



Test Report Serial Number: 45461373R1.0  
Test Report Date: 17 November 2016  
Project Number: 1363

## EMC Test Report - New Filing

Applicant:

# Uniden®

**Uniden America Corporation**  
3001 Gateway Drive  
Suite 130  
Irving, Tx, 75063, USA

FCC ID:

**AMWUT392**

Product Model Number / HVIN

**CMX560**

IC Registration Number

**513C-UT392**

Product Name / PMN

**CMX560**

In Accordance With:

**FCC 47 CFR Part 95 Subpart D, Part 15 Subpart B**

Licensed Non-Broadcast Station Transmitter (TNB)

**SS-GEN, RSS-236 Issue 1**

Citizen Band (26.960 to 27.410 MHz)

Approved By:

**Ben Hewson, President**

Celltech Labs Inc.  
21-364 Lougheed Rd.  
Kelowna, BC, V1X 7R8  
Canada



Test Lab Certificate: 2470.01



Industry  
Canada

IC Registration 3874A-1



FCC Registration: 714830

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**1.0 DOCUMENT CONTROL**

<b>Tested By:</b>	Art Voss		
<b>Prepared By:</b>	Art Voss		
<b>Reviewed By:</b>	Ben Hewson		
<b>Issue Number</b>	<b>Description</b>	<b>By</b>	<b>Issue Date</b>
1.0	Initial Release	Art Voss	17 November 2016

**2.0 TEST RESULT SUMMARY**

<b>TEST SUMMARY</b>						
<b>Referenced Standard(s):</b>		<b>FCC CFR Title 47 Parts 2, 95D, 15B</b>				
<b>Section</b>	<b>Description of Test</b>	<b>Procedure Reference</b>	<b>Applicable Rule Part(s) FCC</b>	<b>Applicable Rule Part(s) ISEDC</b>	<b>Test Date</b>	<b>Result</b>
8	Conducted Power (Fundamental)	ANSI/TIA/EIA-382-A ANSI C63.4:2014	§2.1046 §95.639	RSS-Gen RSS-236 5.2	15 Nov 2016	Pass
9	Modulation Response	ANSI/TIA/EIA-603-D ANSI C63.4:2014	§2.1047 §95.637	RSS-Gen	15 Nov 2016	Pass
10	Occupied Bandwidth	ANSI/TIA/EIA-603-D ANSI C63.4:2014	§2.1049 §95.633	RSS-Gen RSS-236 5.3.2	15 Nov 2016	Pass
	Emission Mask	ANSI/TIA/EIA-603-D ANSI C63.4:2014	§2.1049 §95.635	RSS-Gen RSS-236 5.4.4	15 Nov 2016	Pass
11	Conducted TX Spurious Emissions	ANSI/TIA/EIA-603-D ANSI C63.4:2014	§2.1051 §95.635	RSS-Gen RSS-236 5.4.4	15 Nov 2016	Pass
12	Radiated TX Spurious Emissions	ANSI/TIA/EIA-603-D ANSI C63.4:2014	§2.1053 §95.635	RSS-Gen RSS-236 5.4.4	16 Nov 2016	Pass
13	Radiated Receiver Emissions	ANSI C63.4:2014	§15 Subpart B	§15 Subpart B	16 Nov 2016	Pass
14	Frequency Stability	ANSI/TIA/EIA-603-D ANSI C63.4:2014	§2.1055 §95.625	RSS-Gen	16 Nov 2016	Pass

**3.0 PASS/FAIL CRITERIA**

**Pass / Fail Criteria**

Unless otherwise noted in the Appendices, the pass/fail criteria is the limit set forth in the reference standards. The DUT is considered to have passed the requirements if the measurement and test results obtained during the described measurement procedure is no greater than the specified limits as defined. The pass/fail statements made in this report only apply to the unit tested.

I attest that the data reported herein is true and accurate within the tolerance of the Measurement Instrument Uncertainty; that all tests and measurements were performed in accordance with accepted practices or procedures; and that all tests and measurements were performed by me or by trained personnel under my direct supervision. The results of this investigation are based solely on the test sample(s) provided by the client which were not adjusted, modified or altered in any manner whatsoever, except as required to carry out specific tests or measurements. This test report has been completed in accordance with ISO/IEC 17025.



Art Voss, P.Eng.  
Technical Manager  
Celltech Labs Inc.

17 November 2016  
Date



## 4.0 SCOPE

### Scope

This report outlines the measurements made and results collected during electromagnetic emissions testing of the:

**Uniden America Corporation, Model CMX560, FCC ID: AMWUT392, ISEDC ID: 513C-UT392**

The measurement results were applied against the applicable EMC requirements and limits outlined in the technical rules and regulations set forth in the Federal Communication's Commission Code of Federal Regulations Title 47 Part 2, Part 15 Subpart B and Part 95D and Industry Canada Spectrum Management & Telecommunications Policy RSS-Gen and RSS-236.

## 5.0 NORMATIVE REFERENCES

### Normative References

ANSI / ISO 17025:2005	General Requirements for competence of testing and calibration laboratories
IEEE/ANSI C63.4:2014	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI/TIA/EIA-382-A	Minimum Standards - Citizens Band Radion Service Amplitude Modulated (AM) Transceivers Operating in the 27MHz Band
CFR Title 47 Part 2	Code of Federal Regulations Title 47: Telecommunication Part 2: Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
CFR Title 47 Part 95D	Code of Federal Regulations Title 47: Telecommunication Part 95D: Citizens Band (CB) Radio Service
CFR Title 47 Part 15	Code of Federal Regulations Title 47: Telecommunication Part 15: Radio Frequency Devices Subpart B: Unintentional Radiators
Industry Canada Spectrum Management & Telecommunications Policy	RSS-Gen Issue 4: General Requirements and Information for the Certification of Radiocommunication Equipment
Industry Canada Spectrum Management & Telecommunications Policy	RSS-236 Issue 1: General Radio Service Equipment Operating in the Band 26.960 to 27.410 MHz (Citizens Band)

## 6.0 FACILITIES AND ACCREDITATIONS

### Facility and Accreditation

The facilities used to evaluate this device outlined in this report are located at 21-364 Lougheed Road, Kelowna, British Columbia, Canada V1X 7R8. The radiated emissions site conforms to the requirements set forth in ANSI C63.4 and is filed and listed with the FCC under Test Firm Registration Number 714830 and Industry Canada under Test Site File Number IC 3874A-1. Celltech is accredited to ISO 17025, through accrediting body A2LA and with certificate 2470.01.

## 7.0 CLIENT AND DEVICE INFORMATION

Client Information	
Applicant Name	Uniden America Corporation
Applicant Address	3001 Gateway Drive, Suite 130
	Irving, TX, 75063
	USA
DUT Information	
Device Identifier(s):	FCC ID: AMWUT392
	ISED ID: 513C-UT392
Device Type:	Mobile CB Radio Transceiver
Type of Equipment:	Analog Transceiver
Device Model(s) / HVIN:	CMX560
Device Marketing Name / PMN:	CMX560
Firmware Version ID Number / FVIN:	n/a
Host Marketing Name / HMN:	n/a
Test Sample Serial No.:	T/A Sample - Identical Prototype
Transmit Frequency Range:	26.965 - 27.405 MHz (Chan. 1-40)
Number of Channels:	40
Manuf. Max. Rated Output Power:	4.0W AM
Manuf. Max. Rated BW/Data Rate:	n/a
Antenna Make and Model:	n/a
Antenna Type and Gain:	External Whip, 0dBi nominal (3dBi maximum).
Modulation:	AM
Mode:	n/a
Emission Designator:	5K50A3E
DUT Power Source:	12 VDC External
Deviation(s) from standard/procedure:	None
Modification of DUT:	None

**8.0 CONDUCTED POWER**

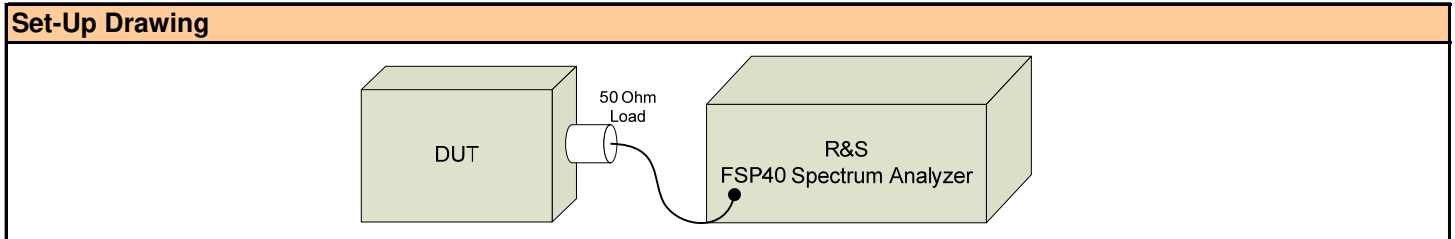
8.1 Test Equipment and Setup

Test Conditions	
<b>Normative Reference</b>	FCC 47 CFR §2.1046, §95D, RSS-236

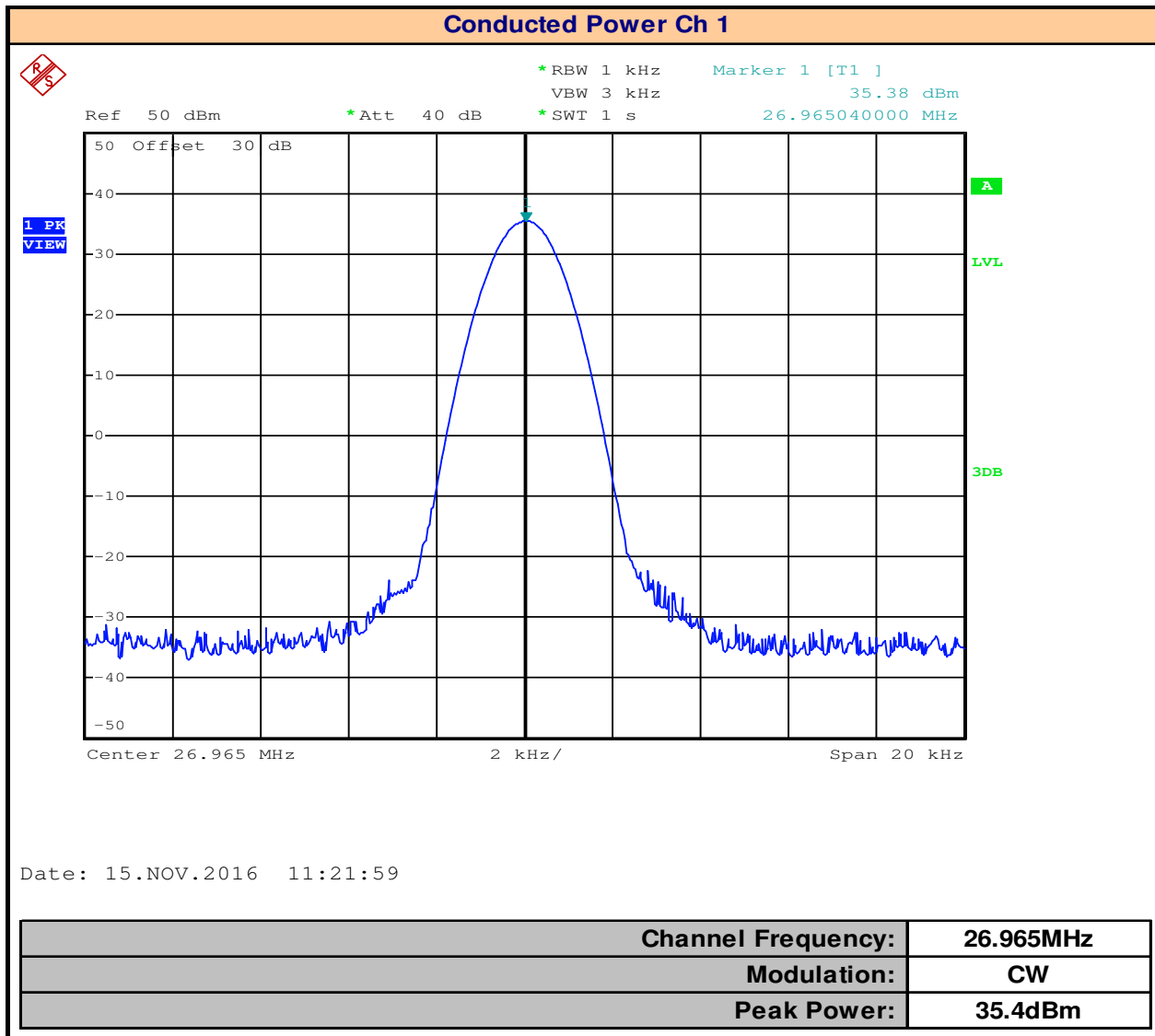
Limits	
47 CFR §65.639	No CB transmitter, under any condition of modulation, shall exceed: (1) 4 W Carrier power when transmitting emission type A1D or A3E;

Environmental Conditions (Typical)	
<b>Temperature</b>	25°C
<b>Humidity</b>	<60%
<b>Barometric Pressure</b>	101 +/- 3kPa

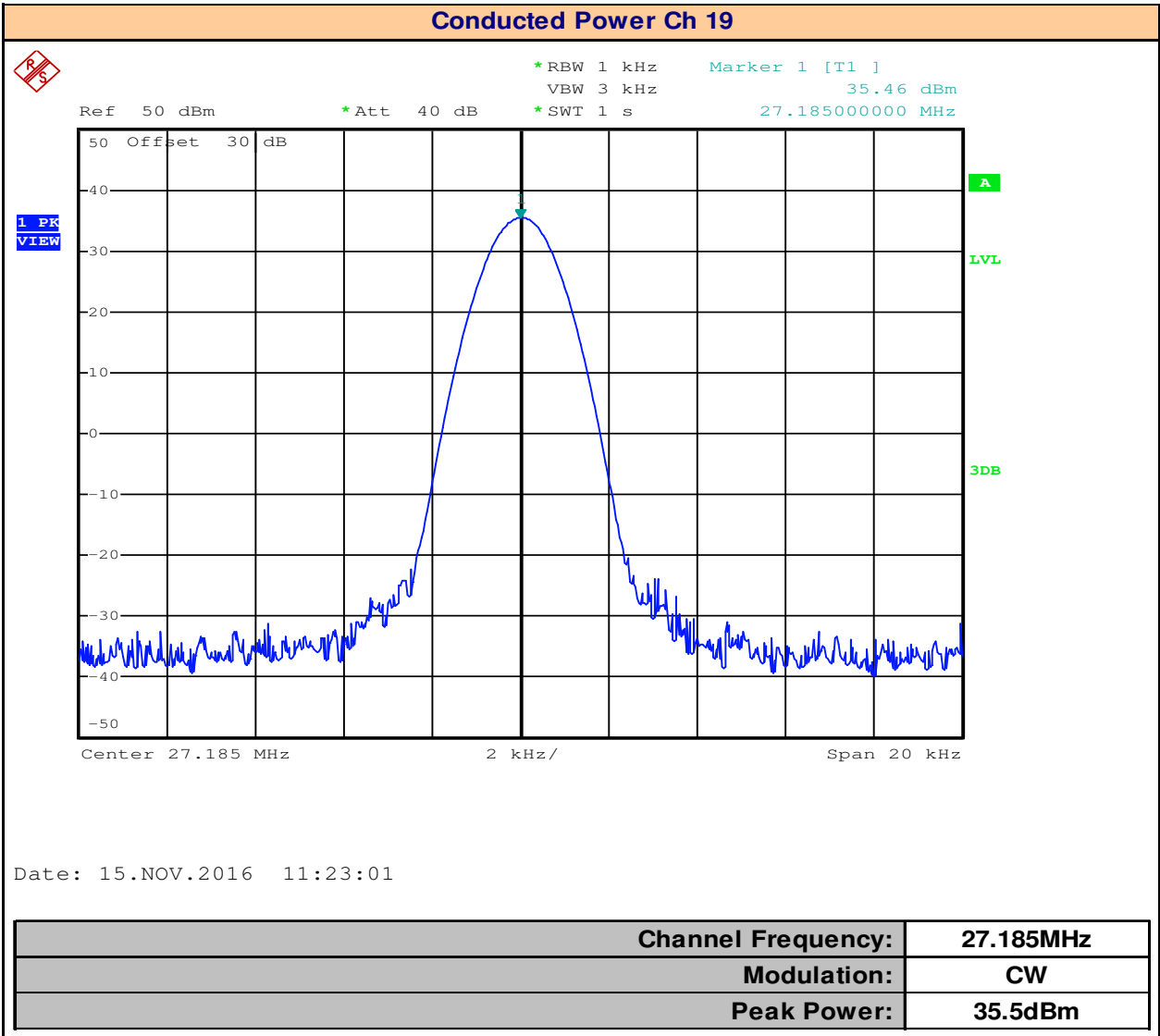
Equipment List			
Asset Number	Manufacturer	Model Number	Description
00241	R&S	FSU40	Spectrum Analyzer



