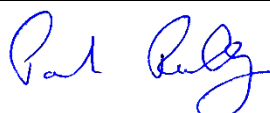


<b>Project Num</b>	20E8928-2b
<b>Quotation</b>	Q20-1410-1
<b>Prepared For</b>	Sensata Technologies Ltd
<b>Company Address</b>	11 Technology Park, Belfast Road, Antrim, Northern Ireland BT41 1QS
<b>Contact</b>	James Kyle
<b>Contact Email</b>	<a href="mailto:jakyle@sensata.com">jakyle@sensata.com</a>
<b>Contact Phone</b>	+44 28 9448 3067
<b>Prepared By</b>	Compliance Engineering Ireland
<b>Test Lab Address</b>	Clonross Lane, Derrockstown, Dunshaughlin, Co. Meath, Ireland
<b>Tested By</b>	Joy Dalayap Michael Kirby
<b>Test Report By</b>	Michael Kirby
<b>FCC Test Firm Registration</b>	409640
<b>IC Site Registration</b>	IE0001
<b>Date</b>	15 <sup>th</sup> Mar 2021
<b>EUT Description</b>	HUBA
<b>FCC ID</b>	2ATIMHUBA
<b>IC ID</b>	25094-HUBA
<b>Authorised by</b>	<b>Paul Reilly</b>
<b>Authorised Signature:</b>	

## TEST SUMMARY

The equipment complies with the requirements according to the following standards.

FCC 15.247 Section	RSS-247 Section	TEST PARAMETERS	Test Result
15.247 (a)2	RSS-247 5.2a	6dB bandwidth	Pass
15.247 (e)	RSS-247 5.2b	Power Spectral Density	Pass
15.247 (b)3	RSS-247 5.4d	Output power Conducted	Pass
15.247 (d)	RSS-247 5.5	Conducted Spurious Emissions	Pass
15.205	RSS Gen 8.9	Radiated Spurious Emissions	Pass
15.209	RSS Gen 8.10		
	RSS Gen 6.7	99% bandwidth	Pass

RSS 247-2 (Feb 2017)

RSS Gen Issue5 Amd 2 (Mar 2021)

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF COMPLIANCE ENGINEERING IRELAND LTD

**Exhibit A – Technical Report**

Table of Contents

---

<b>1.0</b>	<b>EUT DESCRIPTION.....</b>	<b>4</b>
<b>1.1</b>	<b>EUT OPERATION .....</b>	<b>5</b>
<b>1.5</b>	<b>DESCRIPTION OF TEST MODES .....</b>	<b>6</b>
<b>2.0</b>	<b>EMISSIONS MEASUREMENTS.....</b>	<b></b>
<b>3.0</b>	<b>CONDUCTED EMISSIONS ON THE MAINS MEASUREMENTS .....</b>	<b>8</b>
<b>4.0</b>	<b>CONDUCTED MEASUREMENTS ON THE ANTENNA PORT .....</b>	<b>9</b>
<b>5.0</b>	<b>SPURIOUS EMISSIONS .....</b>	<b>18</b>
<b>6.0</b>	<b>LIST OF TEST EQUIPMENT .....</b>	<b>28</b>
<b>7.0</b>	<b>MEASUREMENT UNCERTAINTY .....</b>	<b>29</b>
	<b>APPENDIX A SCANS FOR CONDUCTED MEASUREMENTS .....</b>	<b>30</b>
	<b>APPENDIX B SCANS FOR RADIATED BAND EDGE /RESTRICTED BAND PCB ANTENNA.....</b>	<b>35</b>
	<b>APPENDIX C SCANS FOR RADIATED SPURIOUS EMISSIONS PCB ANTENNA .....</b>	<b>38</b>
	<b>APPENDIX D SCANS FOR RADIATED BAND EDGE /RESTRICTED BAND MODULE ANTENNA.....</b>	<b>45</b>
	<b>APPENDIX E SCANS FOR RADIATED SPURIOUS EMISSIONS MODULE ANTENNA .....</b>	<b>48</b>
	<b>APPENDIX F EUT ORIENTATION .....</b>	<b>55</b>

This report contains Appendices C,D,E and F

Please review in conjunction with main report for remaining items above  
“Sensata Technologies 20E8928-2b HUBA Wifi FCCIC”

## 1.0 EUT Description

<b>Model:</b>	HUBA
<b>Type:</b>	Wireless Gateway
<b>Type of radio:</b>	Stand-alone
<b>Transmitter Type:</b>	802.15.4 (Thread), 802.11G 802.11N Wifi
<b>Operating Frequency Range(s):</b>	2.405 GHz - 2.480GHz Thread 2.412-2.462GHz Wifi
<b>Number of Channels:</b>	16 Thread 11 Wifi
<b>Antenna:</b>	Integral
<b>Power configuration:</b>	12 v Battery.
<b>Ports:</b>	None
<b>Classification:</b>	DTS, CYY
<b>HVIN:</b>	HUBA
<b>PMN:</b>	HUBA
<b>Test Standards:</b>	15.247 RSS-247
<b>Test Methodology:</b>	Measurements performed according to the procedures in ANSI C63.10-2013 KDB 558074 V5 R02

The EUT was a Gateway for use in the vehicles. Its purpose was to relay packets received on the 433MHz band using a transmitter in the 2.4GHz band.

The EUT contained transmitters using Wifi and Thread technology and also a 433MHz receiver.

For Wifi it was possible to switch between 2 internal antennas, one an internal module antenna and the other one a printed pcb antenna.

The Thread radio had its own dedicated pcb antenna.

This report details test carried out on the Wifi transmitter.

This report contains Appendices C, D,E and F

Please review in conjunction with main report "Sensata Technologies 20E8928-2a HUBA Wifi FCCIC"

