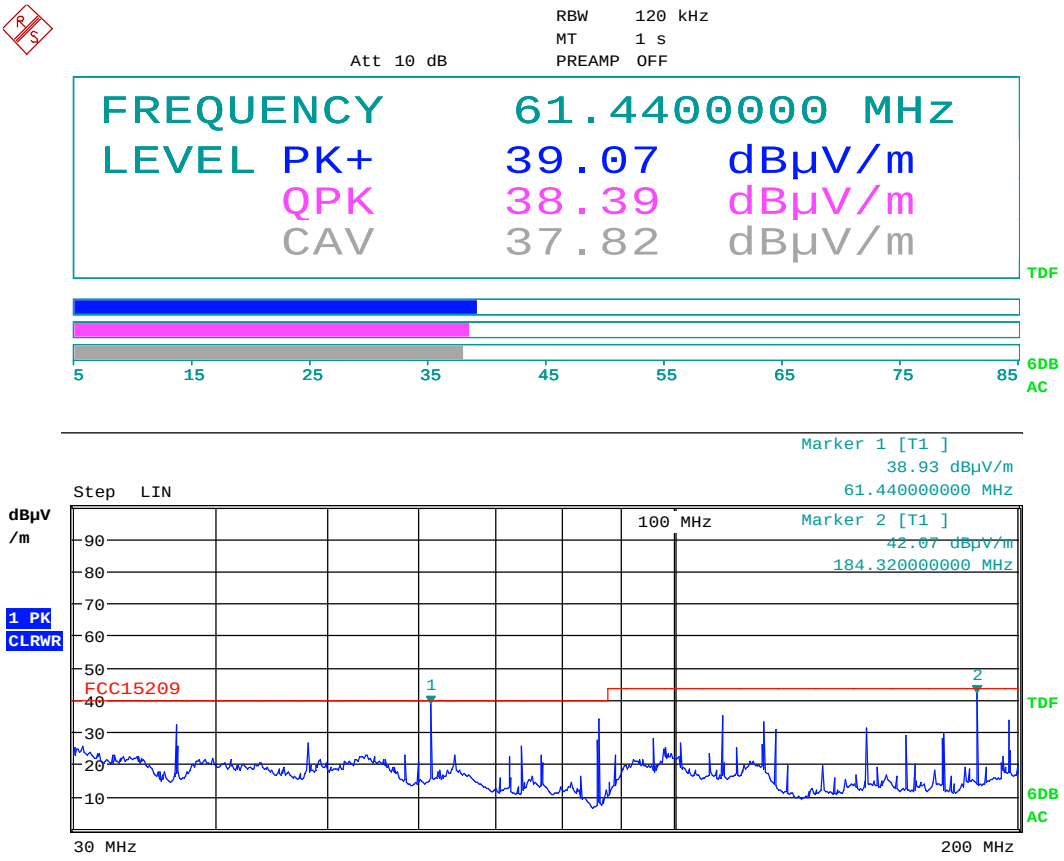
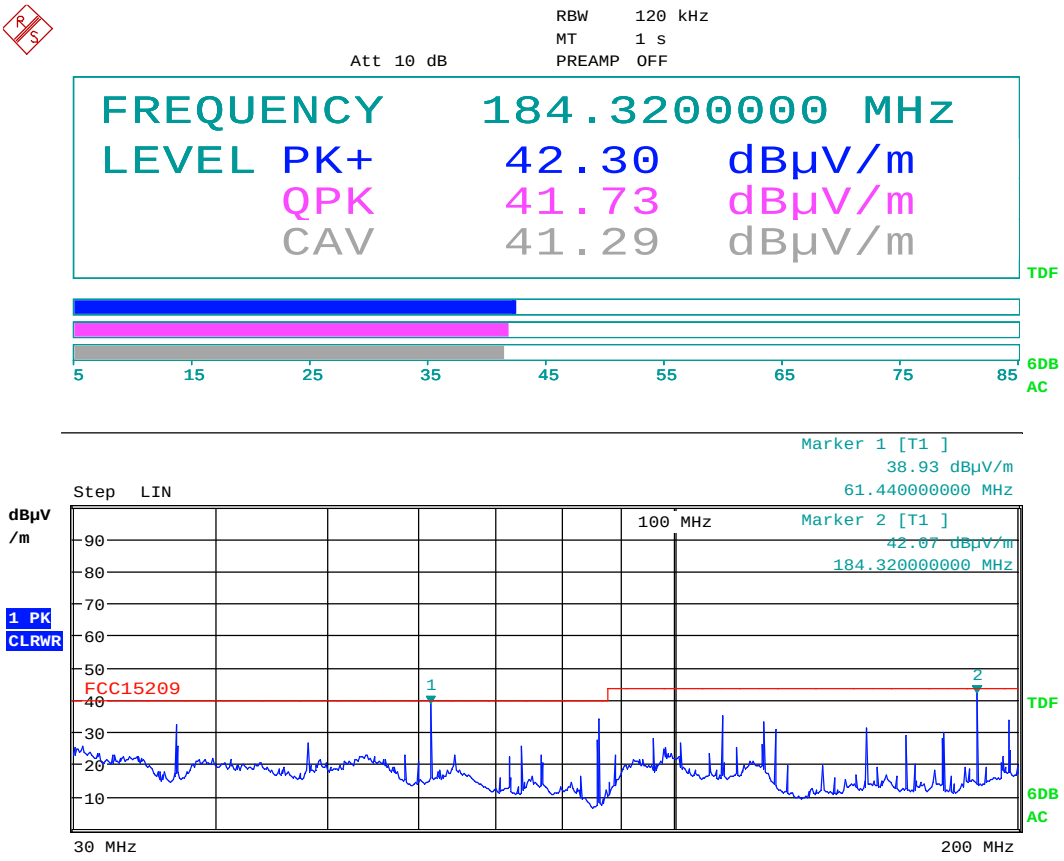


