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**FCC PART 15B / RSS-215**  
**ANALOGUE SCANNING RECEIVER**  
**COMBO TEST REPORT**

<b>Applicant</b>	<b>YAESU MUSEN CO., LTD.</b>
<b>Address</b>	<b>TENNOZU PARKSIDE BUILDING 2-5-8 HIGASHI-SHINAGAWA, SHINAGAWA-KU, TOKYO JAPAN 140-0002</b>
<b>FCC ID:</b>	<b>K6620663X20</b>
<b>IC</b>	<b>511B-20663X20</b>
<b>Model Number</b>	<b>FT-25R</b>
<b>Product Description</b>	<b>AMATEUR HANDHELD VHF RADIO - SCANNING RECEIVER</b>
<b>Date Sample Received</b>	<b>12/16/2016</b>
<b>Final Test Date</b>	<b>12/20/2016</b>
<b>Tested By</b>	<b>Tim Royer</b>
<b>Approved By</b>	<b>Cory Leverett</b>
<b>Test Results</b>	<input checked="" type="checkbox"/> <b>PASS</b> <input type="checkbox"/> <b>FAIL</b>

Report Number	Version Number	Description	Issue Date
2514AUT16TestReport	Rev1	Initial Issue	12/29/2016

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**

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## GENERAL REMARKS

The attached report shall not be reproduced except in full without the written permission of Timco Engineering Inc.

## Summary

The device under test does:

- ☒ Fulfill the general approval requirements as identified in this test report and was selected by the customer.
- ☐ Not fulfill the general approval requirements as identified in this test report

## Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made at:

**Timco Engineering Inc.**  
**849 NW State Road 45**  
**Newberry, FL 32669**

A blue ink signature of Tim Royer is written over a circular purple stamp. The stamp contains the text "TIMCO ENGINEERING, INC." around the perimeter.

### Tested by:

Name and Title: Tim Royer: Project Manager/Testing Engineer

**Date: 12/ 21/ 2016**

A blue ink signature of Cory Leverett is written over a circular pink stamp. The stamp contains the text "TIMCO ENGINEERING, INC." around the perimeter.

### Reviewed and approved by:

Name and Title: Cory Leverett, Project Manager

**Date: 12/ 29/ 2016**

Applicant: YAESU MUSEN CO., LTD.  
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## EUT SPECIFICATION

<b>This test results relates only to the items tested.</b>	
<b>EUT DESCRIPTION</b>	AMATEUR HANDHELD VHF RADIO - SCANNING RECEIVER
<b>REQUIREMENTS</b>	CFR 47 FCC Part 15B, RSS-215 Issue 2, RSS-Gen Issue 4
<b>MODEL NUMBER</b>	FT-25R
<b>TEST STANDARDS</b>	ANSI C63.4 – 2014, FCC Part 15A, RSS-Gen Issue 4
<b>TEST FREQUENCIES</b>	136, 155 & 174 MHz
<b>EUT POWER SOURCE</b>	<input checked="" type="checkbox"/> 100–240Vac/50– 60Hz (While Charging)
	<input type="checkbox"/> DC Power
	<input checked="" type="checkbox"/> Battery Operated
<b>TEST ITEM</b>	<input type="checkbox"/> Prototype
	<input type="checkbox"/> Pre-Production
	<input checked="" type="checkbox"/> Production
<b>TYPE OF EQUIPMENT</b>	<input type="checkbox"/> Fixed
	<input type="checkbox"/> Mobile
	<input checked="" type="checkbox"/> Portable
<b>MODIFICATIONS TO EUT:</b>	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (explanation below)
<b>TEST MODE DESCRIPTION</b>	Receive only, Tuned to three places in band and scanning.
<b>TEST FACILITIES</b>	<b>Timco Engineering Inc. located at 849 NW State Road 45 Newberry, FL 32669 USA.</b>
<b>LABORATORY TEST CONDITION</b>	Temperature: 24-26°C Relative humidity: 50-65% Barometric Pressure:30.01"

## PERIPHERALS USED FOR TESTING

Description	Model	Connector	Cable Type	Length
Audio Earpiece Accessory	NA	Phono SP/Mic	Shielded OFC	0.5m
7.4 VDC Li-ion Battery Pack	QB-33L	2 Pin	NA	NA
Charging Cradle 12VDC In / 8.4 VDC Out	SBH-22	Barrel Jack	NA	NA
100-240 VAC 50/60 Hz Input, 12VDC Output A/C Supply Adapter	SAW12-120-1000UD	Barrel Jack	OFC	0.5m

## TEST RESULTS SUMMARY

Test Item	FCC Rule Part	RSS Specification	Result
Radiated Spurious Emissions	15.109	215 sec 5.1, GEN sec 7.1	Pass
Powerline Conducted Emissions	15.107	215, sec 5.1, GEN sec 8.8	Pass

## RADIATED SPURIOUS EMISSIONS

**Rule Part No.:** FCC Part 15 Subpart B, RSS-215 sec 5.1

**Requirements:** FCC Part 15.109(a), RSS GEN 7.1.2 Radiated Emission Limit

Class B Field Strength Limits @ 3 Meters			
Frequency (MHz)	Quasi-peak (dBuV/ m)	Average (dBuV/ m)	Peak (dBuV/ m)
30 – 88	40.0	-	-
80 – 216	43.5	-	-
216 – 960	46.0	-	-
960 - 1000	54.0	-	-
> 1000	54.0	54	74

### FCC Part 15.109(f) Radiated Emission Limit

For a receiver which employs terminals for the connection of an external receiving antenna, the receiver shall be tested to demonstrate compliance with the provisions of this section with an antenna connected to the antenna terminals unless the antenna conducted power is measured as specified in §15.111(a).

**Procedure:** FCC Part 15.33(b)(3) Frequency range of radiated measurements

FCC Part 15.35(a) Measurement detector functions and bandwidths

ANSI C63.4 Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment 9 kHz to 40 GHz

§ 6.2 Operating conditions

§ 6.3 Arrangement of EUT

§ 8.3.1 Exploratory radiated emissions measurements

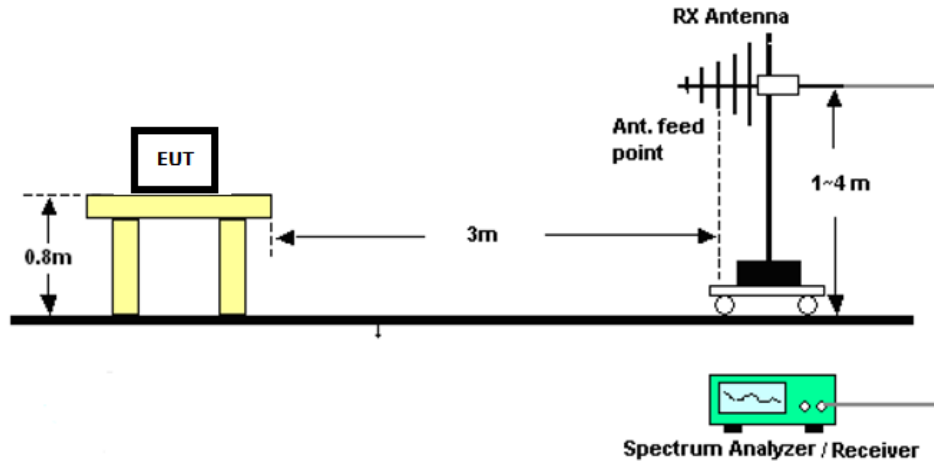
§ 8.3.2 Final radiated emission measurements

**Configuration:** The scanner receiver spurious emissions are to be measured when the receiver is in the scanning mode and repeated when the scanning is stopped..

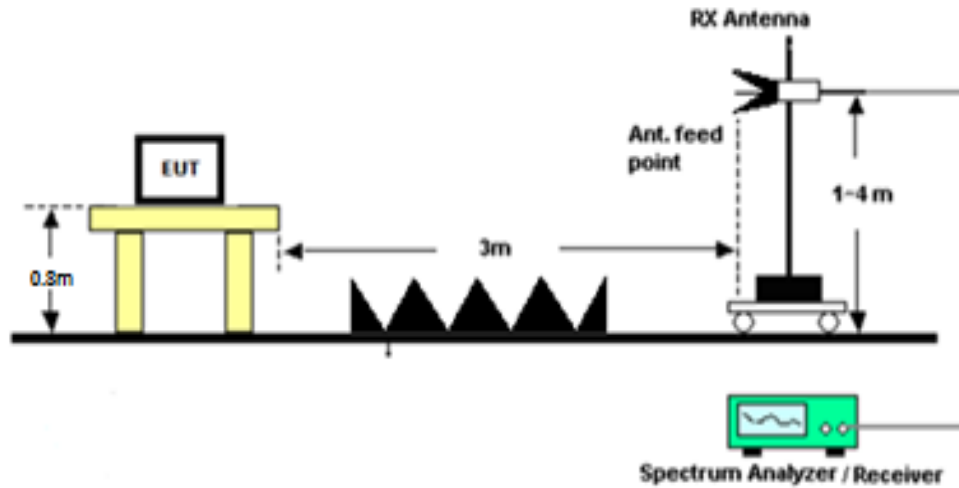
## RADIATED SPURIOUS EMISSIONS

Setup:

Emissions 30 – 1000 MHz



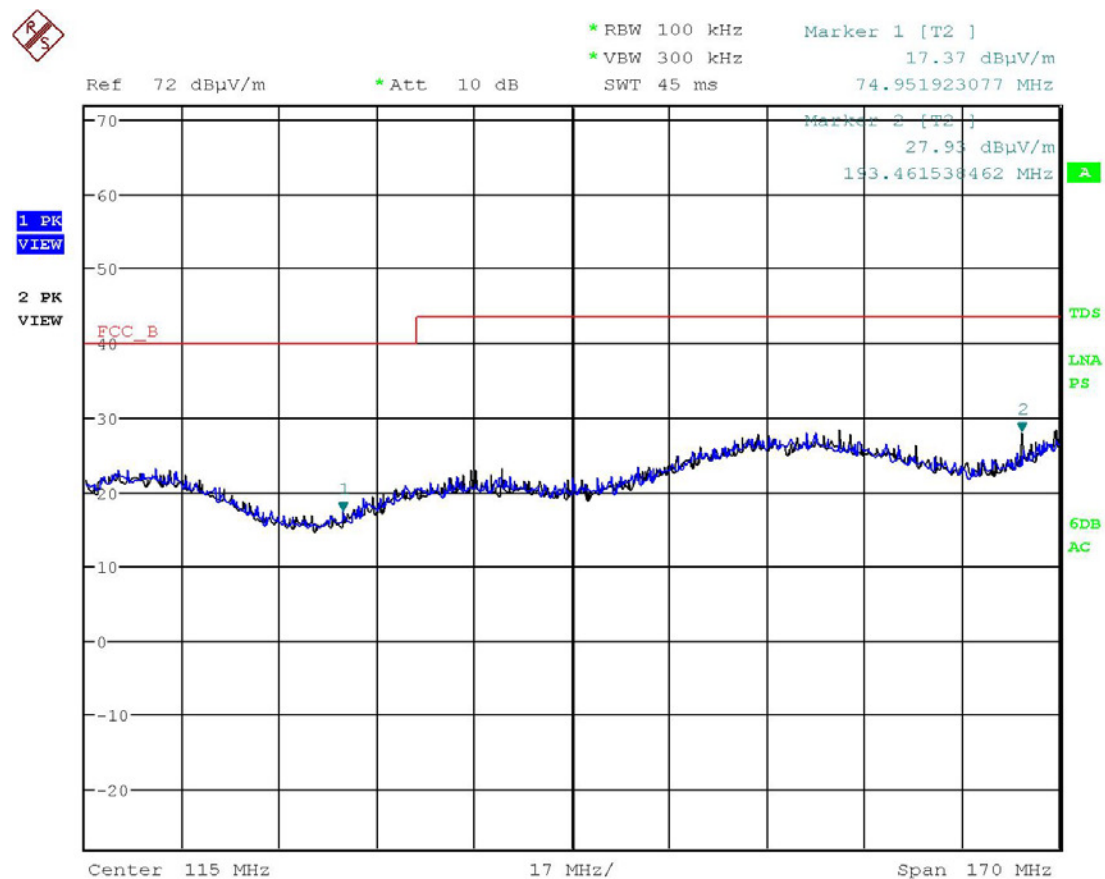
Emissions above 1 GHz



## RADIATED SPURIOUS EMISSIONS

Test Data: Tuned to 136 MHz, 30 – 200 MHz Peak Plot

### 3 Meter Field Strength Plot



Date: 20.DEC.2016 09:13:27

Ant Polarity: T1 (Blue)= Vertical, T2 (Black)= Horizontal

### Results Meets Requirements

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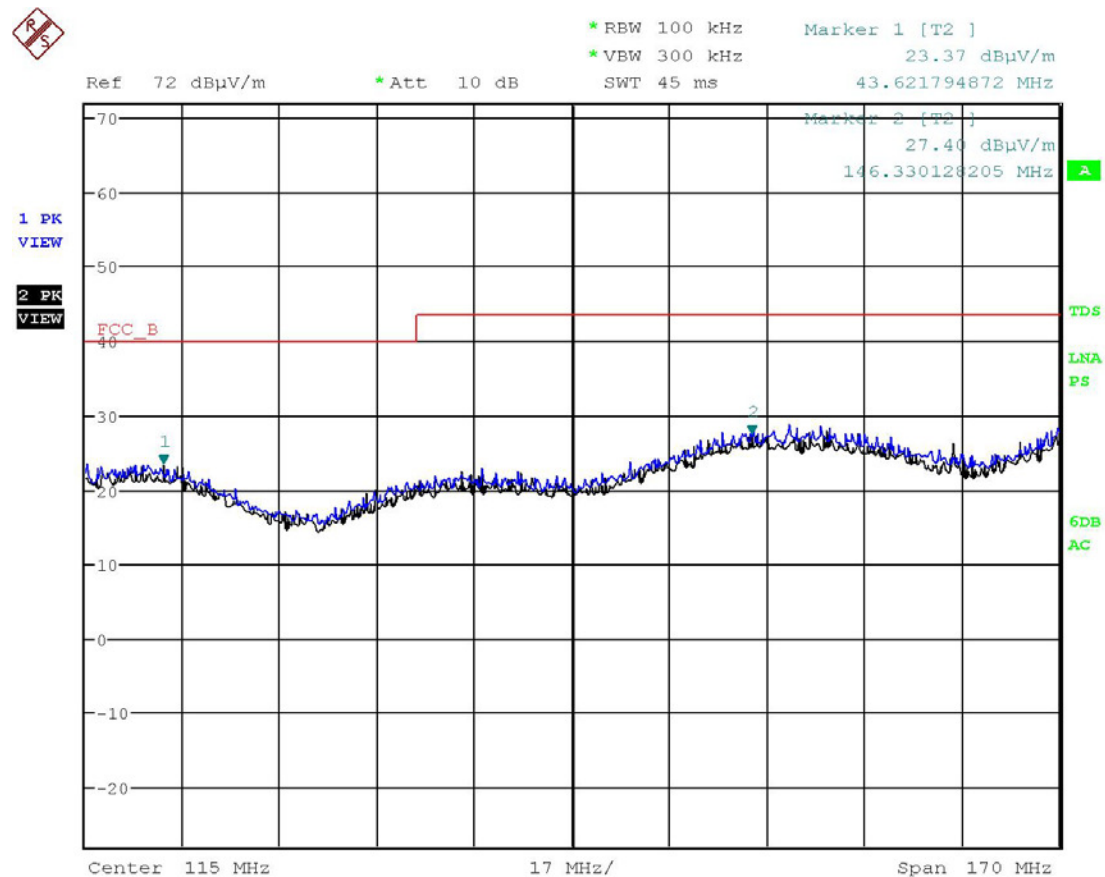
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## RADIATED SPURIOUS EMISSIONS

Test Data: Tuned to 155 MHz, 30 – 200 MHz Peak Plot

### 3 Meter Field Strength Plot



Date: 20.DEC.2016 09:25:31

Ant Polarity: T1 (Blue)= Vertical, T2 (Black)= Horizontal

### Results Meets Requirements

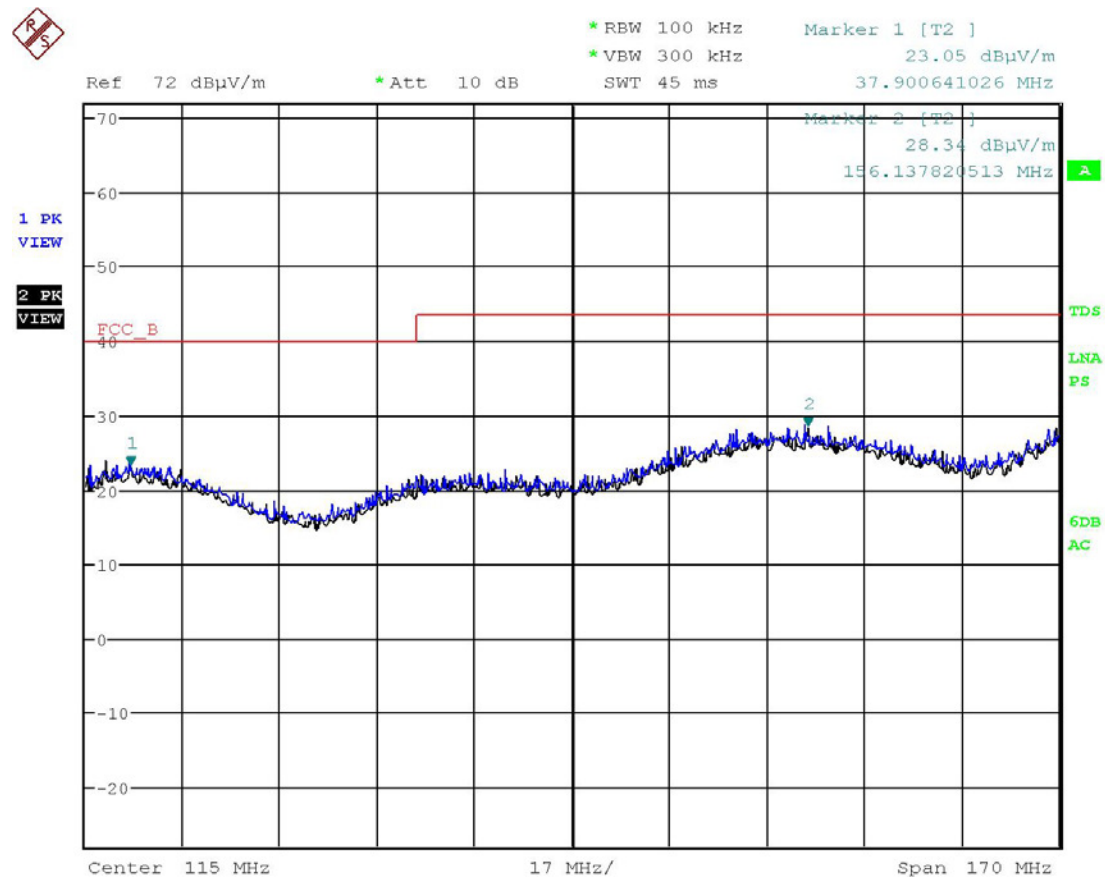
Applicant: YAESU MUSEN CO., LTD.  
 FCC ID: K6620663X20  
 IC: 511B-20663X20  
 Report: 2514AUT16TestReport\_Rev1

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## RADIATED SPURIOUS EMISSIONS