**Appendix C**

**Radiated Spurious Emissions PCB Antenna**

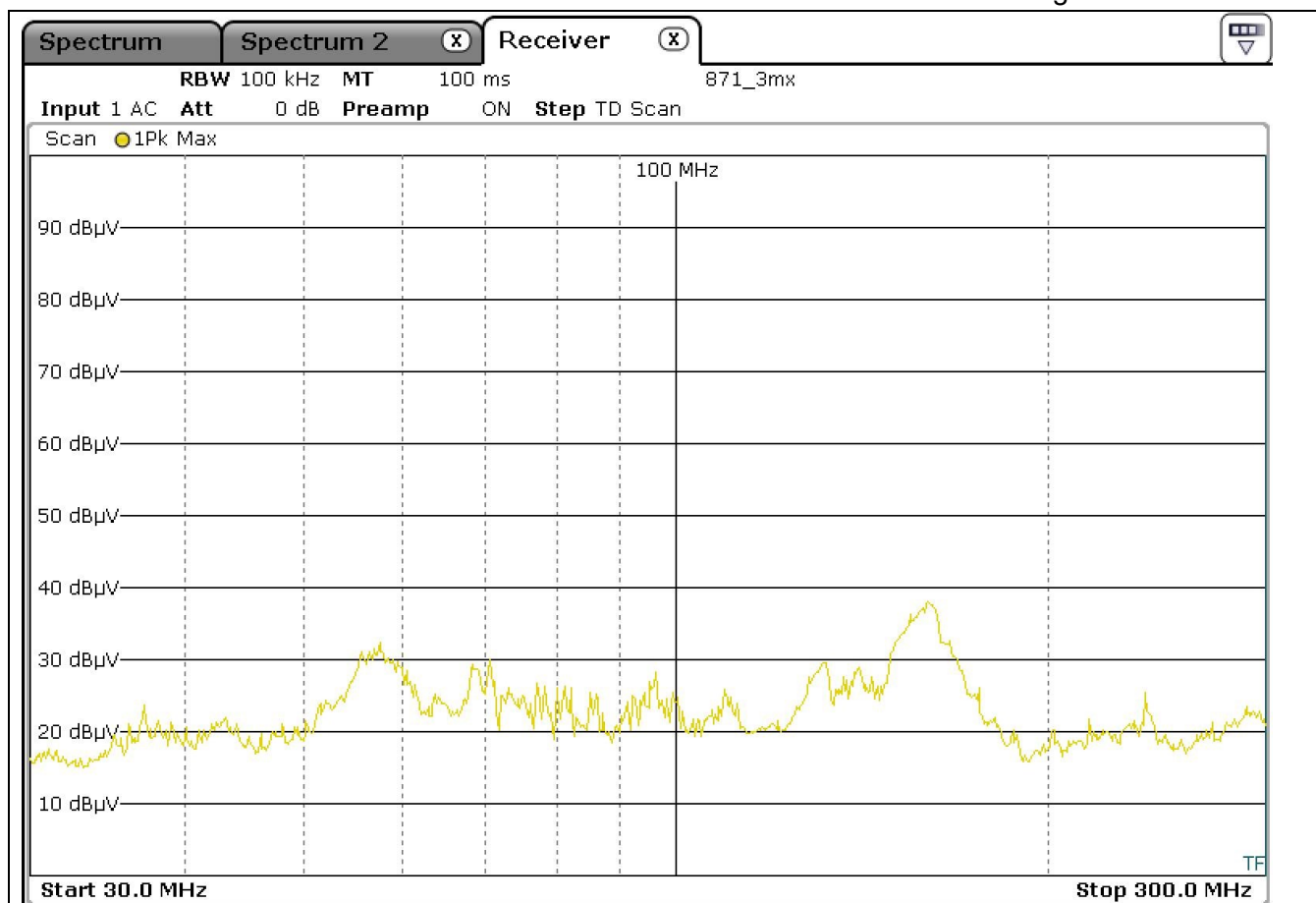


Fig C1 High Channel Radiated Emissions 30MHz -300MHz Vertical 3metres

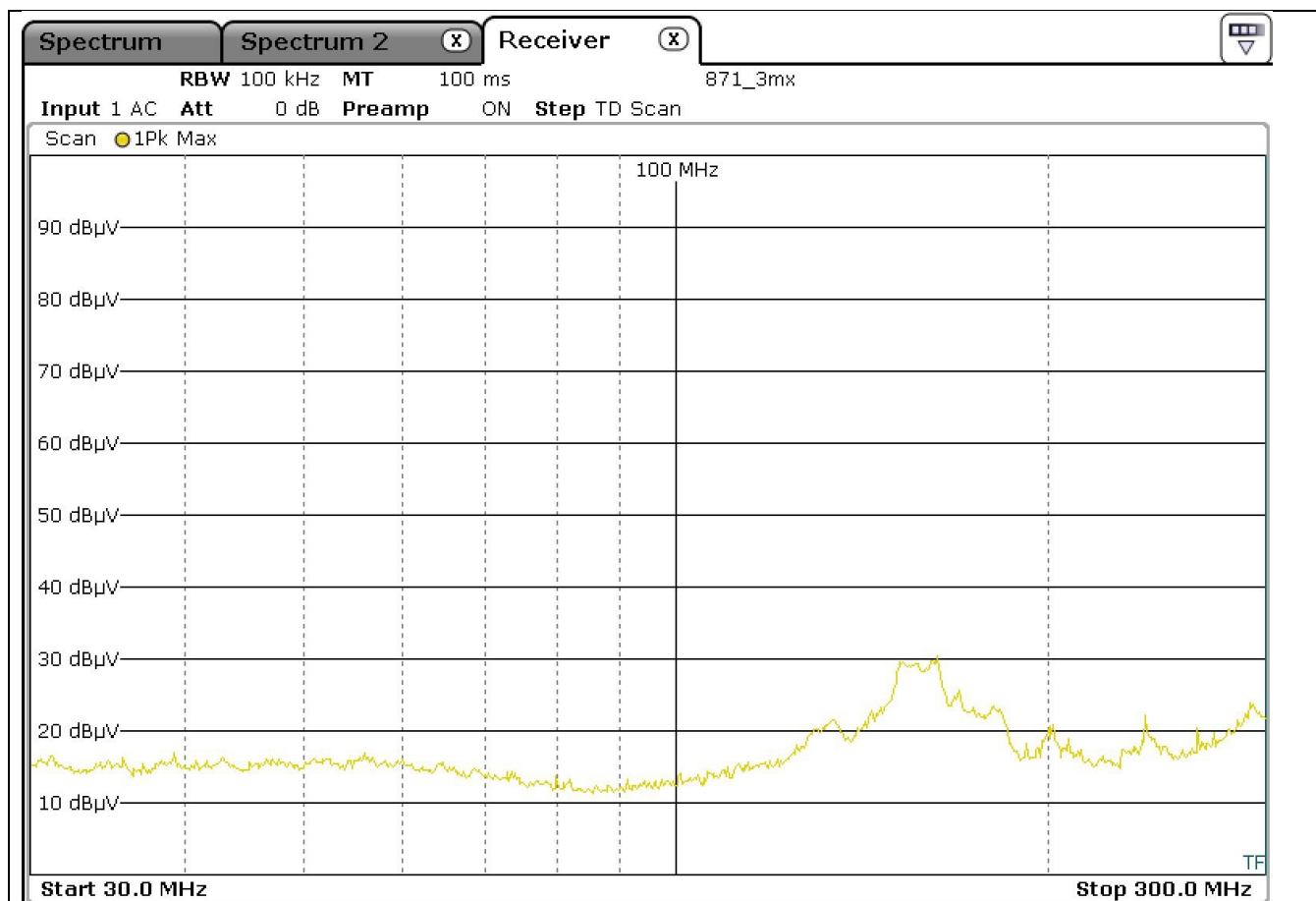
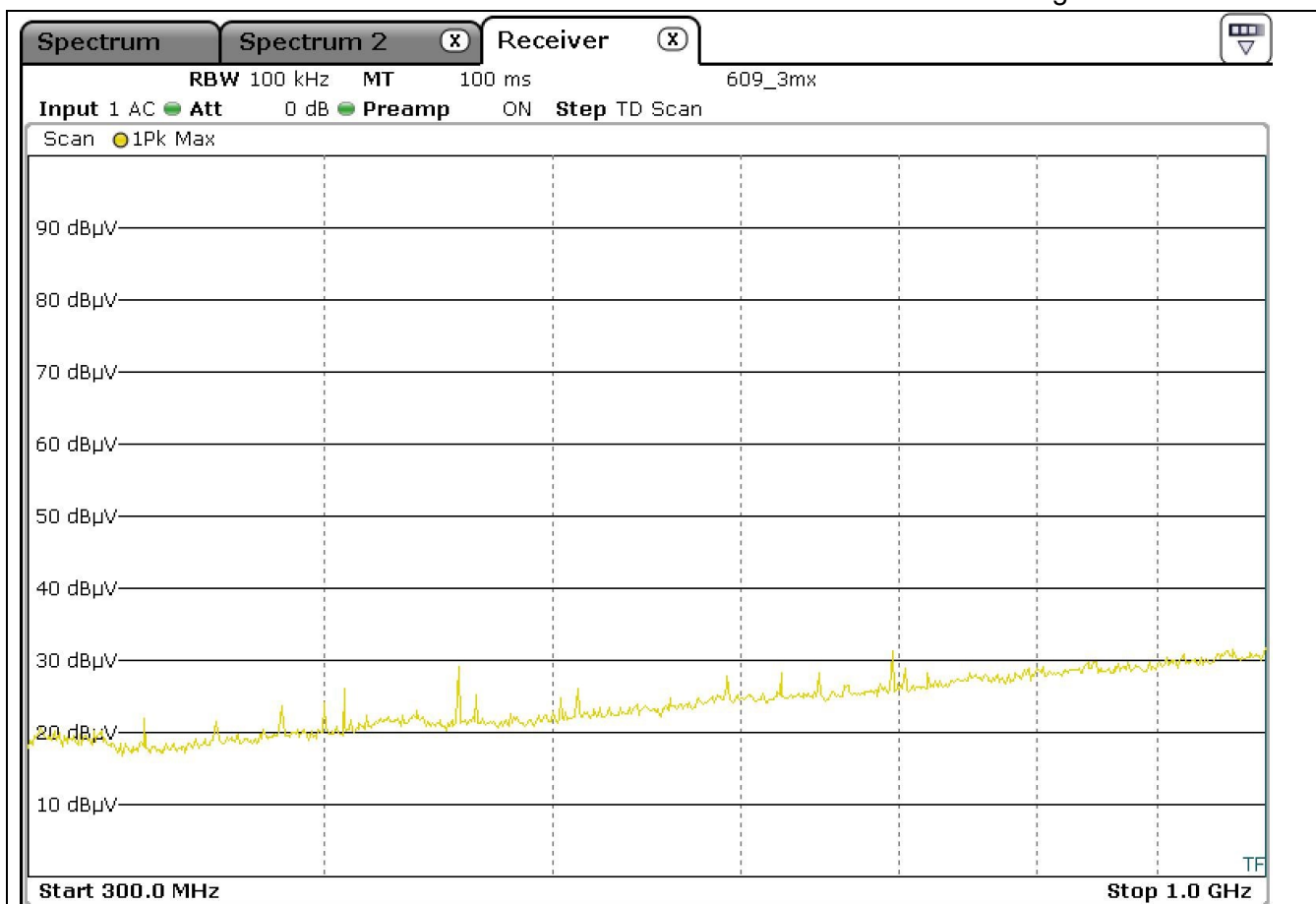
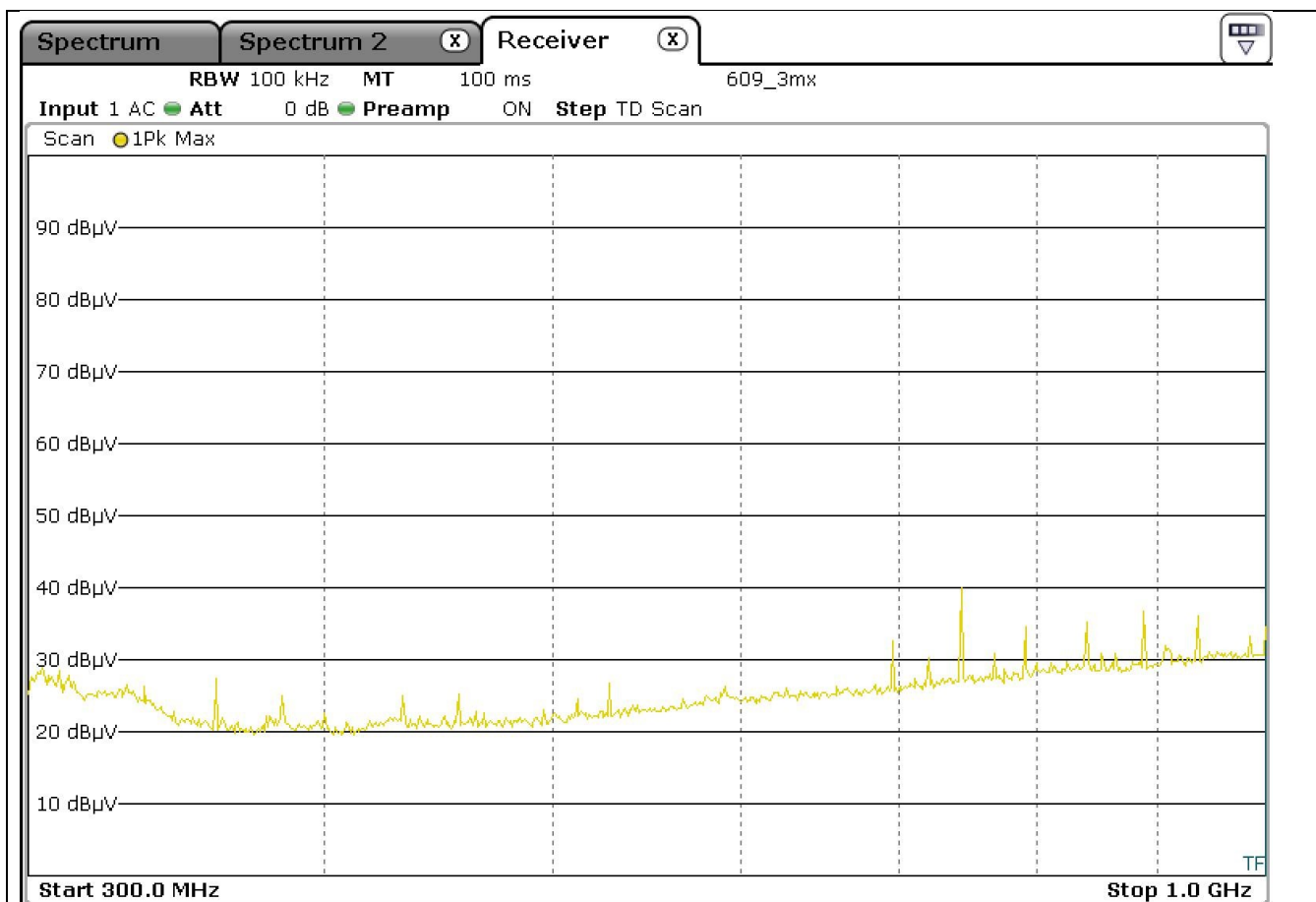