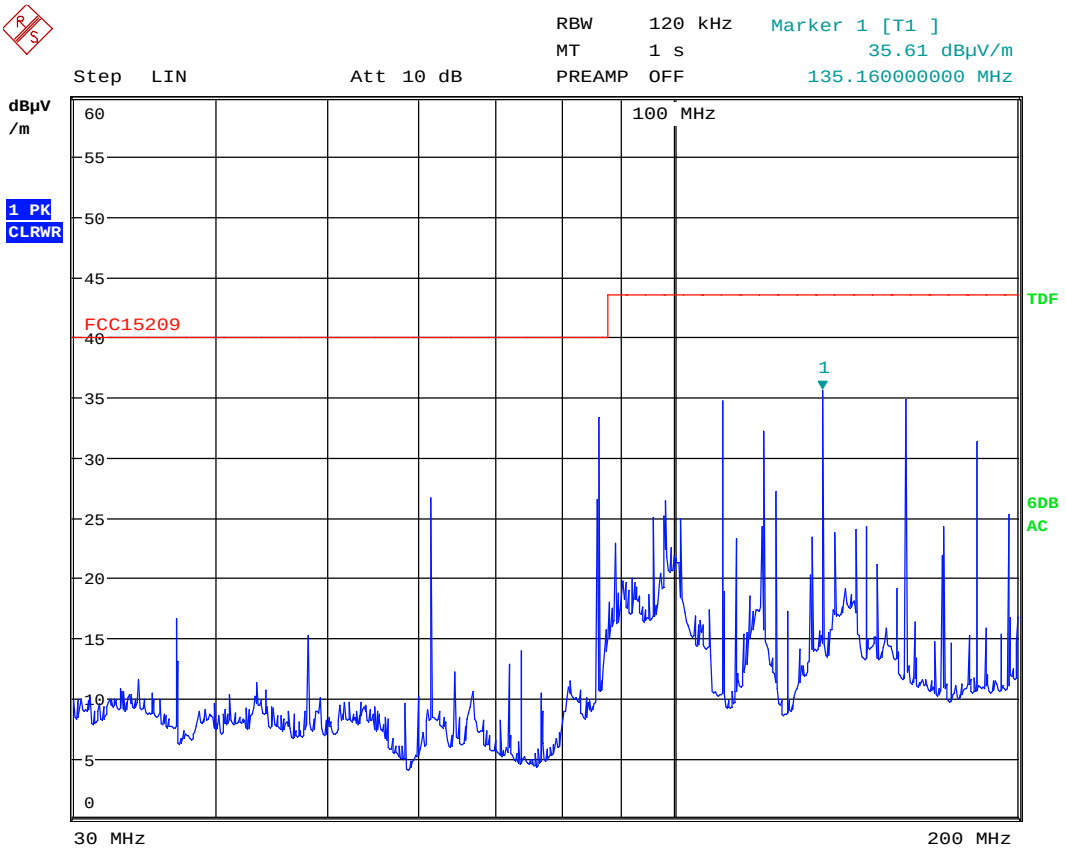
Date: 19.SEP.2018 18:07:49

VP: QP at 61.44MHz



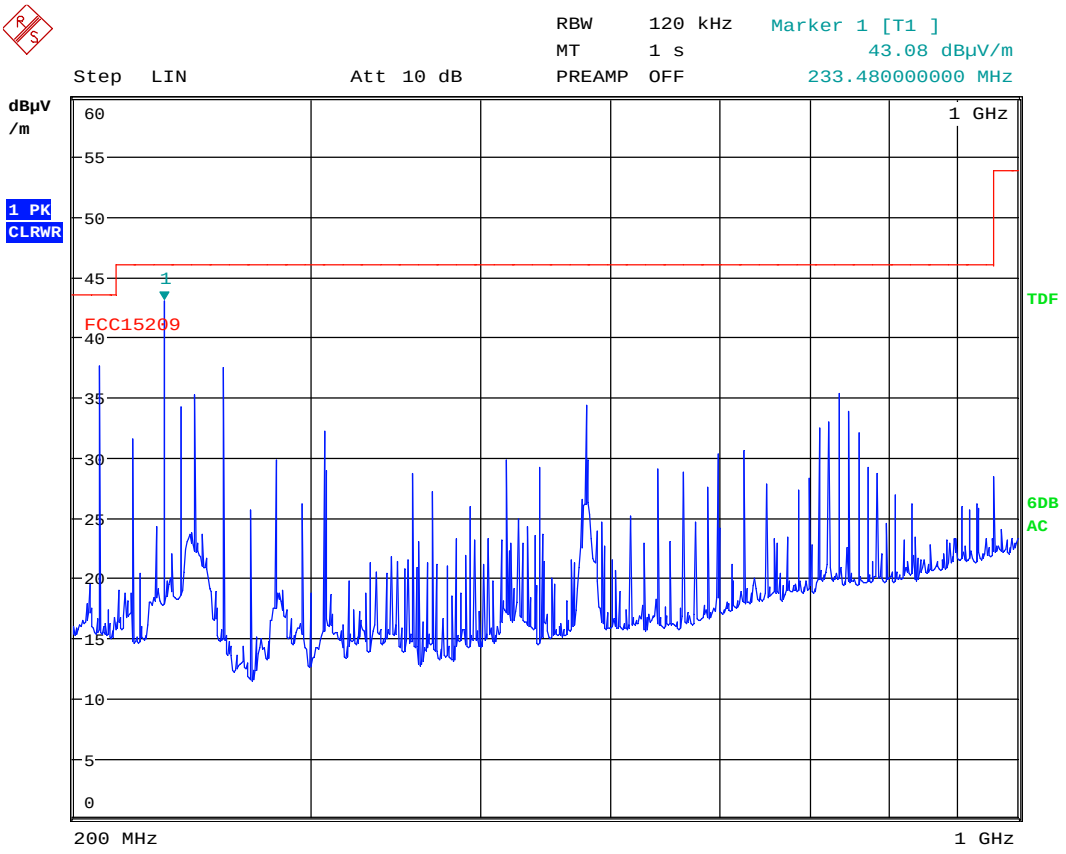
Date: 19.SEP.2018 18:09:28

VP: QP at 184.32MHz



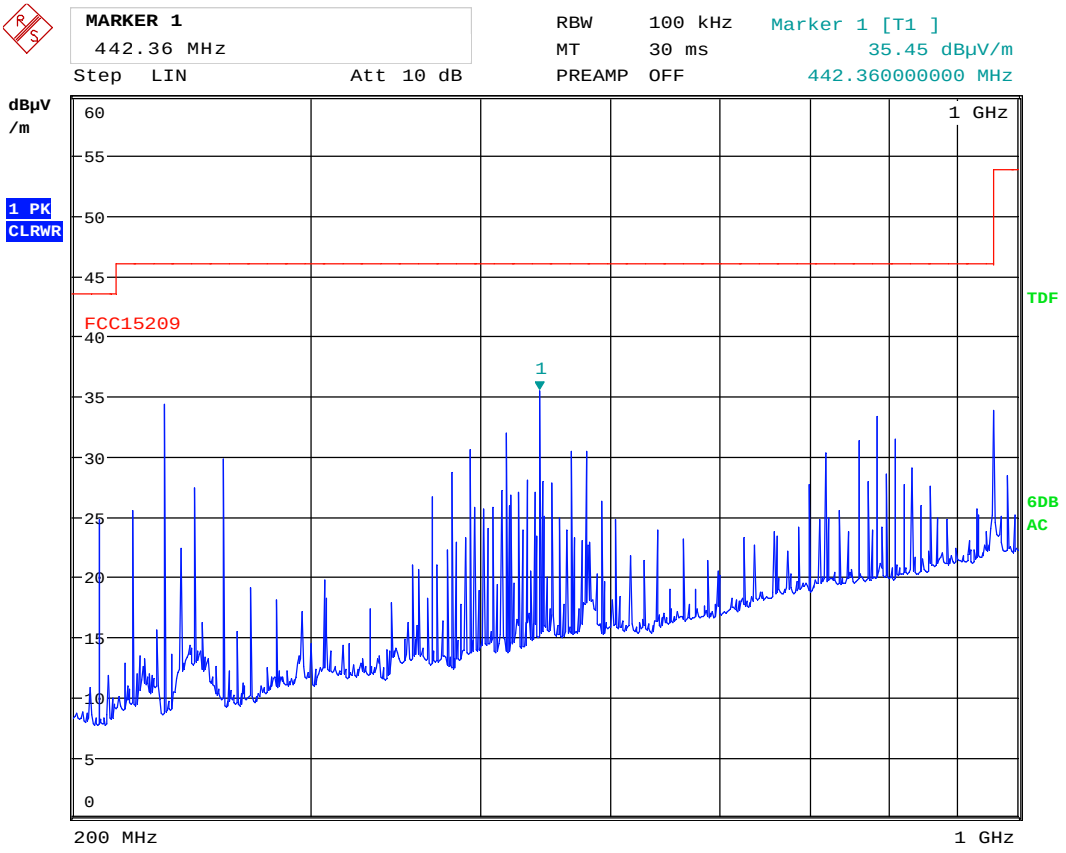
Date: 19.SEP.2018 18:12:45

HP: 30 - 200MHz PK scan



Date: 19.SEP.2018 18:31:07

VP: 200 - 1000MHz PK scan



Date: 19.SEP.2018 18:42:19

HP: 200 - 1000MHz PK scan

3.10 Radiated Emissions, above 1GHz

FCC 15.205, 15.209

ISED RSS-GEN, Issue 4, Clause 8.9

Test Results: Complies

Radiated Emissions, 1-40 GHz

Measuring distance 3m up to 18 GHz, 1m above 18 GHz.