Test Data: Tuned to 174 MHz, 30 – 200 MHz Peak Plot

### 3 Meter Field Strength Plot



Date: 20.DEC.2016 09:11:57

Ant Polarity: T1 (Blue)= Vertical, T2 (Black)= Horizontal

### Results Meets Requirements

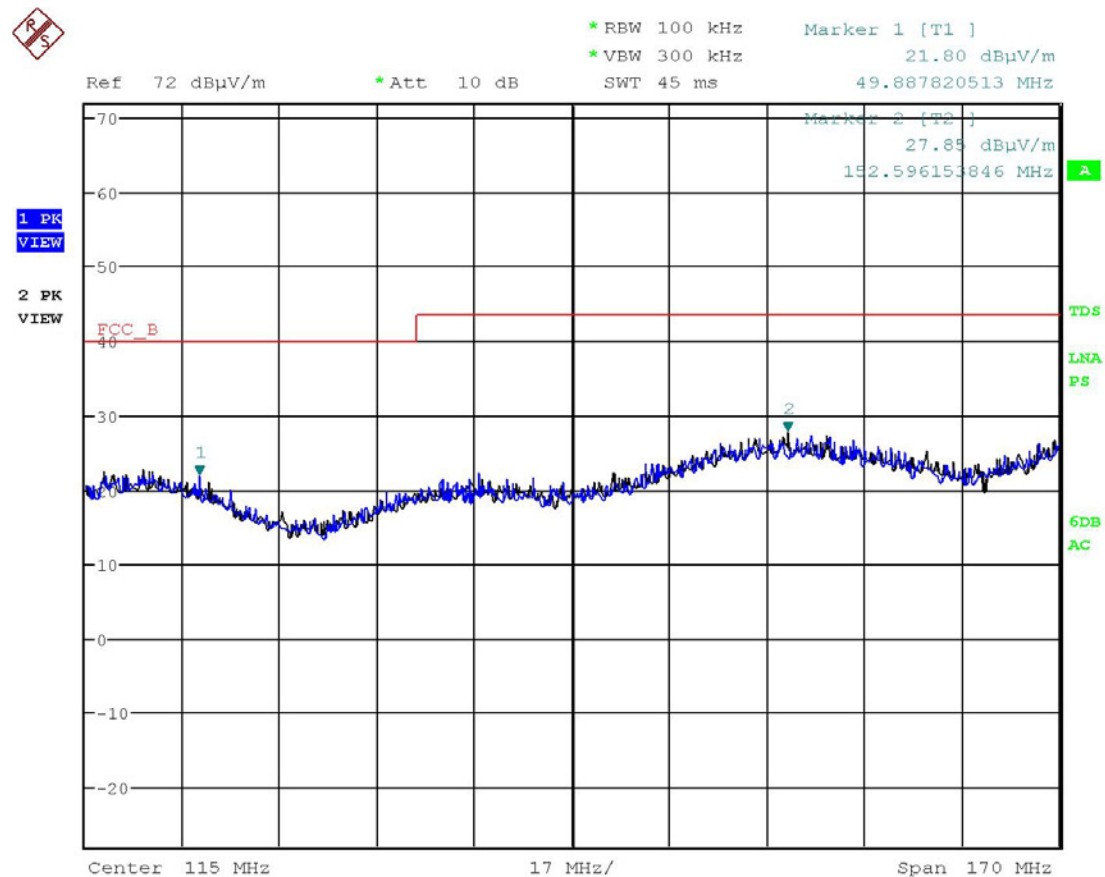
Applicant: YAESU MUSEN CO., LTD.  
 FCC ID: K6620663X20  
 IC: 511B-20663X20  
 Report: 2514AUT16TestReport\_Rev1

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## RADIATED SPURIOUS EMISSIONS

Test Data: Scanning Mode, 30 – 200 MHz Peak Plot

### 3 Meter Field Strength Plot



Date: 20.DEC.2016 09:55:30

Ant Polarity: T1 (Blue)= Vertical, T2 (Black)= Horizontal

### Results Meets Requirements

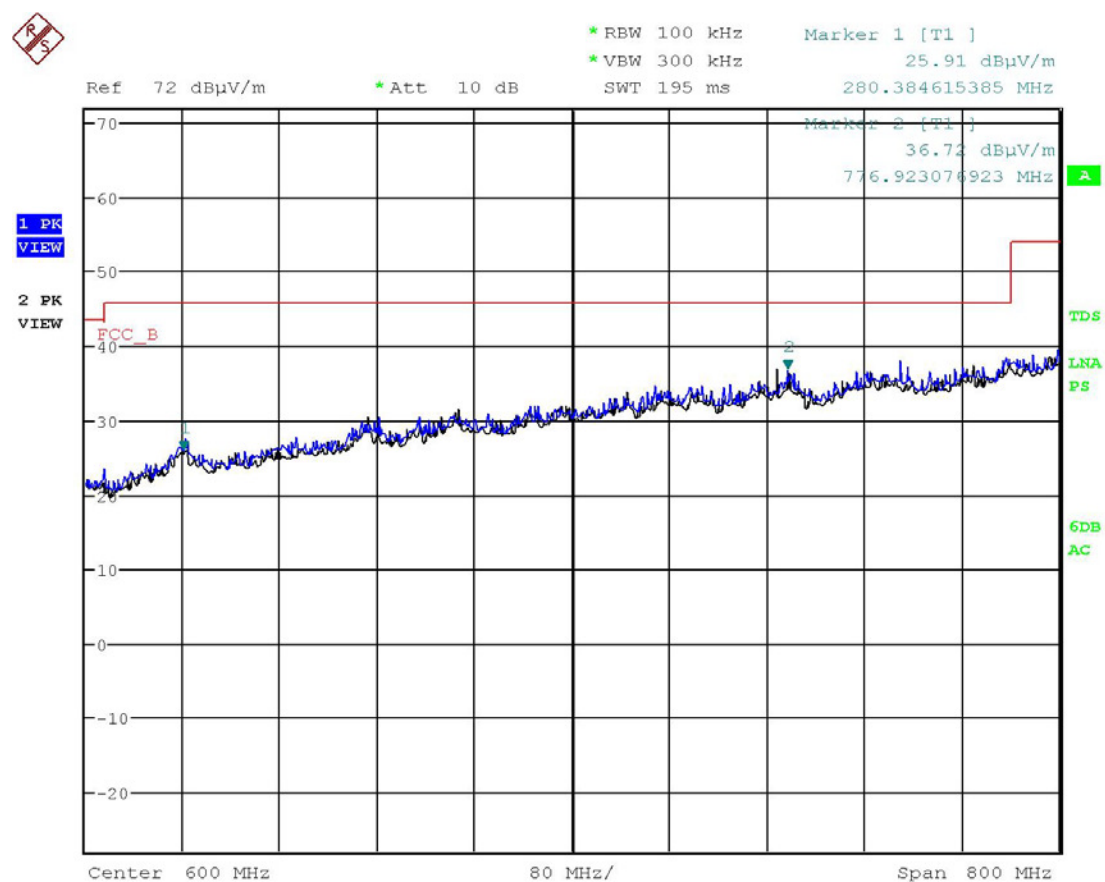
Applicant: YAESU MUSEN CO., LTD.  
 FCC ID: K6620663X20  
 IC: 511B-20663X20  
 Report: 2514AUT16TestReport\_Rev1

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## RADIATED SPURIOUS EMISSIONS

Test Data: Tuned to 136 MHz, 200 - 1000 MHz Peak Plot

### 3 Meter Field Strength Plot



Date: 20.DEC.2016 09:41:01

Ant Polarity: T1 (Blue)= Vertical, T2 (Black)= Horizontal

### Results Meets Requirements

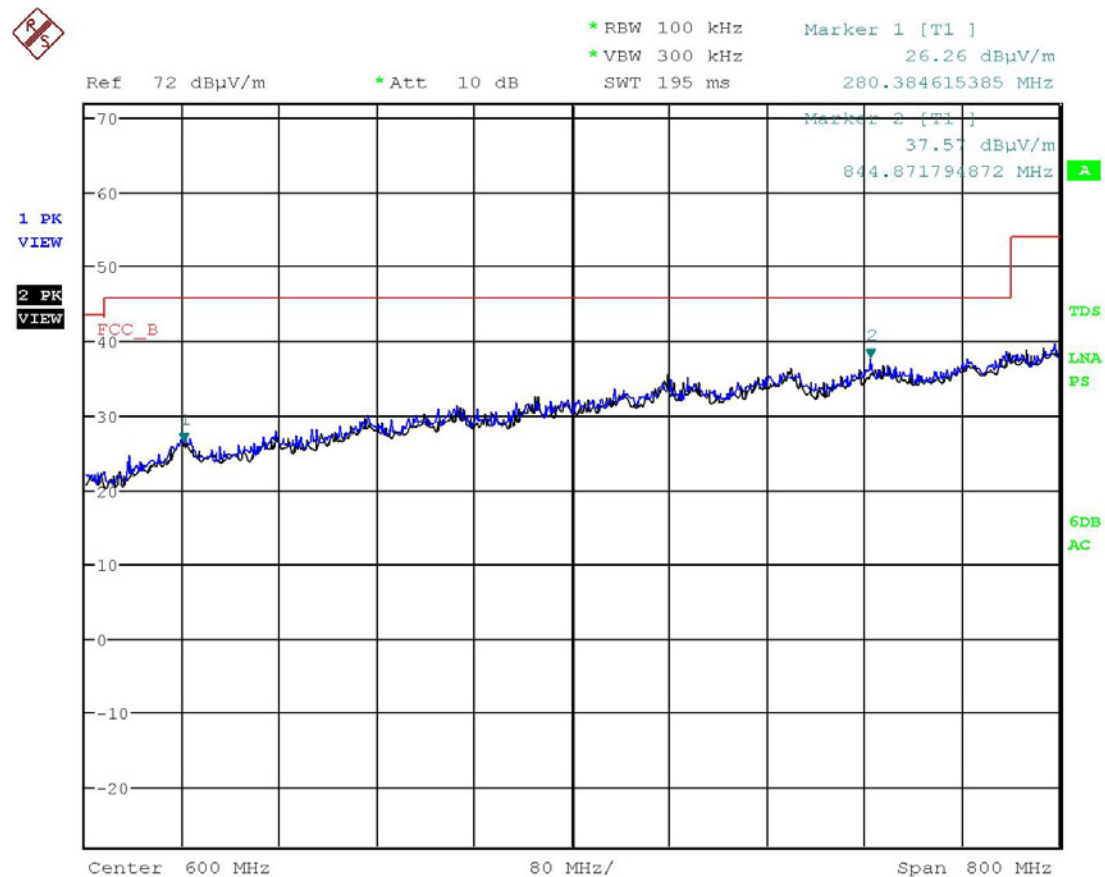
Applicant: YAESU MUSEN CO., LTD.  
 FCC ID: K6620663X20  
 IC: 511B-20663X20  
 Report: 2514AUT16TestReport\_Rev1

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## RADIATED SPURIOUS EMISSIONS