Fig C2 High Channel Radiated Emissions 30MHz -300MHz Horizontal 3metres



**Fig C3 High Channel Radiated Emissions 300MHz -1GHz Vertical 3metres**



**Fig C4 High Channel Radiated Emissions 300MHz -1GHz Horizontal 3metres**

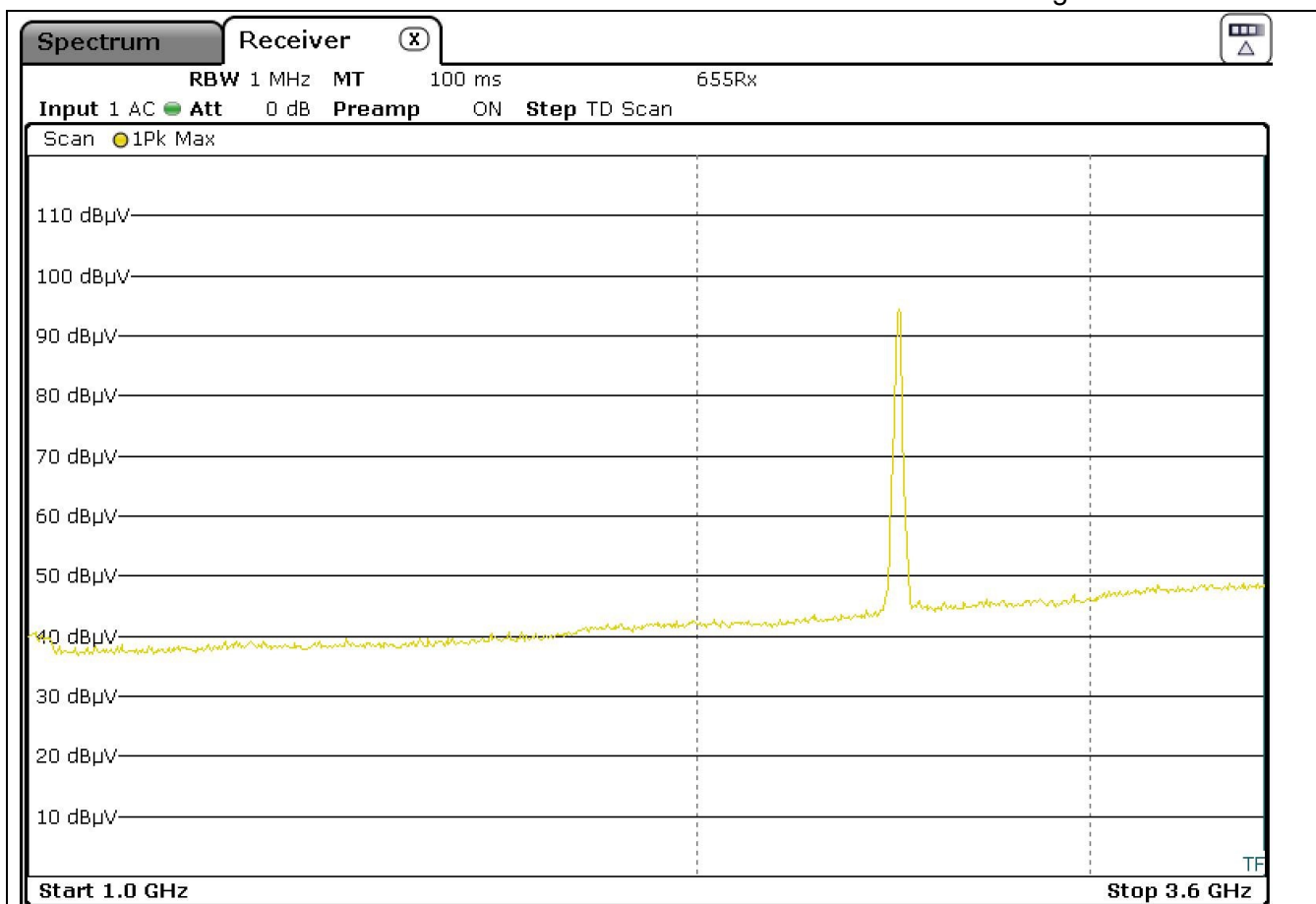


Fig C5 High Channel Radiated Emissions 1GHz -3.6GHz Vertical 3metres

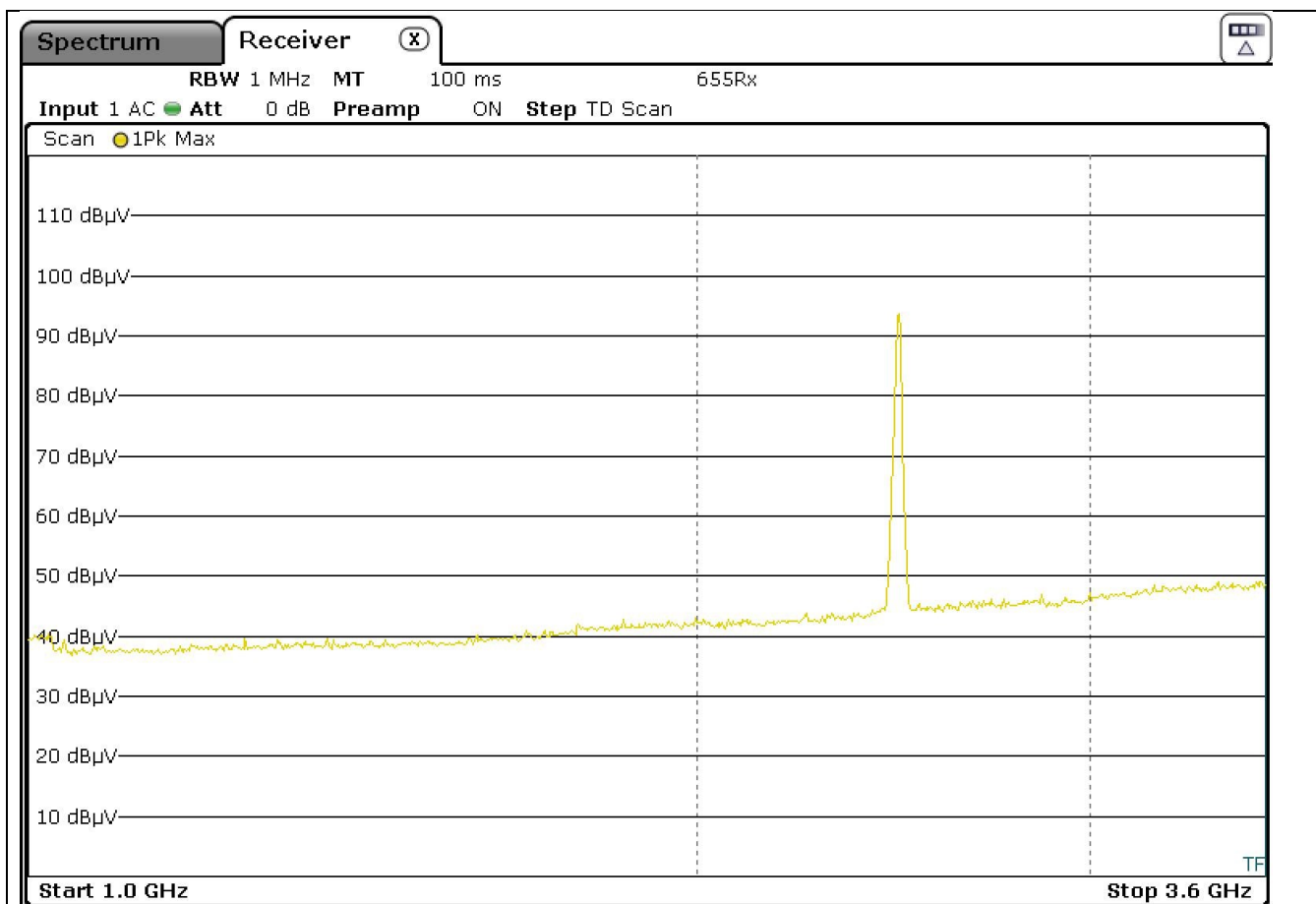
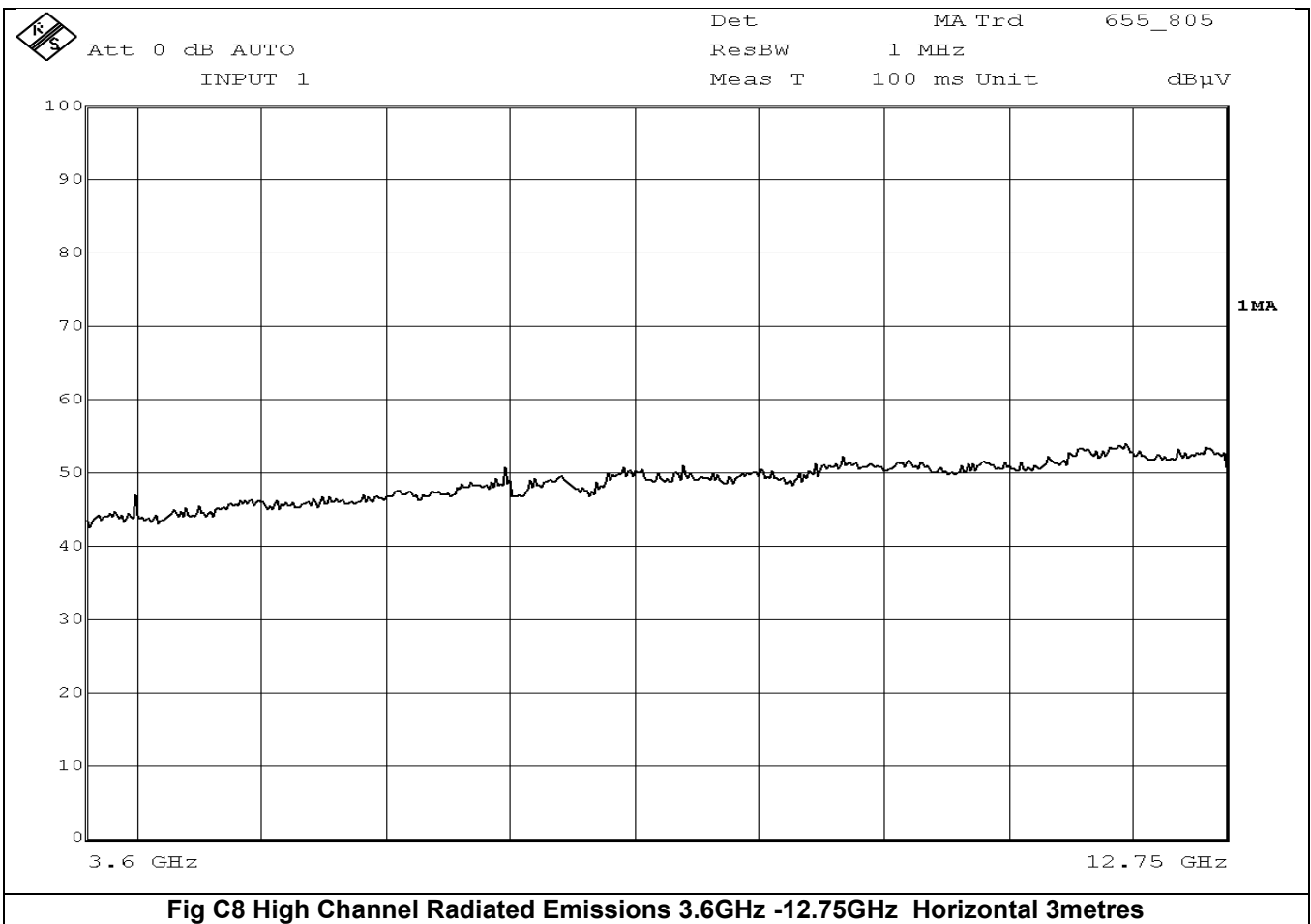
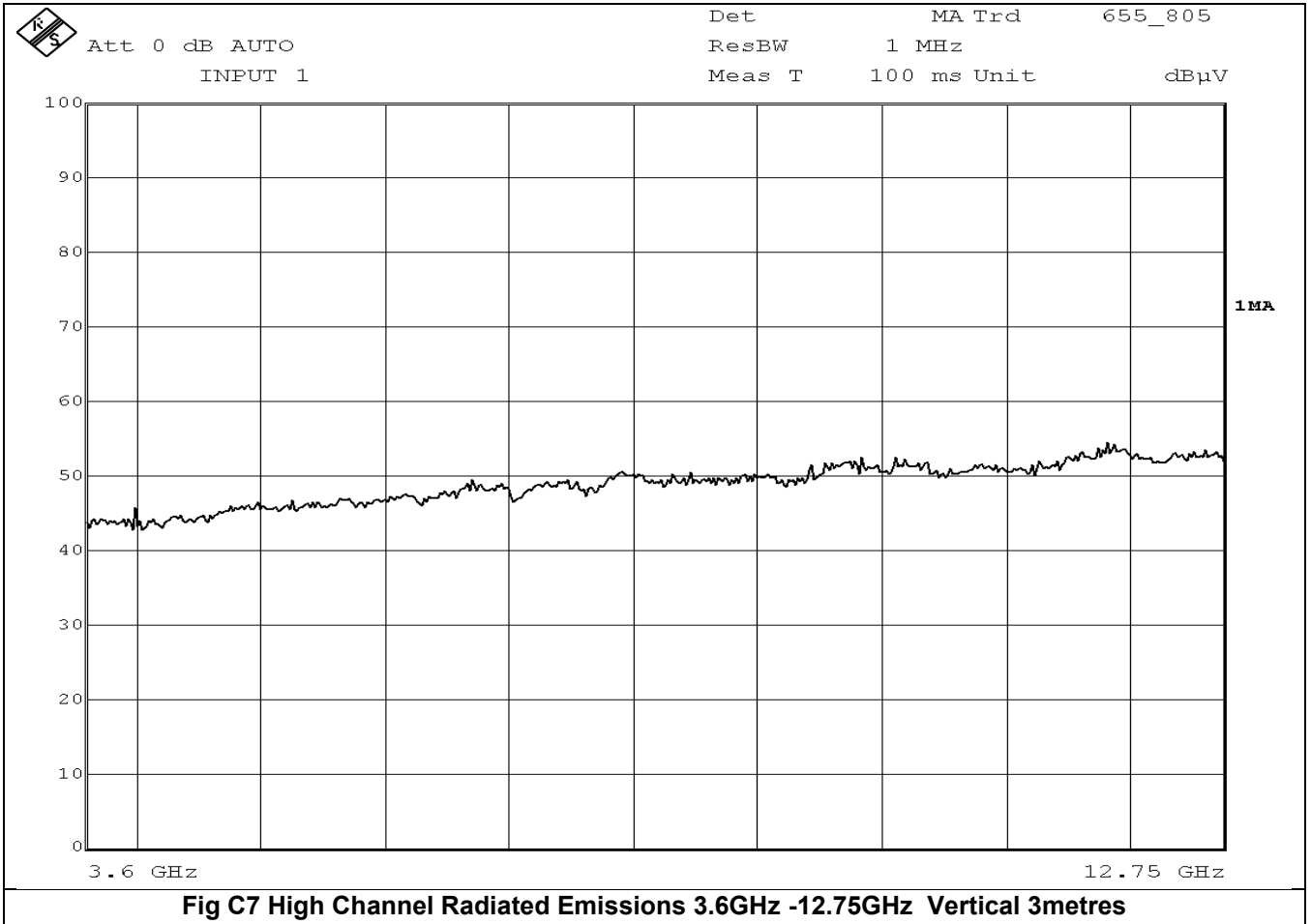
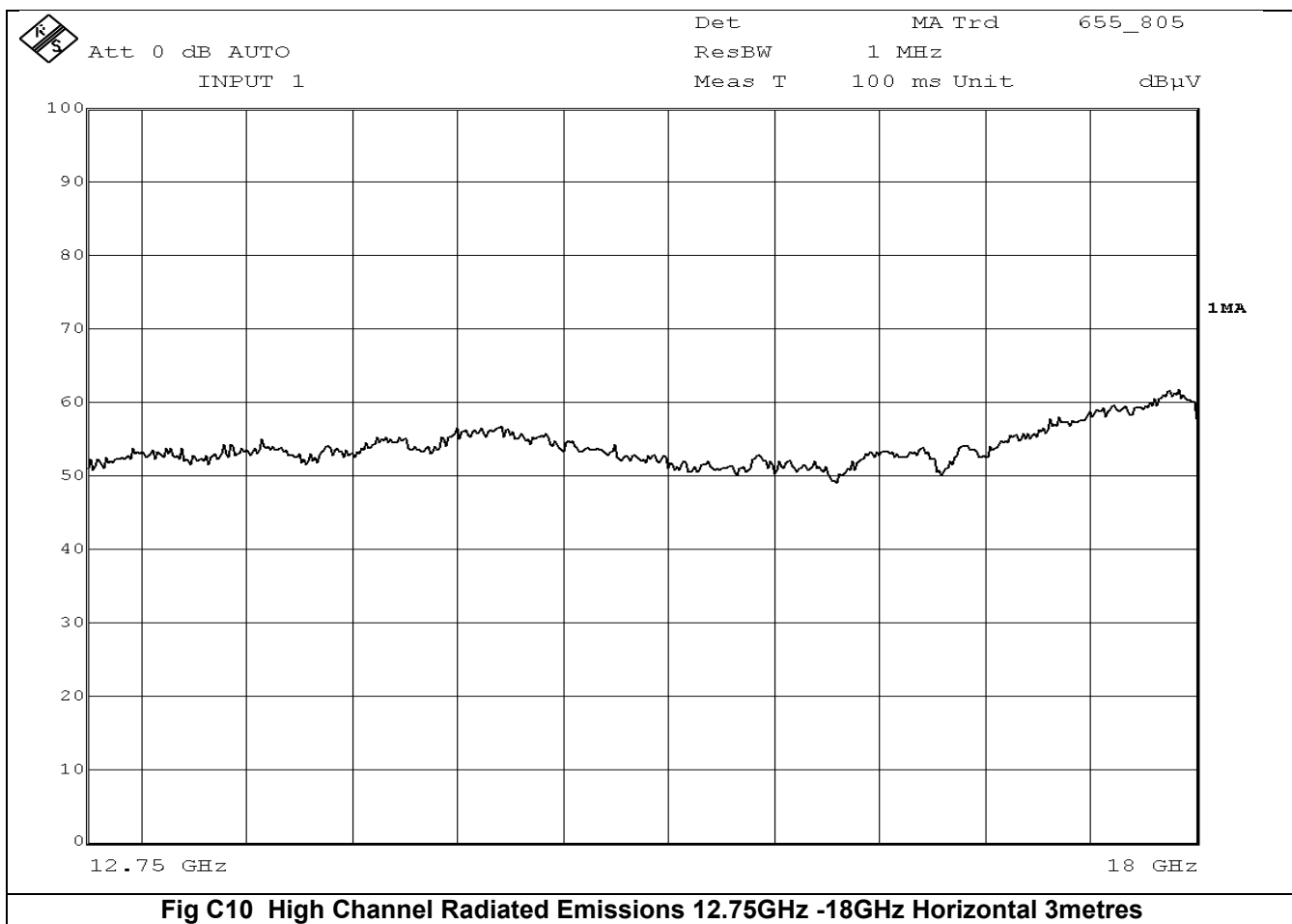
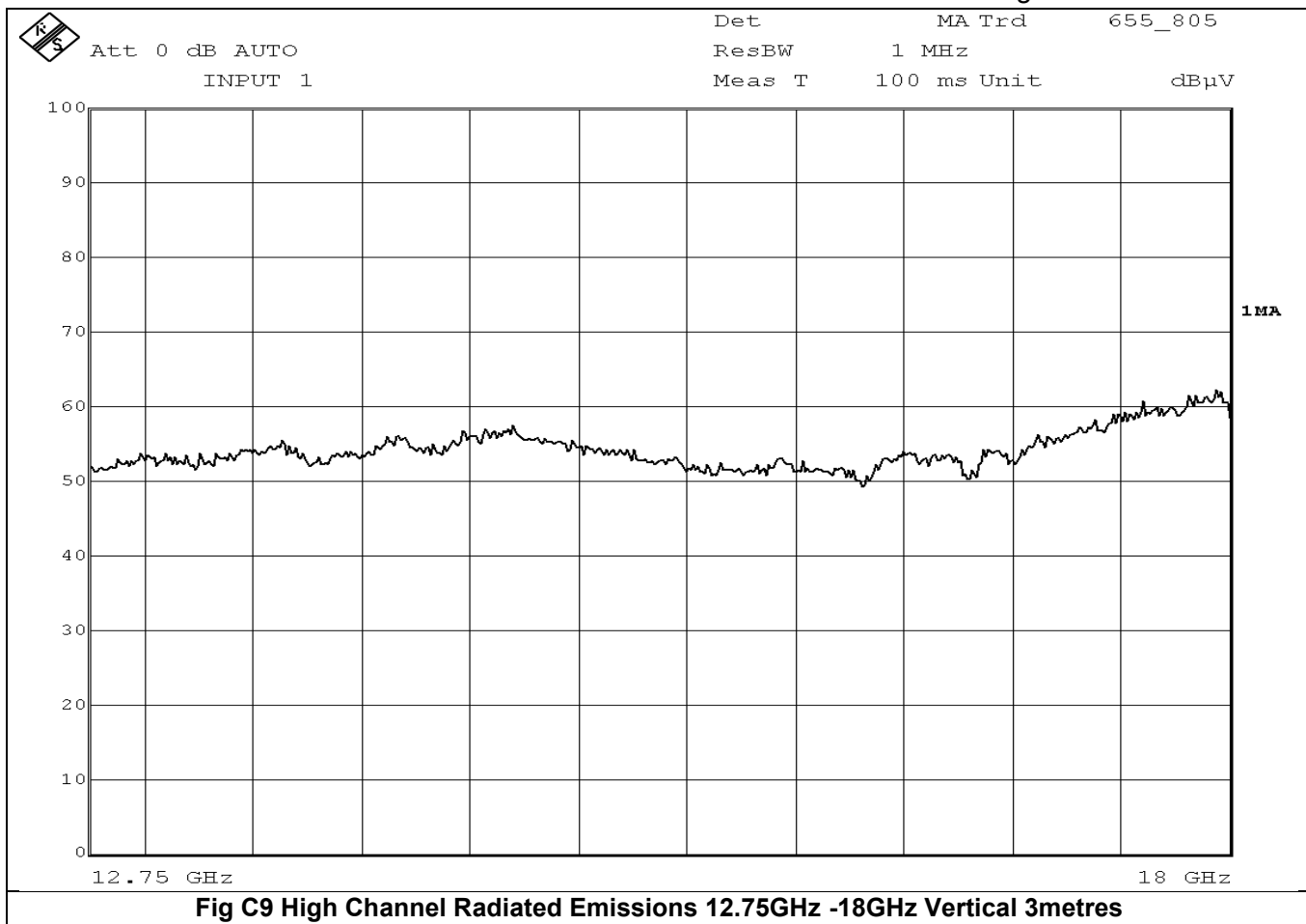
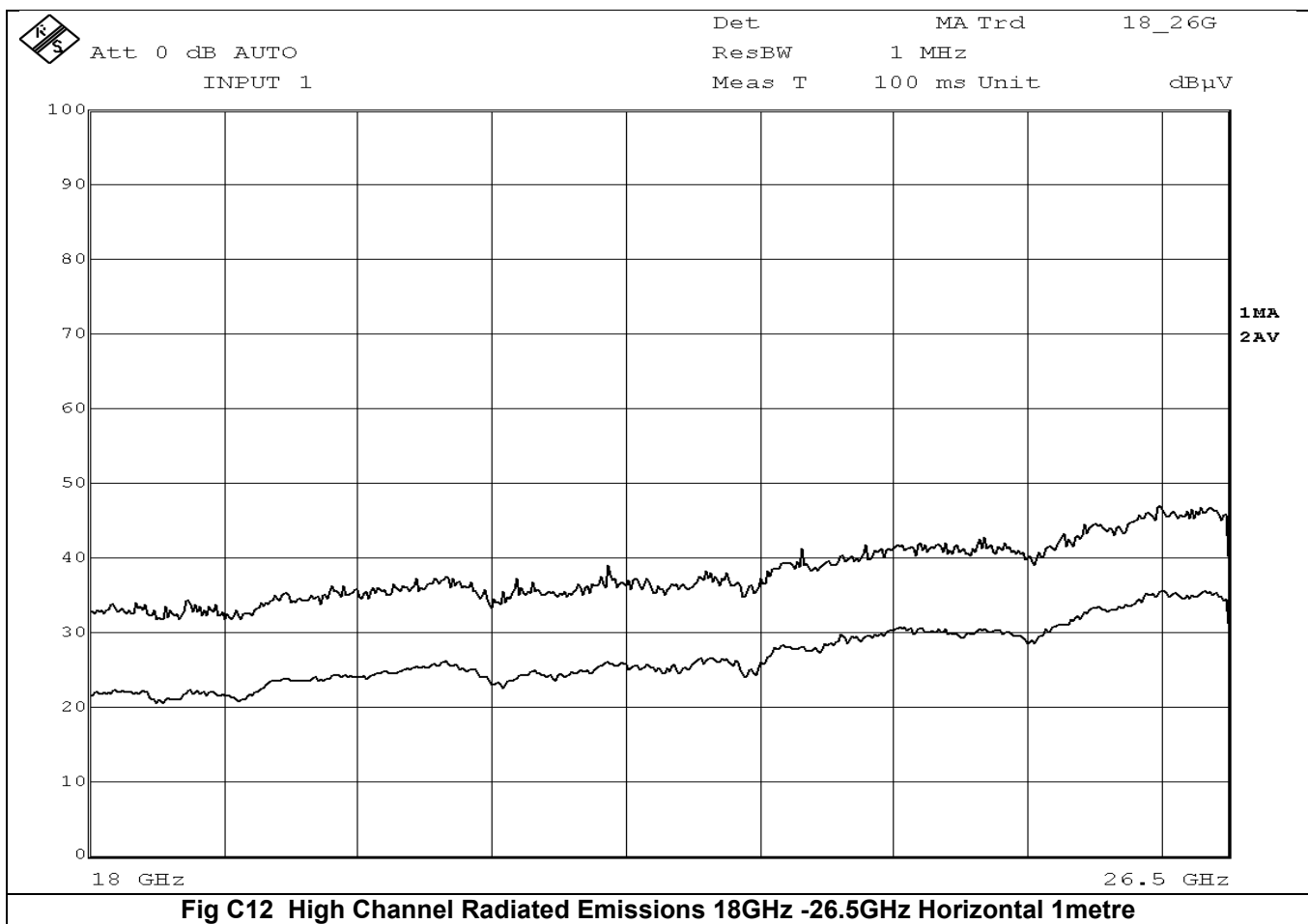
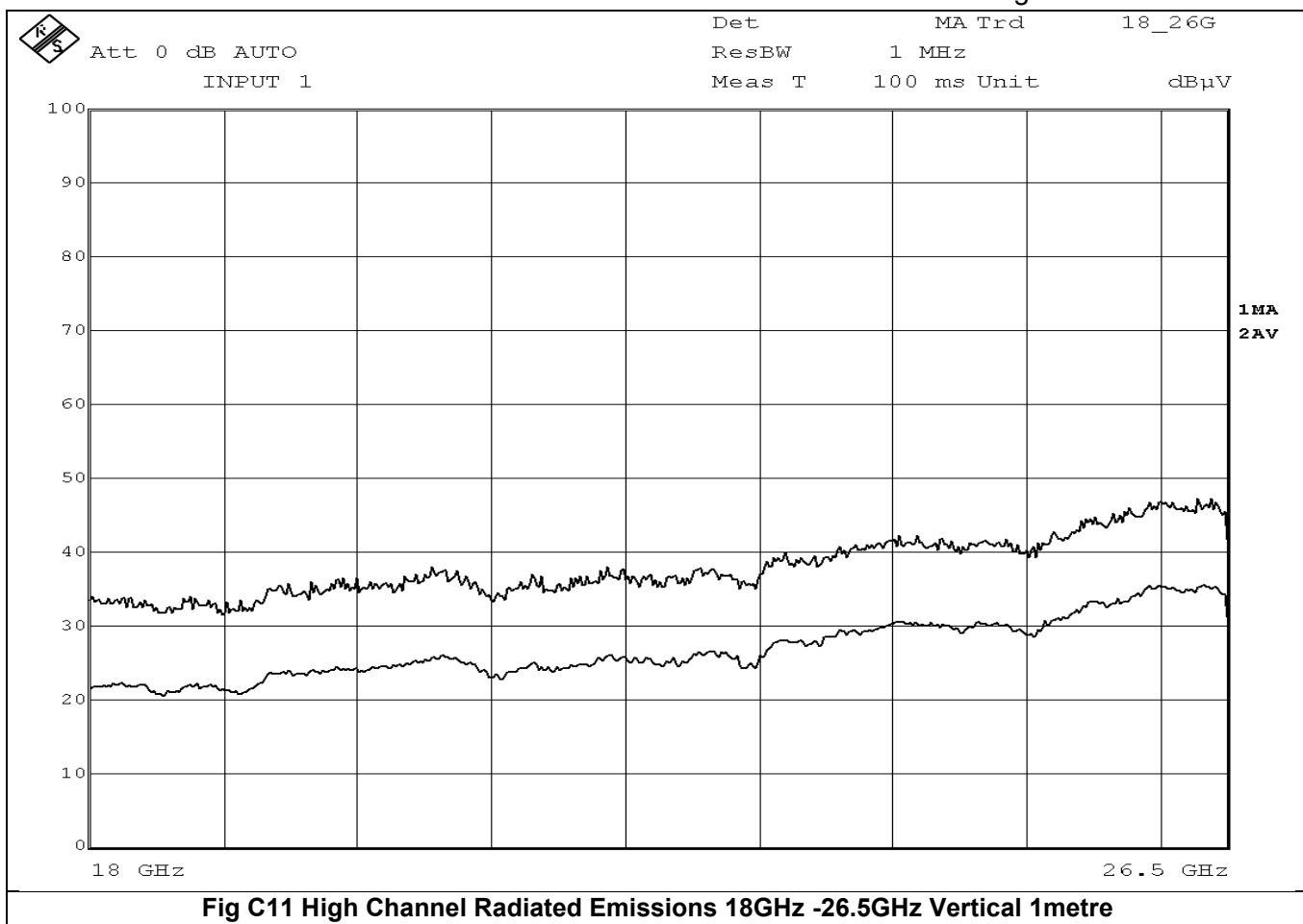