Antenna A and Antenna B:

Frequency	RF channel	Dist. corr. factor	Field strength, Peak Detector	Duty cycle corr. factor	Limit	Margin
GHz	L,M,H	dB	dBµV/m	dB	dBµV/m	dB
1 - 18	L	0	None detected	/	54	/
1 - 18	M	0	None detected	/	54	/
1 - 18	H	0	None detected	/	54	/
18 - 40	L,M,H	-9.5	None detected	/	54	/

Average Detector values are calculated from Peak values by Duty Cycle Correction Factor.

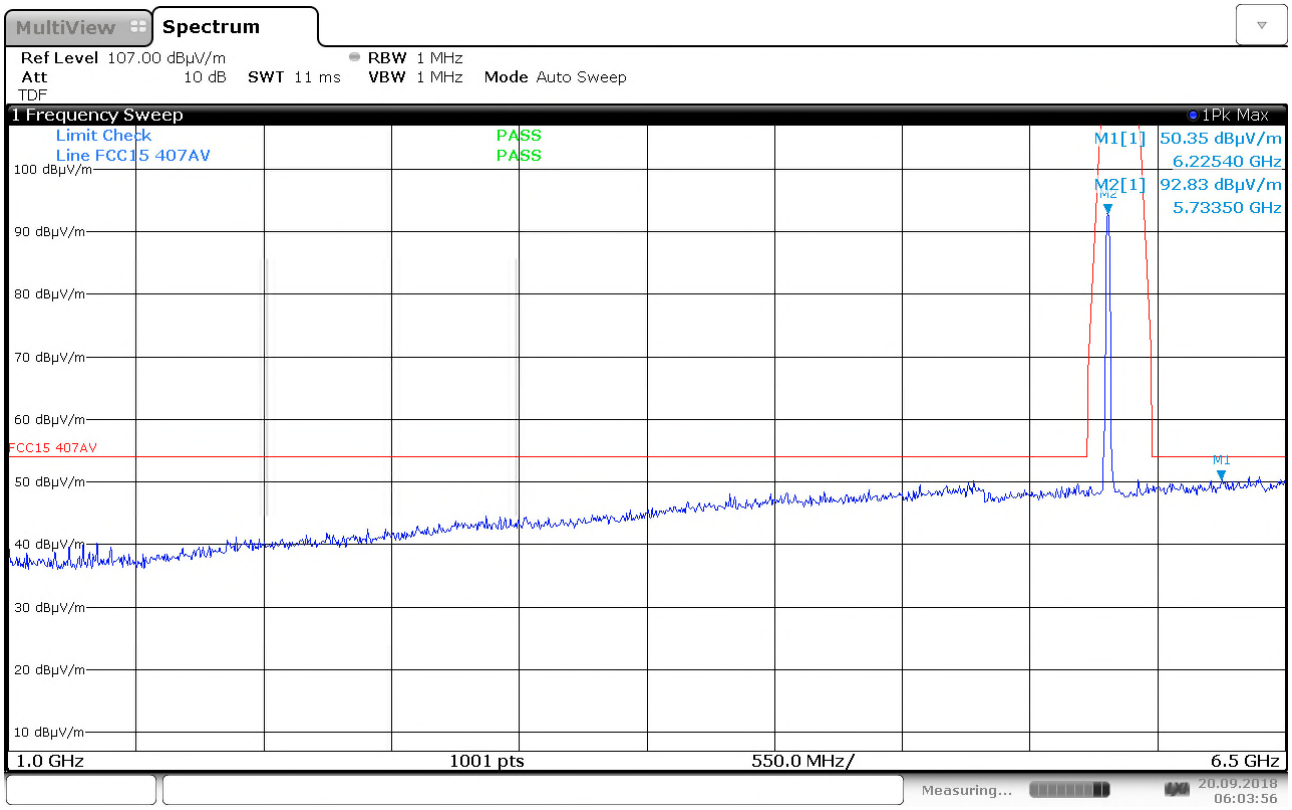
Antenna factor, amplifier gain and cable loss are included in spectrum analyzer “Transducer factor”.

See plots (The PK scan complies with average limit)