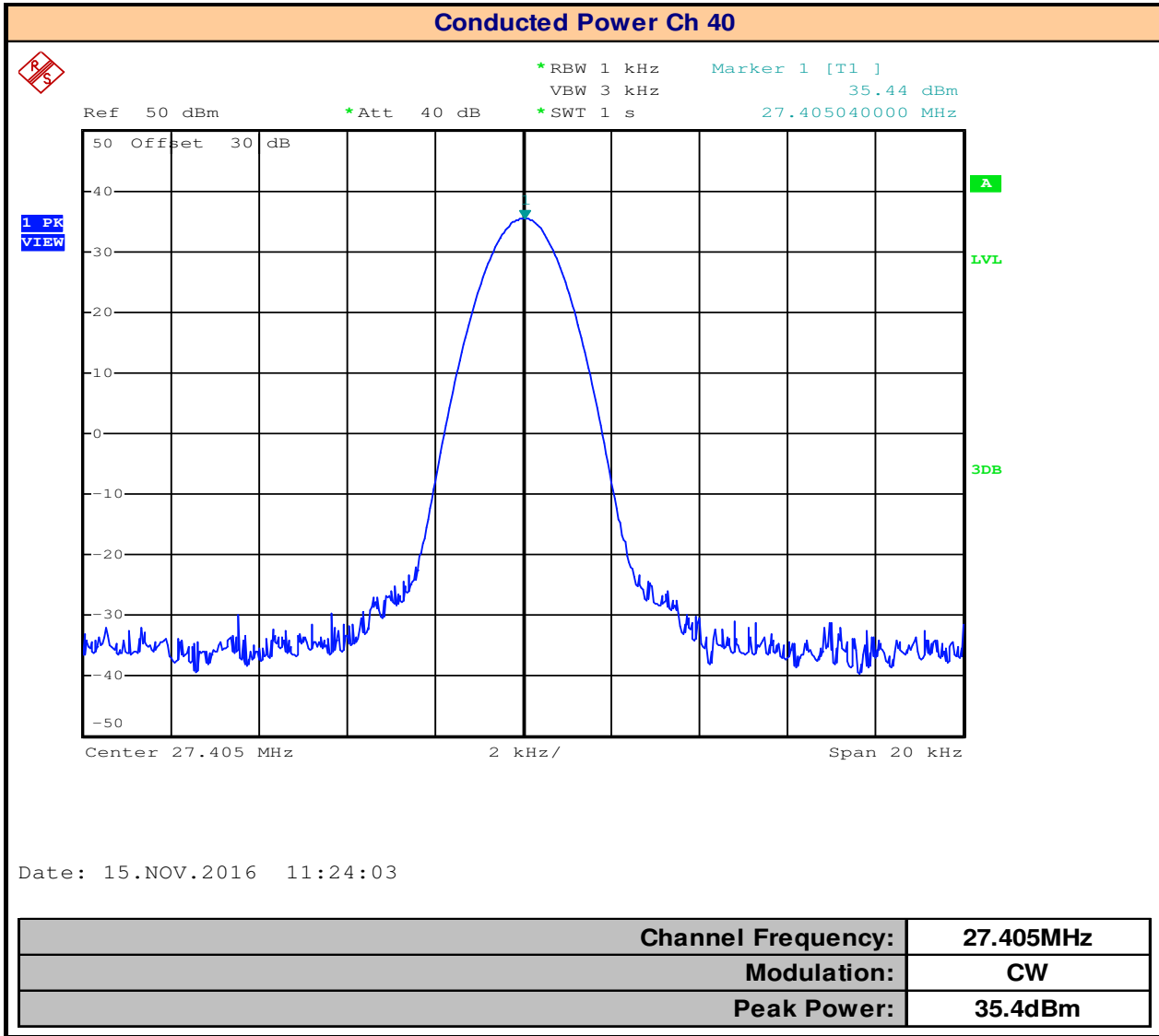
### 8.2 Conducted Power Measurement Plots







Date: 15.NOV.2016 11:23:01



### 8.3 Conducted Power Measurement Summary

Conducted Power Measurement	
<b>Method of Measurement:</b> The RF power is measured with a 50 ohm resistive watt-meter connected at the EUT's RF output connector. Nomiminal DC power of 13.8VDC is applied.	
<b>Measured Output Power (Ch 1):</b>	3.47W (35.4dBm)
<b>Measured Output Power (Ch 19):</b>	3.55W (35.5dBm)
<b>Measured Output Power (Ch 40):</b>	3.47W (35.4dBm)
<b>FCC CFR 47 §2.1033( c )(8): Power to Transmitter:</b>	$I_{Rx} = 0.320A, I_{Tx} = 1.06A$
	$I_{xmitter} = 0.74A$
	$(13.8VDC)(0.74) = 10.2W$
<b>Manufacturer's Rated Output Power:</b>	4.0W
<b>FCC/IC Limit:</b>	4.0W
<b>Result:</b>	<b>Complies</b>

## 9.0 MODULATION CHARACTERISTICS

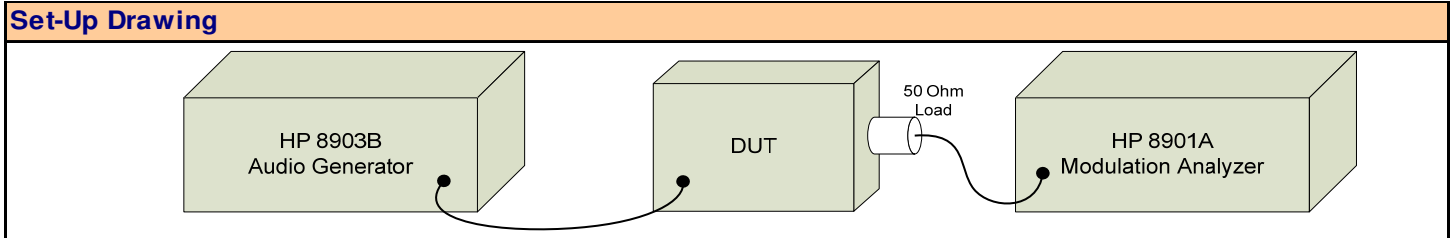
### 9.1 Test Equipment and Setup

Test Conditions	
<b>Normative Reference</b>	FCC 47 CFR §2.1047, Part 95D, 95.637, RSS-236, 5.3.2

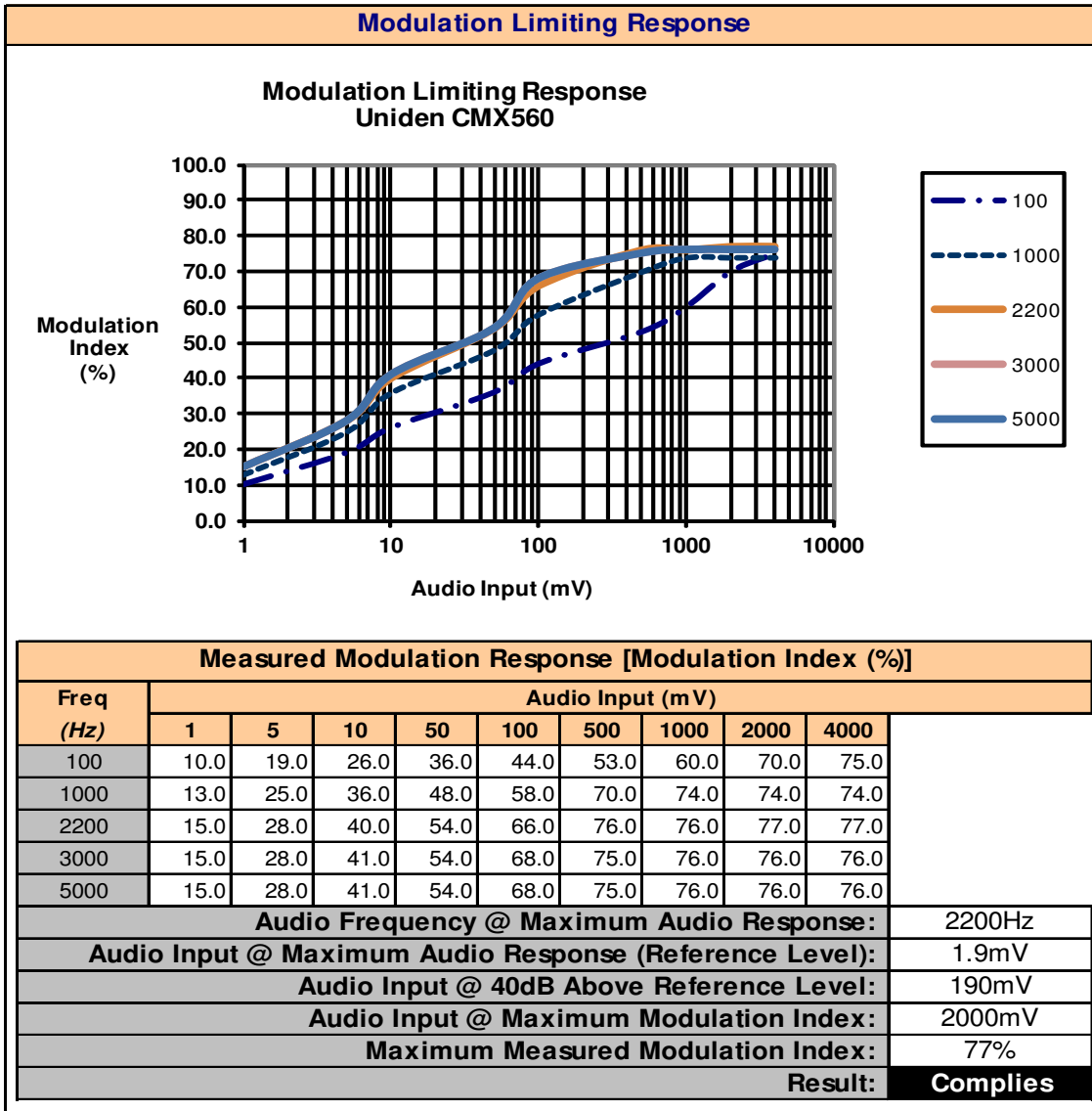
Limits	
FCC §2.1047	a) Voice modulated communication equipment. A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be submitted.

Environmental Conditions (Typical)	
<b>Temperature</b>	25°C
<b>Humidity</b>	<60%
<b>Barometric Pressure</b>	101 +/- 3kPa

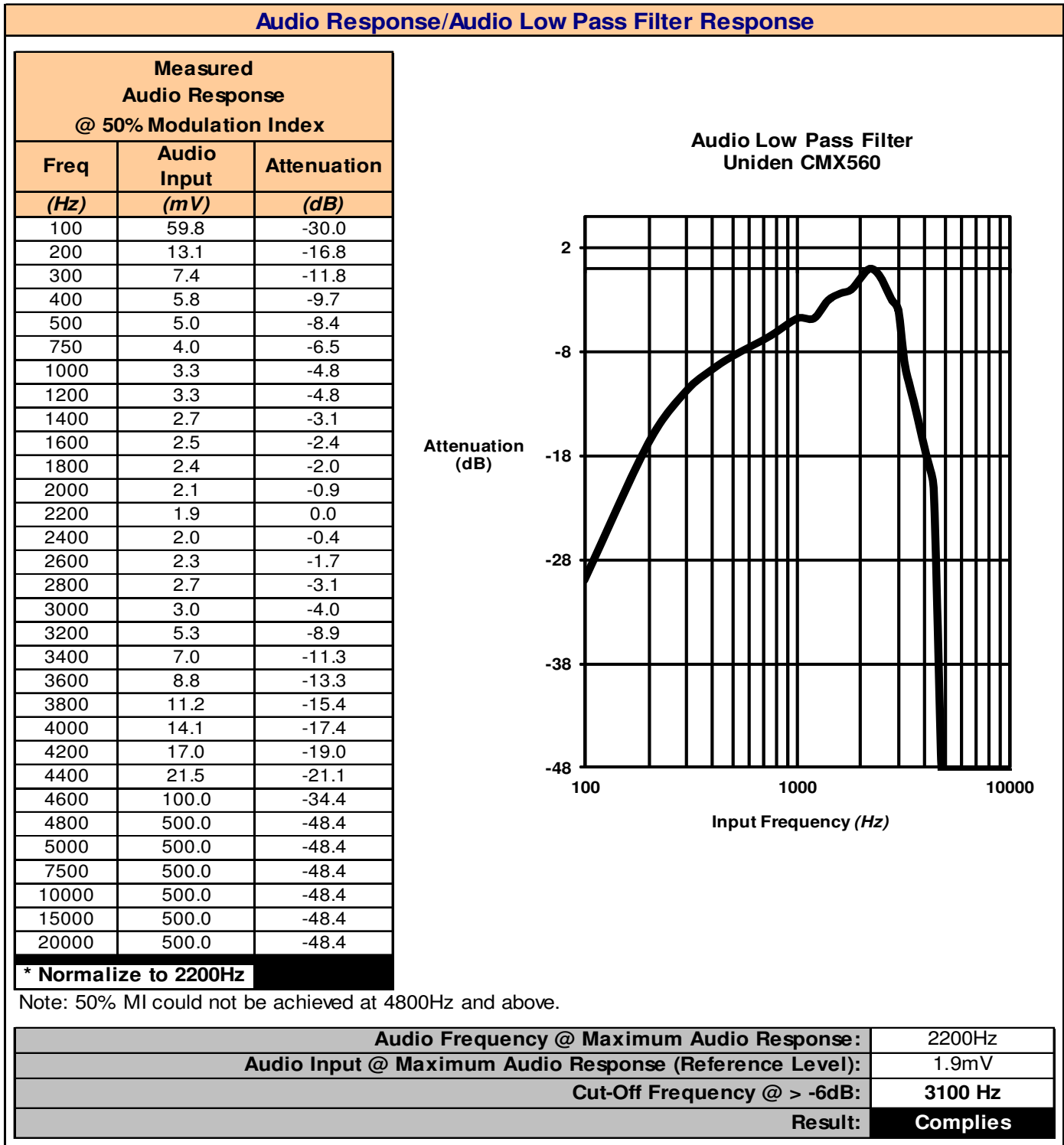
Equipment List			
Asset Number	Manufacturer	Model Number	Description
00223	HP	8901A	Modulation Analyzer
00224	HP	8903B	Audio Generator



