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TIMCO ENGINEERING, Inc.

An IIA Company

FCC Part 15.236 Test Report

APPLICANT	WISYCOM SRL
	VIA SPIN, 156 ROMANO D'EZZELINO (VI) 36060 ITALY
FCC ID	POUMTB40SUSX
MODEL NUMBER	MTB40S-US, MTB40S-USX
PRODUCT DESCRIPTION	PLUG ON TRANSMITTER
DATE SAMPLE RECEIVED	8/23/2018
DATE TESTED	8/23/2018
TESTED BY	Tim Royer
APPROVED BY	Franklin Rose
TEST RESULTS	☒ PASS ☐ FAIL

Report Number	Report Version	Description	Issue Date
1334BUT18_PT15_TestReport	Rev1	Initial Issue	08/29/2018

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

TABLE OF CONTENTS

GENERAL REMARKS **2**

GENERAL INFORMATION **3**

RESULTS SUMMARY **4**

CHANGE(S) TO EUT, SUMMARY **4**

RF POWER OUTPUT **5**

TEST DATA: MEAN OUTPUT MEASUREMENT TABLE, 600 MHZ GUARD BAND & DUPLEX GAP 5

EMISSION MASK **6**

TEST DATA: 614.075 MHZ EMISSION MASK PLOT 8
TEST DATA: 615.925 MHZ EMISSION MASK PLOT 9
TEST DATA: 658 MHZ EMISSION MASK PLOT 10
TEST DATA: 662.925 MHZ EMISSION MASK PLOT 11

STATEMENT OF MEASUREMENT UNCERTAINTY **12**

EMC EQUIPMENT LIST **13**

GENERAL REMARKS

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
Designation #: US1070

Tested by:

Name and Title	Tim Royer, Project Manager / EMC Testing Engineer
Date	08/29/2018

Reviewed and Approved by:

Name and Title	Franklin Rose, Project Manager / EMC Testing Technician
Date	08/29/2018

GENERAL INFORMATION

EUT Description	PLUG ON TRANSMITTER
FCC ID	POUMTB40SUSX
Model Number	MTB40S-US, MTB40S-USX
Operating Frequency	Band 2: 614.075 – 615.925 MHz Band 4: 657.075 – 662.925 MHz
Test Frequencies	Band 2: 614.075, 615.925 MHz
EUT Power Source	☐ 110–120Vac/50– 60Hz
	☐ DC Power
	☒ Battery Operated Exclusively
Test Item	☐ Prototype
	☐ Pre-Production
	☒ Production
Type of Equipment	☐ Fixed
	☐ Mobile
	☒ Portable
Antenna Connector	BNC
Test Conditions	The temperature was 26ºC Relative humidity of 50%.
Modification to the EUT	No Modification to EUT.
Test Exercise	The EUT was placed in continuous transmit and was operated in "Test Mode" for digital emissions tests.
Applicable Standards	FCC CFR 47 Part 2, & 15, KDB 206256 D01 v02, ANSI C63.10-2013**,** ANSI C63.26 2015
Test Facility	Timco Engineering Inc. at 849 NW State Road 45 Newberry, FL 32669 USA. Designation #: US1070

RESULTS SUMMARY

FCC Rule Part	Requirement	Test Item	Result
PART 2.1046(a), 15.236(d)(2)	Conducted Power	RF Power Output	**PASS**
PART 15.236(g), ETSI EN 300-422-1 s. 8.3.2	Unwanted Emissions	Emission Mask	**PASS**

CHANGE(S) TO EUT, SUMMARY

The changes to Part 74 H, specifically in the 600 MHz band have impact on the granted function of this device. In order to comply with the changes outlined in KDB 206256 D01 Wireless Microphones v02, this device has been tested to show compliance with the new rulings.

This device's hardware has not been altered; only the software/firmware settings have been changed in order to become compliant with the newly updated rules, as per KDB 206256, sections II and III. For more specific information, please see the updated Operational Description of the device.