Fig C6 High Channel Radiated Emissions 1GHz -3.6GHz Horizontal 3metres









**Appendix D**

**Radiated tests for Band Edges /Restricted band Module antenna**

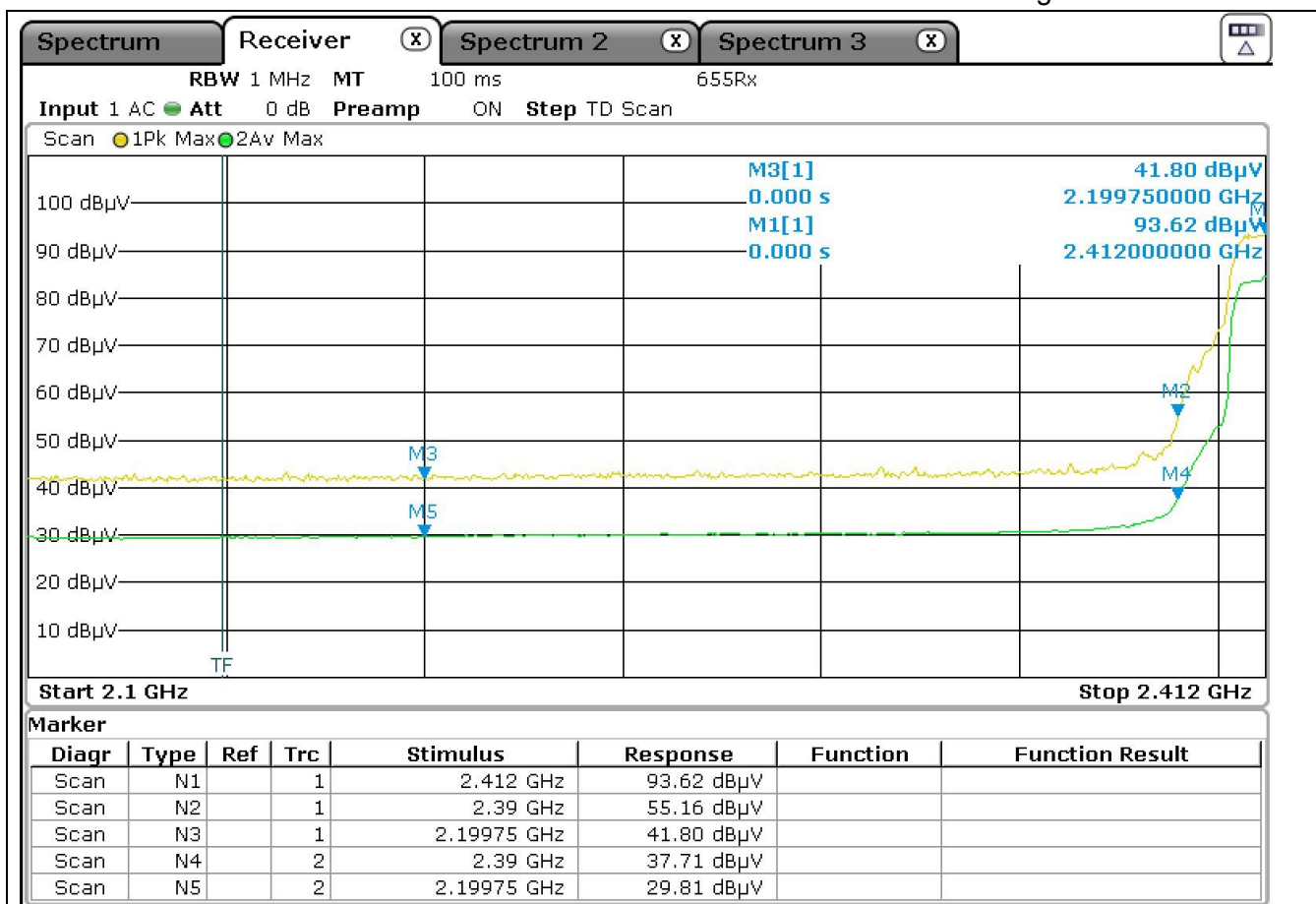


Fig D1 Low Channel Band Edge Vertical peak and average at 3 metres

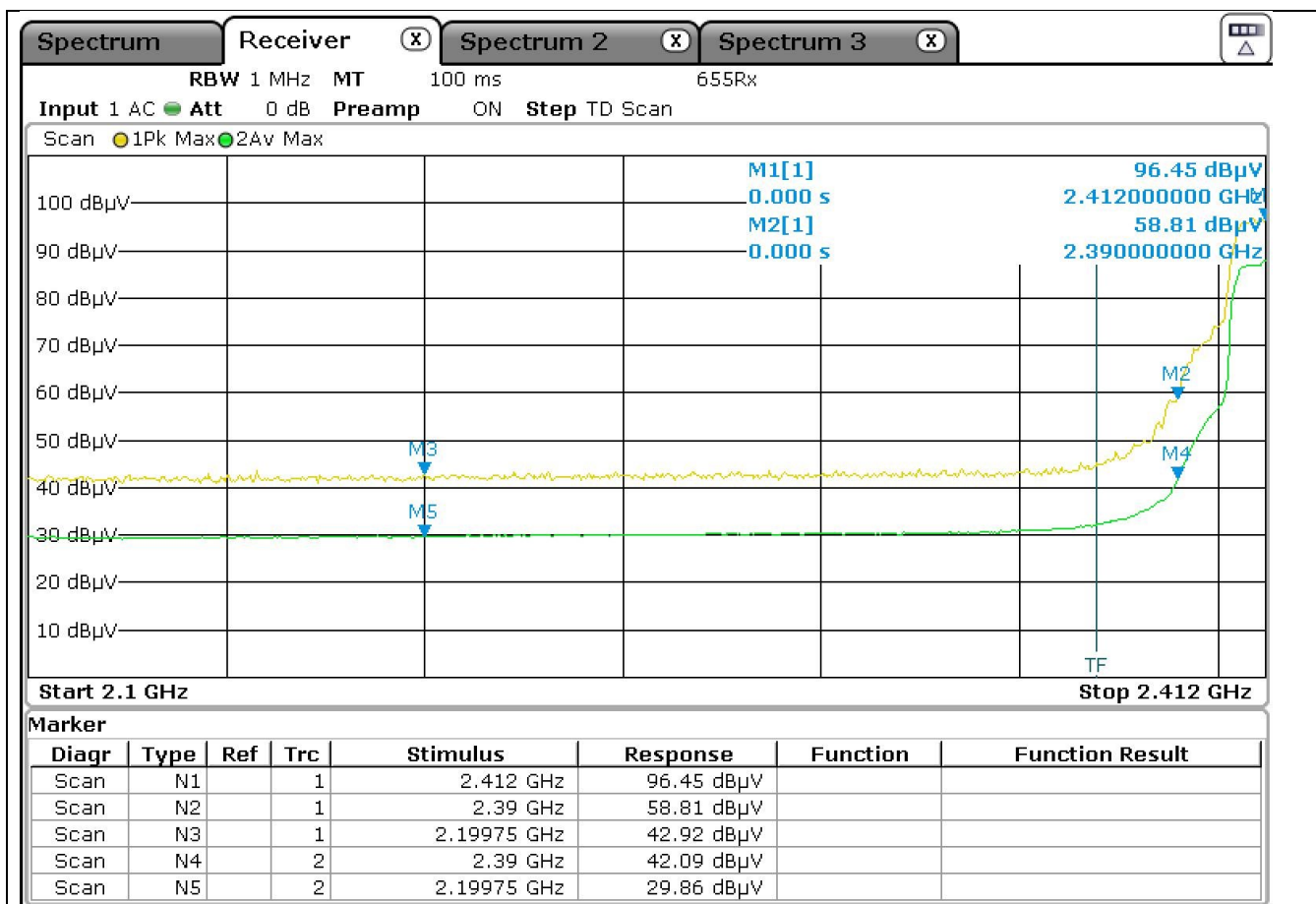


