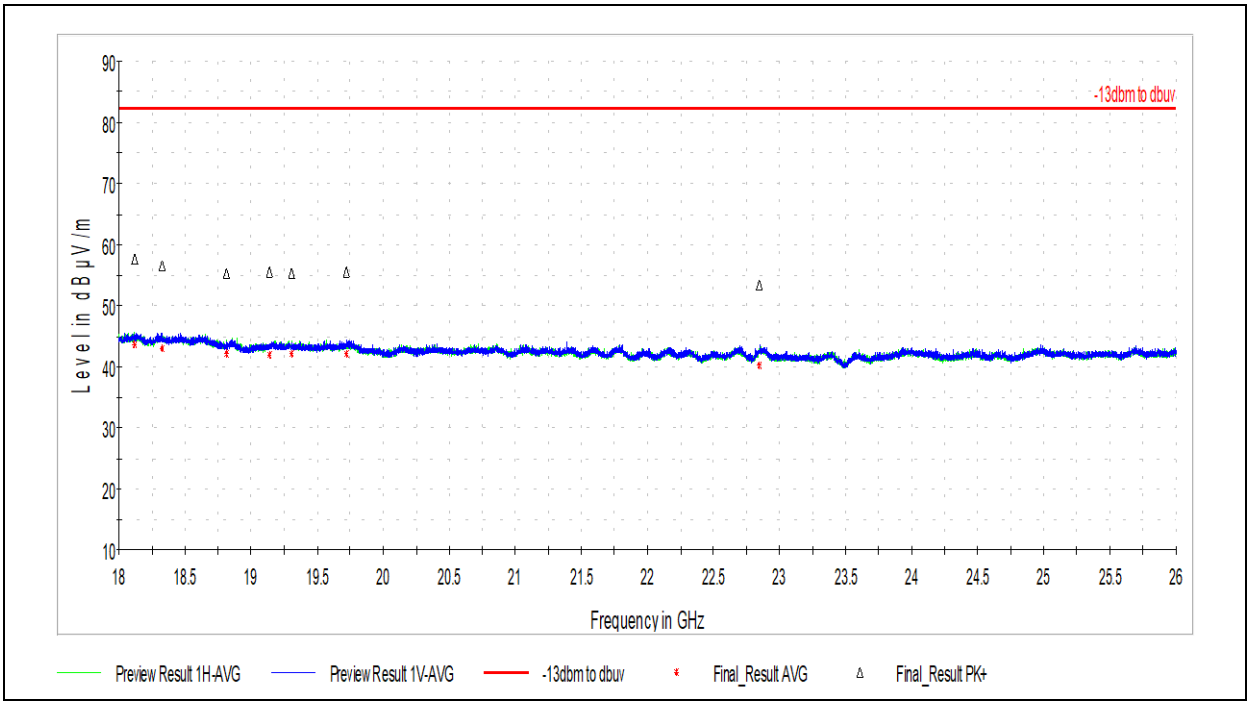
Low Channel UARFCN 9662



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
18064.000000	43.44	82.25	38.81	1000.000	109.0	H	98.0	20.9
18358.909091	42.93	82.25	39.32	1000.000	100.0	V	99.0	20.0
18861.090909	42.15	82.25	40.10	1000.000	109.0	H	172.0	18.3
19271.272727	42.24	82.25	40.01	1000.000	109.0	H	184.0	17.2
19640.727273	41.70	82.25	40.55	1000.000	100.0	V	310.0	15.7
22652.727273	40.76	82.25	41.49	1000.000	109.0	V	190.0	6.8

Test Personnel:	Brandon Norris	Test Date:	04/15/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	-13dbm to dbuv
Product Standard:	ANSIC63.26	Ambient Temperature:	23.9°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	22.0%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	995.9mbar