This device was previously granted on the following frequency bands:

Date of Grant: 04/21/2015

470.075 – 607.925 MHz
614.075 – 697.925 MHz

And only the software has been altered to limit operation to:

614.075 – 615.925 MHz

Note: The EUT is only marketed and sold to "Professional Users" and Part 74 frequencies are also selectable in device. For more details, see companion report:

"1334AUT18_PT74_TestReport_Rev1"

RF POWER OUTPUT

Rule Part No.: PART 2.1046(a), 15.236(d)(2)

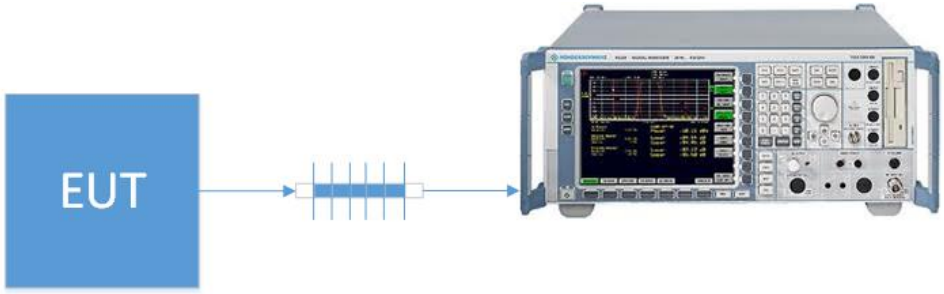
Requirement:

§15.236 Operation of wireless microphones in the bands 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-698 MHz.

(d) The maximum radiated power shall not exceed the following values:

(2) In the 600 MHz guard band and the 600 MHz duplex gap: 20 mW EIRP.

Setup Diagram:



Test Data: Mean Output Measurement Table, 600 MHz Guard Band & Duplex Gap

Tuned Frequency (MHz)	Mean Power Output			
	Level (dBm)	Ant. Gain (dBi)	Level (mW)	Margin (mW)
614.075	10.82	0.00	12.1	7.9
615.925	10.81	0.00	12.1	7.9
658.000	12.00	0.00	15.8	4.2
662.925	12.17	0.00	16.5	3.5

EMISSION MASK

Rule Part No.: FCC CFR 47 PART 15.236(g)

(g) Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in §8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08), *Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1: Technical characteristics and methods of measurement.* Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08).

Requirement: ETSI EN 300 422-1 Section 8.3.2

(c) Compliance for emission mask and spurious emission requirements shall be demonstrated using the applicable measurement procedures of ETSI EN 300 422-1. Compliance with the emission limits shall be demonstrated using a RMS Average detector. Emissions shall be investigated up to the 10th harmonic of the fundamental. All other technical requirements shall be demonstrated utilizing the procedures specified in ANSI C63.26,[4] as applicable.

EMISSION MASK

8.3.2.2 Limits

The transmitter output spectrum shall be within the mask defined in figure 4. This mask may also be used for analogue.