Fig D2 Low Channel Band Edge Horizontal peak and average at 3 metres

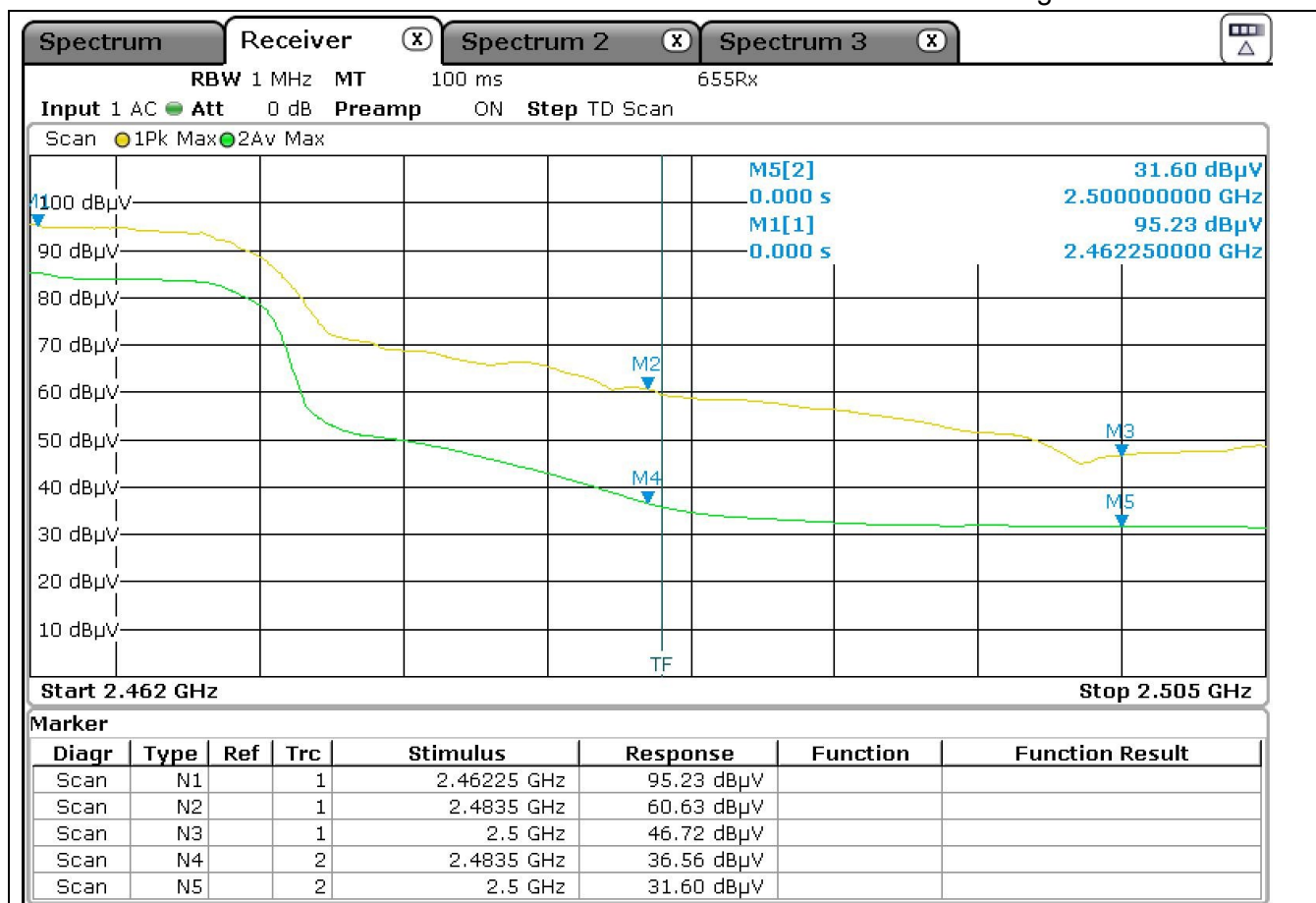


Fig D3 High Channel Band Edge Vertical peak and average at 3 metres

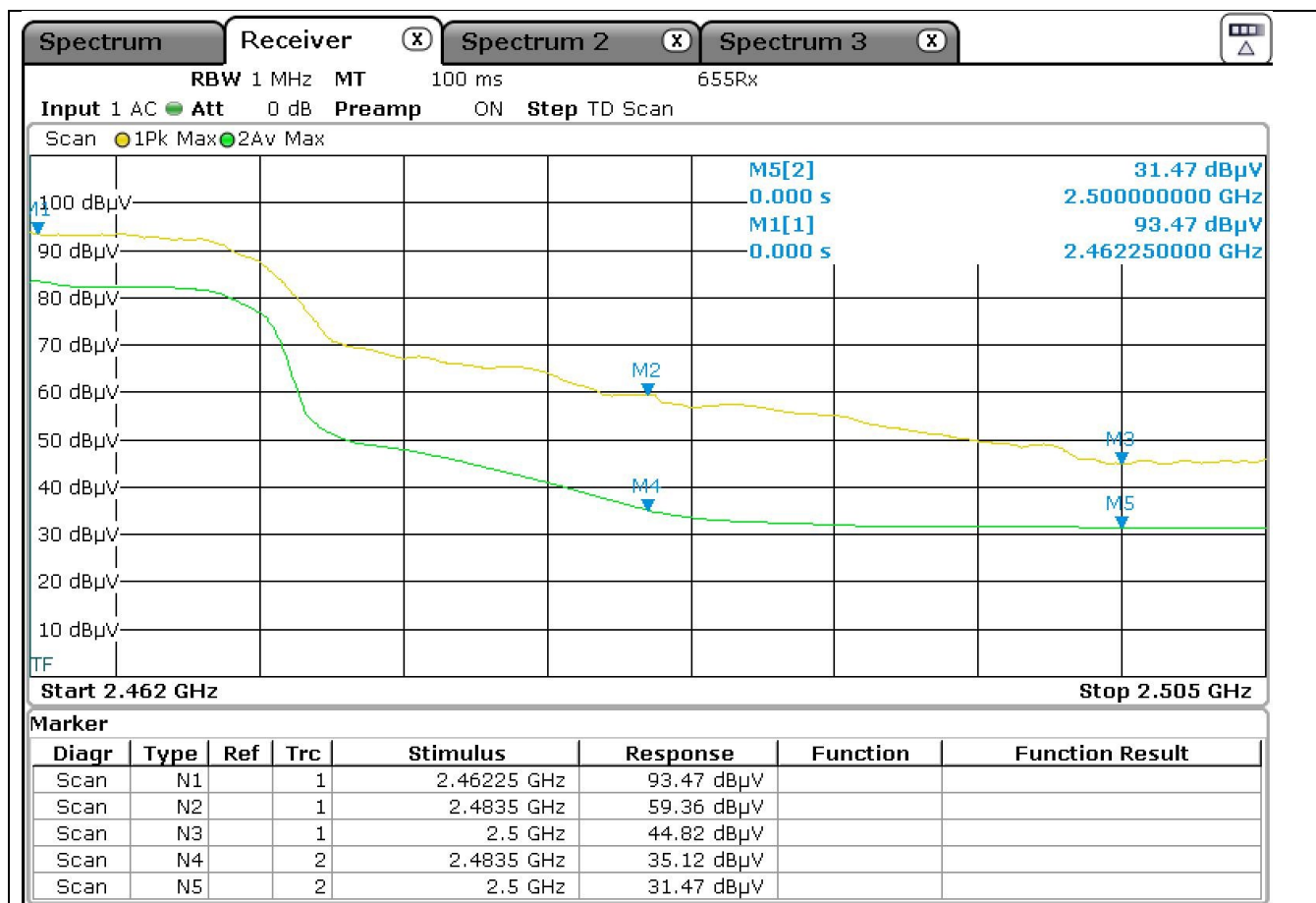


Fig D4 High Channel Band Edge Horizontal peak and average at 3 metres

**Appendix E**

**Radiated Spurious Emissions Module Antenna**

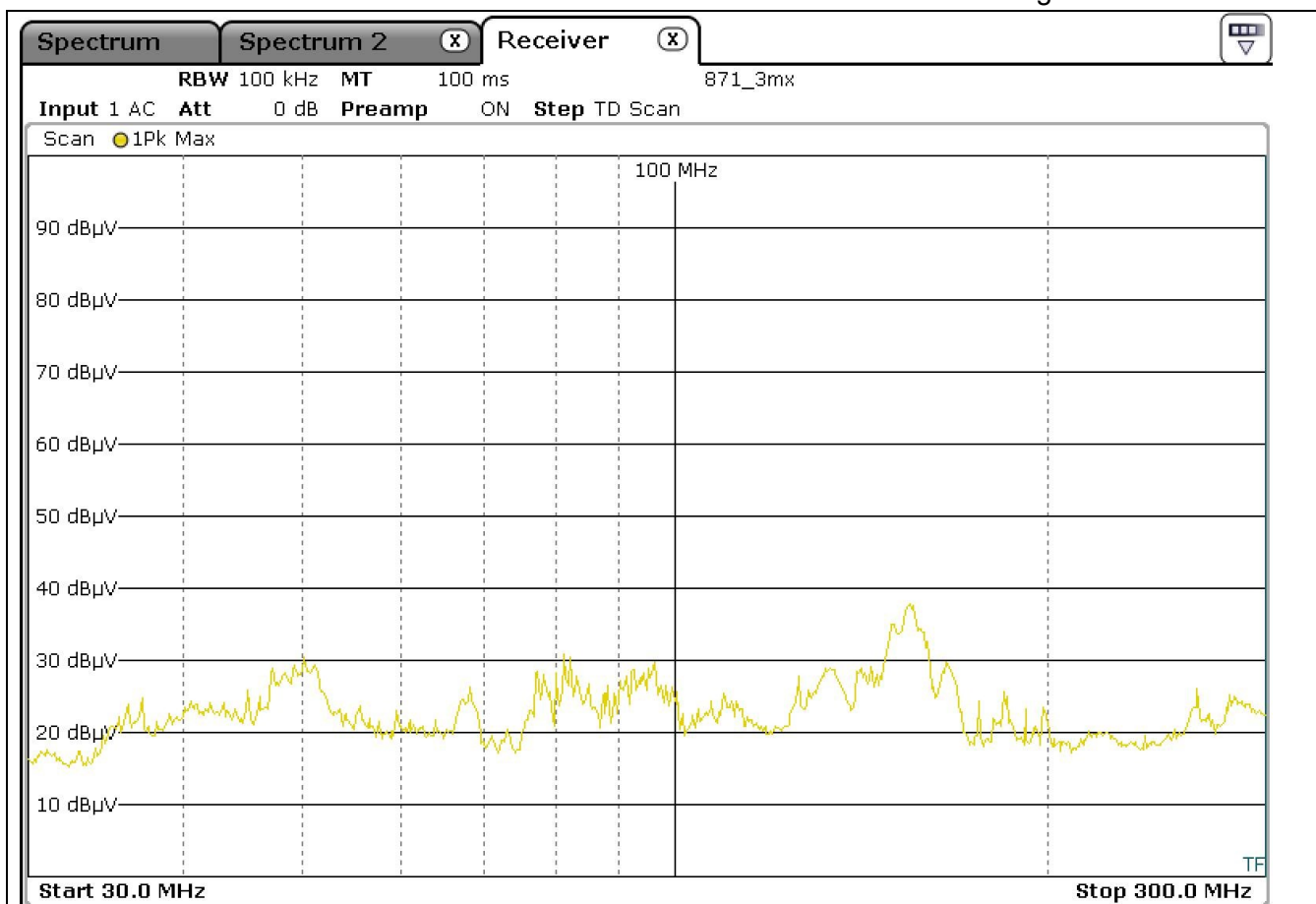