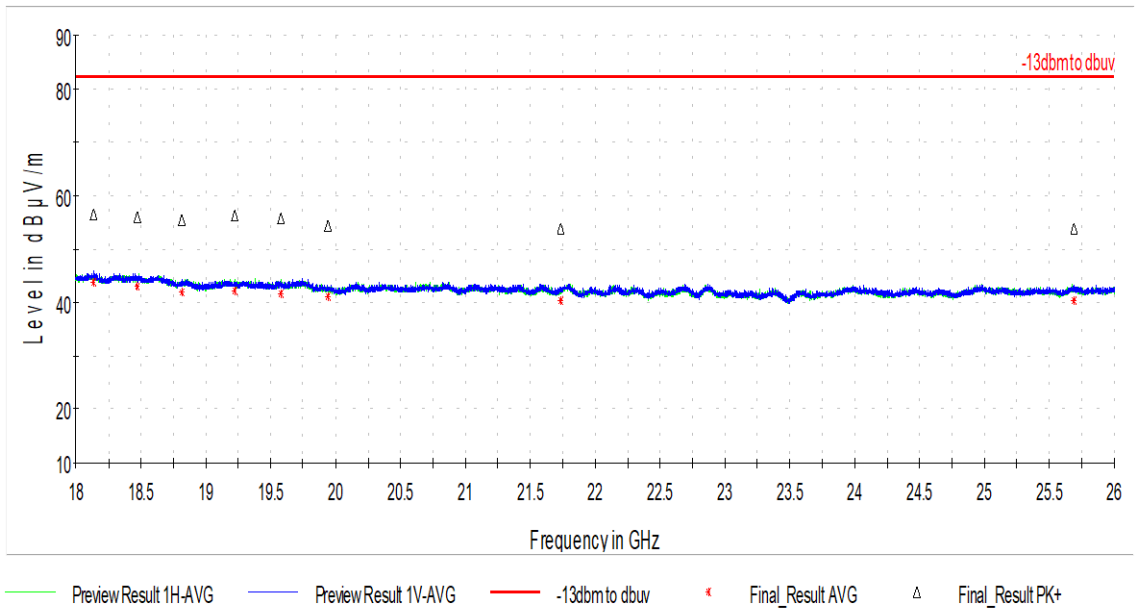
Mid Channel UARFCN 9800



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
18117.090909	43.67	82.25	38.58	1000.000	128.0	H	46.0	20.7
18324.727273	43.05	82.25	39.20	1000.000	100.0	V	320.0	20.0
18814.909091	42.03	82.25	40.22	1000.000	250.0	H	26.0	18.3
19137.090909	41.95	82.25	40.30	1000.000	100.0	V	329.0	17.5
19304.363636	42.14	82.25	40.11	1000.000	132.0	H	343.0	17.1
19722.545455	42.22	82.25	40.03	1000.000	100.0	V	145.0	15.7
22843.272727	40.27	82.25	41.98	1000.000	100.0	H	212.0	6.2

Test Personnel:	Brandon Norris	Test Date:	04/15/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	-13dbm to dbuv
Product Standard:	ANSIC63.26	Ambient Temperature:	23.9°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	22.0%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	995.9mbar

High Channel UARFCN 9938



Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
18133.454546	43.82	82.25	38.43	1000.000	303.0	V	262.0	20.7
18473.818182	43.08	82.25	39.17	1000.000	108.0	H	212.0	19.1
18817.090909	42.02	82.25	40.23	1000.000	108.0	V	248.0	18.3
19220.363636	42.20	82.25	40.05	1000.000	108.0	H	220.0	17.1
19578.545455	41.64	82.25	40.61	1000.000	108.0	H	119.0	15.7
19942.909091	41.18	82.25	41.07	1000.000	108.0	V	156.0	14.7
21734.181818	40.39	82.25	41.86	1000.000	108.0	H	240.0	8.8
25686.545455	40.25	82.25	42.00	1000.000	100.0	V	141.0	5.6

Test Personnel:	Brandon Norris	Test Date:	04/15/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	-13dbm to dbuv
Product Standard:	ANSIC63.26	Ambient Temperature:	23.9°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	22.0%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	995.9mbar

11 Frequency Stability

11.1 Test Limits

§ 22.355

Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C–1 of this section.

Table C-1—Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Mobile ≤ 3 watts ppm
821 to 896	±2.5

§ 24.232

The frequency stability shall be sufficient to ensure that the funadamental emissions stay with in the authorized bands of operation.

RSS-132(5.3)

The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations.

RSS-133(6.3)

The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations.

11.2 Test Procedure

This is a conducted test. The EUT was operated at 12 VDC nominal voltage and was placed in the temperature chamber for the series of evaluations performed. Test methodology is per Section 5.6 of ANSI C63.26-2015, American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services. The frequency measurements were based on 99% bw measurements for F_{low} and F_{high} and the midpoint of the two measurements was used as the center frequency of the transmitted signal. Voltage variations from Nominal Voltage of 12VDC were performed @ 20°C. Reference measurements were performed on mid channels only. The Temperature was set to 50°C and allowed to sit to allow the equipment and chamber temperature to stabilize. Once stabilized, the EUT was turned on and the measurement performed. The temperature was then decreased by 10°C steps and allowed to settle before taking the next set of measurements.