Test Data: Tuned to 155 MHz, 200 - 1000 MHz Peak Plot

### 3 Meter Field Strength Plot



Date: 20.DEC.2016 09:38:43

Ant Polarity: T1 (Blue)= Vertical, T2 (Black)= Horizontal

### Results Meets Requirements

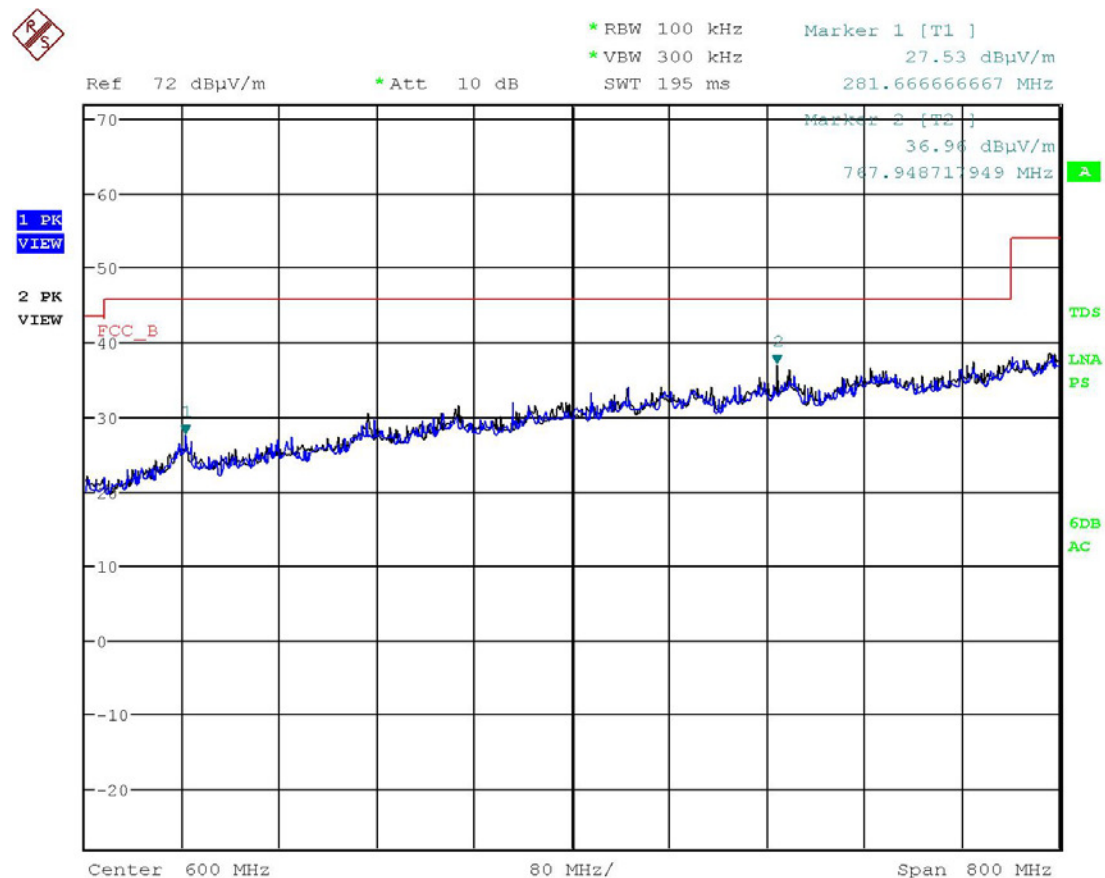
Applicant: YAESU MUSEN CO., LTD.  
FCC ID: K6620663X20  
IC: 511B-20663X20  
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## RADIATED SPURIOUS EMISSIONS

Test Data: Tuned to 174 MHz, 200 - 1000 MHz Peak Plot

### 3 Meter Field Strength Plot



Date: 20.DEC.2016 09:43:43

Ant Polarity: T1 (Blue)= Vertical, T2 (Black)= Horizontal

### Results Meets Requirements

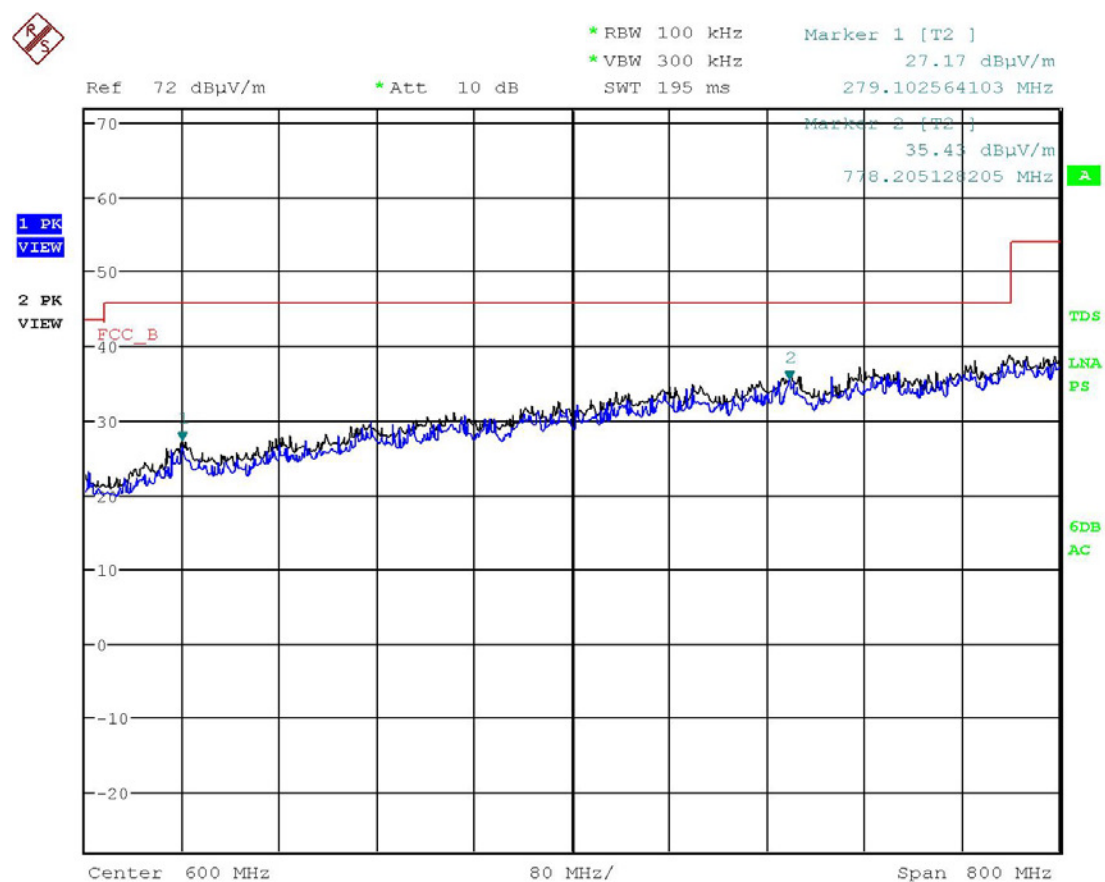
Applicant: YAESU MUSEN CO., LTD.  
 FCC ID: K6620663X20  
 IC: 511B-20663X20  
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## RADIATED SPURIOUS EMISSIONS

Test Data: Scanning Mode, 200 - 1000 MHz Peak Plot

### 3 Meter Field Strength Plot



Date: 20.DEC.2016 09:54:10

Ant Polarity: T1 (Blue)= Vertical, T2 (Black)= Horizontal

### Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.  
 FCC ID: K6620663X20  
 IC: 511B-20663X20  
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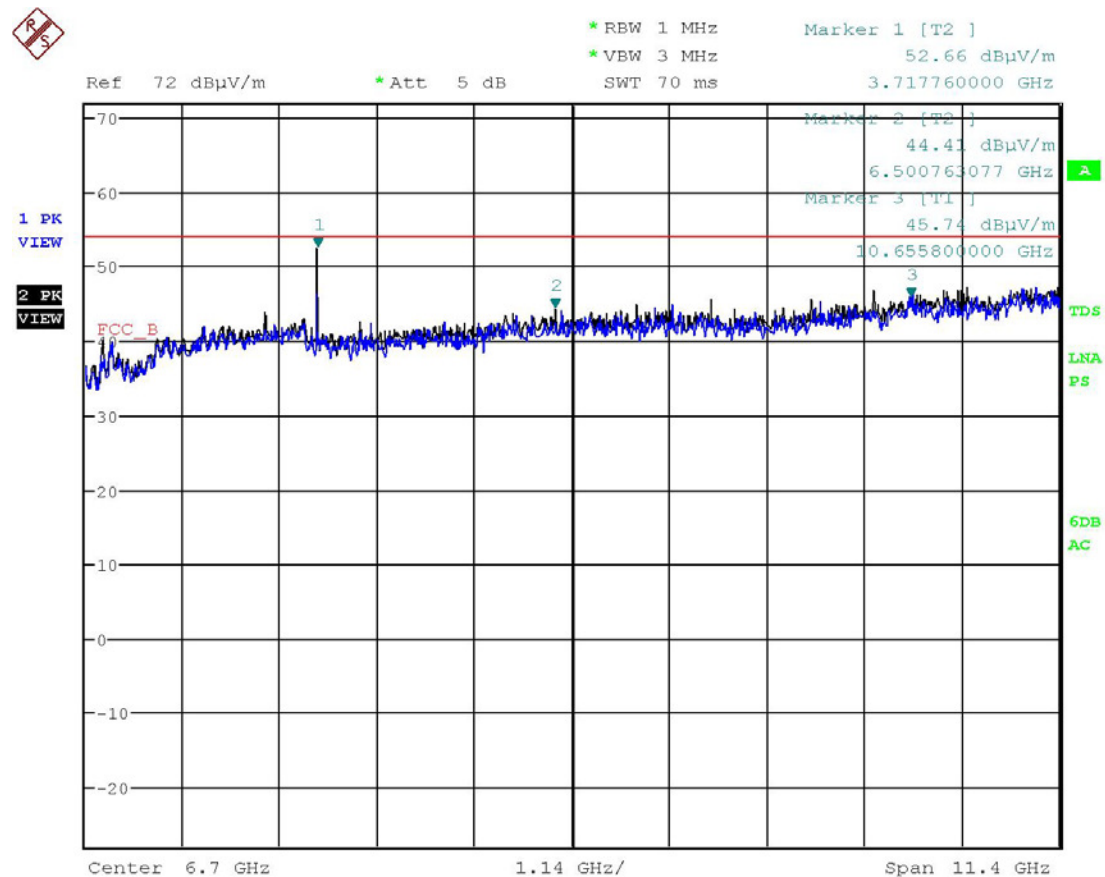