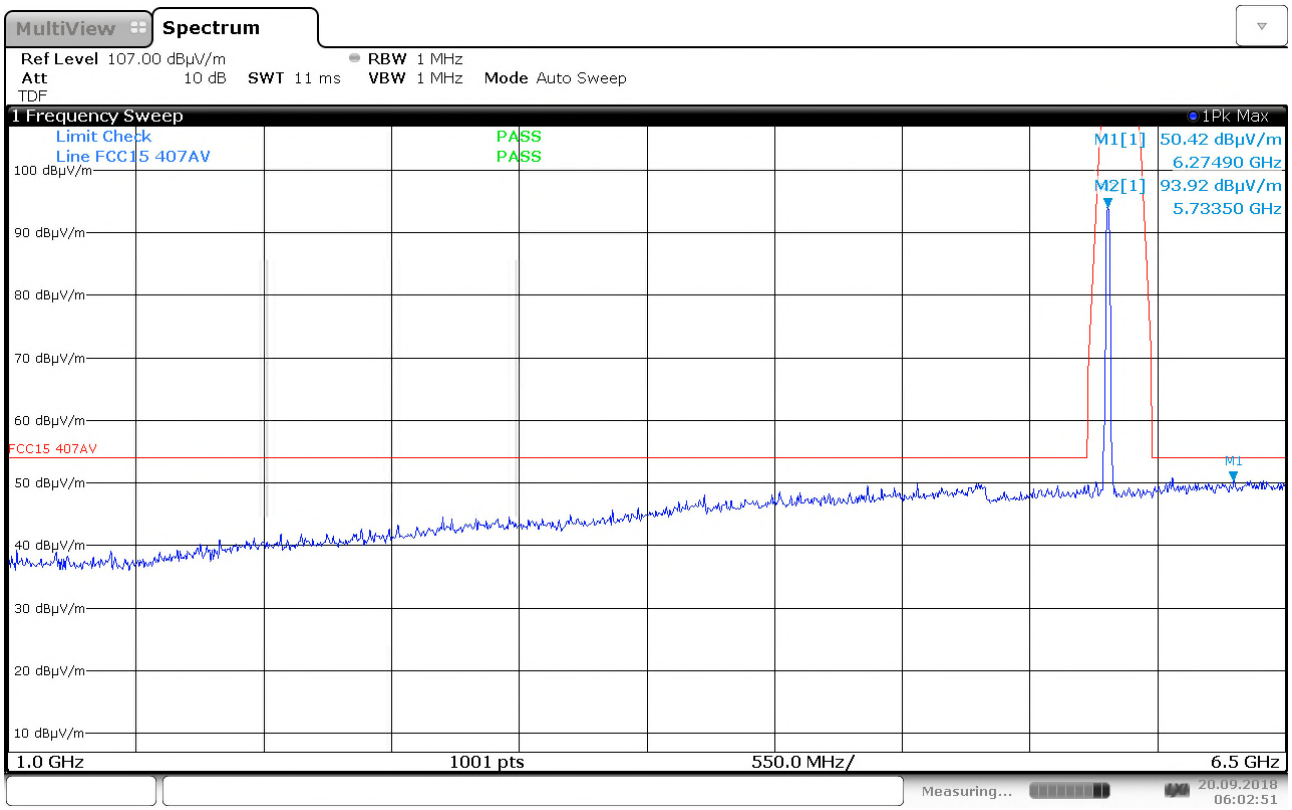
Requirements/Limit

FCC	Part 15.209 @ frequencies defined in §15.205	
ISED	RSS-GEN Issue 4, Clause 8.9 @ frequencies defined in clause 8.10	
	Radiated emission limit @3 meters	
Frequency (MHz)	**AV (dBµV/m)**	**Peak (dBµV/m)**
Above 1 GHz	54.0	74.0

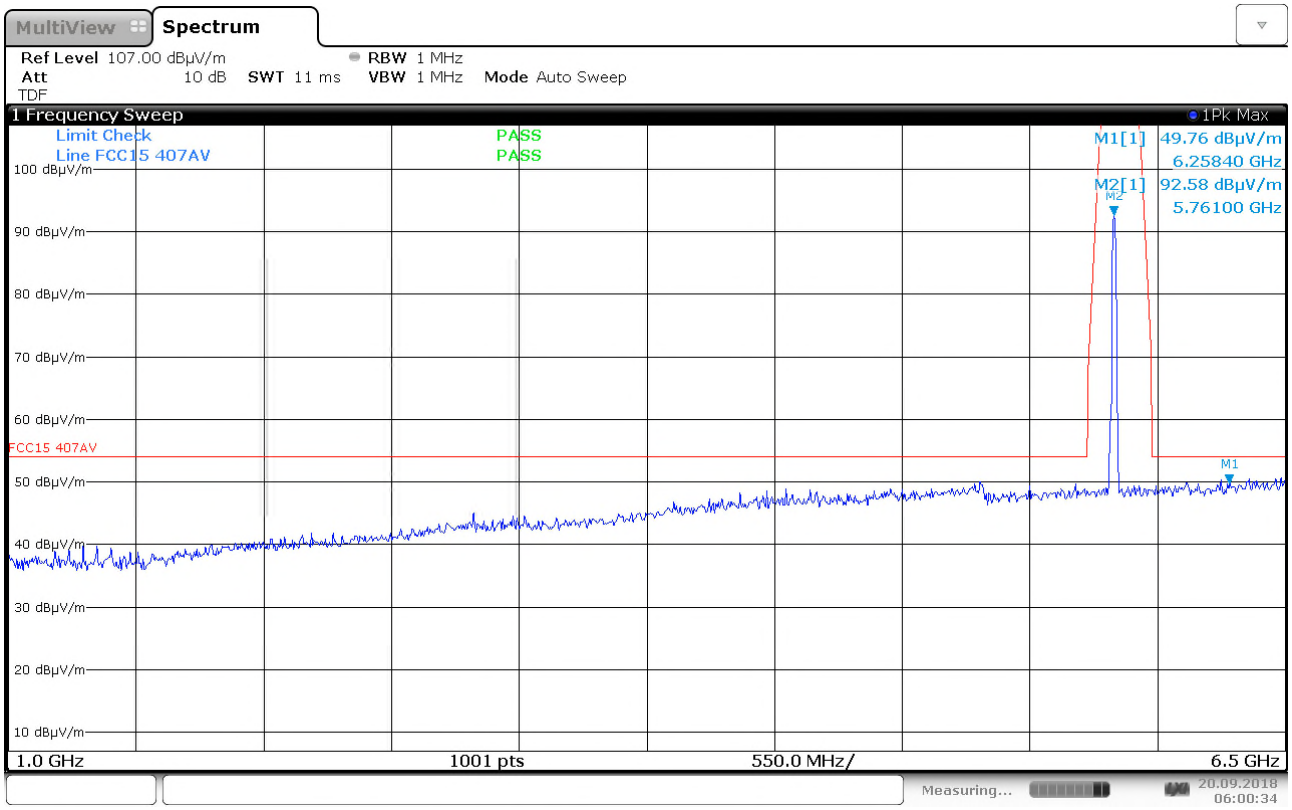
Antanna A



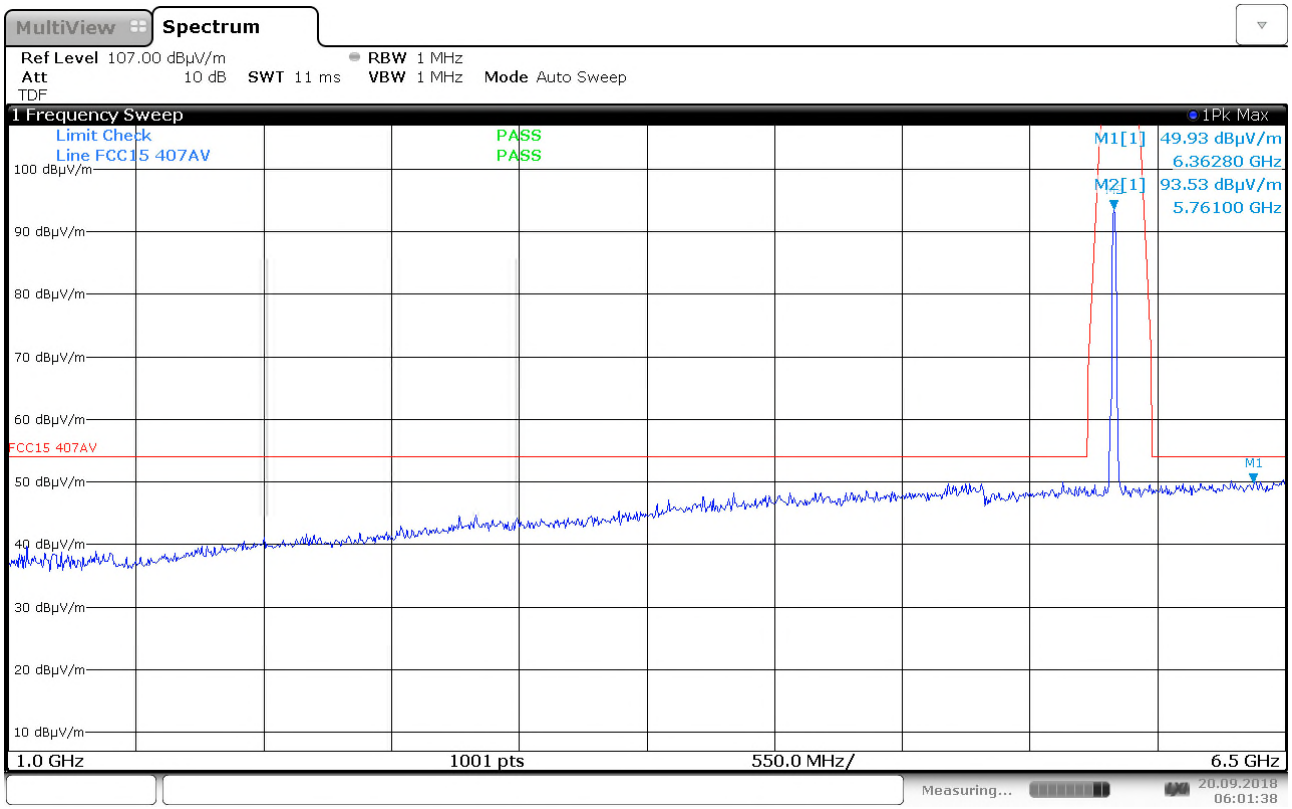
VP: 1 - 6.5GHz @ 3m , PK scan , Ant.A, ch5736MHz