For band 5, the maximum frequency deviation was used as frequency offset to verify that the fundamental emission stay with the authorized bands of operation. For band 2, the maximum frequency deviation in percent was used to calculate maximum frequency deviation in parts per million (ppm).

11.1 Test Conditions:

Test Personnel:	Brandon Norris	Test Date:	04/21/2020
Supervising/Reviewing Engineer: (Where Applicable)	Bryan Taylor	Limit Applied:	-13dbm to dbuv
Product Standard:	ANSIC63.26	Ambient Temperature:	26.4°C
Input Voltage:	12VDC via AC/DC power adapter	Relative Humidity:	34.1%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	978.7mbar

11.2 Test Equipment Used:

Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
Environmental Chamber	7077	CSZ	Z-Plus	2/27/2020	2/27/2021
EMI Test Receiver	2327	Rhode & Schwarz	ESI26	9/30/2019	9/30/2020
Power Supply	3515	Gwinstek	GPS1850D	Verify at Time of Use	Verify at Time of Use
Multimeter	65920871	Fluke	87	1/21/2020	1/21/2021

11.3 Results:

The tables below show the frequency stability data. In all cases the test sample met the ±2.5ppm.

Frequency Stability in Band 2, UARFCN 9800

Voltage (%)	Voltage (DC)	Temp (C)	F_L/T_1 (MHz)	F_H/T_2 (MHz)	Center Frequency	Frequency Deviation (%)	Deviation (ppm)
100	12	-30	879.5208417	883.6791583	881.600000	0.00	0.0
100	12	-20	879.5208417	883.6791583	881.600000	0.00	0.0
100	12	-10	879.5208417	883.6791583	881.600000	0.00	0.0
100	12	0	879.5208417	883.6791583	881.600000	0.00	0.0
100	12	10	879.5208417	883.6791583	881.600000	0.00	0.0
100	12	20	879.5208417	883.6791583	881.600000	0.00	0.0
100	12	30	879.5208417	883.6791583	881.600000	0.00	0.0
100	12	40	879.5208417	883.6791583	881.600000	0.00	0.0
100	12	50	879.5208417	883.6791583	881.600000	0.00	0.0
115	13.8	20	879.5208417	883.6791583	881.600000	0.00	0.0
85	3.06	20	879.5208417	883.6791583	881.600000	0.00	0.0

Frequency Stability in Band 5, UARFCN 4408

Voltage (%)	Voltage (DC)	Temp (C)	F_L/T_1 (MHz)	F_H/T_2 (MHz)	Center Frequency	Frequency Deviation (%)	Deviation (ppm)
100	12	-30	1957.91082	1962.08918	1960.000000	0.00	0.0
100	12	-20	1957.91082	1962.08918	1960.000000	0.00	0.0
100	12	-10	1957.91082	1962.08918	1960.000000	0.00	0.0
100	12	0	1957.91082	1962.08918	1960.000000	0.00	0.0
100	12	10	1957.91082	1962.08918	1960.000000	0.00	0.0
100	12	20	1957.91082	1962.08918	1960.000000	0.00	0.0
100	12	30	1957.91082	1962.08918	1960.000000	0.00	0.0
100	12	40	1957.91082	1962.08918	1960.000000	0.00	0.0
100	12	50	1957.91082	1962.08918	1960.000000	0.00	0.0
115	13.8	20	1957.91082	1962.08918	1960.000000	0.00	0.0
85	3.06	20	1957.91082	1962.08918	1960.000000	0.00	0.0

12 Measurement Uncertainty

The measured value related to the corresponding limit will be used to decide whether the equipment meets the requirements.

The measurement uncertainty figures were calculated and correspond to a coverage factor of k = 2, providing a confidence level of respectively 95.45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian).

Measurement uncertainty Table

Parameter	Uncertainty	Notes
Radiated emissions, 30 to 1000 MHz	±3.9dB	
Radiated emissions, 1 to 18 GHz	±4.2dB	
Radiated emissions, 18 to 40 GHz	±4.3dB	
Power Port Conducted emissions, 150kHz to 30 MHz	+2.8dB	

13 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
001	4/27/2020	104295343LEX-001	BN	BCT	