## RADIATED SPURIOUS EMISSIONS

Test Data: Tuned to 155 MHz, 1000 - 2000 MHz Peak Plot

### 3 Meter Field Strength Plot



Date: 21.DEC.2016 16:14:27

Ant Polarity: T1 (Blue)= Vertical, T2 (Black)= Horizontal

### Results Meets Requirements

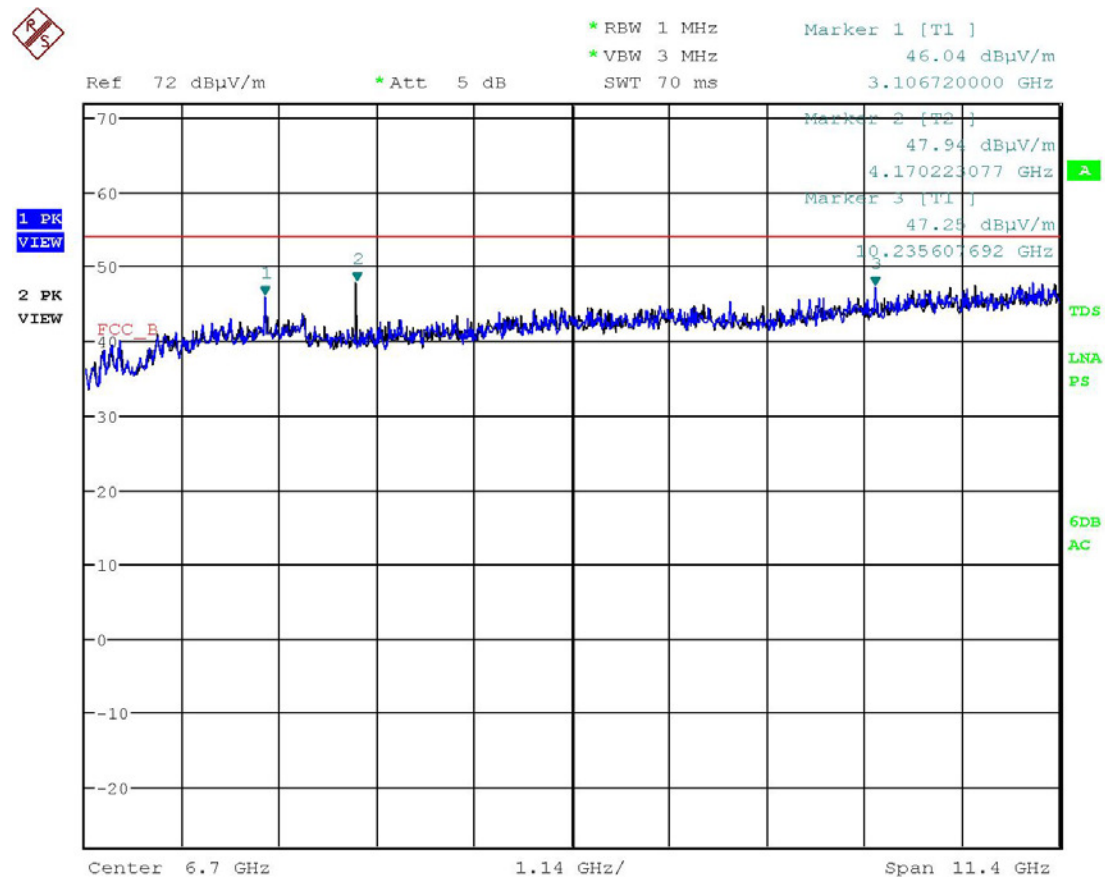
Applicant: YAESU MUSEN CO., LTD.  
 FCC ID: K6620663X20  
 IC: 511B-20663X20  
 Report: 2514AUT16TestReport\_Rev1

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## RADIATED SPURIOUS EMISSIONS

Test Data: Tuned to 174 MHz, 1000 - 2000 MHz Peak Plot

### 3 Meter Field Strength Plot



Date: 21.DEC.2016 16:12:38

Ant Polarity: T1 (Blue)= Vertical, T2 (Black)= Horizontal

Results Meets Requirements

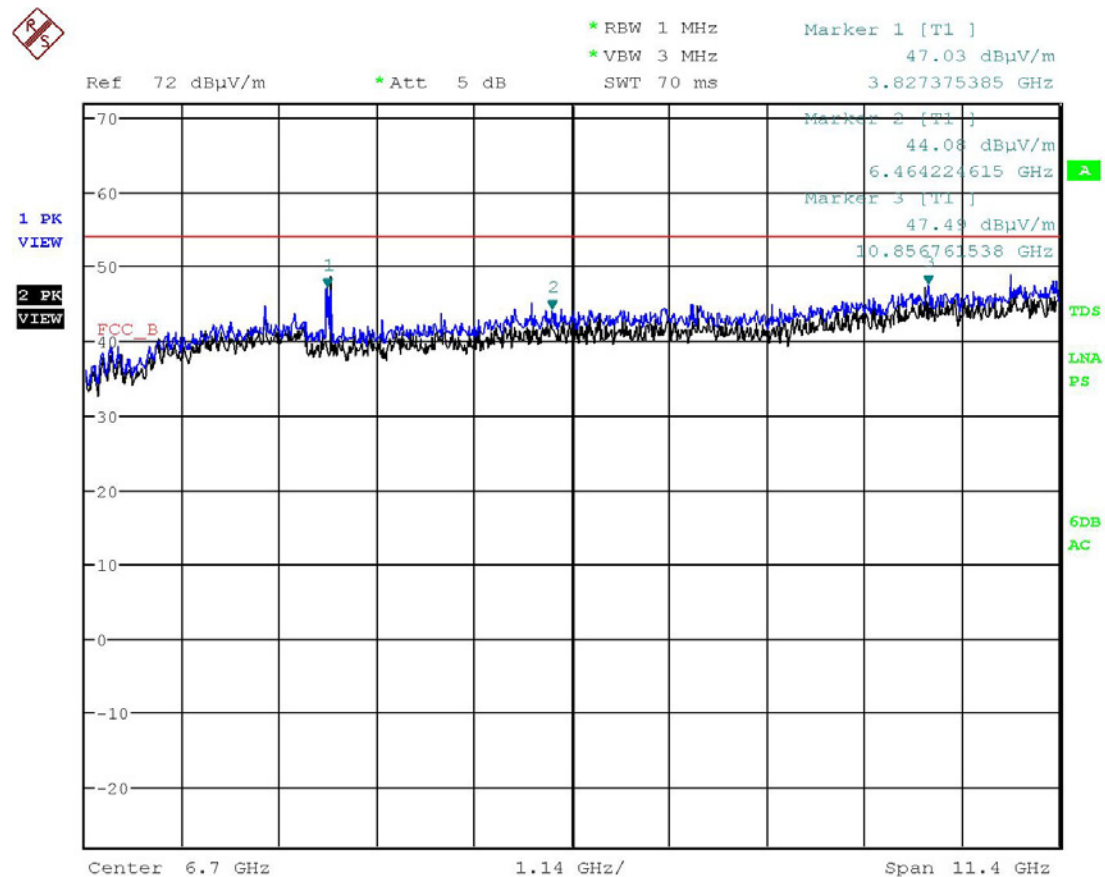
Applicant: YAESU MUSEN CO., LTD.  
 FCC ID: K6620663X20  
 IC: 511B-20663X20  
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## RADIATED SPURIOUS EMISSIONS

Test Data: Scanning Mode, 1000 - 2000 MHz Peak Plot

### 3 Meter Field Strength Plot



Date: 21.DEC.2016 16:21:19

Ant Polarity: T1 (Blue)= Vertical, T2 (Black)= Horizontal

### Results Meets Requirements

Applicant: YAESU MUSEN CO., LTD.  
 FCC ID: K6620663X20  
 IC: 511B-20663X20  
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## POWER LINE CONDUCTED INTERFERENCE

**Rules Part No.:** Part 15.107, RSS-GEN sec 8.8

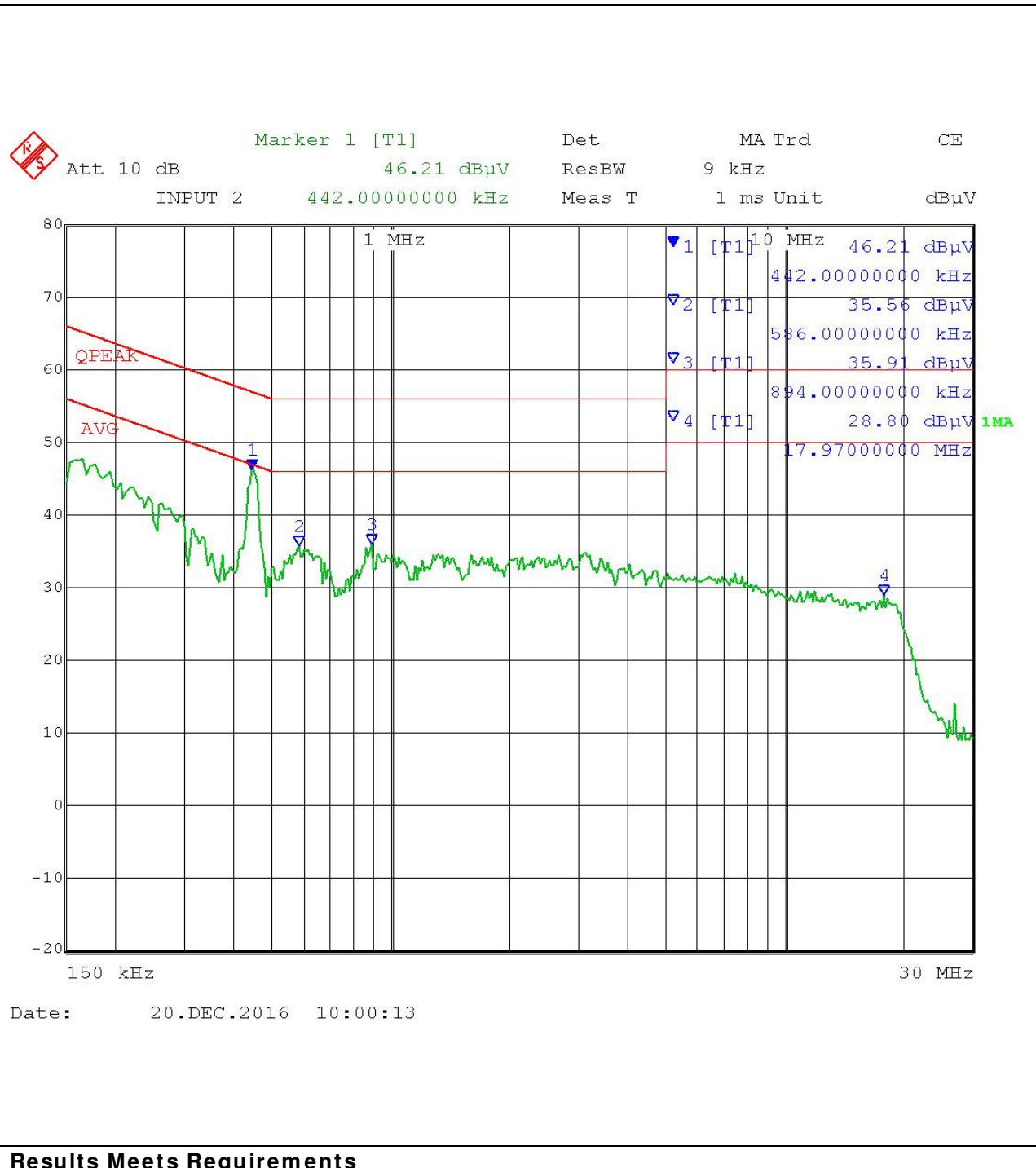
### Requirements:

Frequency (MHz)	Quasi Peak Limits (dB $\mu$ V)	Average Limits (dB $\mu$ V)
0.15 – 0.5	66 – 56 *	56 – 46 *
0.5 – 5.0	56	46
5.0 – 30	60	50
* Decrease with logarithm of frequency		

**Test Data:** The following plots represent the emissions for power line conducted. Both lines were observed. 120 Volts AC 60 Hz supply voltage was used for all tests

## POWER LINE CONDUCTED INTERFERENCE

Test Data: Tuned to 136 MHz, Line 1 Peak Plot

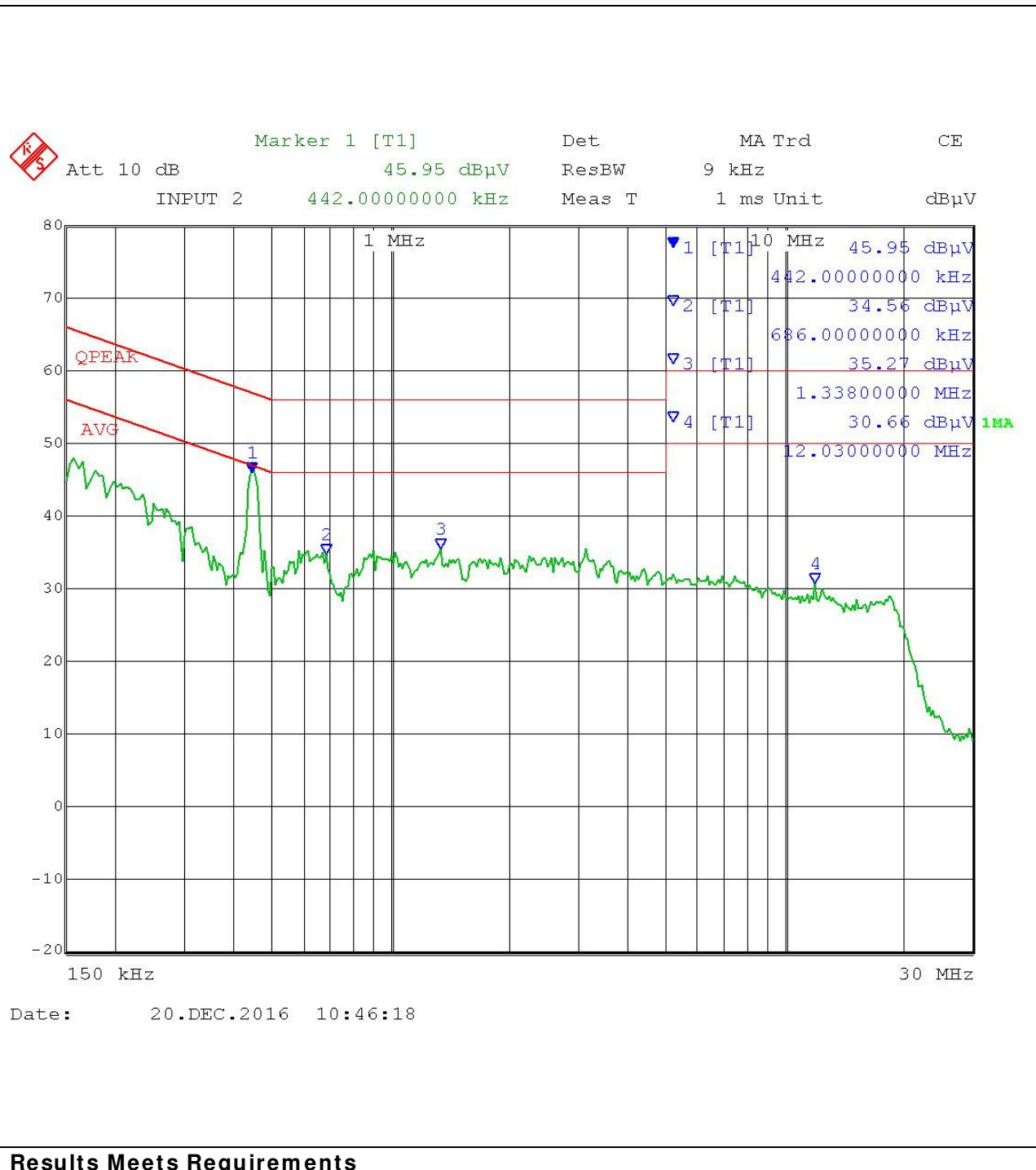


Applicant: YAESU MUSEN CO., LTD.  
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## POWER LINE CONDUCTED INTERFERENCE

Test Data: Tuned to 155 MHz, Line 1 Peak Plot

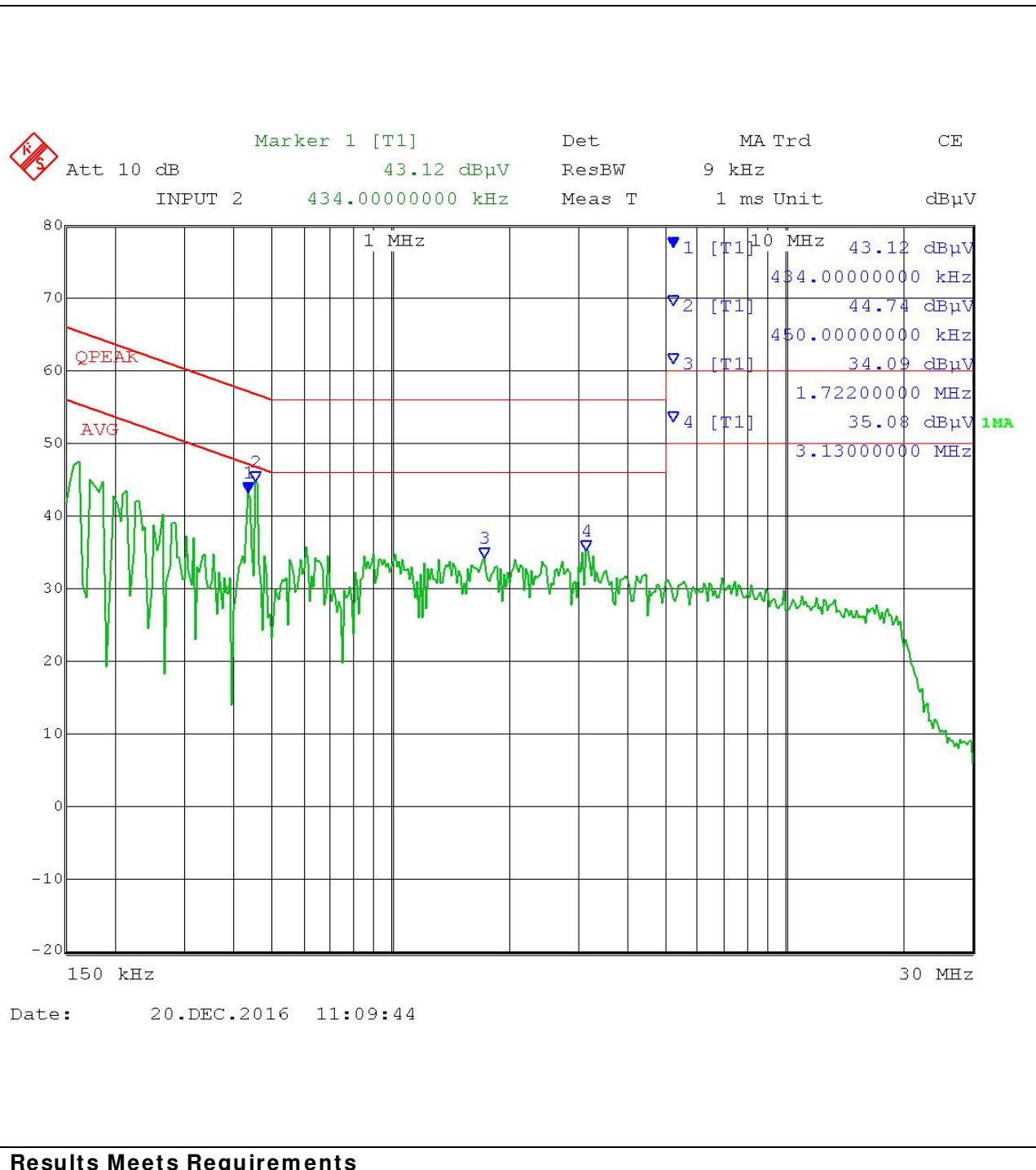


Applicant: YAESU MUSEN CO., LTD.  
 FCC ID: K6620663X20  
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## POWER LINE CONDUCTED INTERFERENCE