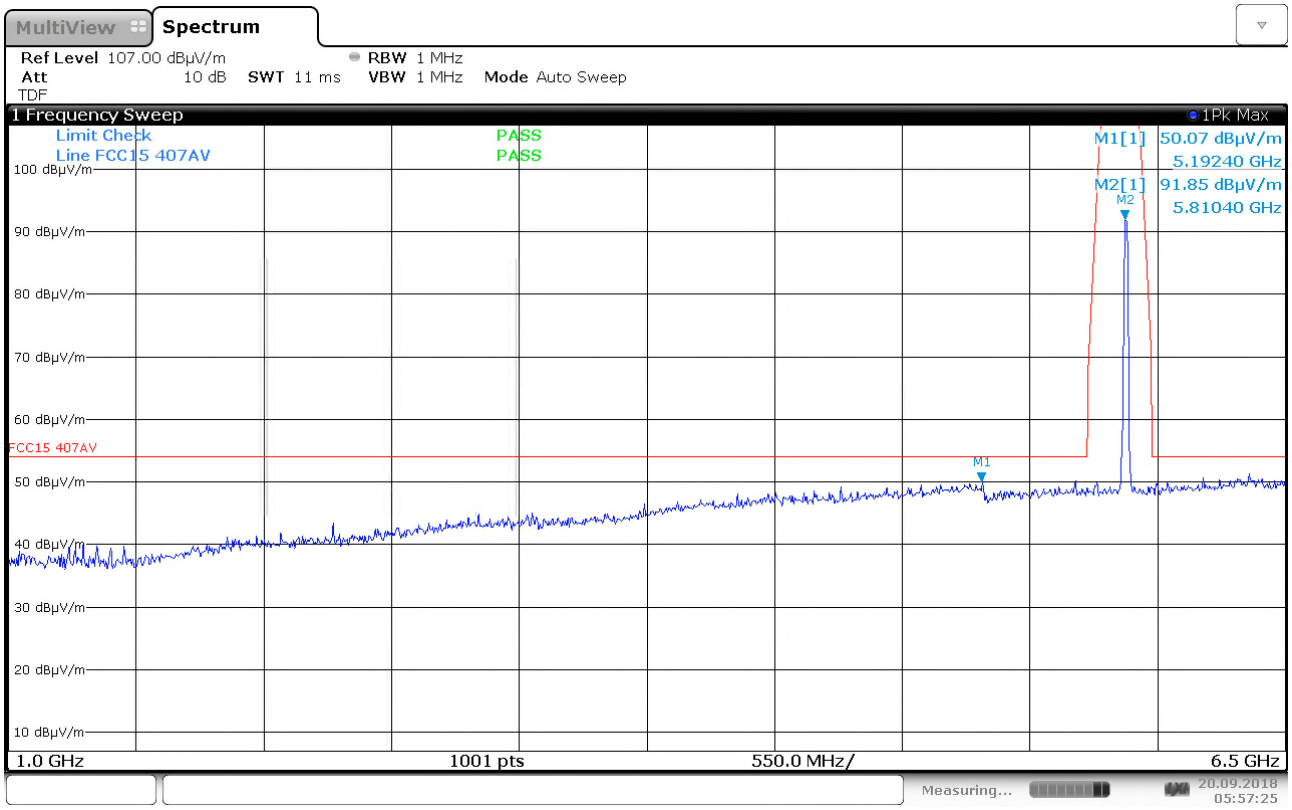
HP: 1 - 6.5GHz @ 3m , PK scan , Ant.A, ch5736MHz



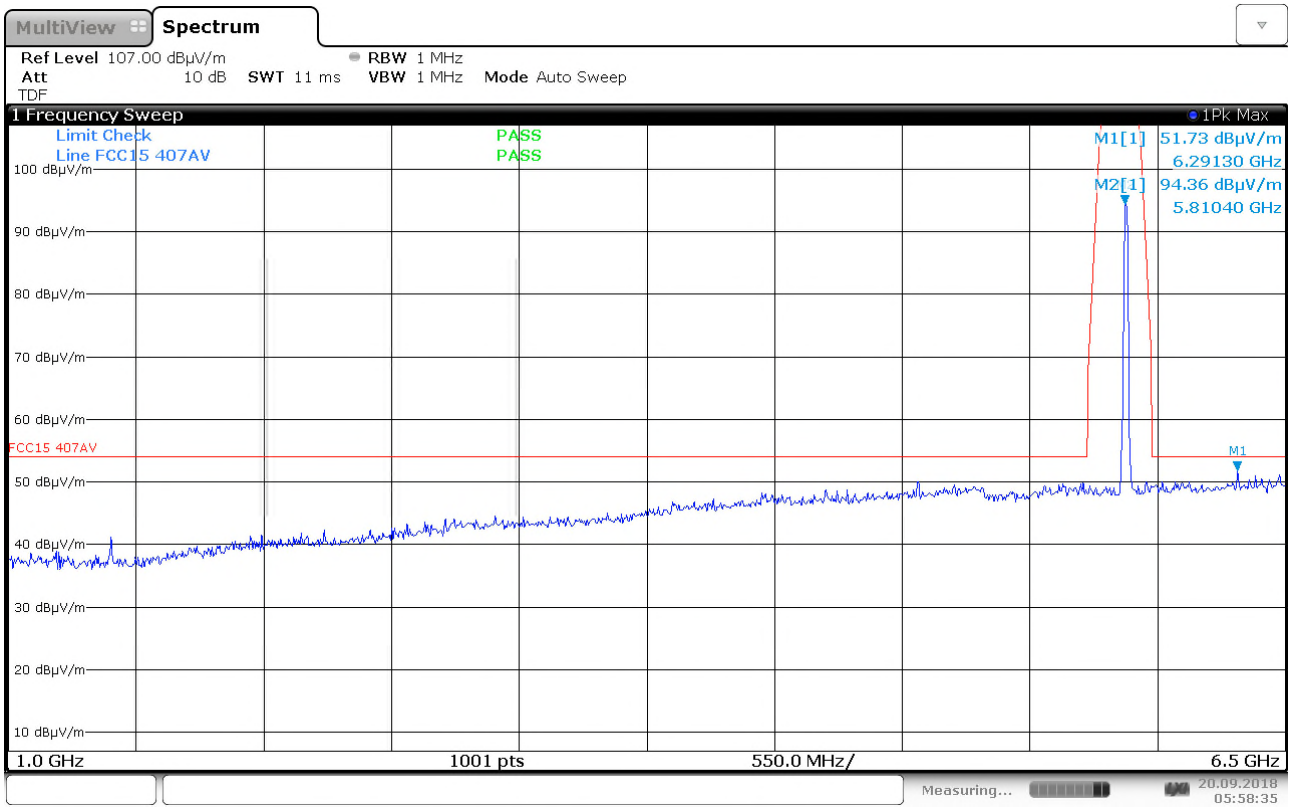
VP: 1 - 6.5GHz @ 3m , PK scan , Ant.A, ch5762MHz