Fig E1 High Channel Radiated Emissions 30MHz -300MHz Vertical 3metres

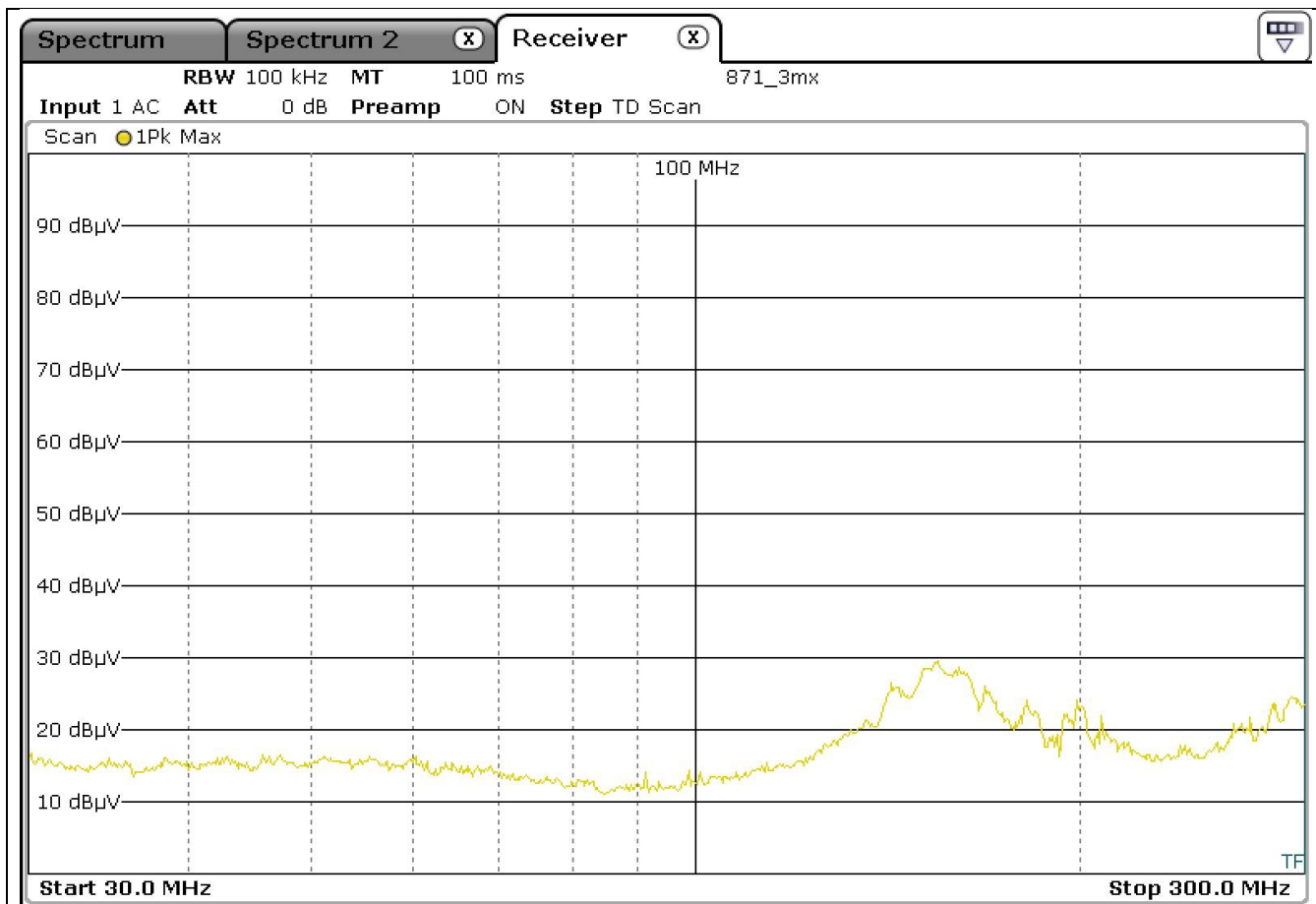


Fig E2 High Channel Radiated Emissions 30MHz -300MHz Horizontal 3metres



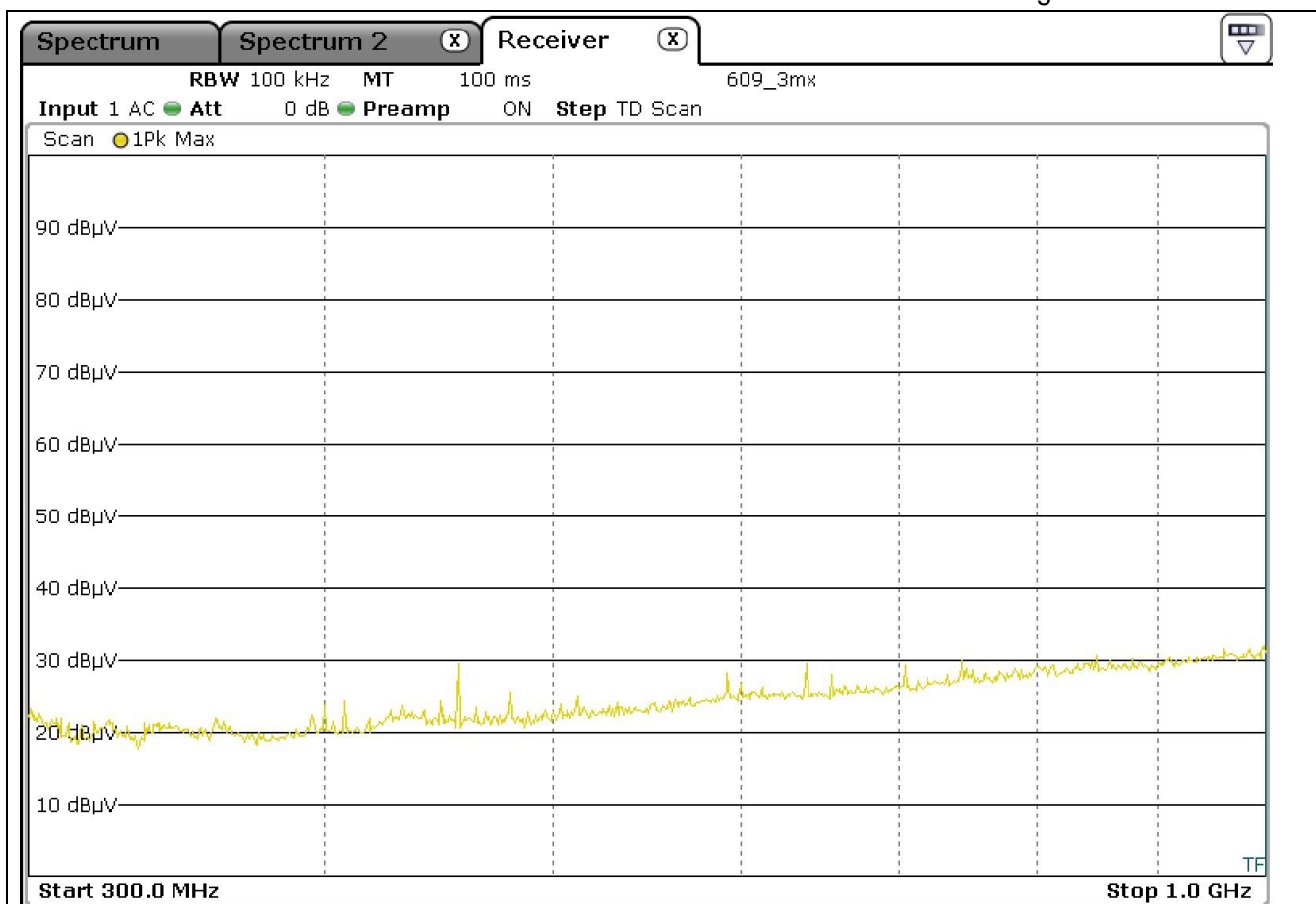


Fig E3 High Channel Radiated Emissions 300MHz -1GHz Vertical 3metres

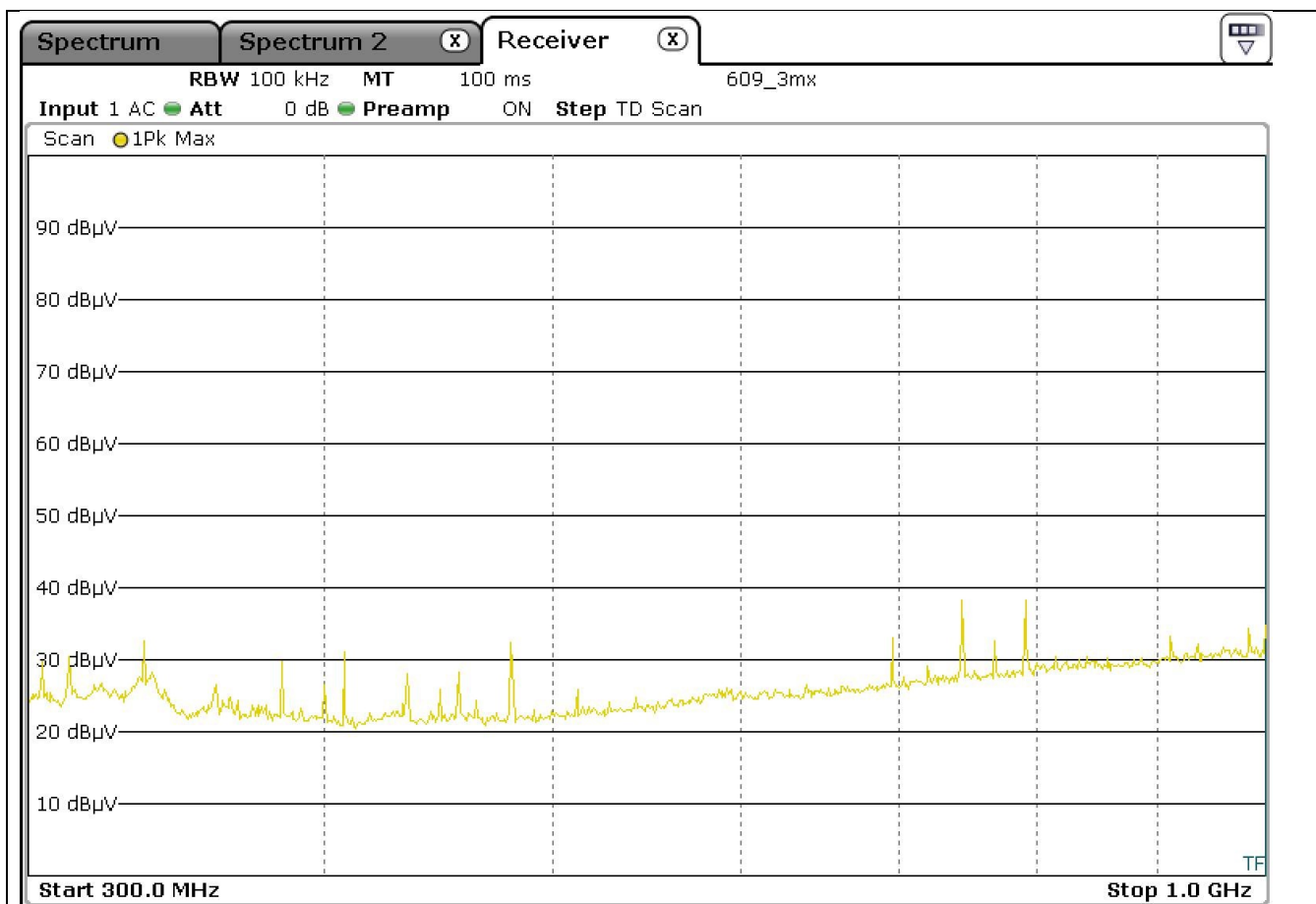