Test Data: Tuned to 174 MHz, Line 1 Peak Plot

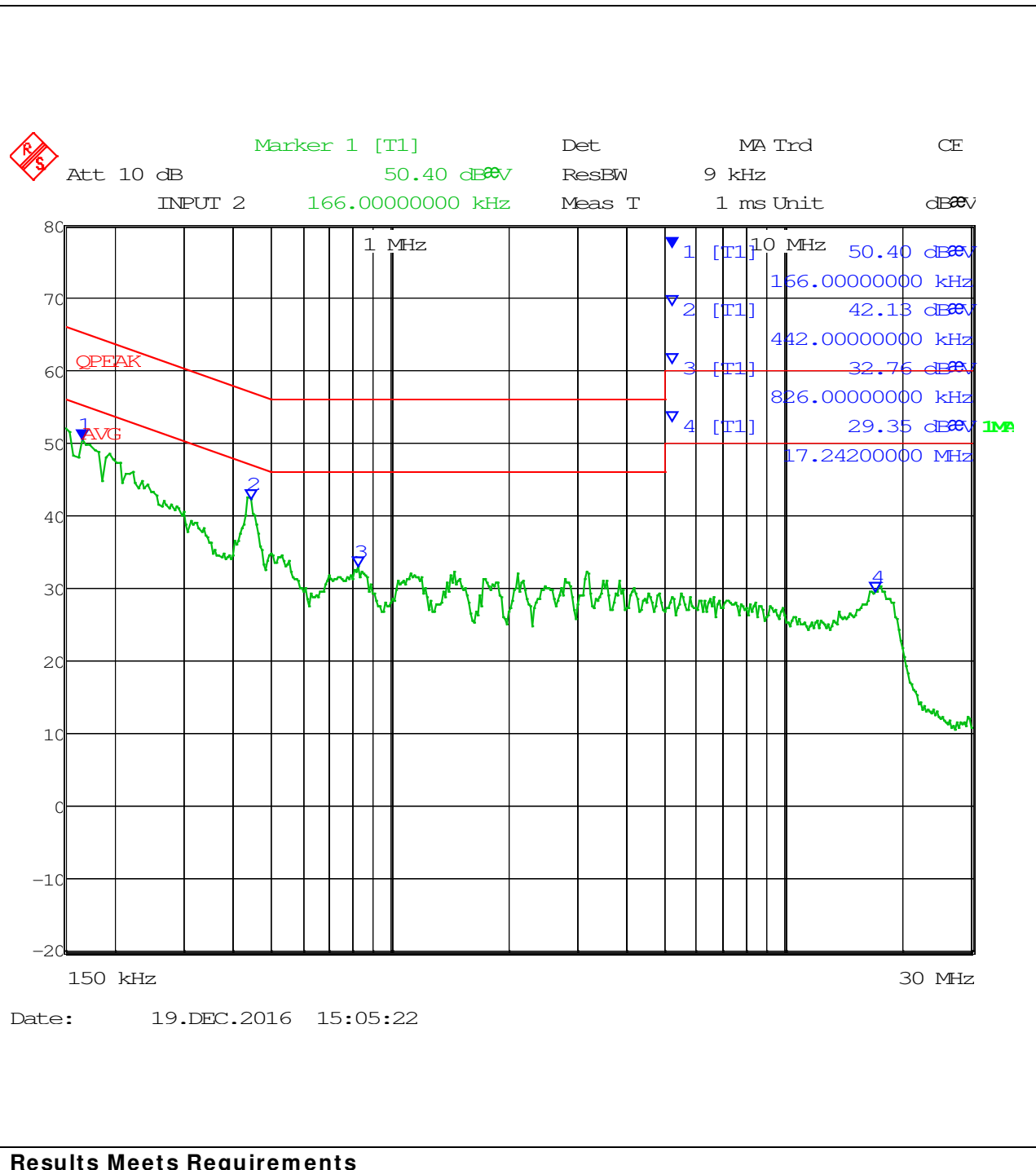


Applicant: YAESU MUSEN CO., LTD.  
 FCC ID: K6620663X20  
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## POWER LINE CONDUCTED INTERFERENCE

Test Data: Scanning Mode, Line 1 Peak Plot



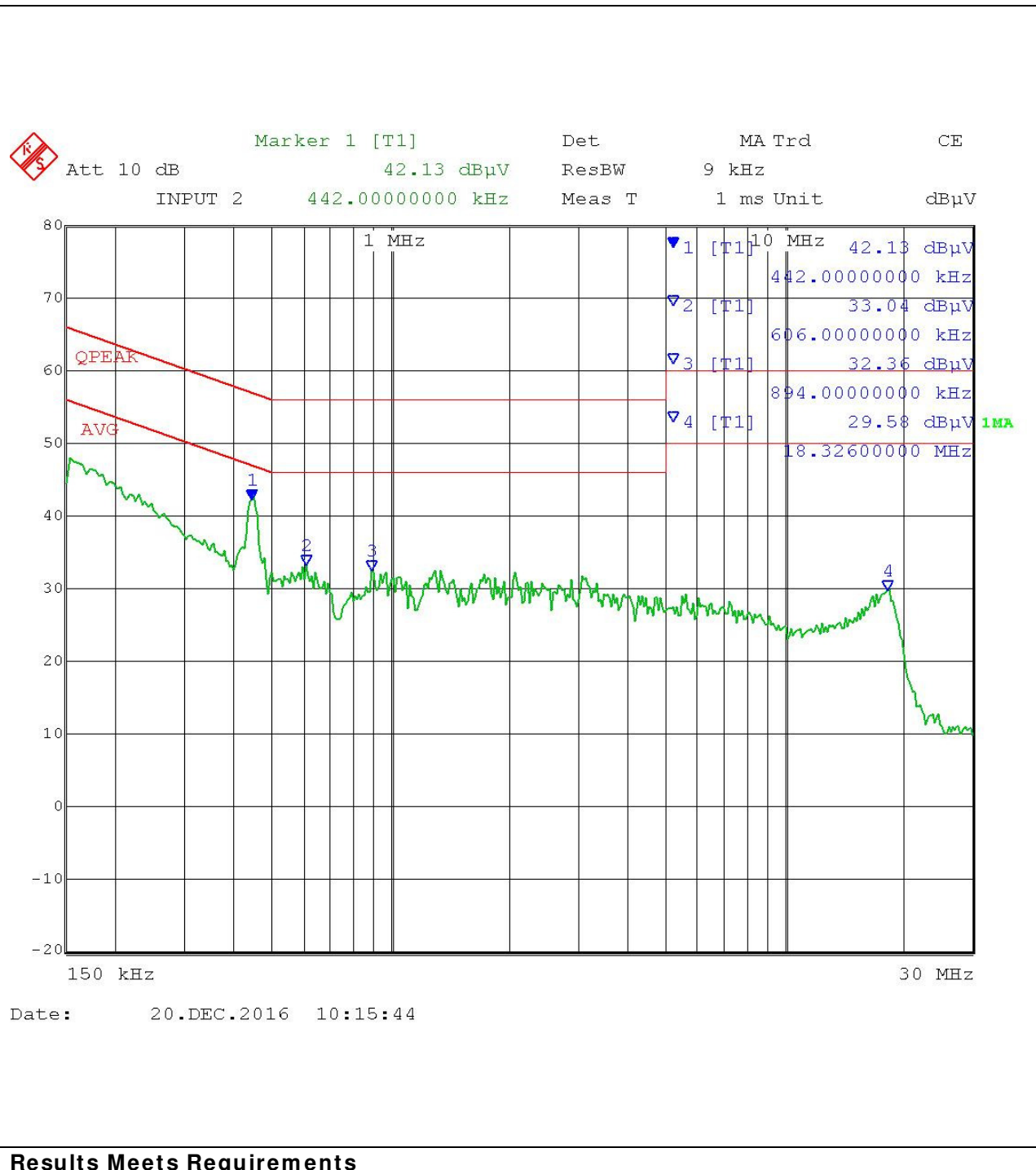
Applicant: YAESU MUSEN CO., LTD.  
 FCC ID: K6620663X20  
 IC: 511B-20663X20  
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## POWER LINE CONDUCTED INTERFERENCE

Test Data: Tuned to 136 MHz, Line 2 Peak Plot

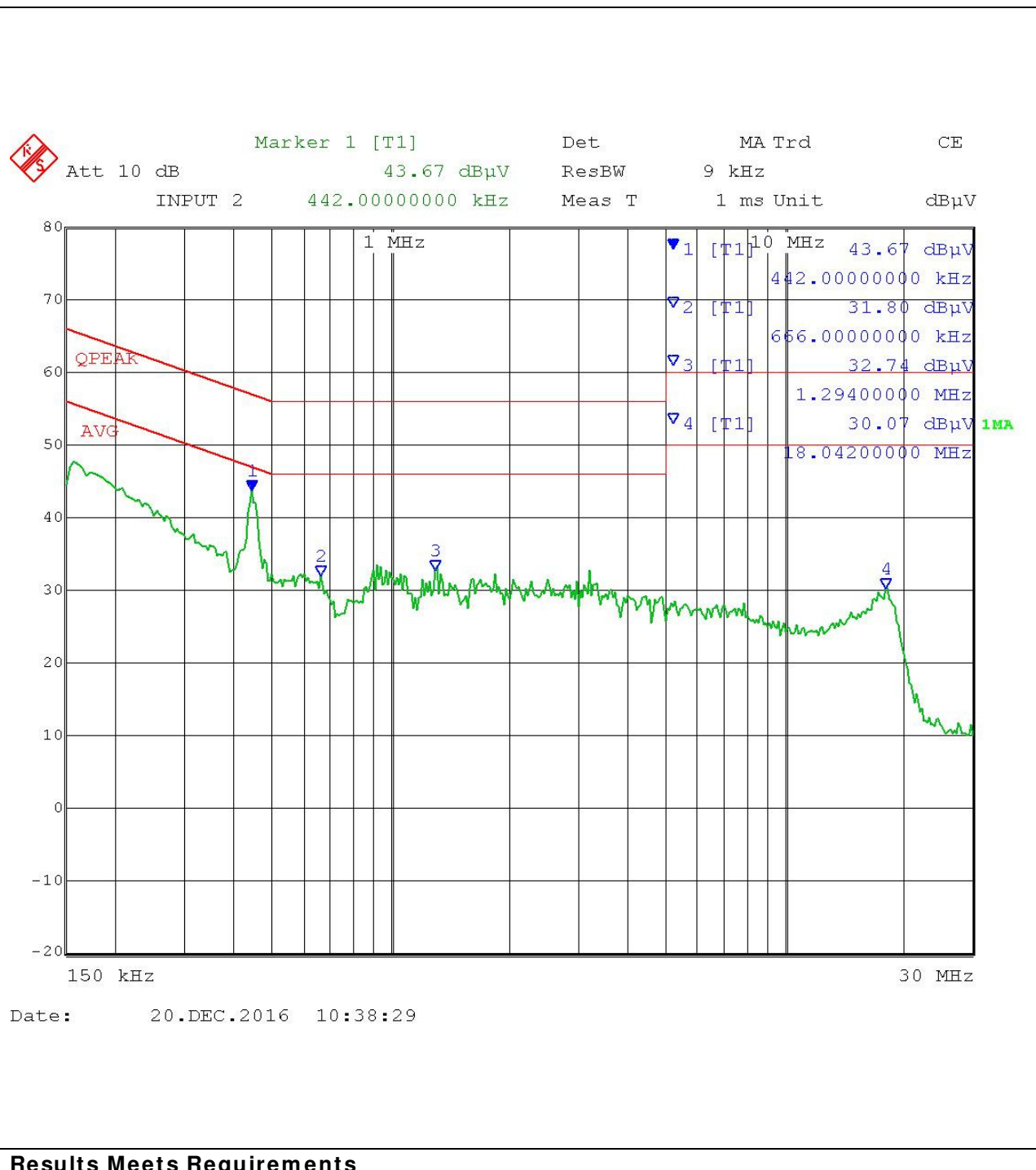


Applicant: YAESU MUSEN CO., LTD.  
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## POWER LINE CONDUCTED INTERFERENCE