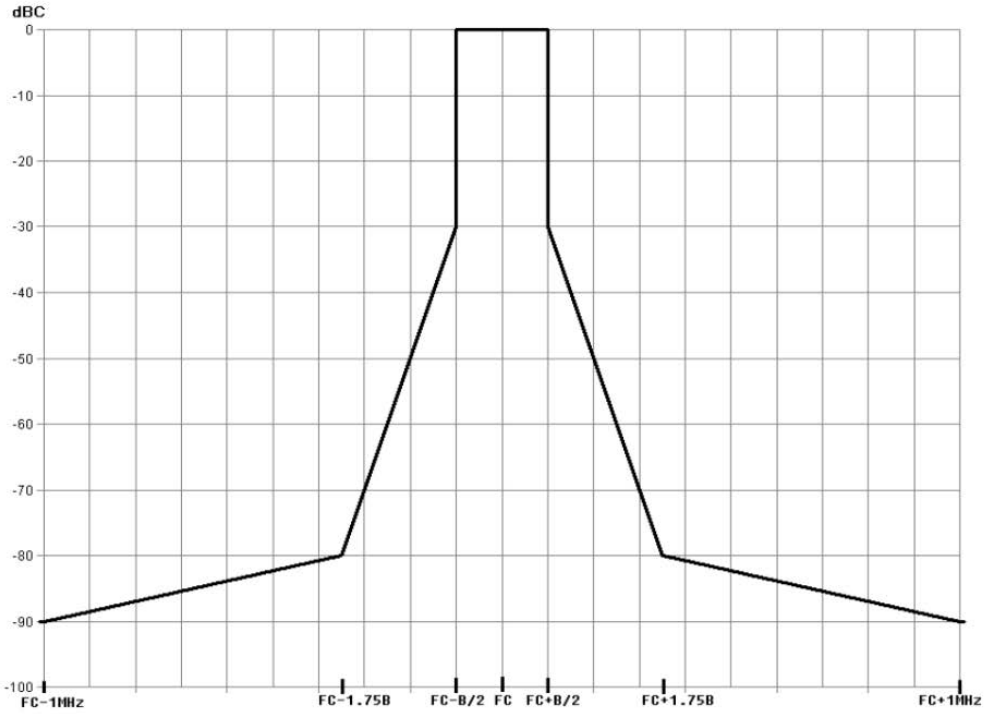
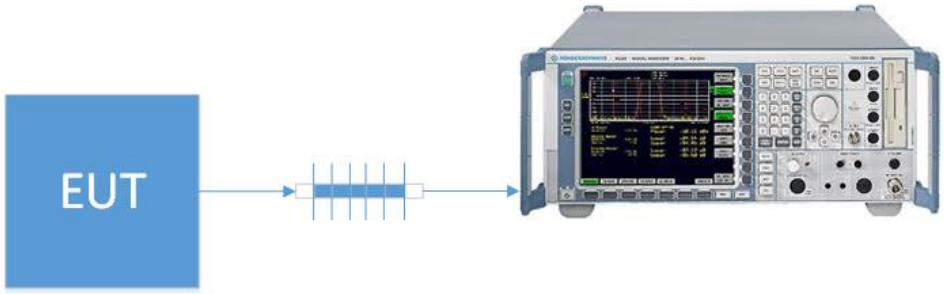