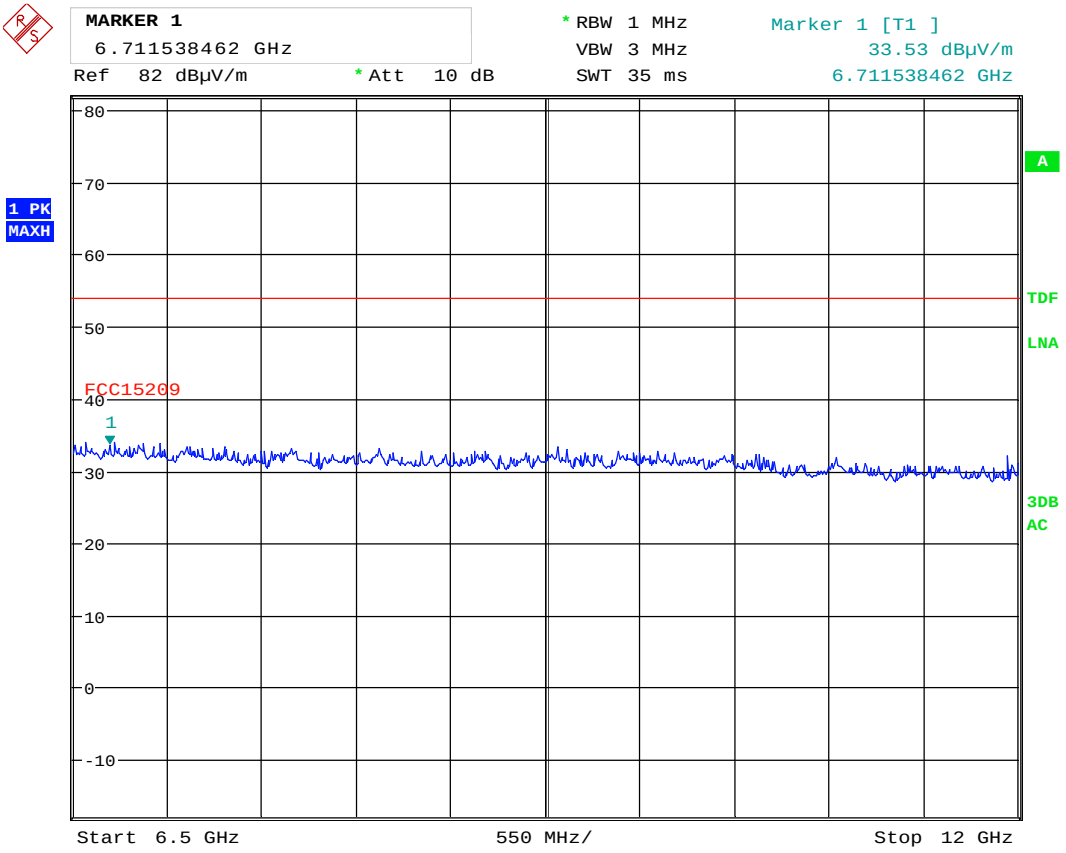
HP: 1 - 6.5GHz @ 3m , PK scan , Ant.A, ch5762MHz