Test Data: Tuned to 155 MHz, Line 2 Peak Plot

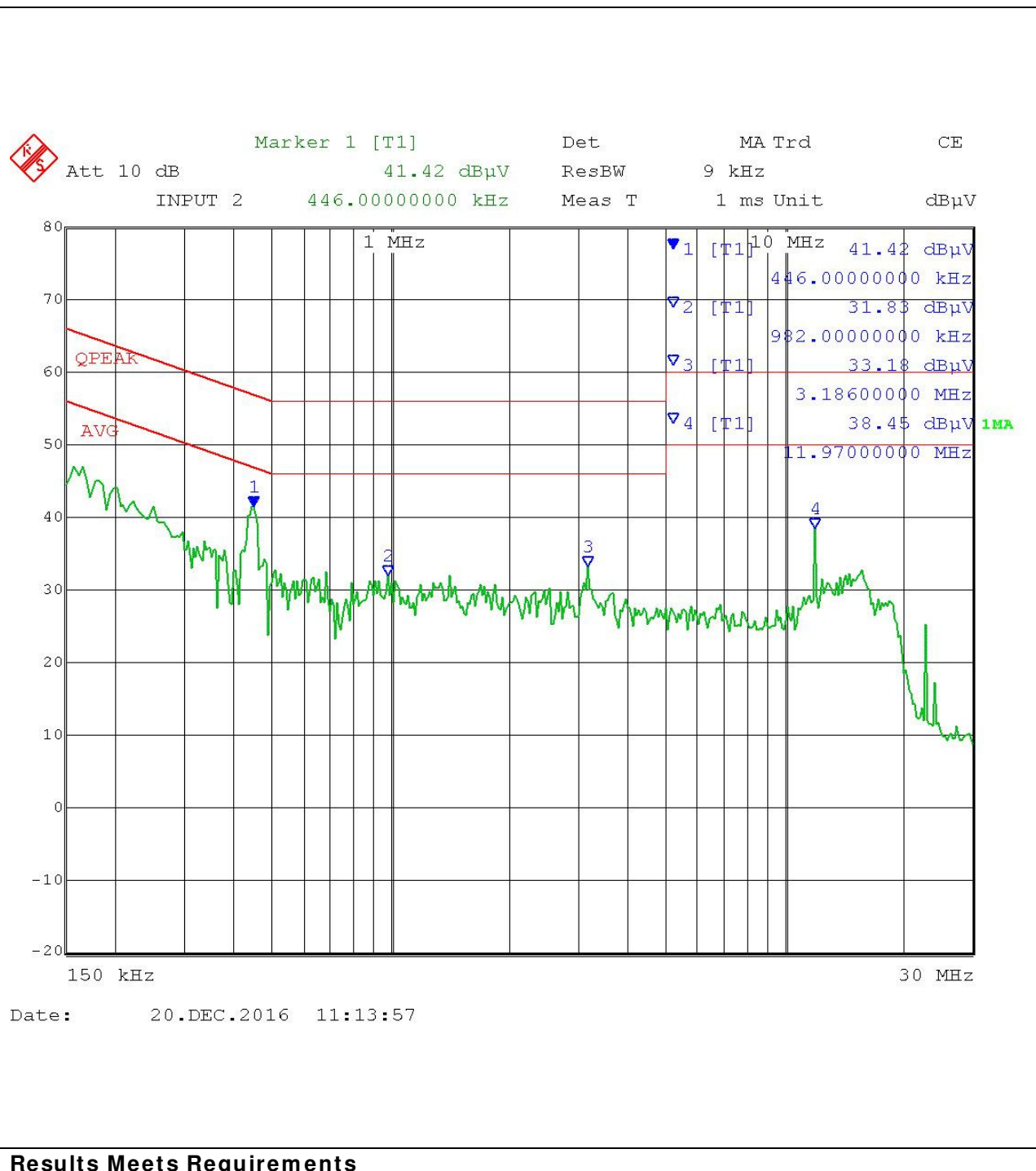


Applicant: YAESU MUSEN CO., LTD.  
 FCC ID: K6620663X20  
 IC: 511B-20663X20  
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## POWER LINE CONDUCTED INTERFERENCE

Test Data: Tuned to 174 MHz, Line 2 Peak Plot

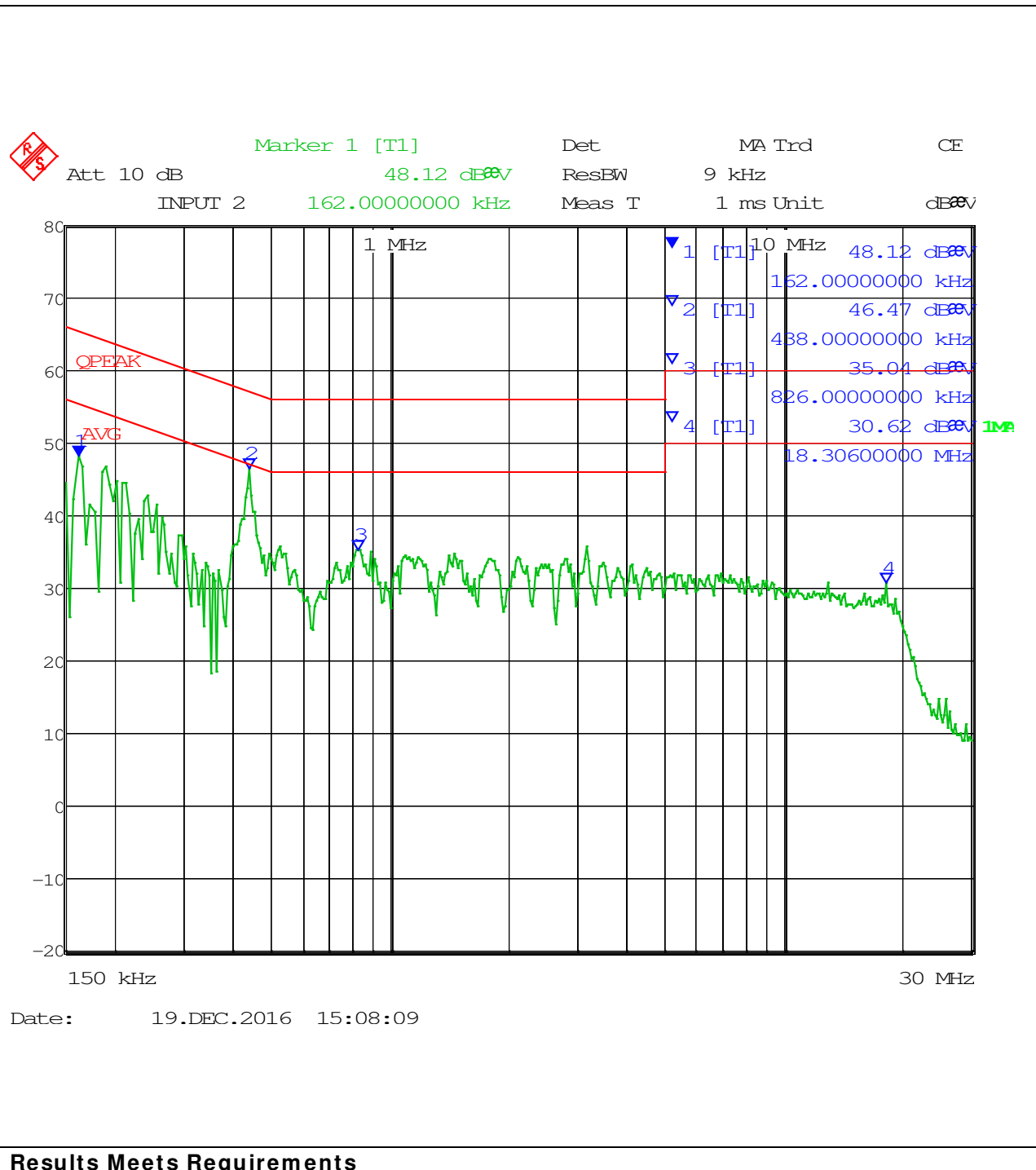


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## POWER LINE CONDUCTED INTERFERENCE

Test Data: Scanning Mode, Line 2 Peak Plot



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## TEST EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Antenna: Biconical 1096 Chamber	Eaton	94455-1	1096	07/14/15	07/14/17
Antenna: Log- Periodic 1122	Electro-Metrics	LPA-25	1122	07/14/15	07/14/17
LISN (Primary)	Electro-Metrics	ANS-25/2	2604	07/13/15	07/13/17
CHAMBER	Panashield	3M	N/A	04/25/16	12/31/17
Antenna: Double-Ridged Horn/ETS Horn 2	ETS-Lindgren Chamber	3117	00041534	02/25/15	02/25/17
EMI Test Receiver R & S ESIB 40 Screen Room	Rohde & Schwarz	ESIB 40	100274	08/16/16	08/16/18
Software: Field Strength Program	Timco	N/A	Version 4.0	N/A	N/A
EMI Test Receiver R & S ESU 40 Chamber	Rohde & Schwarz	ESU 40	100320	04/01/16	04/01/18
Coaxial Cable - BMBM-1000-00 Silver	Semflex	LISN Cable	BMBM-1000-00	01/05/16	01/04/17
Coaxial Cable - Chamber 3 cable set (Primary)	Micro-Coax	Chamber 3 cable set (Primary)	KMKM-0244-01; KMKM-0670-00; KFKF-0198-01	08/08/16	08/08/18
Bore-sight Antenna Positioning Tower	Sunol Sciences	TLT2	N/A	N/A	N/A

### \* EMI RECEIVER SOFTWARE VERSION

The receiver firmware used was version 4.43 Service Pack 3

## END OF TEST REPORT

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