Figure 4: Spectrum mask for digital systems below 1 GHz

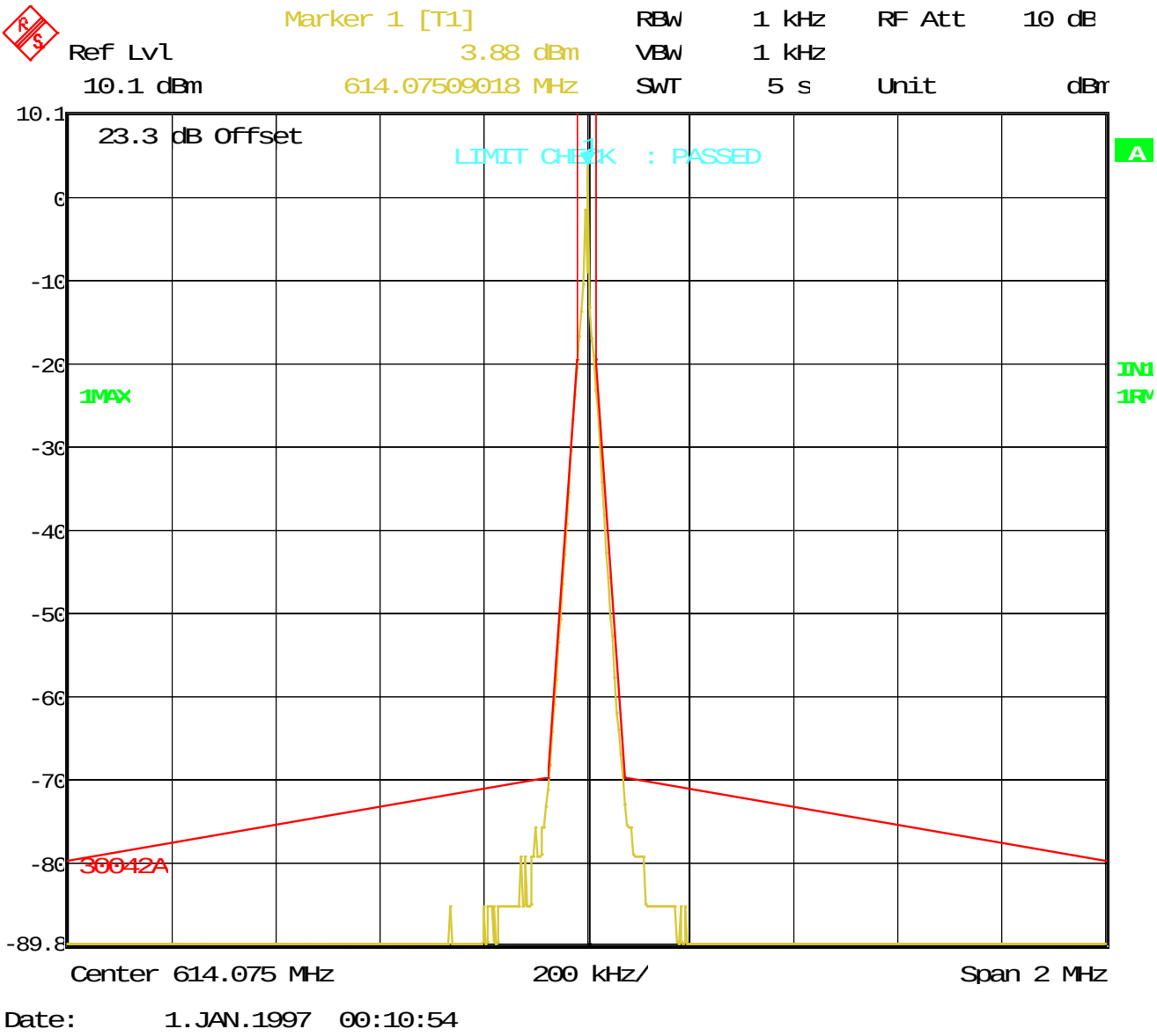
Procedure: ETSI EN 300 422-1 s. 8.3.2
ANSI C63.26, 5.4.4 (using Test Setup from TIA 603-E 2.2.11, below)

Setup Diagram:



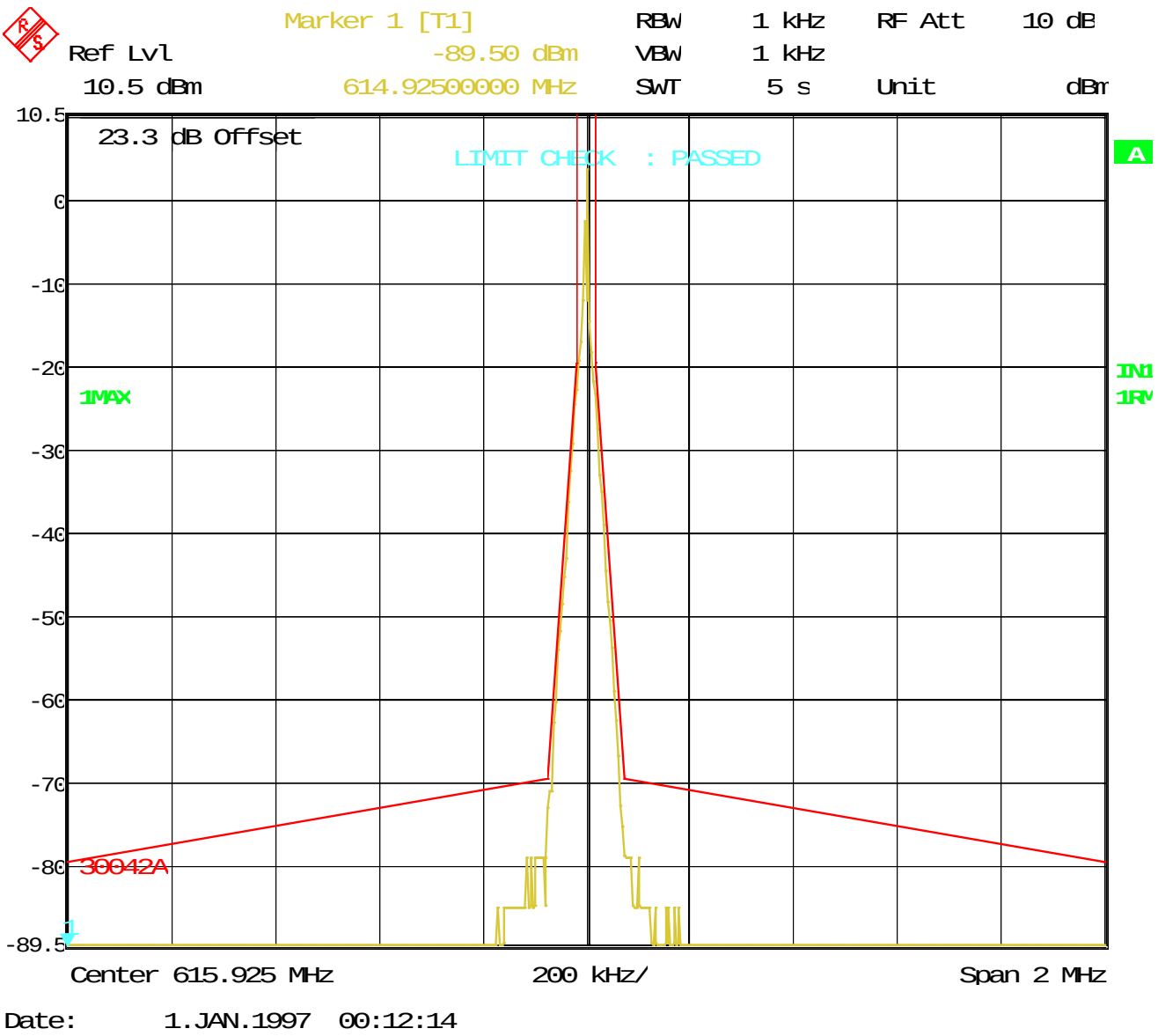
EMISSION MASK

Test Data: 614.075 MHz Emission Mask Plot



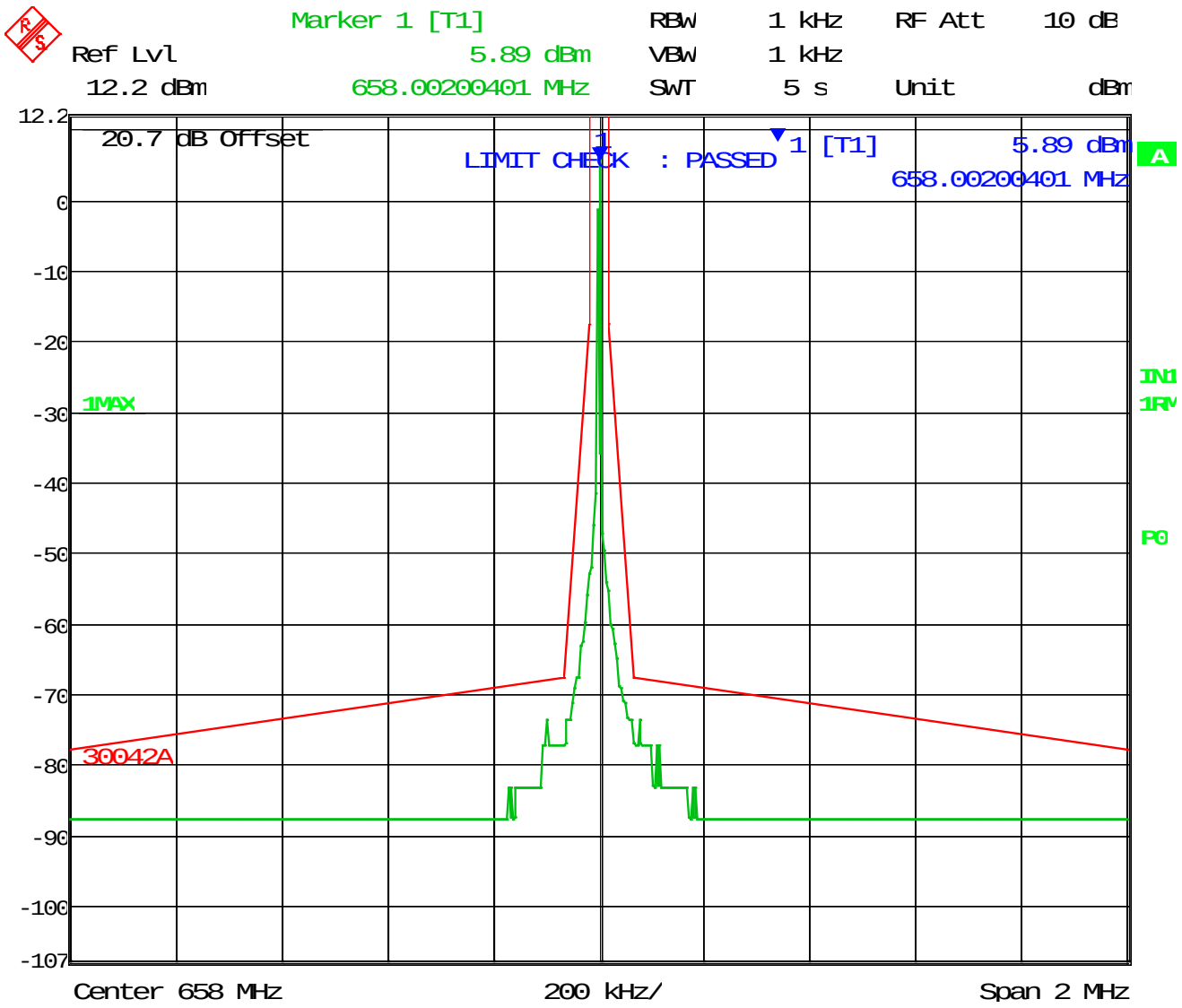
EMISSION MASK

Test Data: 615.925 MHz Emission Mask Plot



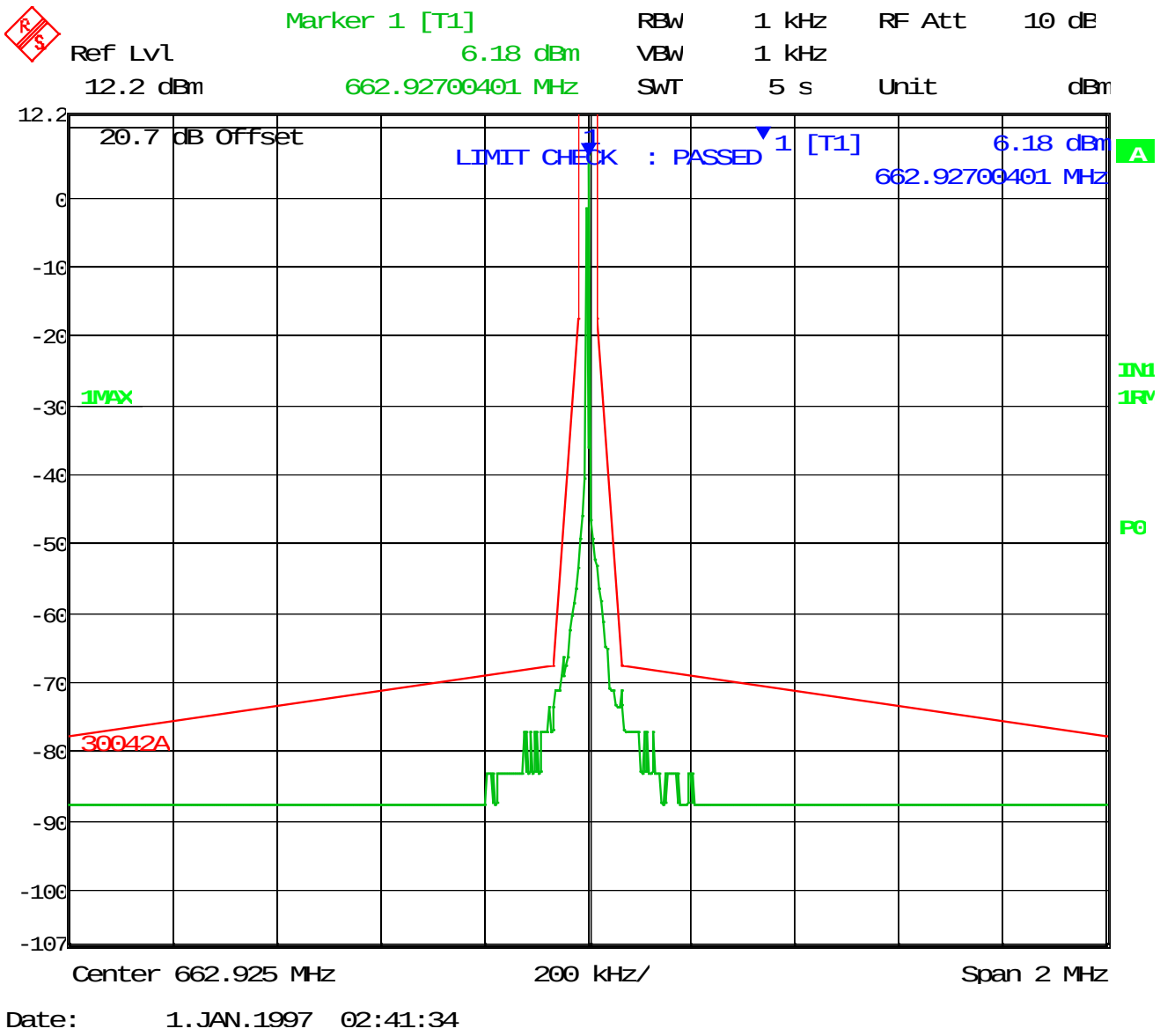
EMISSION MASK

Test Data: 658 MHz Emission Mask Plot



EMISSION MASK

Test Data: 662.925 MHz Emission Mask Plot



Date: 1.JAN.1997 02:41:34

STATEMENT OF MEASUREMENT UNCERTAINTY

The data and results referenced in this document are true and accurate. The measurement uncertainty was calculated for all measurements listed in this test report according To CISPR 16–4 or ENTR 100-028 