VP: 1 - 6.5GHz @ 3m , PK scan , Ant.A, ch5814MHz

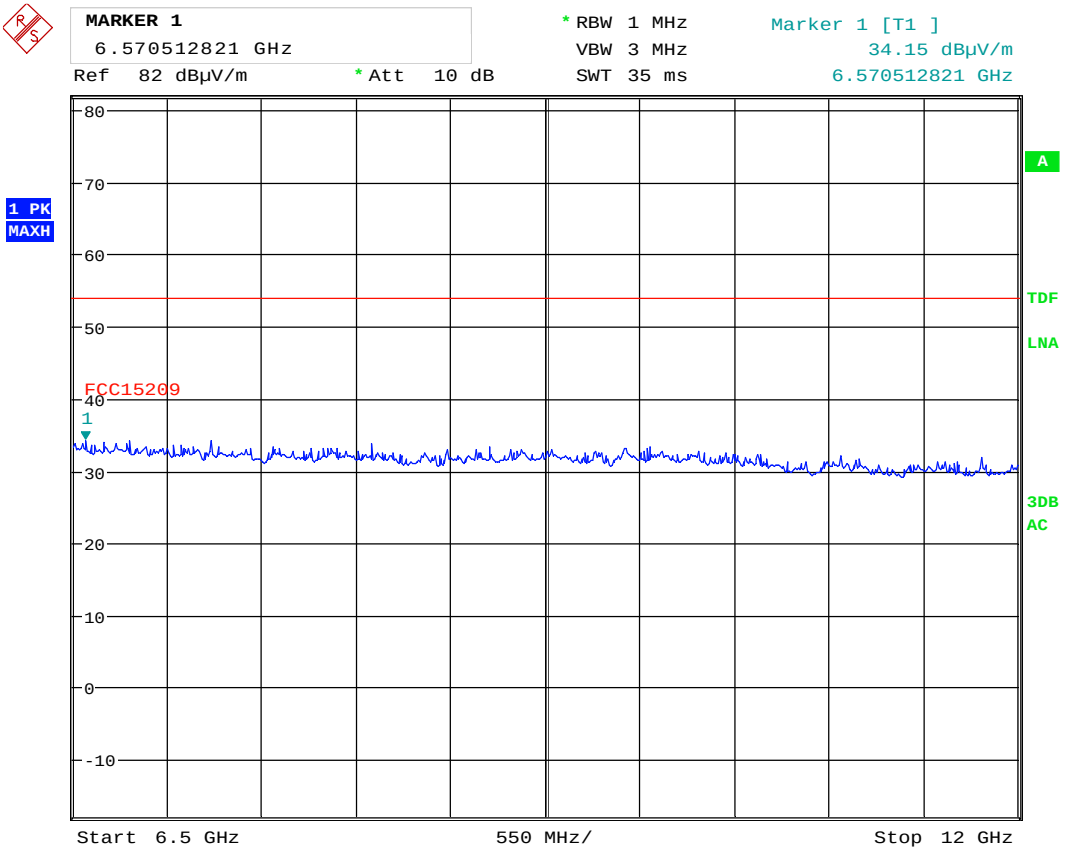


HP: 1 - 6.5GHz @ 3m , PK scan , Ant.A, ch5814MHz



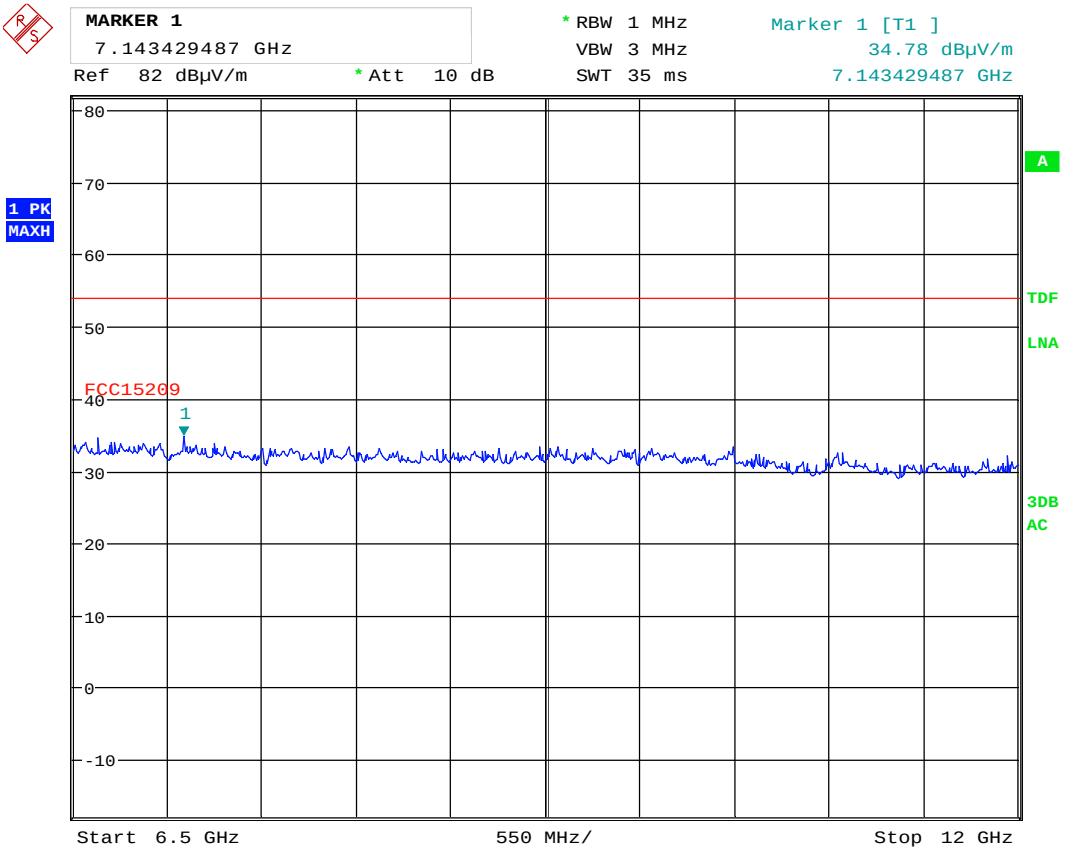
Date: 20.SEP.2018 06:52:55

VP: 6.5 - 12GHz @ 3m , PK scan , Ant.A, ch5736MHz



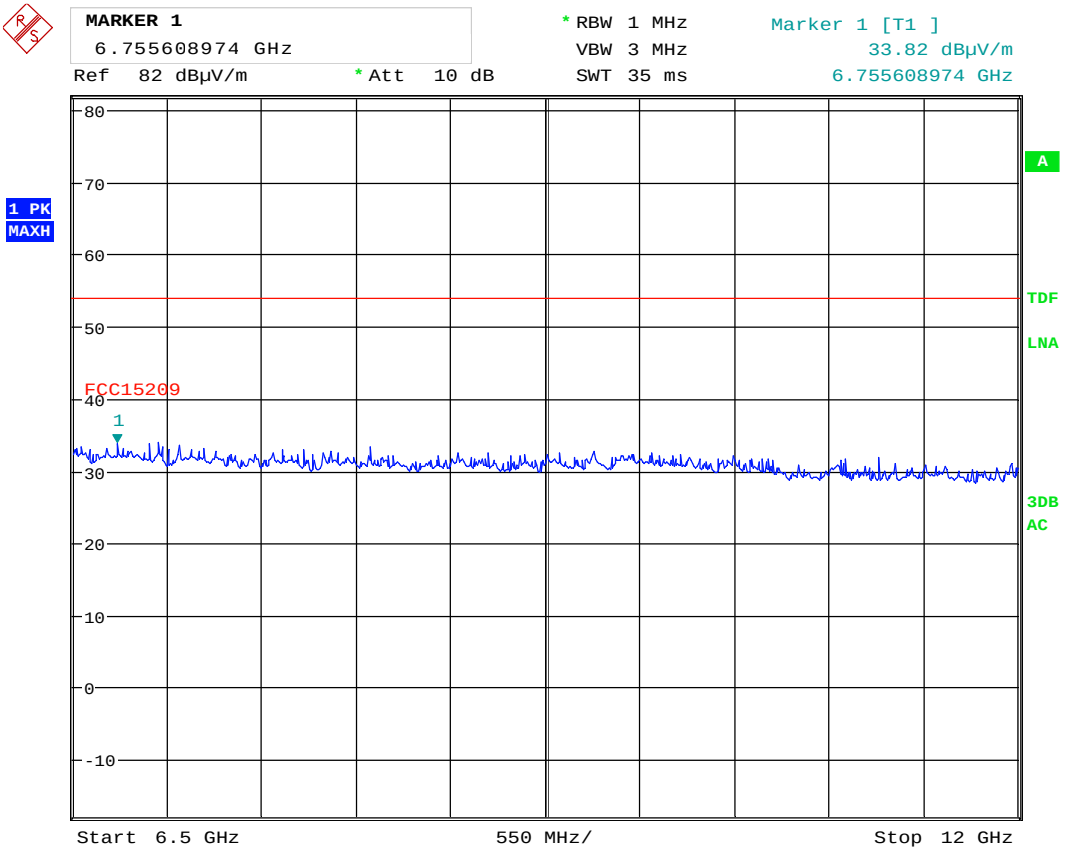
Date: 20.SEP.2018 06:52:01

HP: 6.5 - 12GHz @ 3m , PK scan , Ant.A, ch5736MHz