9.2 Modulation Limiting Response



9.3 Audio and Low Pass Filter Response



## 10.0 OCCUPIED BANDWIDTH AND EMISSION MASK

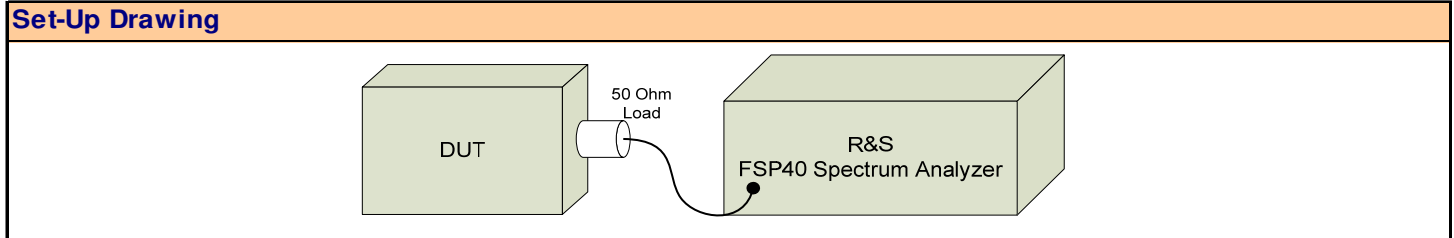
### 10.1 Test Equipment and Setup

Test Conditions	
<b>Normative Reference</b>	FCC 47 CFR §2.1049, §95.633, RSS-210 A6

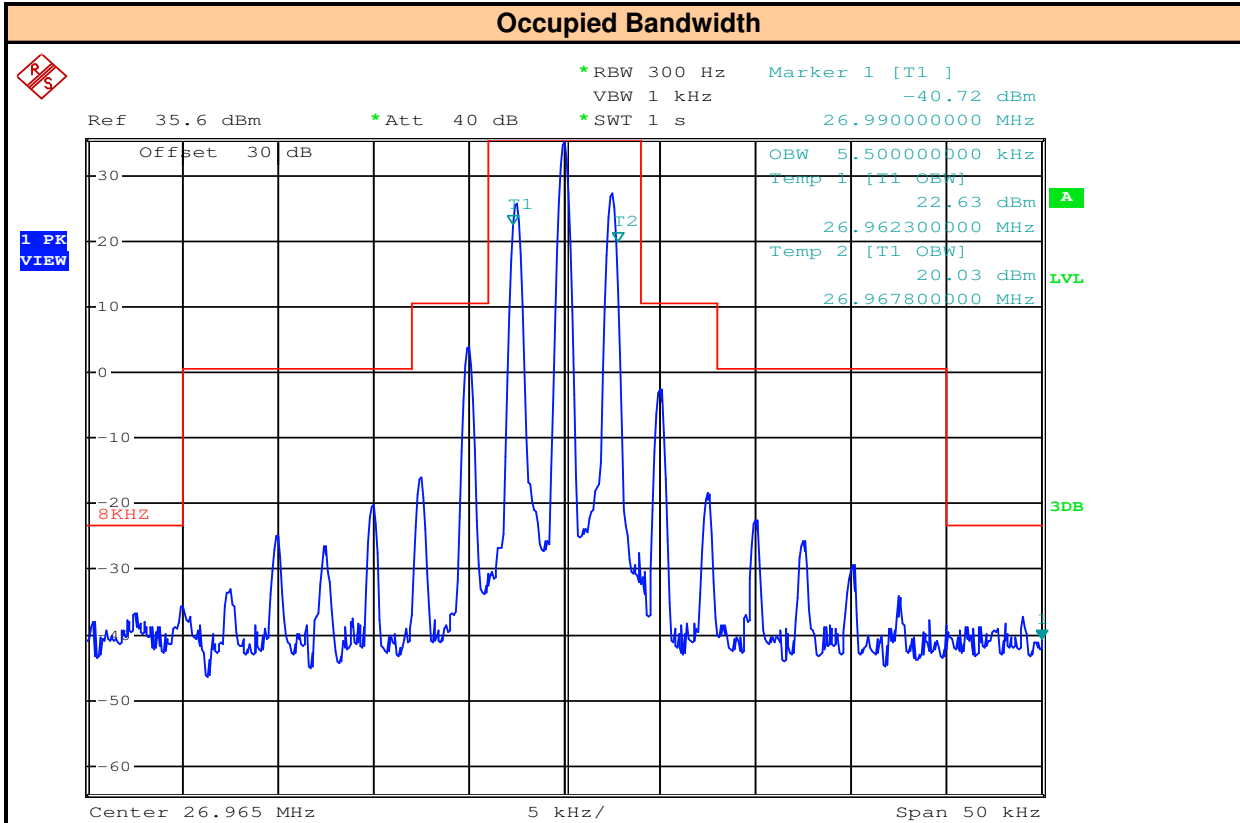
Limits	
47 CFR §2.1049	The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured...

Environmental Conditions (Typical)	
<b>Temperature</b>	25°C
<b>Humidity</b>	<60%
<b>Barometric Pressure</b>	101 +/- 3kPa

Equipment List			
Asset Number	Manufacturer	Model Number	Description
00241	R&S	FSU40	Spectrum Analyzer



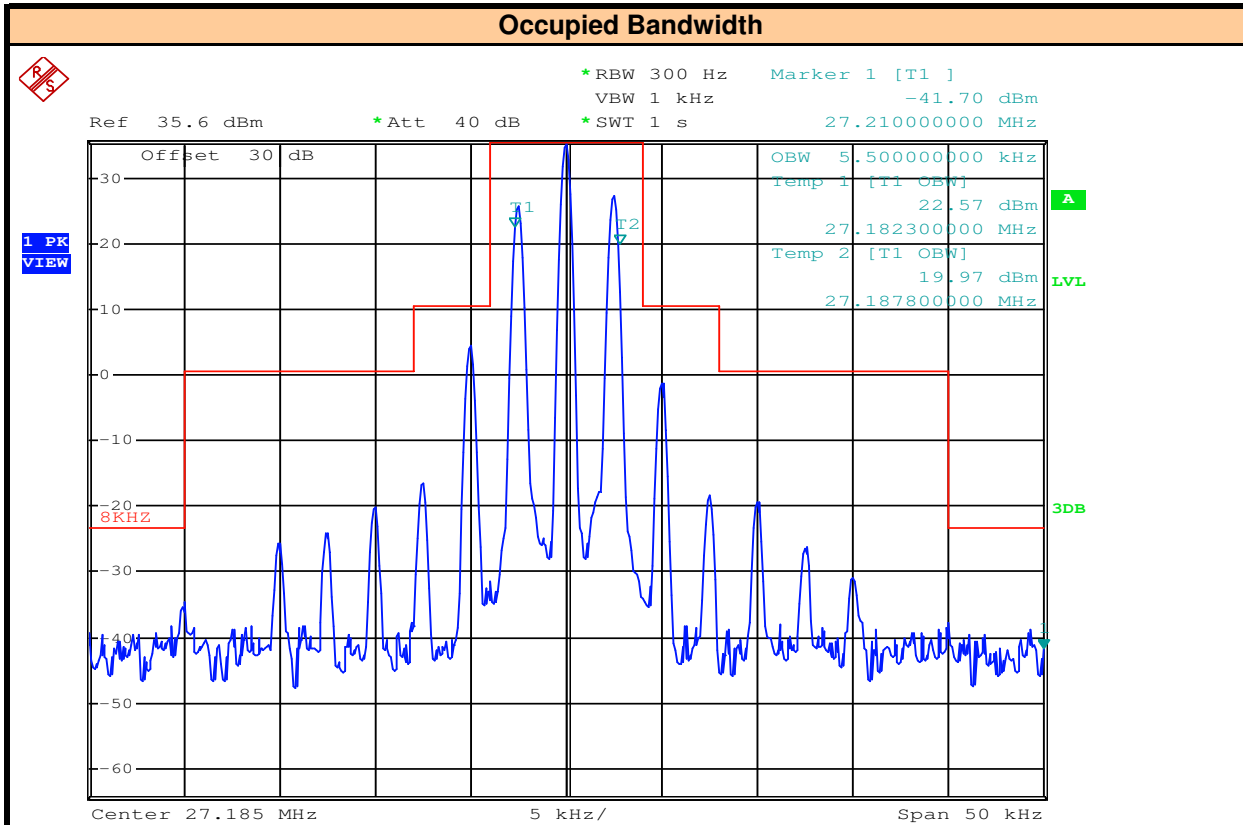
10.2 OBW Measurement Plots



Date: 15.NOV.2016 13:13:52

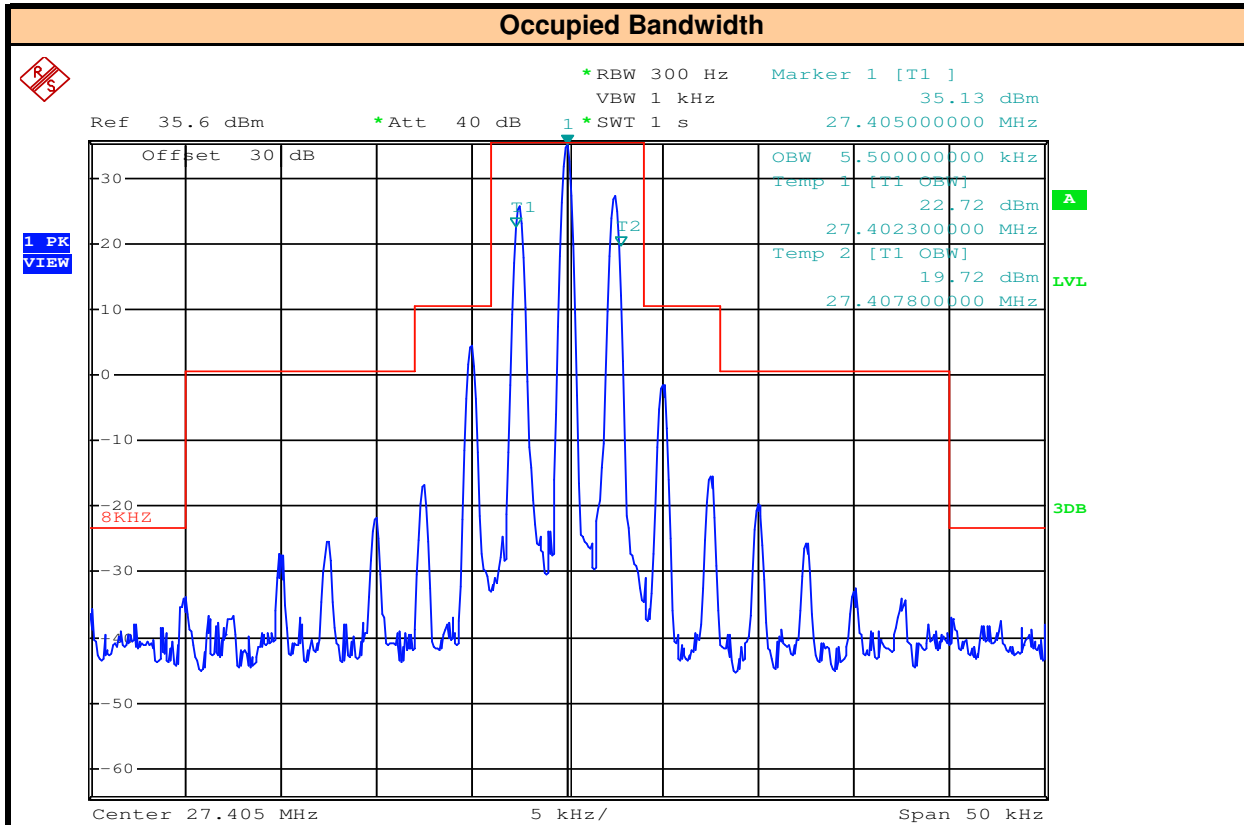
<b>Channel Frequency (Ch 1):</b>	26.965MHz
<b>Modulation:</b>	CW
<b>Audio Input Frequency:</b>	2.5kHz
<b>Audio Input Level: &gt;16dB Level @ 50% Modulation:</b>	15mV
<b>Emission Designator:</b>	A3E
<b>Authorized Bandwidth (§95.633):</b>	8kHz
<b>Measured Occupied Bandwidth (99%):</b>	5.5kHz
<b>Result:</b>	<b>Complies</b>





Date: 15.NOV.2016 13:13:01

<b>Channel Frequency (Ch 19):</b>	27.185MHz
<b>Modulation:</b>	CW
<b>Audio Input Frequency:</b>	2.5kHz
<b>Audio Input Level: &gt;16dB Level @ 50% Modulation:</b>	15mV
<b>Emission Designator:</b>	A3E
<b>Authorized Bandwidth (§95.633):</b>	8kHz
<b>Measured Occupied Bandwidth (99%):</b>	<b>5.5kHz</b>
<b>Result:</b>	<b>Complies</b>



Date: 15.NOV.2016 13:10:52

<b>Channel Frequency (Ch 40):</b>	27.405MHz
<b>Modulation:</b>	CW
<b>Audio Input Frequency:</b>	2.5kHz
<b>Audio Input Level: &gt;16dB Level @ 50% Modulation:</b>	15mV
<b>Emission Designator:</b>	A3E
<b>Authorized Bandwidth (§95.633):</b>	8kHz
<b>Measured Occupied Bandwidth (99%):</b>	<b>5.5kHz</b>
<b>Result:</b>	<b>Complies</b>