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: "Uncertainty in EMC Measurements" and is documented in the Timco Engineering, Inc. quality system according to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Timco Engineering, Inc. is reported:

Test Items	Measurement Uncertainty	Notes
RF Frequency Accuracy	± 49.5 Hz	(1)
RF Conducted Power	±0.93dB	(1)
Conducted spurious emission of transmitter valid up to 40GHz	±1.86dB	
Occupied Bandwidth	±2.65%	
Audio Frequency Response	±1.86dB	
Modulation limiting	±1.88%	
Radiated RF Power	±1.4dB	
Maximum frequency deviation: Within 300 Hz and 6kHz of audio freq. Within 6kHz and 25kHz of audio Freq.	 ±1.88% ±2.04%	
Rad Emissions Sub Meth up to 26.5GHz	±2.14dB	
Adjacent channel power	±1.47dB	(1)
Transient Frequency Response	±1.88%	
Temperature	±1.0°C	(1)
Humidity	±5.0%	

Notes: (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

EMC EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Sweep/Signal Generator	Anritsu	68369B	985112	11/08/17	11/08/19
EMI Test Receiver R & S ESIB 40 Screen Room	Rohde & Schwarz	ESIB 40	100274	08/16/16	08/16/19
Tunable Notch Filter 250-850 MHz	Eagle	TNF-200	250-850 MHz (#19)	01/19/17	11/19/19

***EMI RECEIVER SOFTWARE VERSION**

The receiver firmware used was version 4.43 Service Pack 3

END OF TEST REPORT