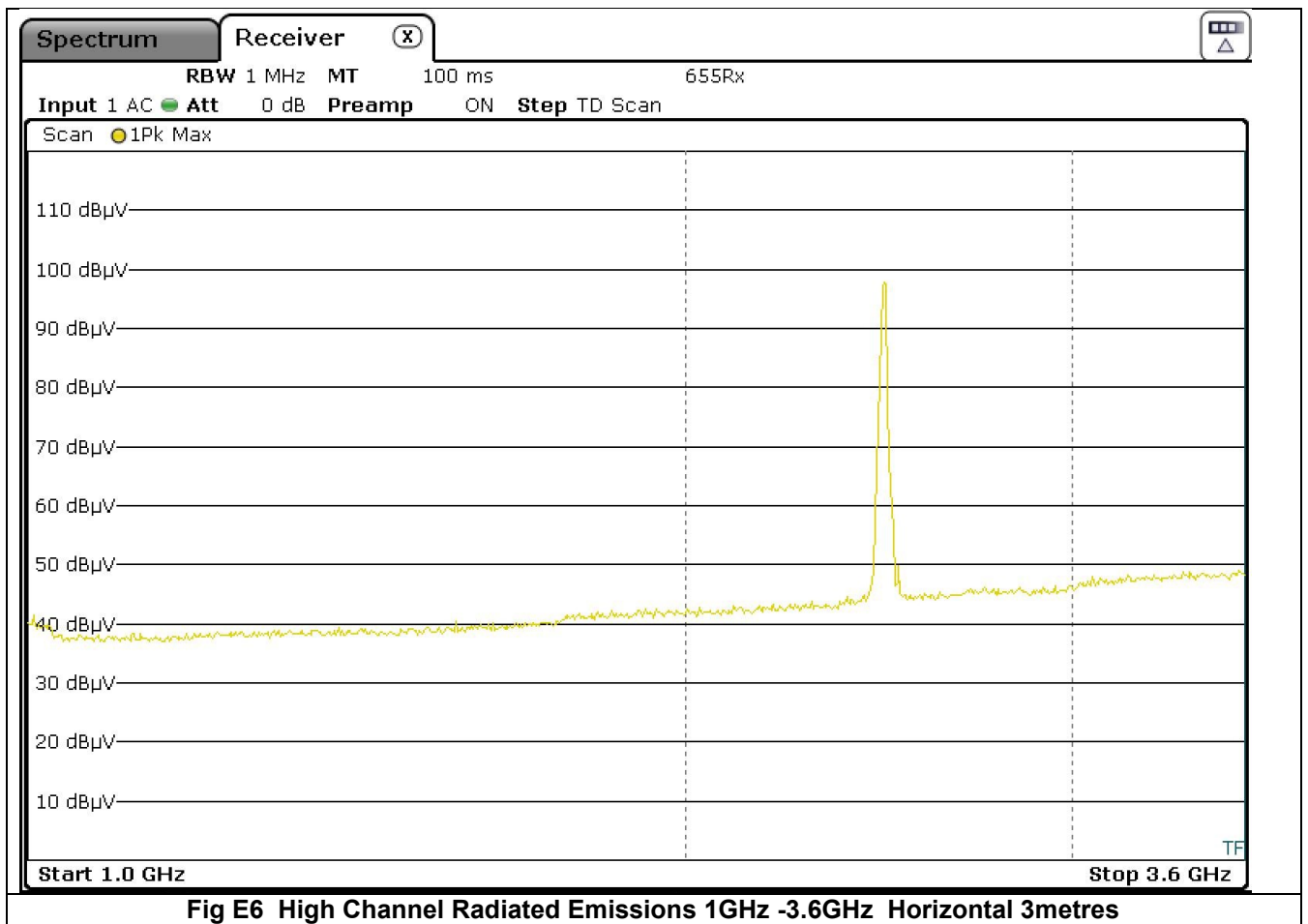
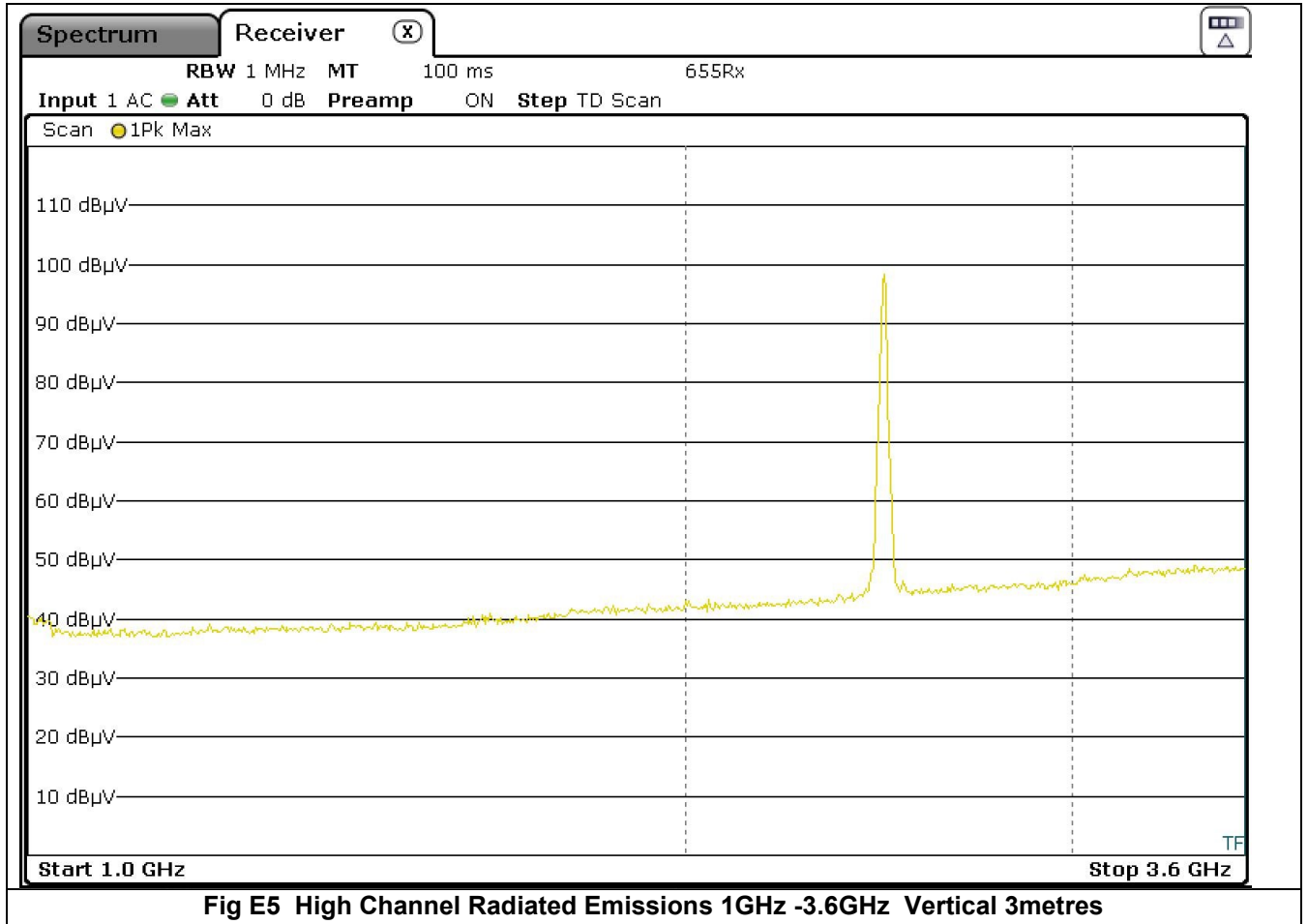
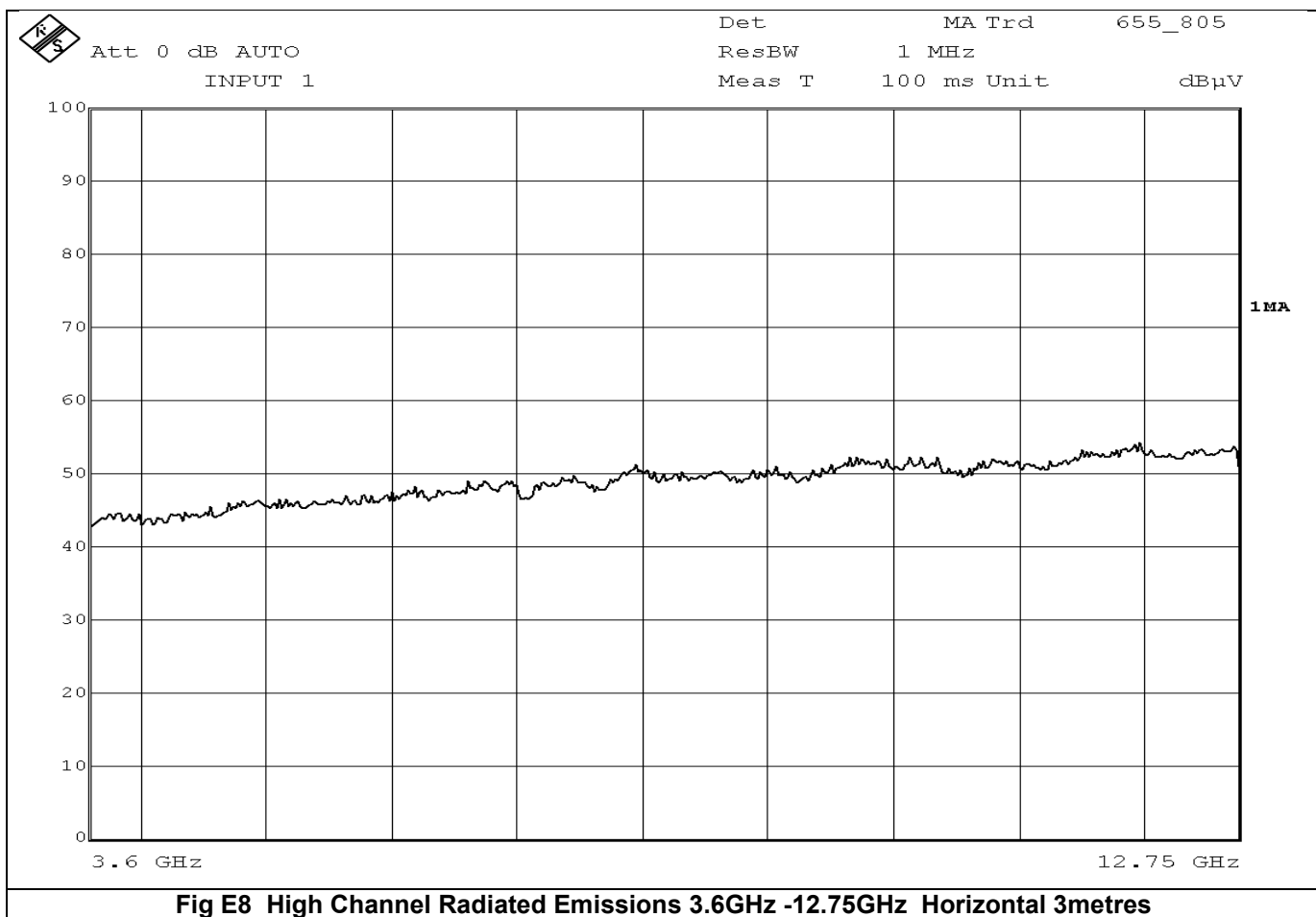
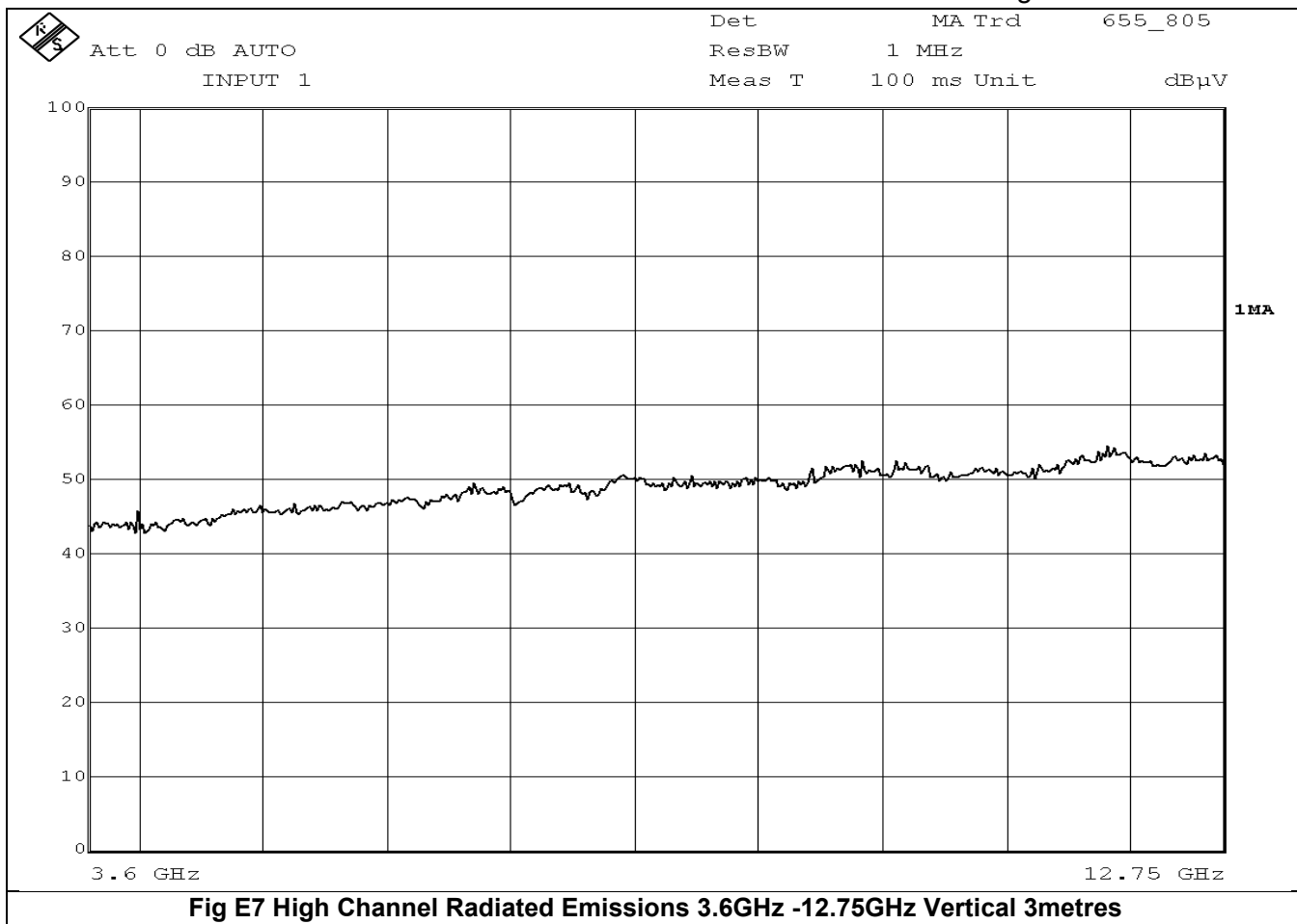
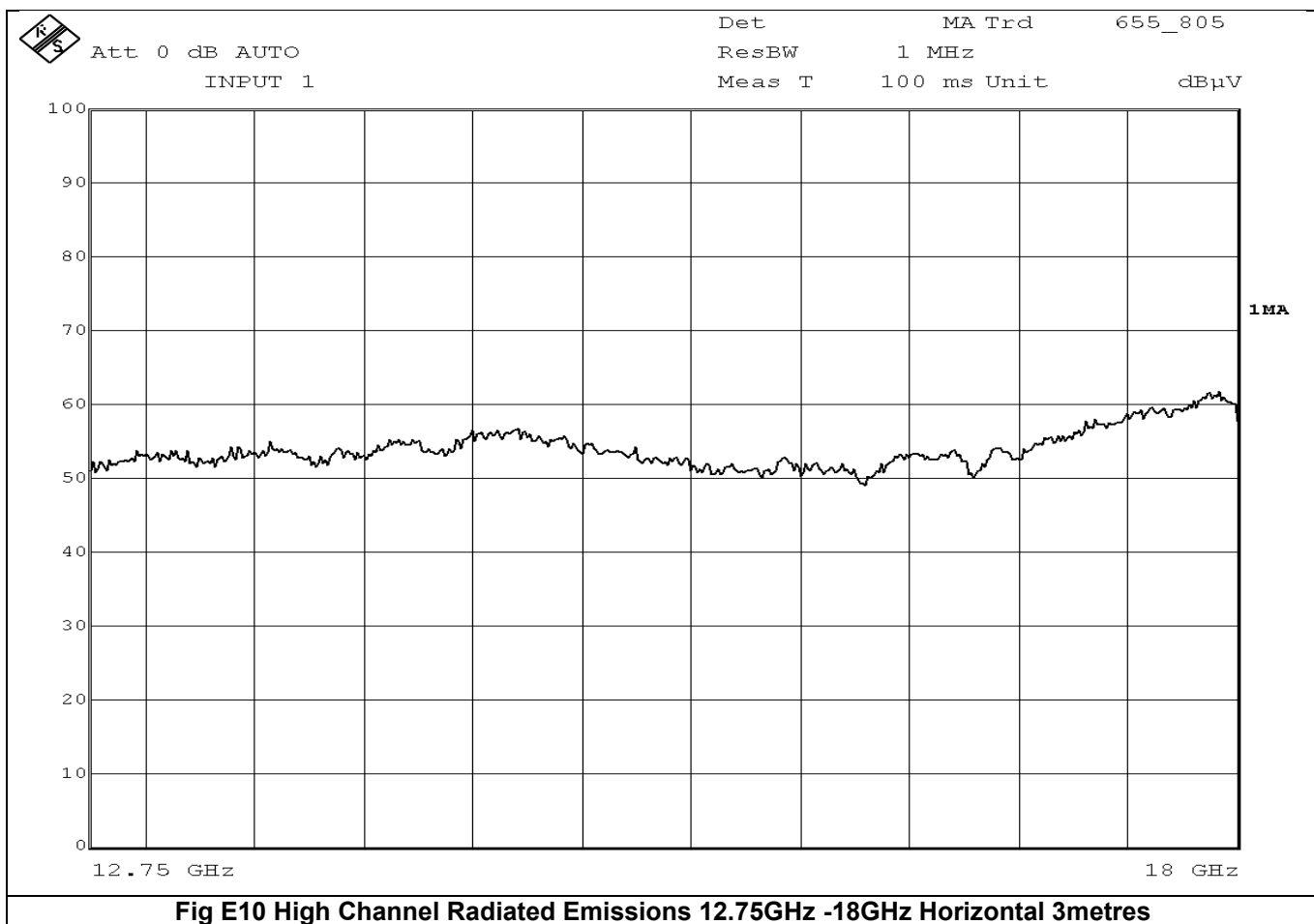
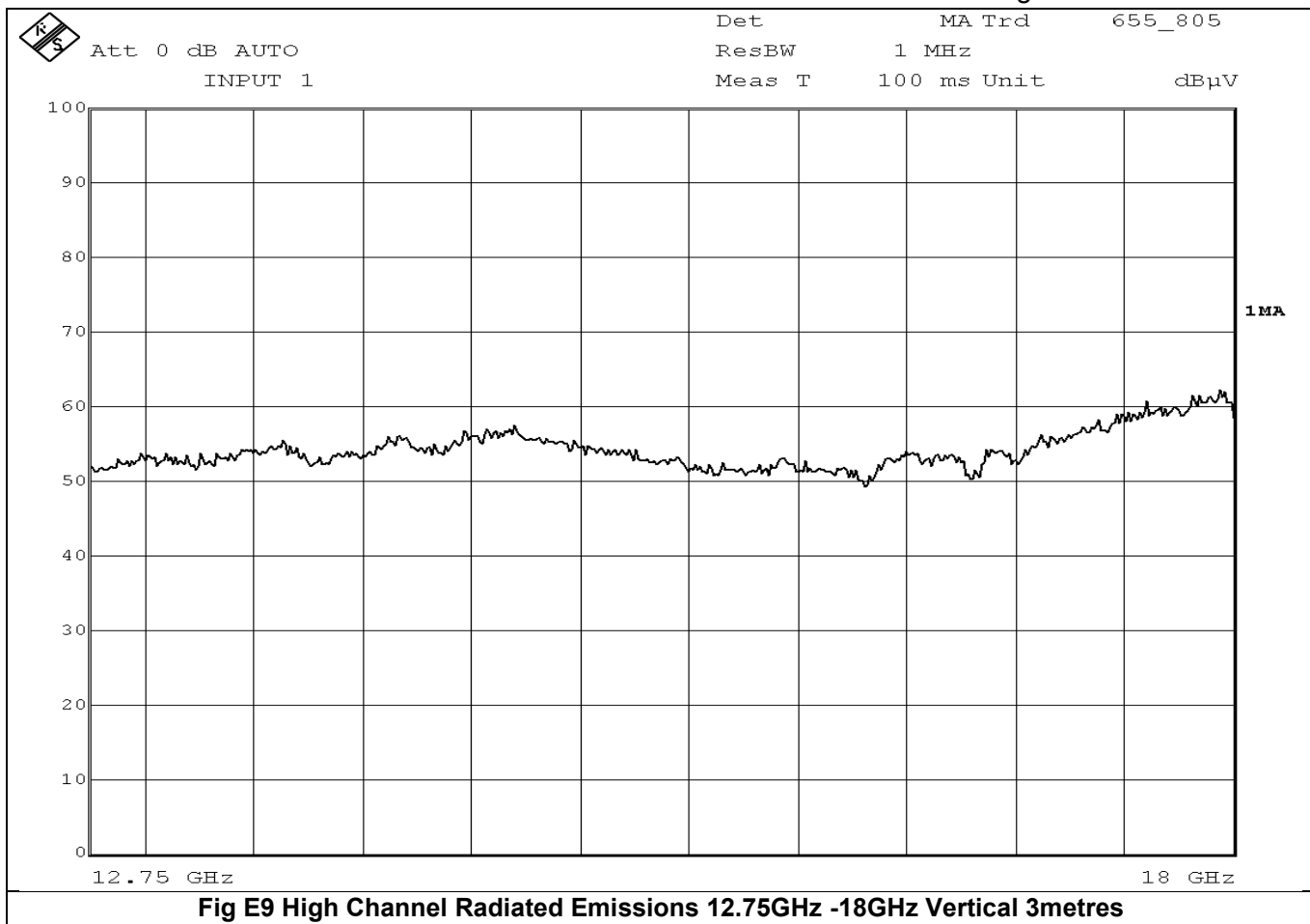
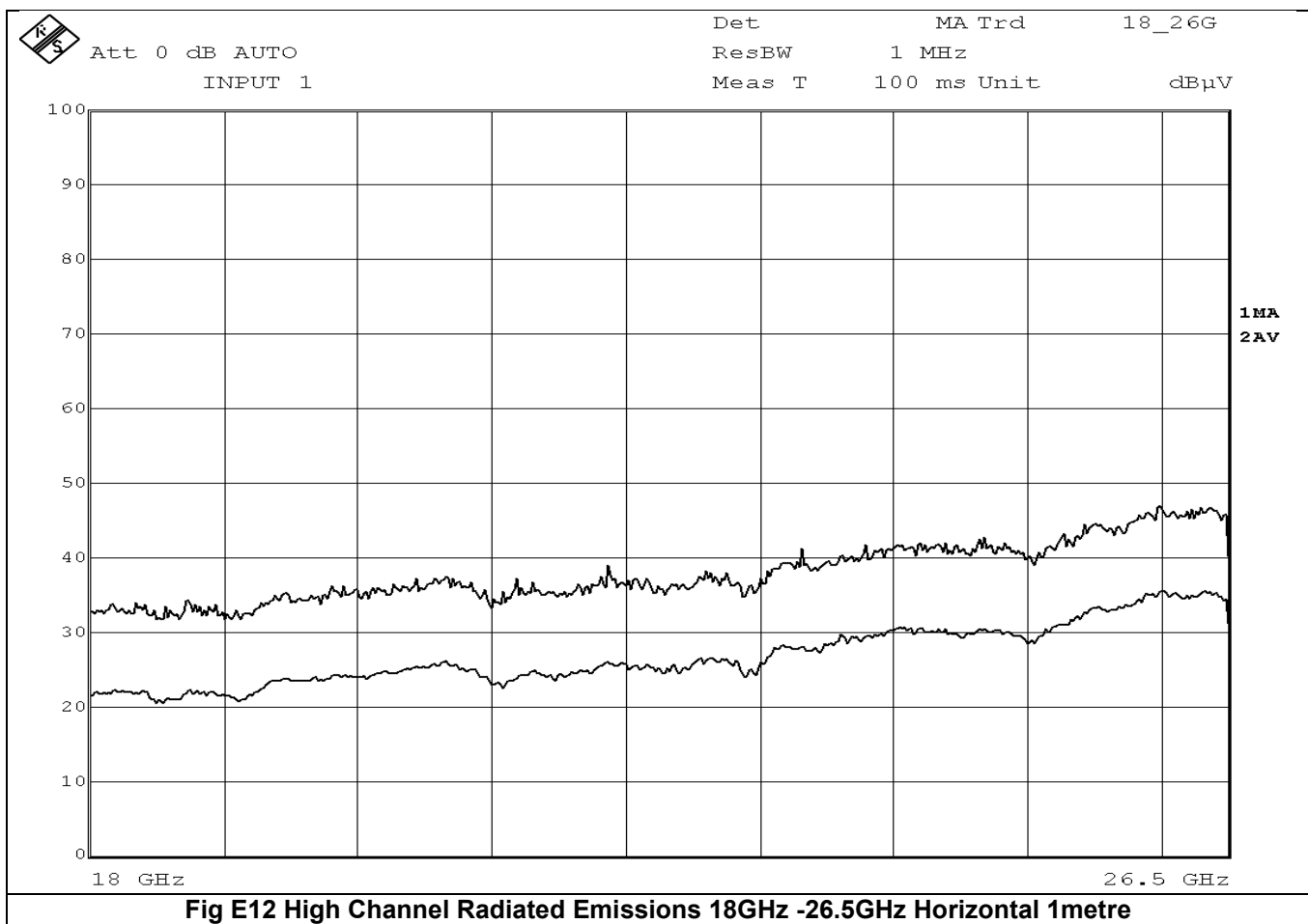
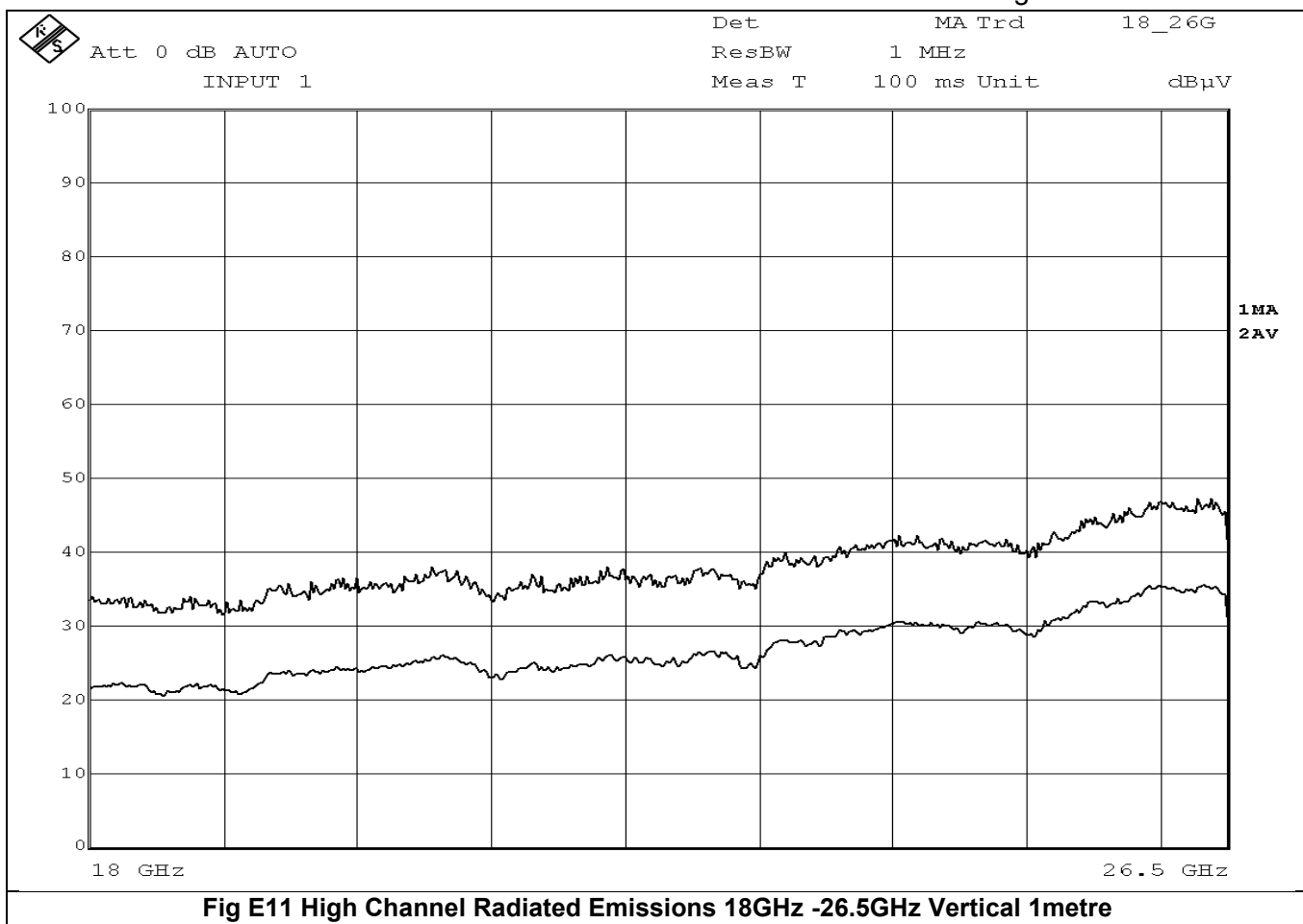