## 11.0 CONDUCTED SPURIOUS EMISSIONS

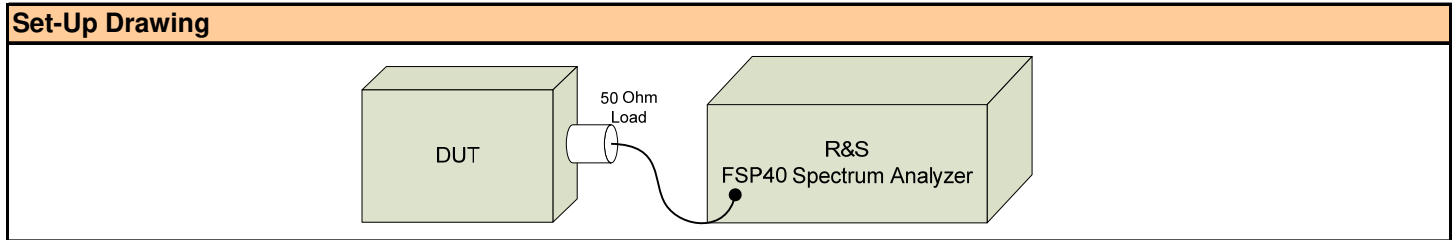
### 11.1 Test Equipment and Setup

Test Conditions	
<b>Normative Reference</b>	FCC 47 CFR §95.635, RSS-236

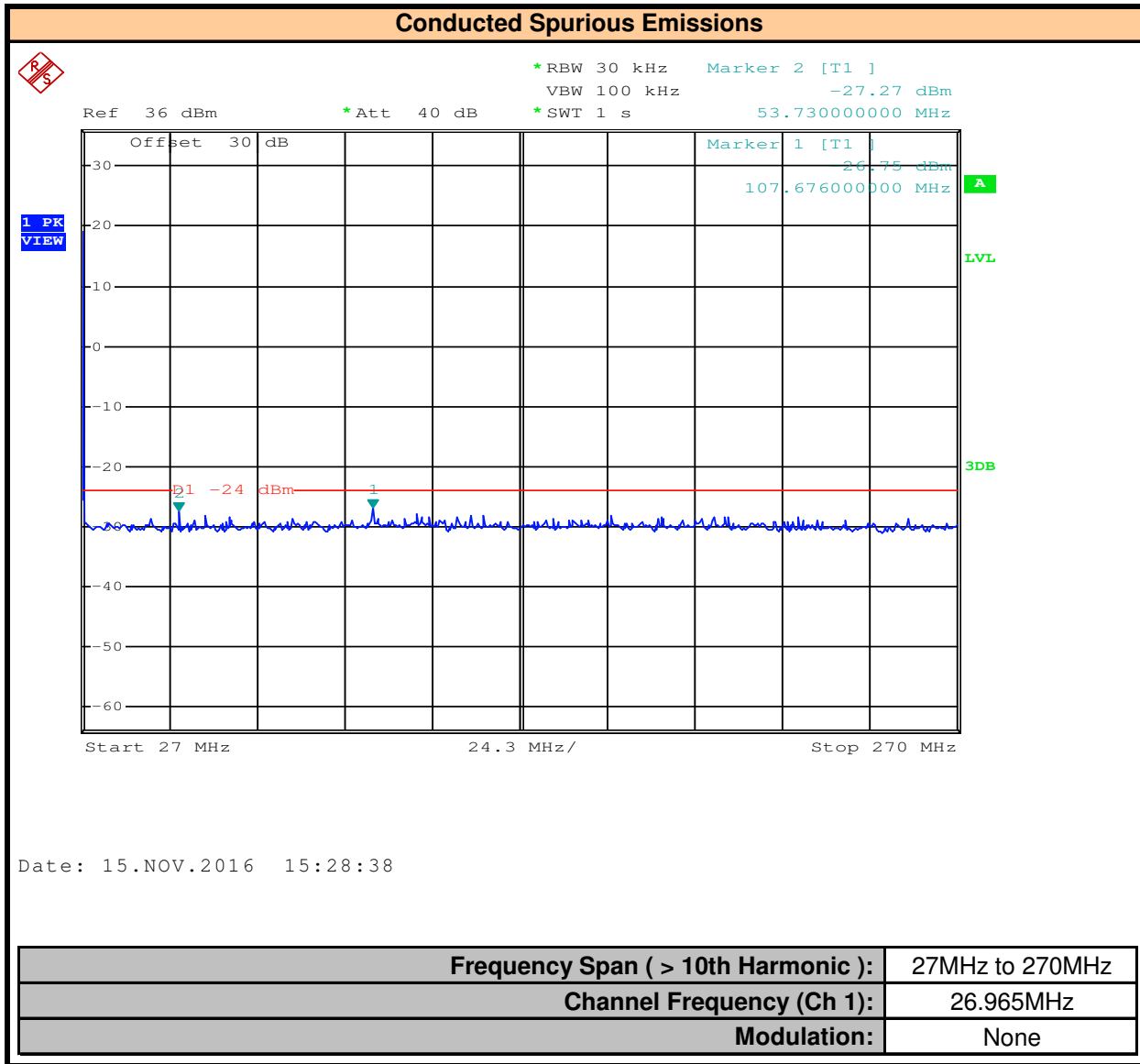
Limits	
§95.635(1), (3), (8), (9)	(1) At least 25 dB (decibels) on any frequency removed from the center of the authorized bandwidth by more than 50% up to and including 100% of the authorized bandwidth. (2) At least 35 dB on any frequency removed from the center of the authorized bandwidth by more than 50% up to and including 150% of the authorized bandwidth. (8) At least $53 + 10 \log_{10}(T)$ dB on any frequency removed from the center of the authorized bandwidth by more than 250%. (9) At least 60 dB on any frequency twice or greater than twice the fundamental frequency.

Environmental Conditions (Typical)	
<b>Temperature</b>	25°C
<b>Humidity</b>	<60%
<b>Barometric Pressure</b>	101 +/- 3kPa

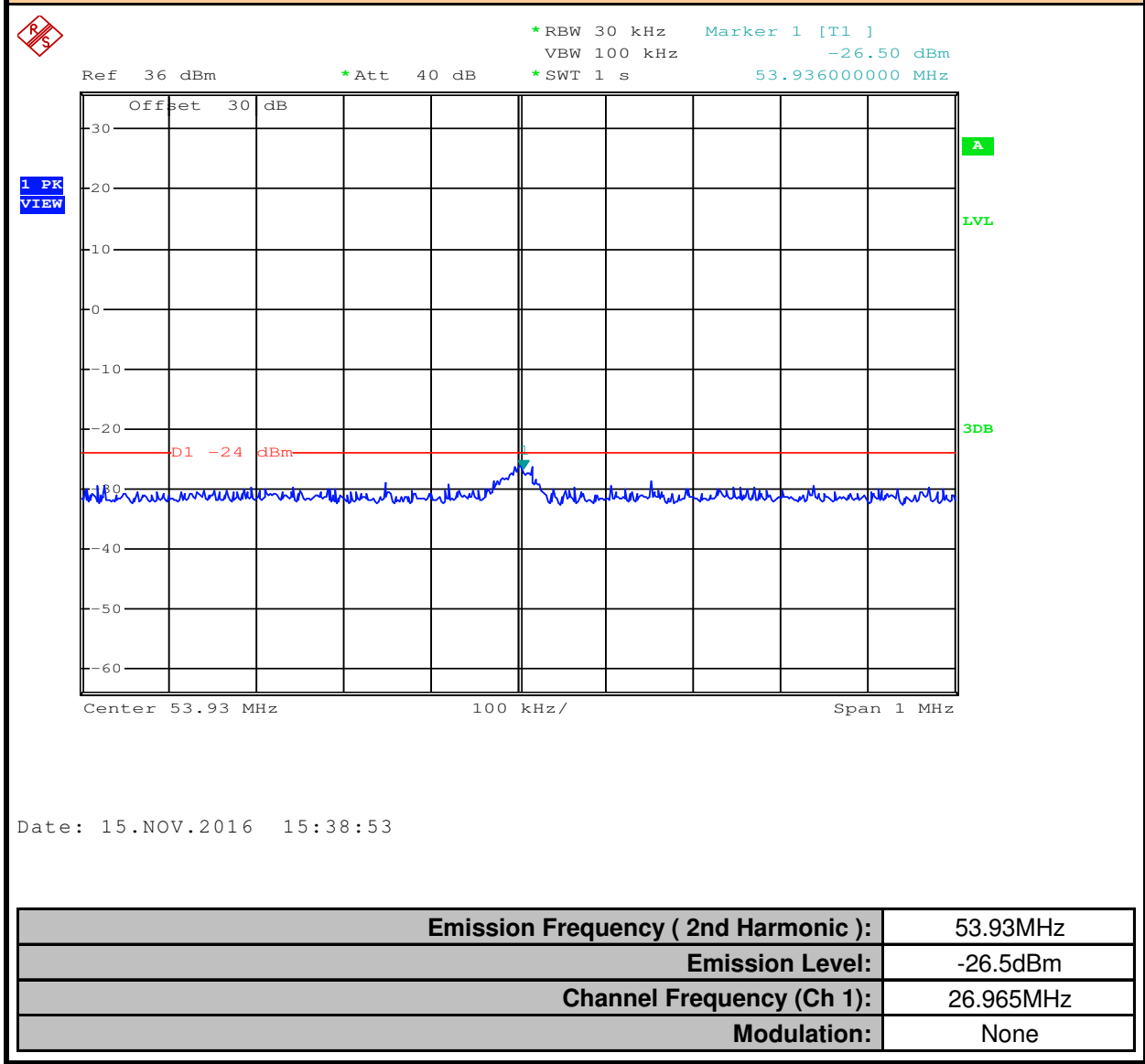
Equipment List			
Asset Number	Manufacturer	Model Number	Description
00241	R&S	FSU40	Spectrum Analyzer

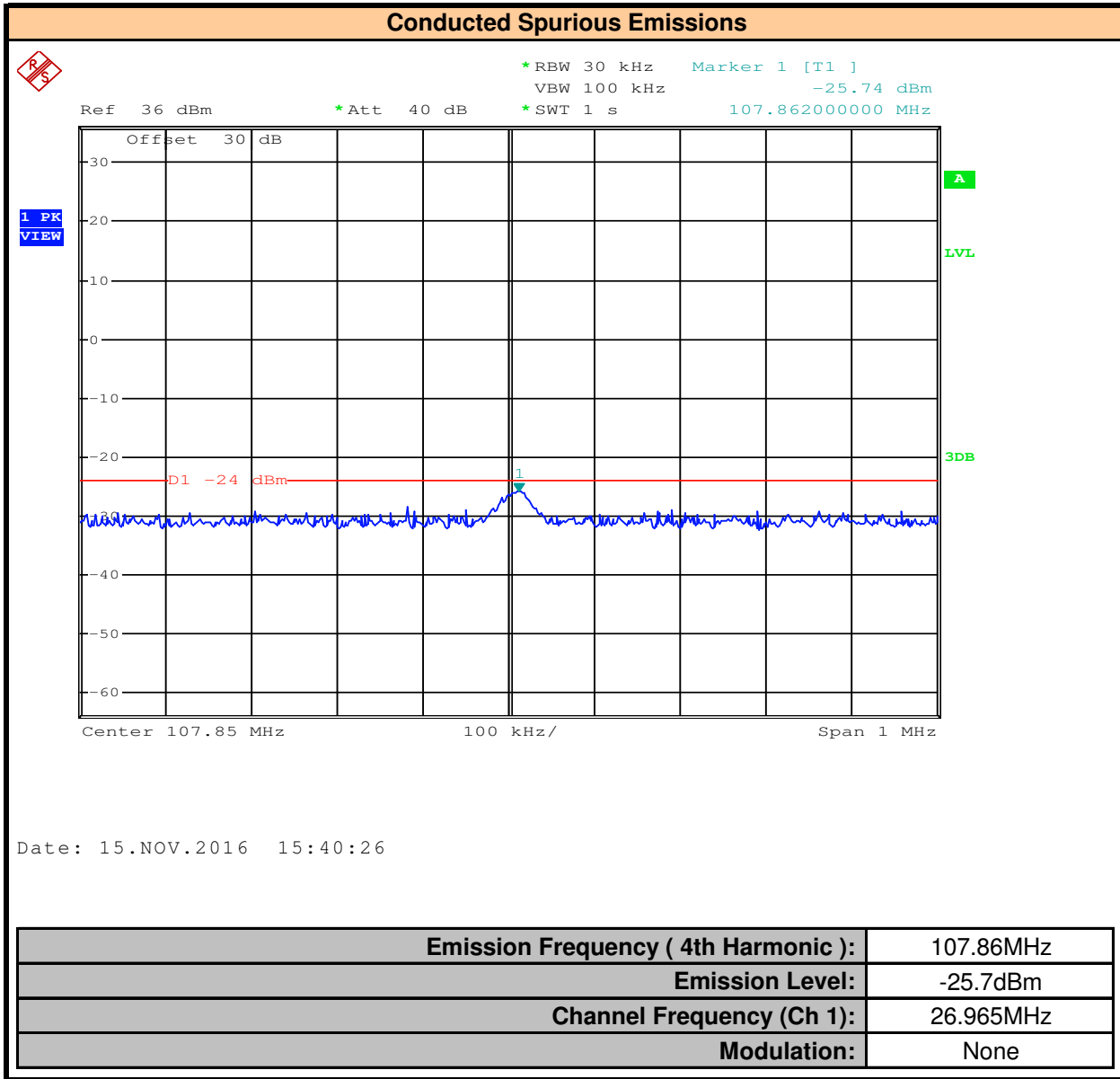


11.2 Conducted Emissions Measurement Plots



### Conducted Spurious Emissions



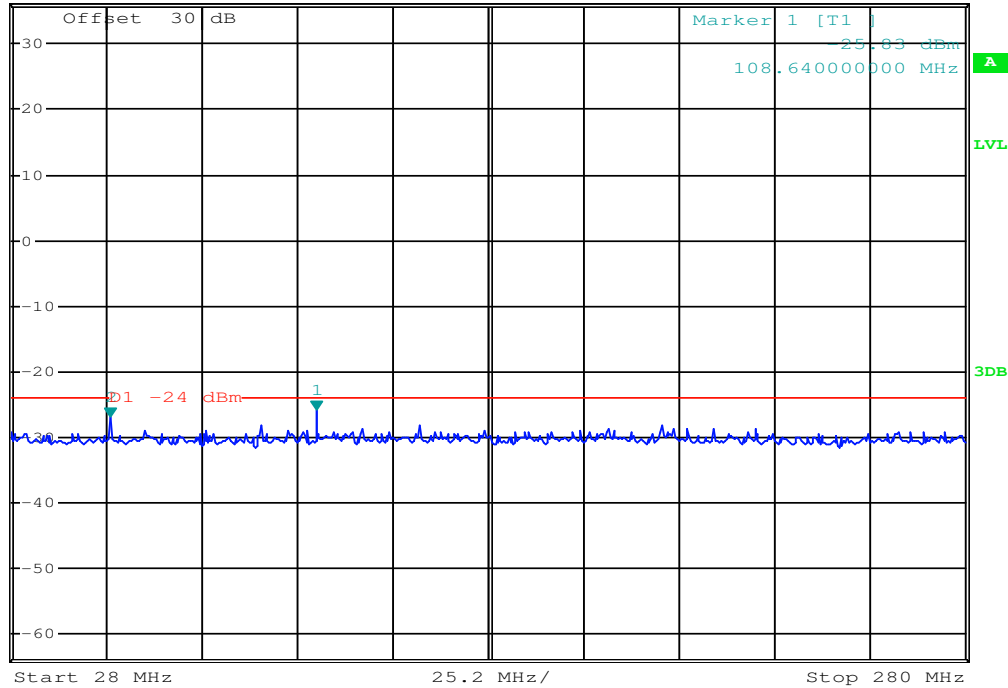


### Conducted Spurious Emissions



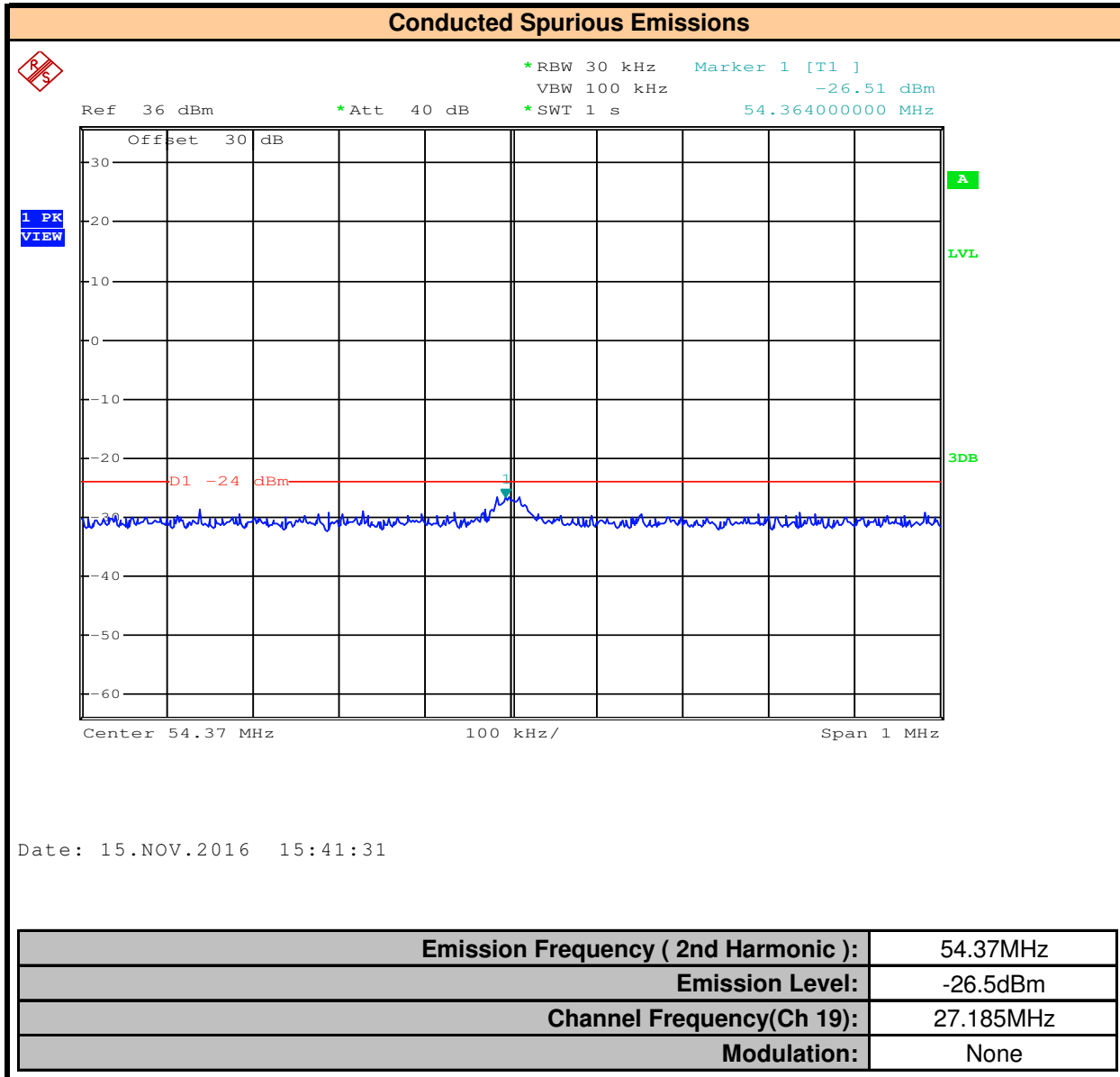
Ref 36 dBm      \*Att 40 dB      \*RBW 30 kHz      Marker 2 [T1 ]      -26.75 dBm  
 \*VBW 100 kHz      \*SWT 1 s      54.208000000 MHz

1 PK  
VIEW



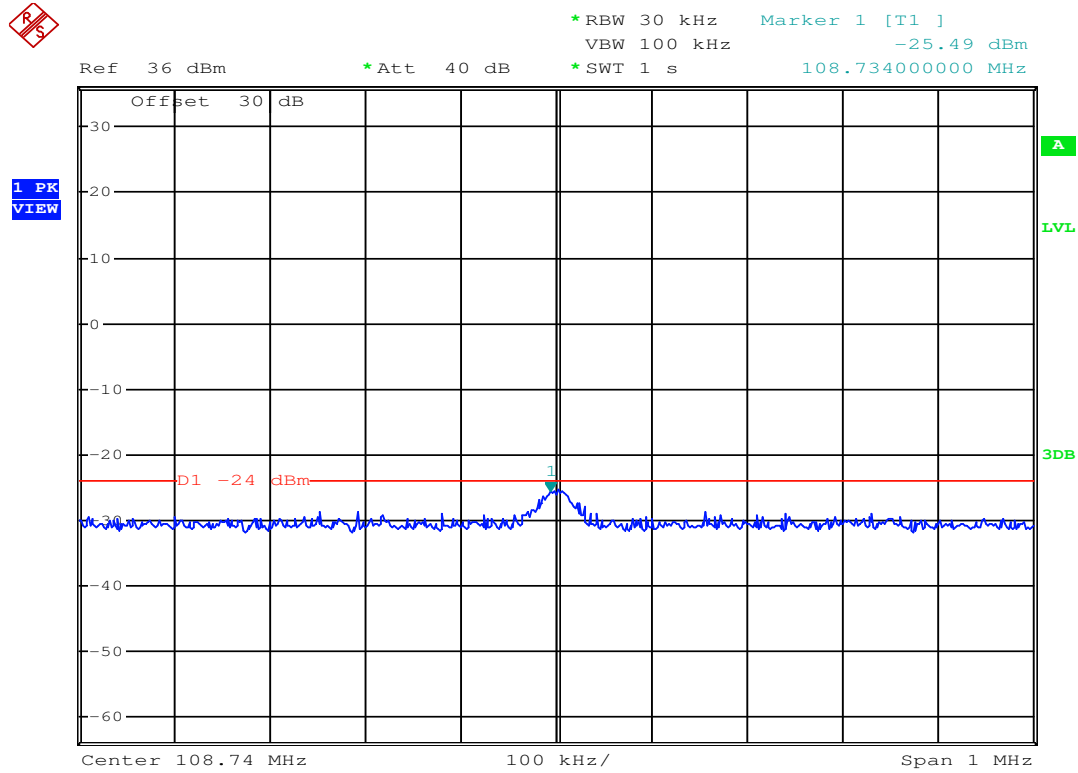
Date: 15.NOV.2016 15:30:58

<b>Frequency Span (&gt; 10th Harmonic):</b>	28MHz to 280MHz
<b>Channel Frequency (Ch 19):</b>	27.185MHz
<b>Modulation:</b>	None



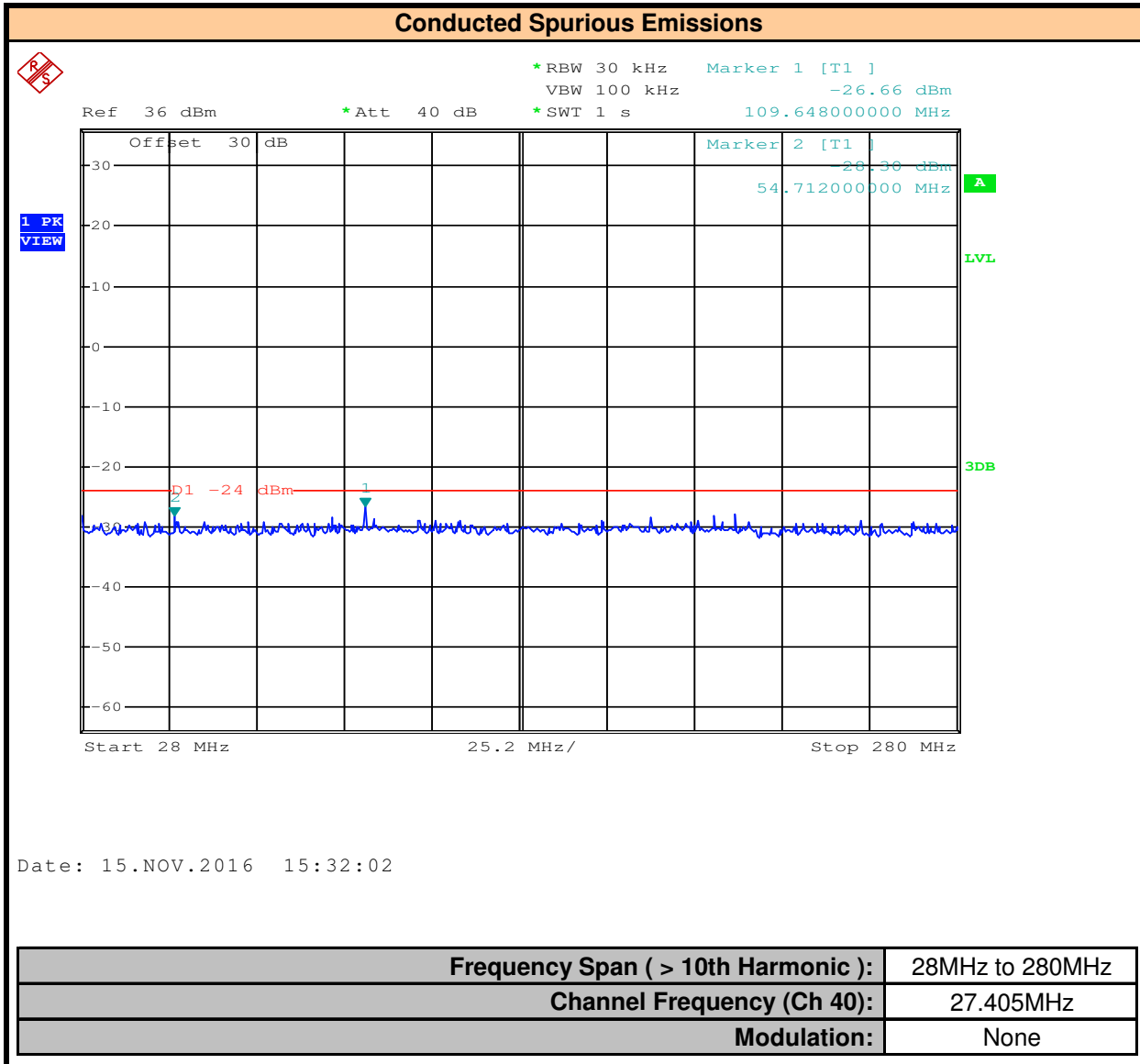


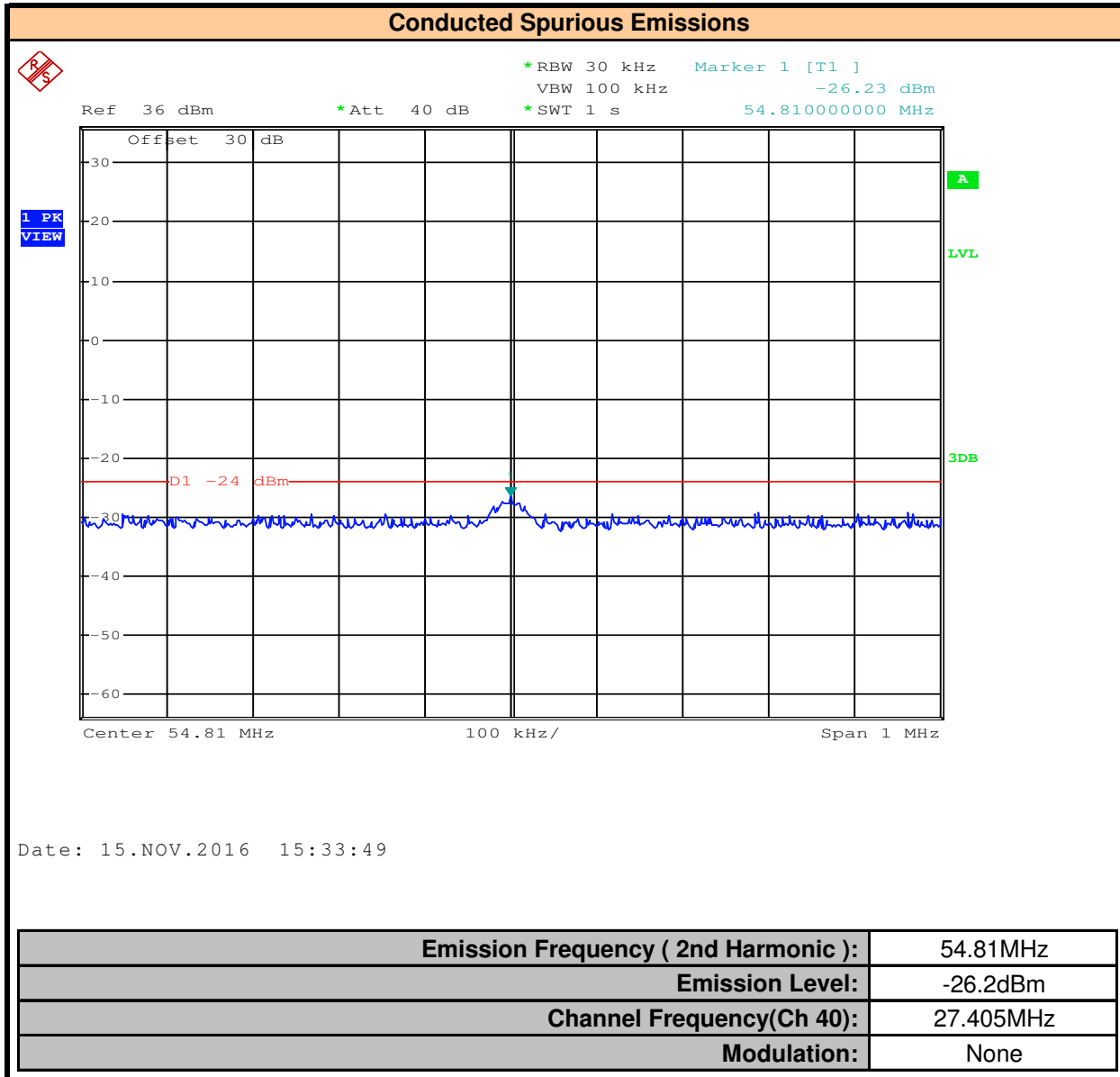
### Conducted Spurious Emissions



Date: 15.NOV.2016 15:43:01

<b>Emission Frequency ( 4th Harmonic ):</b>	108.74MHz
<b>Emission Level:</b>	-25.5dBm
<b>Channel Frequency(Ch 19):</b>	27.185MHz
<b>Modulation:</b>	None



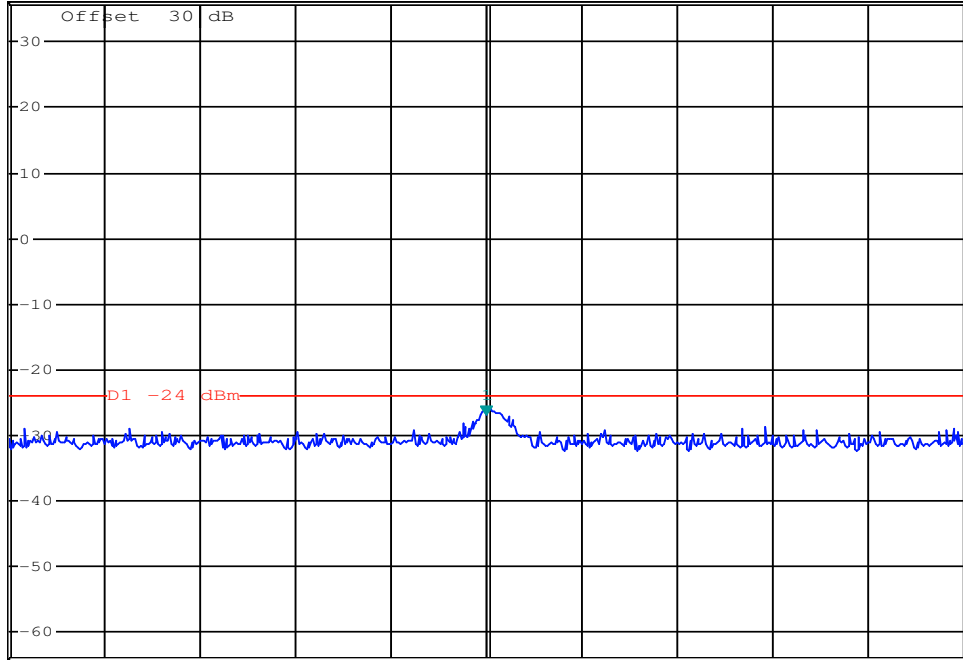


### Conducted Spurious Emissions



\*RBW 30 kHz    Marker 1 [T1 ]  
 VBW 100 kHz    -26.80 dBm  
 \*Att 40 dB    \*SWT 1 s    109.61400000 MHz