Fig E4 High Channel Radiated Emissions 300MHz -1GHz Horizontal 3metres









Appendix F

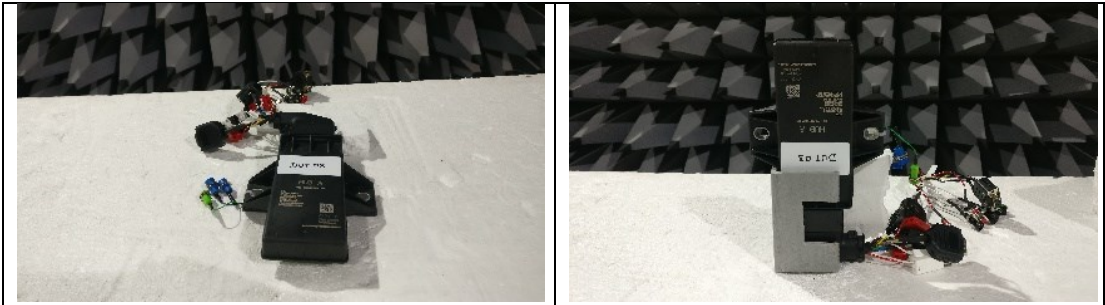


Fig F1 EUT orientation "O1"

Fig F2 EUT orientation "O2"

Orientations for Radiated Emissions

End of Report