Ref 36 dBm



Center 109.614 MHz    100 kHz/    Span 1 MHz

Date: 15.NOV.2016 15:36:01

<b>Emission Frequency ( 4th Harmonic ):</b>	109.62MHz
<b>Emission Level:</b>	-26.8dBm
<b>Channel Frequency(Ch 40):</b>	27.405MHz
<b>Modulation:</b>	None

11.3 Conducted Emissions Measurement Summary

Conducted Spurious Emissions						
Frequency (MHz)	DUT Modulation	Fundamental Power [P] (dBm)	Out of Band Emission [P <sub>E</sub> ] (dBm)	Attenuation [dB]	Limit (dB)	Margin (dB)
53.93	None	35.4	-26.5	61.9	60.0	1.90
107.86		35.4	-25.7	61.1	60.0	1.10
54.73		35.5	-26.5	62.0	60.0	2.00
108.74		35.5	-25.5	61.0	60.0	1.00
54.81		35.4	-26.2	61.6	60.0	1.60
109.62		35.4	-26.8	62.2	60.0	2.20
Attenuation = P - P <sub>E</sub>						
Margin = Limit - Attenuation						
				<b>Result:</b>	<b>Complies</b>	
<b>Notes:</b>						
All Spurious Emissions were evaluated to the 10th harmonic (270.4MHz). No other emissions were observed.						
Data for fundamental presented using a peak detector compared to average limits						

## 12.0 RADIATED TX SPURIOUS EMISSIONS

### 12.1 Test Equipment

Test Conditions	
<b>Normative Reference</b>	FCC 47 CFR §95.635, RSS-236
<b>Procedure Reference</b>	ANSI/TIA/EIA-603-D, ANSI C63.4

Limits	
§95.635(1), (3), (8), (9)	<p>(1) At least 25 dB (decibels) on any frequency removed from the center of the authorized bandwidth by more than 50% up to and including 100% of the authorized bandwidth.</p> <p>(2) At least 35 dB on any frequency removed from the center of the authorized bandwidth by more than 50% up to and including 150% of the authorized bandwidth.</p> <p>(8) At least 53 + 10 log<sub>10</sub> (T) dB on any frequency removed from the center of the authorized bandwidth by more than 250%.</p> <p>(9) At least 60 dB on any frequency twice or greater than twice the fundamental frequency.</p>

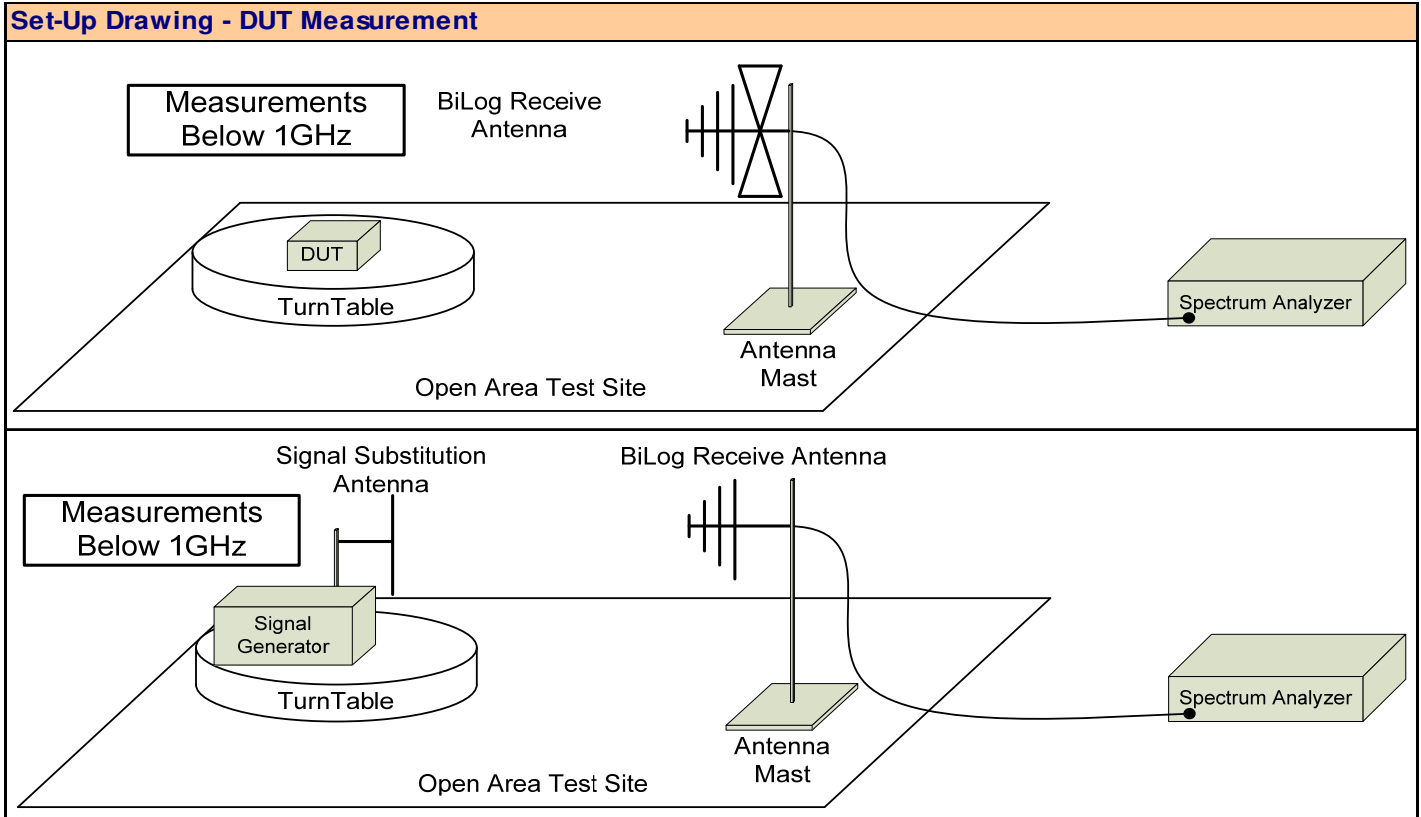
Environmental Conditions (Typical)	
<b>Temperature</b>	25°C
<b>Humidity</b>	<60%
<b>Barometric Pressure</b>	101 +/- 3kPa

Equipment List			
Asset Number	Manufacturer	Model Number	Description
00051	HP	8566B	Spectrum Analyzer
00049	HP	85650A	Quasi-peak Adapter
00047	HP	85685A	RF Preselector
00072	EMCO	2075	Mini-mast
00073	EMCO	2080	Turn Table
00071	EMCO	2090	Multi-Device Controller
00265	Miteq	JS32-00104000-58-5P	Microwave L/N Amplifier
00241	R&S	FSU40	Spectrum Analyzer
00050	Chase	CBL-6111A	Bilog Antenna
00275	Coaxis	LMR400	25m Cable
00276	Coaxis	LMR400	4m Cable
00278	TILE	34G3	TILE Test Software
00034	ETS	3115	Double Ridged Guide Horn

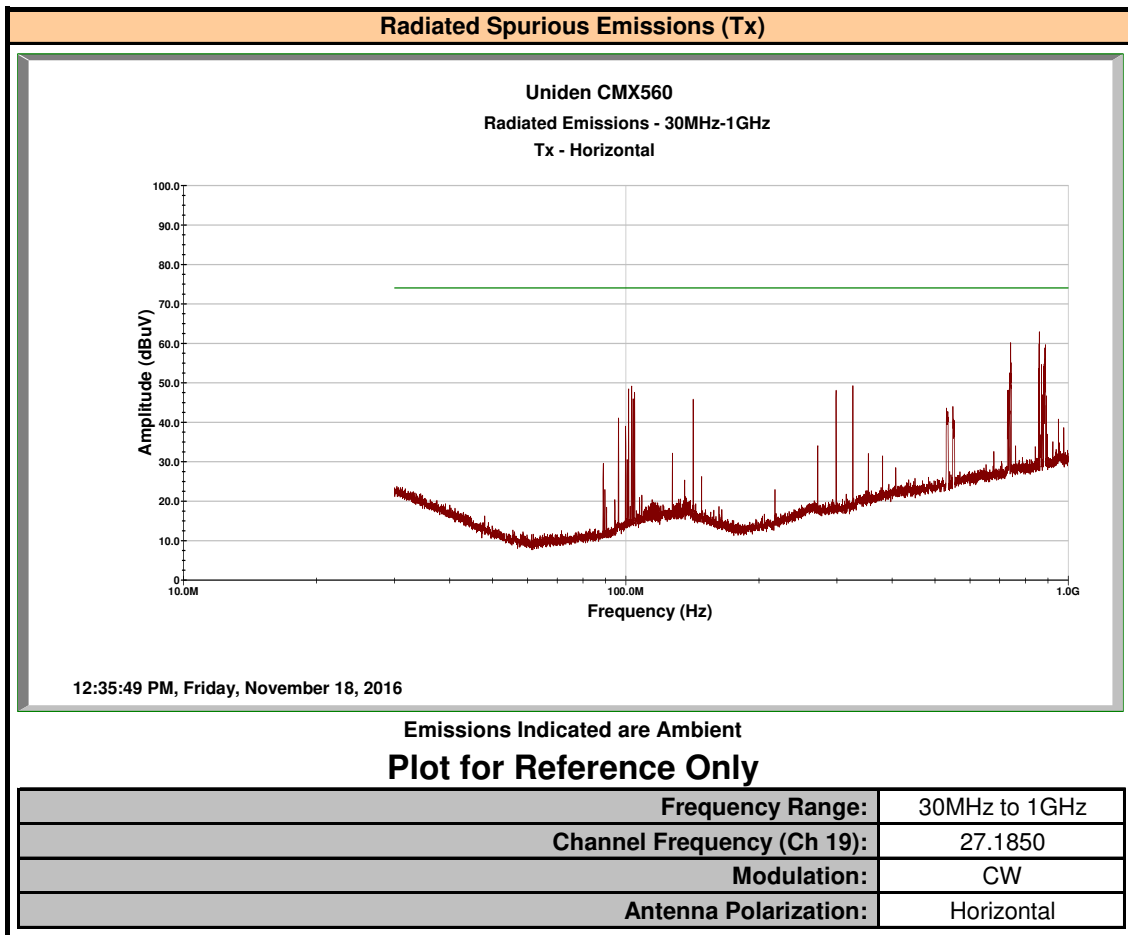
CNR: Calibration Not Required

COU: Calibrate On Use

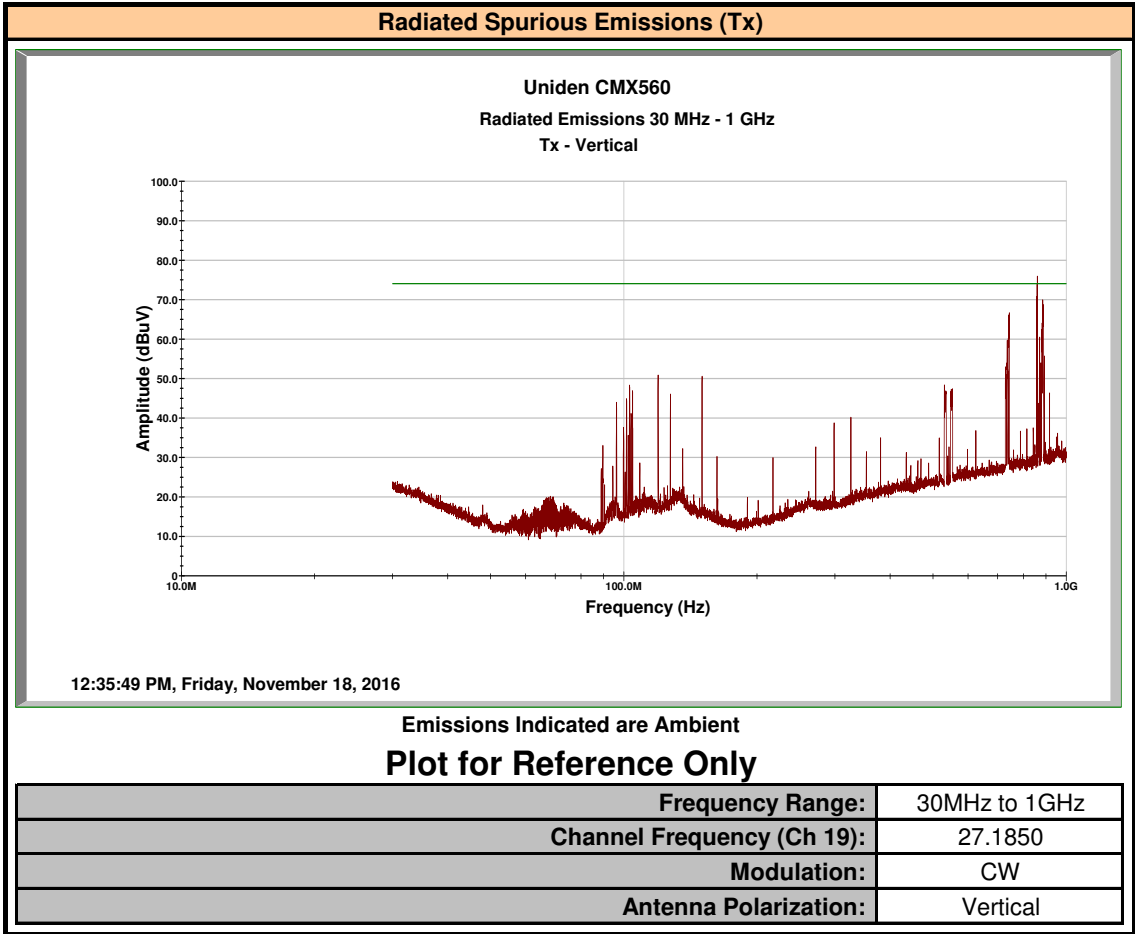
12.2 Test Setup

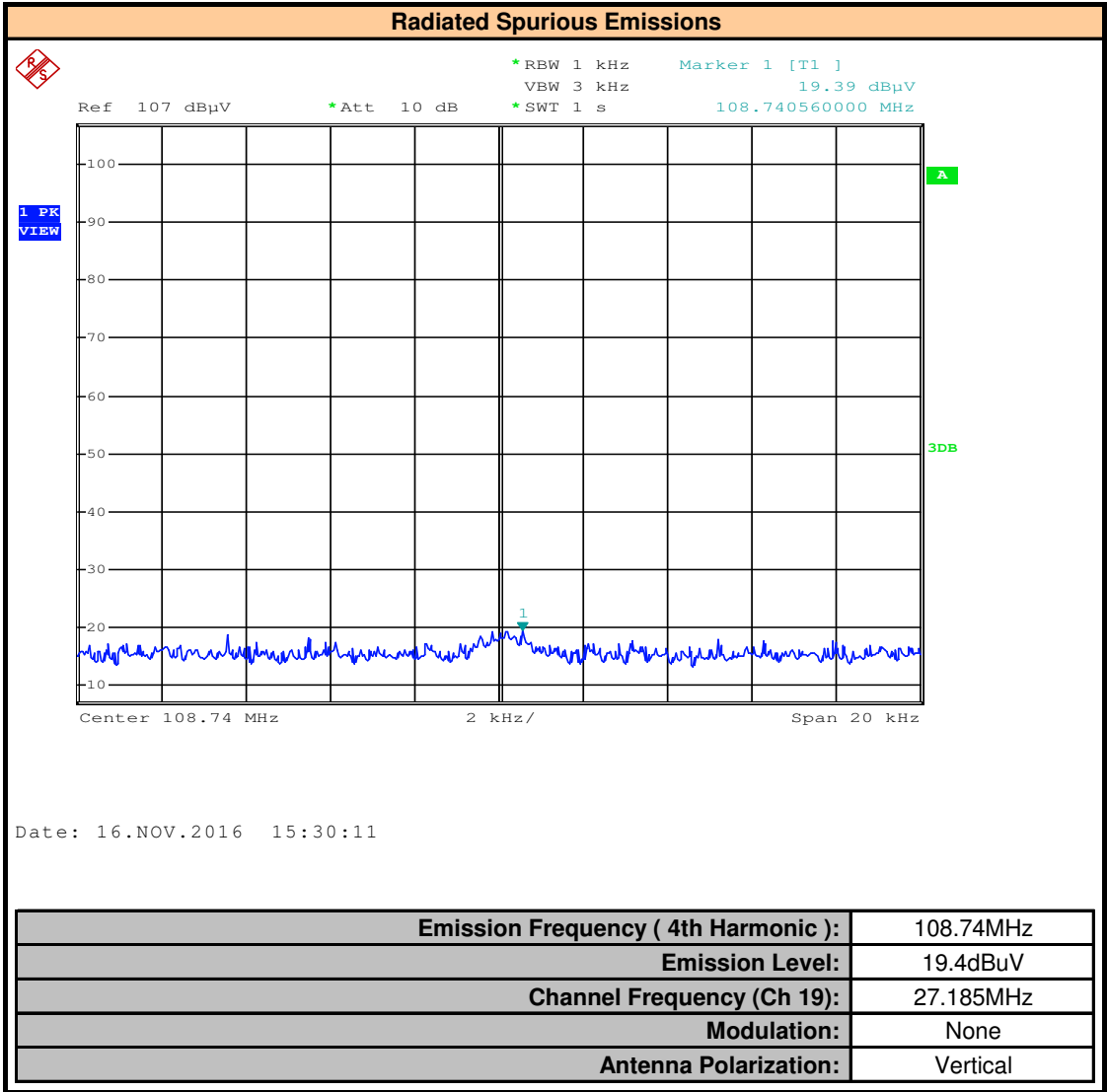


12.3 Radiated Emissions Measurement Plots









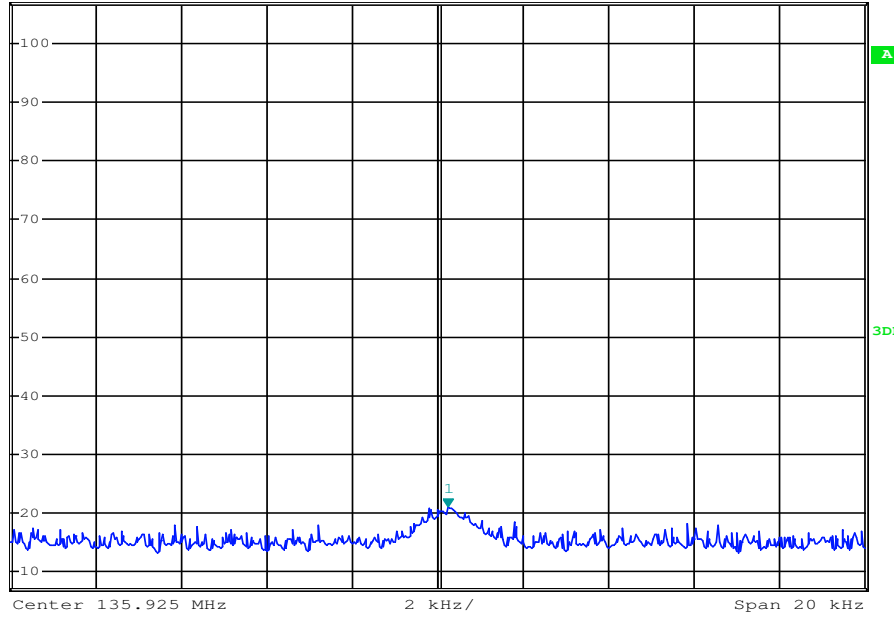
### Radiated Spurious Emissions



\*RBW 1 kHz    Marker 1 [T1 ]  
 VBW 3 kHz    21.01 dBμV  
 \*Att 10 dB    \*SWT 1 s    135.925240000 MHz

Ref 107 dBμV

1 PK  
VIEW



Date: 16.NOV.2016 15:27:47

<b>Emission Frequency ( 5th Harmonic ):</b>	135.925
<b>Emission Level:</b>	21.0dBuV
<b>Channel Frequency (Ch 19):</b>	27.185MHz
<b>Modulation:</b>	None
<b>Antenna Polarization:</b>	Vertical

## 12.4 Radiated Emissions Measurement Summary

Radiated Spurious Emissions												
Margin [M] = Limit - C <sub>E</sub> Corrected Emission [C <sub>E</sub> ] = P <sub>SG</sub> - C <sub>S</sub> where P <sub>SG</sub> is the Output Power of the Signal Generator Corrected Substitution Level [C <sub>S</sub> ] = L <sub>C</sub> + G <sub>C</sub> Corrected Dipole Gain [G <sub>C</sub> ] = G <sub>I</sub> - G <sub>D</sub> where G <sub>I</sub> is the Ideal Dipole Gain (2.15) and G <sub>D</sub> is the actual Dipole Gain Corrected Emission to dBuV at 3m [C <sub>e</sub> ] = [C <sub>E</sub> ] + [C <sub>d</sub> ] (For Reference Only)												
Frequency	Antenna Polarization	Measured Emission Level @ 3m	Substitution Level [P <sub>SG</sub> ]	Cable Loss [L <sub>C</sub> ]	Dipole Antenna Gain [G <sub>D</sub> ]	Corrected Dipole Gain [G <sub>C</sub> ]	Substitution Level Correction [C <sub>S</sub> ]	Correction to dBm dBuV/m @3m [C <sub>d</sub> ]	Corrected Emission Level @3m [C <sub>e</sub> ]	Corrected Emission Level [C <sub>E</sub> ]	Limit	Margin [M]
(MHz)		(dBuV)	(dBm)	(dB)	(dBi)		(dB)	(dBm)	(dBuV)	(dBm)	(dBm)	(dB)
108.74	V	19.4	-74.0	0.16	1.9	0.3	0.4	97.38	22.97	-74.4	-24.0	50.4
135.93	V	21.0	-71.5	0.16	1.6	0.6	0.7	97.38	25.17	-72.2	-24.0	48.2
											<b>Complies</b>	
<b>Notes</b>												
No Emissions within 20dB of limit detected Worst-case emissions shown The device was searched to the 10th harmonic of the fundamental (270 MHz) Data presented may use a peak detector and compared to quasi-peak limit All detected emissions have been reported												

### 13.0 RADIATED RX SPURIOUS EMISSIONS

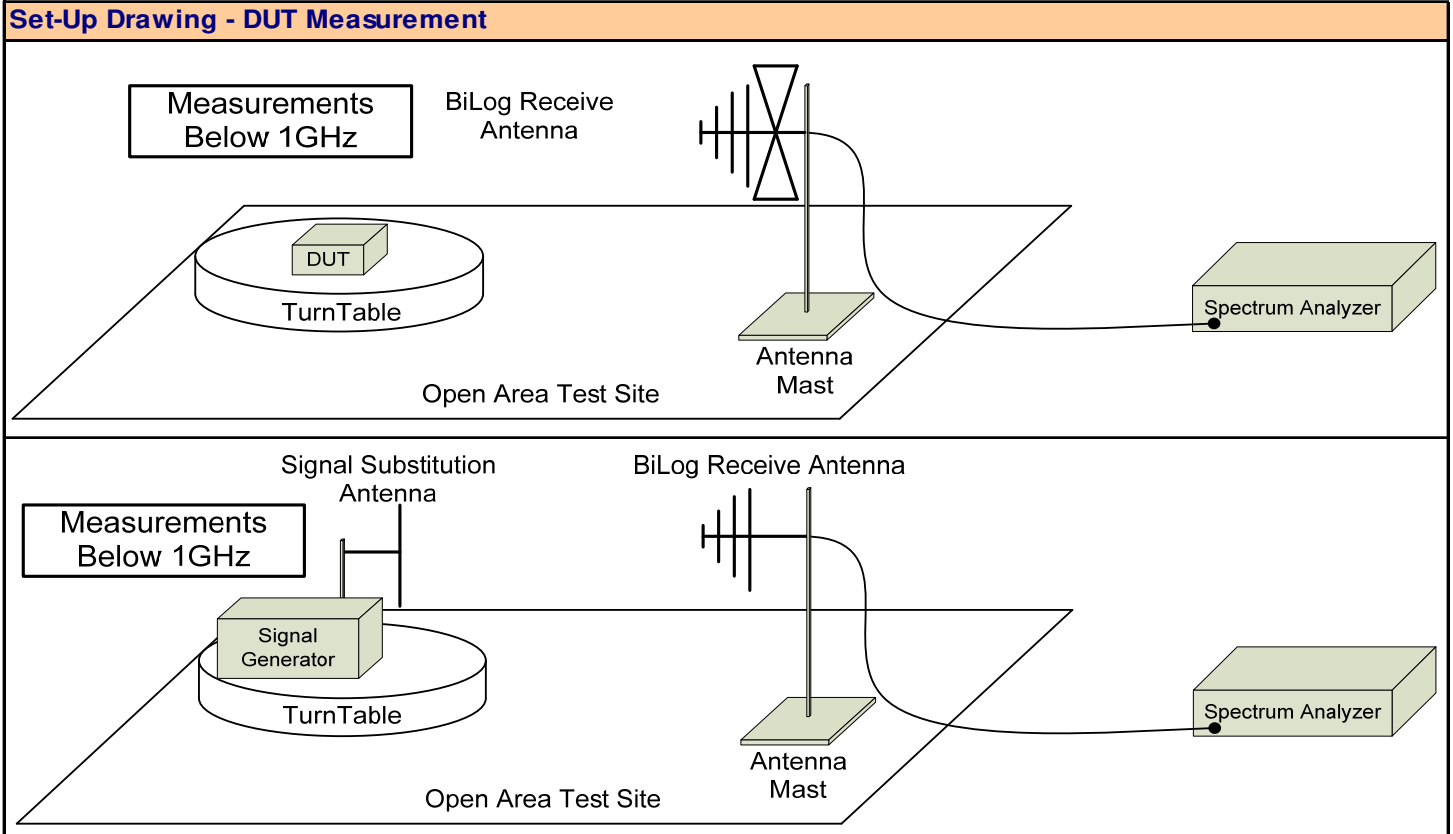
#### 13.1 Test Equipment

Test Conditions			
<b>Normative Reference</b>	FCC 47 CFR §15.109		
<b>Procedure Reference</b>	ANSI/TIA/EIA-603-D, ANSI C63.4		
Limits			
FCC §15.109	30-88MHz: 40dBuV/m 88-216MHz: 43.5dBuV/m 216-960MHz: 46dBuV/m > 960MHz: 54dBuV/m		
Environmental Conditions (Typical)			
<b>Temperature</b>	25°C		
<b>Humidity</b>	<60%		
<b>Barometric Pressure</b>	101 +/- 3kPa		
Equipment List			
Asset Number	Manufacturer	Model Number	Description
00051	HP	8566B	Spectrum Analyzer
00049	HP	85650A	Quasi-peak Adapter
00047	HP	85685A	RF Preselector
00072	EMCO	2075	Mini-mast
00073	EMCO	2080	Turn Table
00071	EMCO	2090	Multi-Device Controller
00265	Miteq	JS32-00104000-58-5P	Microwave L/N Amplifier
00241	R&S	FSU40	Spectrum Analyzer
00050	Chase	CBL-6111A	Bilog Antenna
00275	Coaxis	LMR400	25m Cable
00276	Coaxis	LMR400	4m Cable
00278	TILE	34G3	TILE Test Software
00034	ETS	3115	Double Ridged Guide Horn

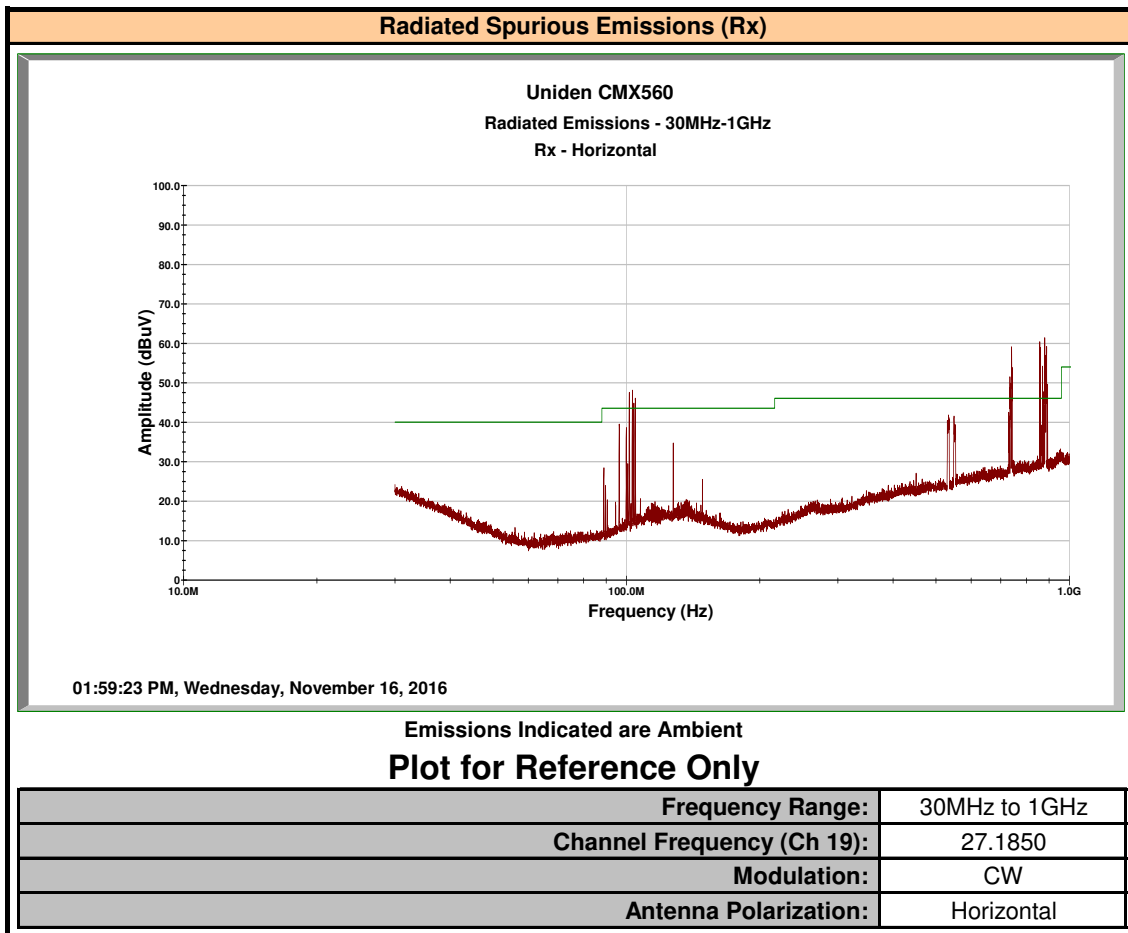
CNR: Calibration Not Required

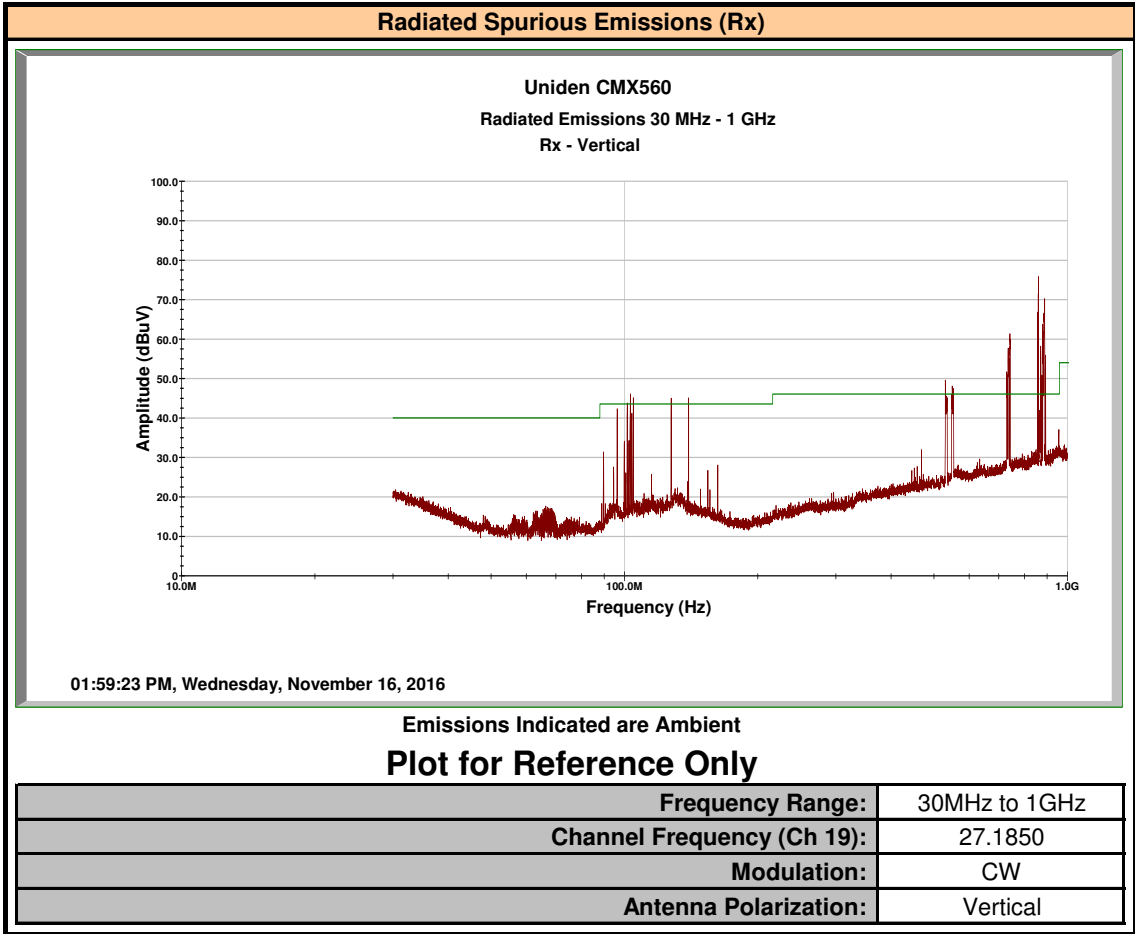
COU: Calibrate On Use

13.2 Test Setup



13.3 Rx Radiated Emissions Measurement Plots







13.4 Rx Radiated Emissions Measurement Summary

Radiated Spurious Emissions (Rx)								
Frequency	Antenna Polarization	Emission Level @ 3m [E <sub>Meas</sub> ]	Antenna Factor [AF]	Cable Loss [L <sub>Cable</sub> ]	Substitution Method Correction [L <sub>Sub</sub> ]	Corrected Emission @ 3m [E <sub>Corr</sub> ]	Limit @ 3m [E <sub>Lim</sub> ]	Margin
(MHz)		(dBuV/m)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
$E_{Corr} = E_{Meas} + AF + L_{Cable} + L_{Sub}$ $Margin = E_{Lim} - E_{Corr}$								
						<b>Result:</b>	<b>Complies</b>	
<b>Notes</b> <b>No Emission were detected.</b> Data presented may use a peak detector and compared to quasi-peak limit All detected emissions have been reported								

## 14.0 FREQUENCY STABILITY

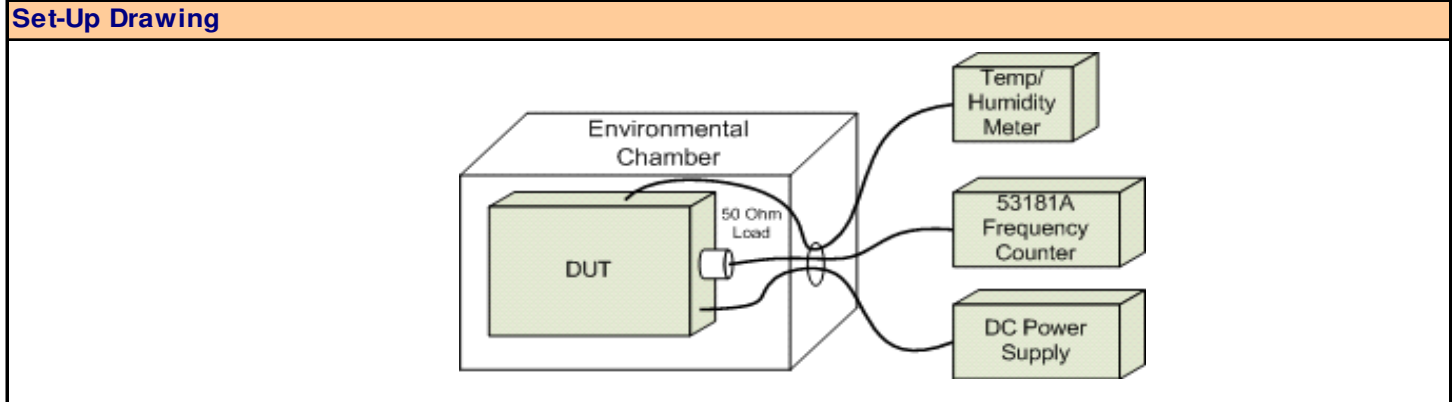
### 14.1 Test Equipment and Setup

Test Conditions	
<b>Normative Reference</b>	FCC 47 CFR §2.1055, §95.625, RSS-Gen

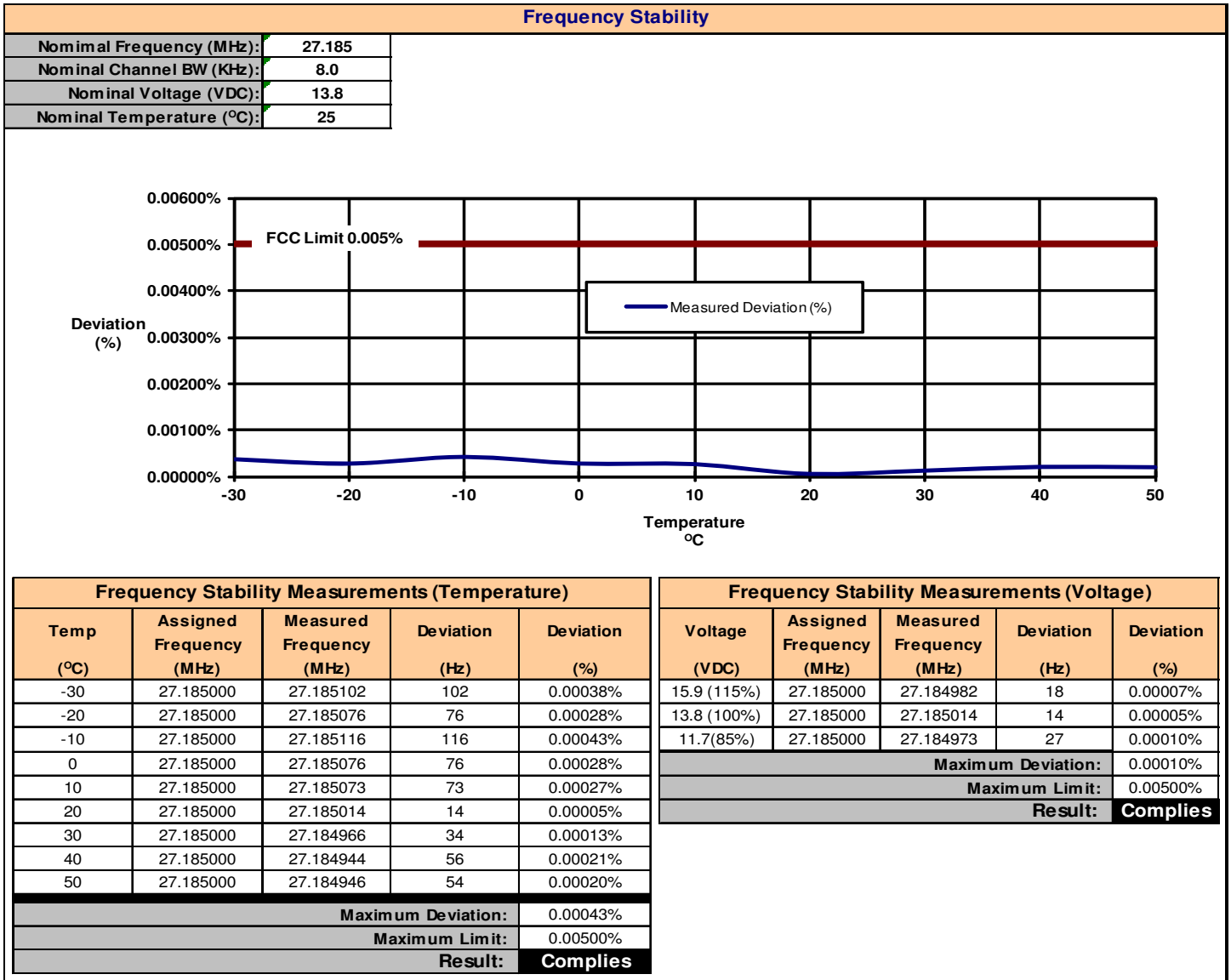
Limits	
FCC §95.625(b)	Each CB transmitter must be maintained within a frequency tolerance of 0.005%.

Test Conditions	
<b>Temperature</b>	-40°C to +50°C at 10°C Increments
<b>Humidity</b>	<100% Non Condensating
<b>Voltage (VDC)</b>	10.2(85%) - 13.8 - 27.6VDC(115%)

Equipment List			
Asset Number	Manufacturer	Model Number	Description
00081	ESPEC	ECT-2	Environmental Chamber
00003	HP	53181A	Frequency Counter
00201	HP	E3611A	Power Supply
00234	VWR	61161-378	Temp/Humidity Meter



14.2 Frequency Stability Measurement Summary



### 15.0 EQUIPMENT LIST AND CALIBRATION

Equipment List						
Asset Number	Manufacturer	Model Number	Serial Number	Description	Last Calibrated	Calibration Interval
00003	HP	53181A	3736A05175	Frequency Counter	28 Apr 2014	Triennial
00034	ETS	3115	6267	Double Ridged Guide Horn	02 Dec 2015	Triennial
00047	HP	85685A	2837A00826	RF Preselector	30 Apr 2014	Triennial
00049	HP	85650A	2043A00162	Quasi-peak Adapter	30 Apr 2014	Triennial
00050	Chase	CBL-6111A	1607	Bilog Antenna	25 Apr 2014	Triennial
00051	HP	8566B	2747A05510	Spectrum Analyzer	30 Apr 2014	Triennial
00071	EMCO	2090	9912-1484	Multi-Device Controller	n/a	n/a
00072	EMCO	2075	0001-2277	Mini-mast	n/a	n/a
00073	EMCO	2080	0002-1002	Turn Table	n/a	n/a
00081	ESPEC	ECT-2	0510154-B	Environmental Chamber	CNR	n/a
00110	Gigatronics	8652A	1875801	Power Meter	29 Feb 2016	Triennial
00224	HP	8903B	3729A18691	Audio Analyzer	22 Dec 2014	Triennial
00234	VWR	61161-378	140320430	Temp/Humidity Meter	New	Triennial
00241	R&S	FSU40	100500	Spectrum Analyzer	23 Apr 2015	Triennial
00237	Gigatronics	80334A	1837001	Power Sensor	23 Jun 2014	Triennial
00265	Miteq	JS32-00104000-58-5P	1939850	Microwave L/N Amplifier	COU	n/a
00275	Coaxis	LMR400	n/a	25m Cable	COU	n/a
00276	Coaxis	LMR400	n/a	4m Cable	COU	n/a
00278	TILE	34G3	n/a	TILE Test Software	NCR	n/a

CNR: Calibration Not Required

COU: Calibrate On Use

## 16.0 MEASUREMENT INSTRUMENT UNCERTAINTY

### CISPR 16-4 Measurement Uncertainty ( $U_{LAB}$ )

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence interval using a coverage factor of  $k=2$

#### 30MHz - 200MHz

$$U_{LAB} = 5.14\text{dB} \quad U_{CISPR} = 6.3\text{dB}$$

#### 200MHz - 1000MHz

$$U_{LAB} = 5.90\text{dB} \quad U_{CISPR} = 6.3\text{dB}$$

#### 1GHz - 6GHz

$$U_{LAB} = 4.80\text{dB} \quad U_{CISPR} = 5.2\text{dB}$$

#### 6GHz - 18GHz

$$U_{LAB} = 5.1\text{dB} \quad U_{CISPR} = 5.5\text{dB}$$

If the calculated uncertainty  $U_{lab}$  is **less** than  $U_{CISPR}$  then:

- |   |   |
|---|---|
| 1 | Compliance is deemed to occur if <b>NO</b> measured disturbance exceeds the disturbance limit             |
| 2 | Non-Compliance is deemed to occur if <b>ANY</b> measured disturbance <b>EXCEEDS</b> the disturbance limit |

If the calculated uncertainty  $U_{lab}$  is **greater** than  $U_{CISPR}$  then:

- |   |  |
|---|--|
| 3 | Compliance is deemed to occur if <b>NO</b> measured disturbance, increased by ( $U_{lab} - U_{CISPR}$ ), exceeds the disturbance limit             |
| 4 | Non-Compliance is deemed to occur if <b>ANY</b> measured disturbance, increased by ( $U_{lab} - U_{CISPR}$ ), <b>EXCEEDS</b> the disturbance limit |

22.3 End of Document

# End of Document