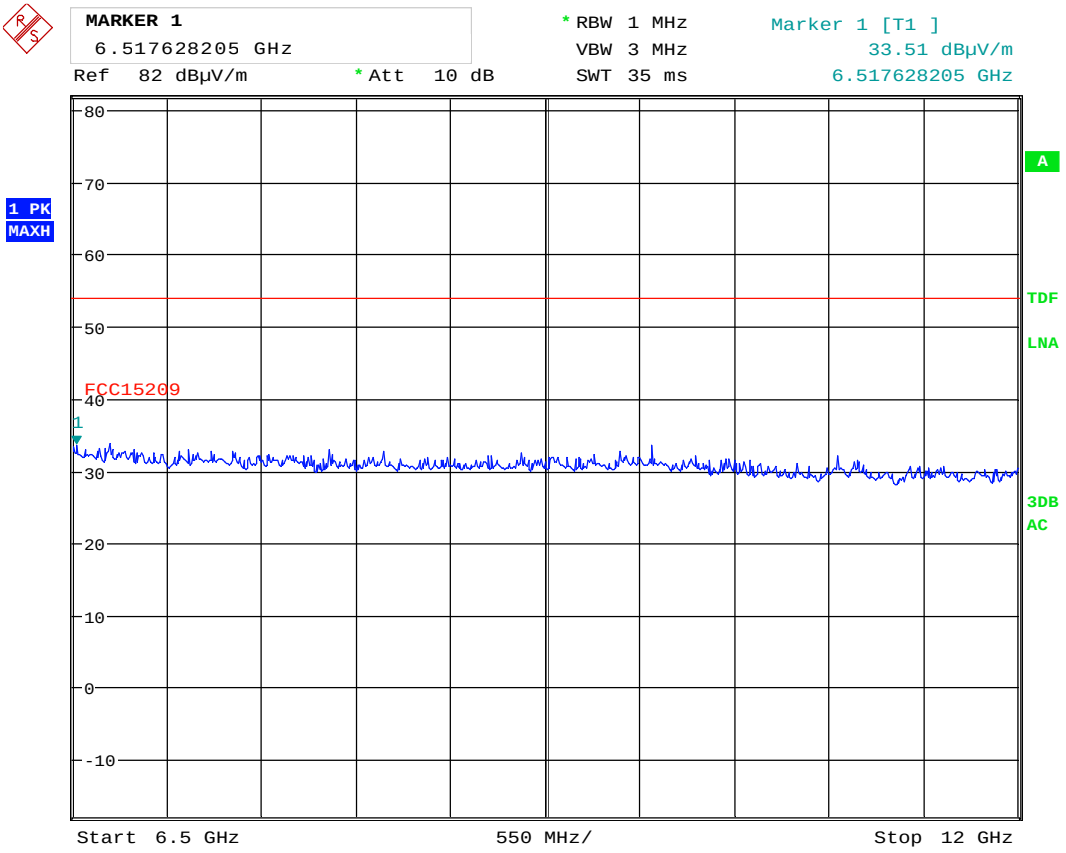
Date: 20.SEP.2018 06:53:26

VP: 6.5 - 12GHz @ 3m , PK scan , Ant.A, ch5762MHz



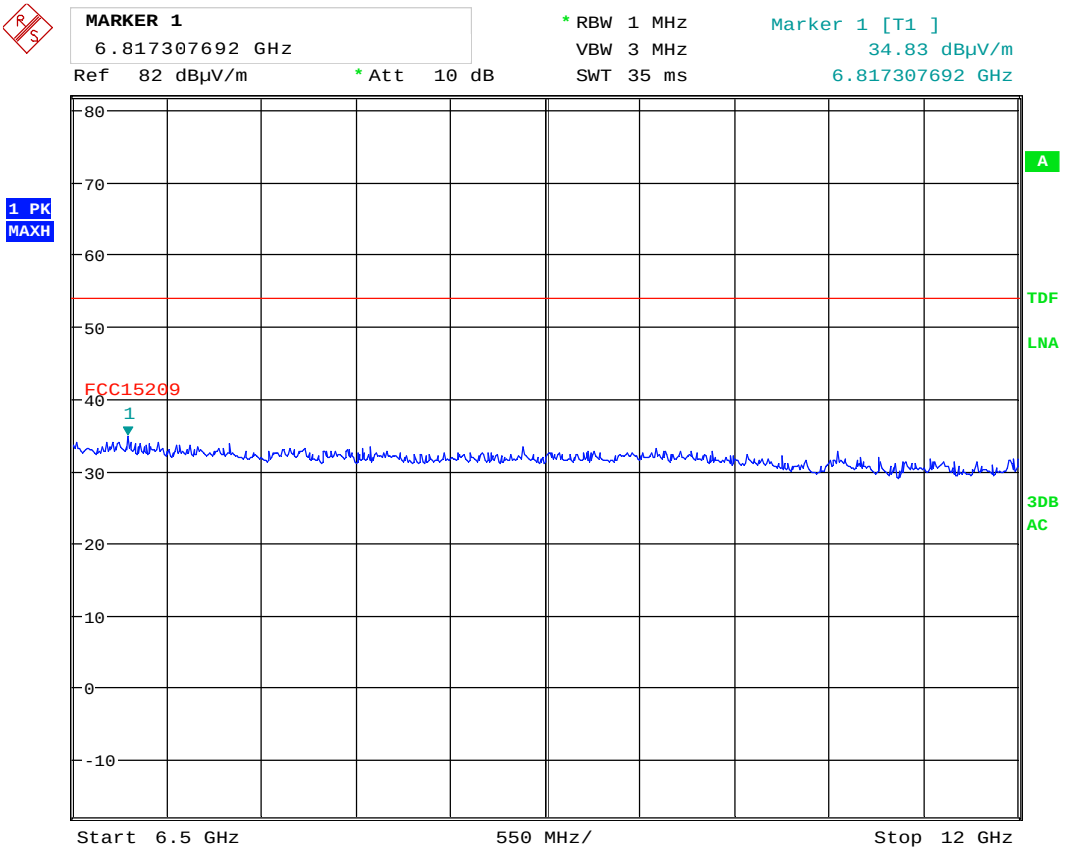
Date: 20.SEP.2018 06:53:54

HP: 6.5 - 12GHz @ 3m , PK scan , Ant.A, ch5762MHz



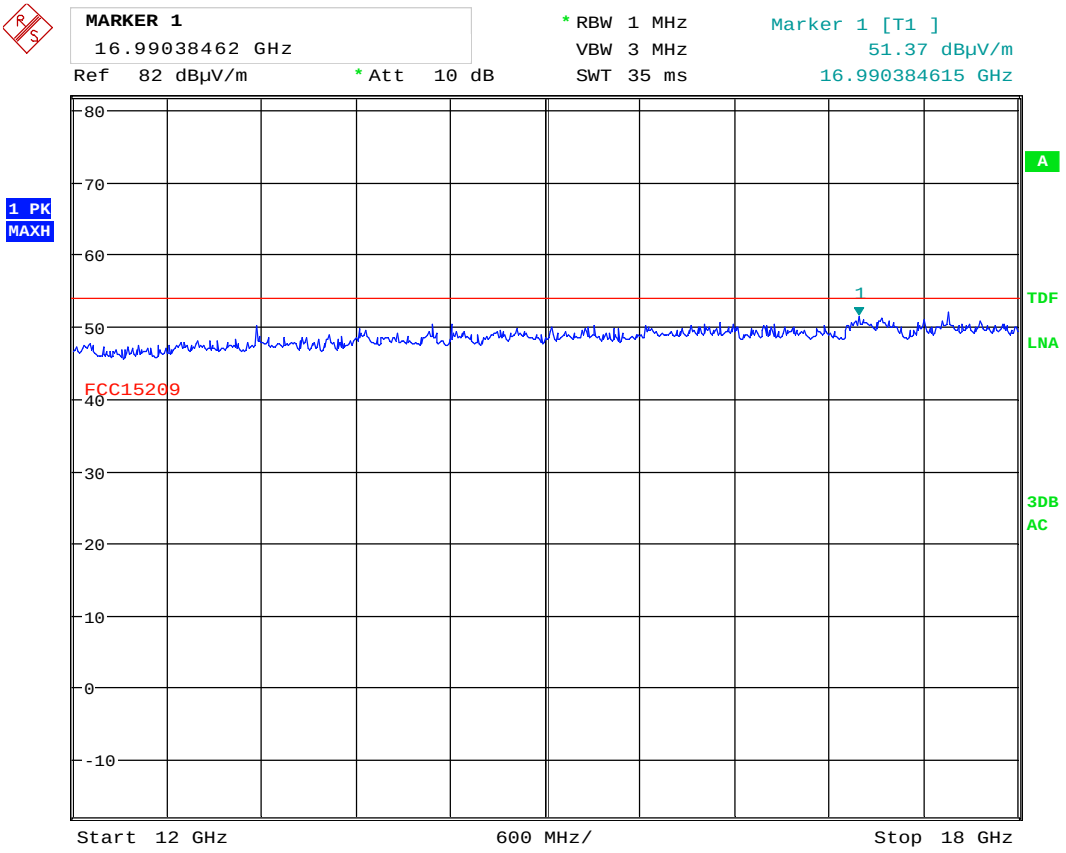
Date: 20.SEP.2018 06:54:56

VP: 6.5 - 12GHz @ 3m , PK scan , Ant.A, ch5814MHz



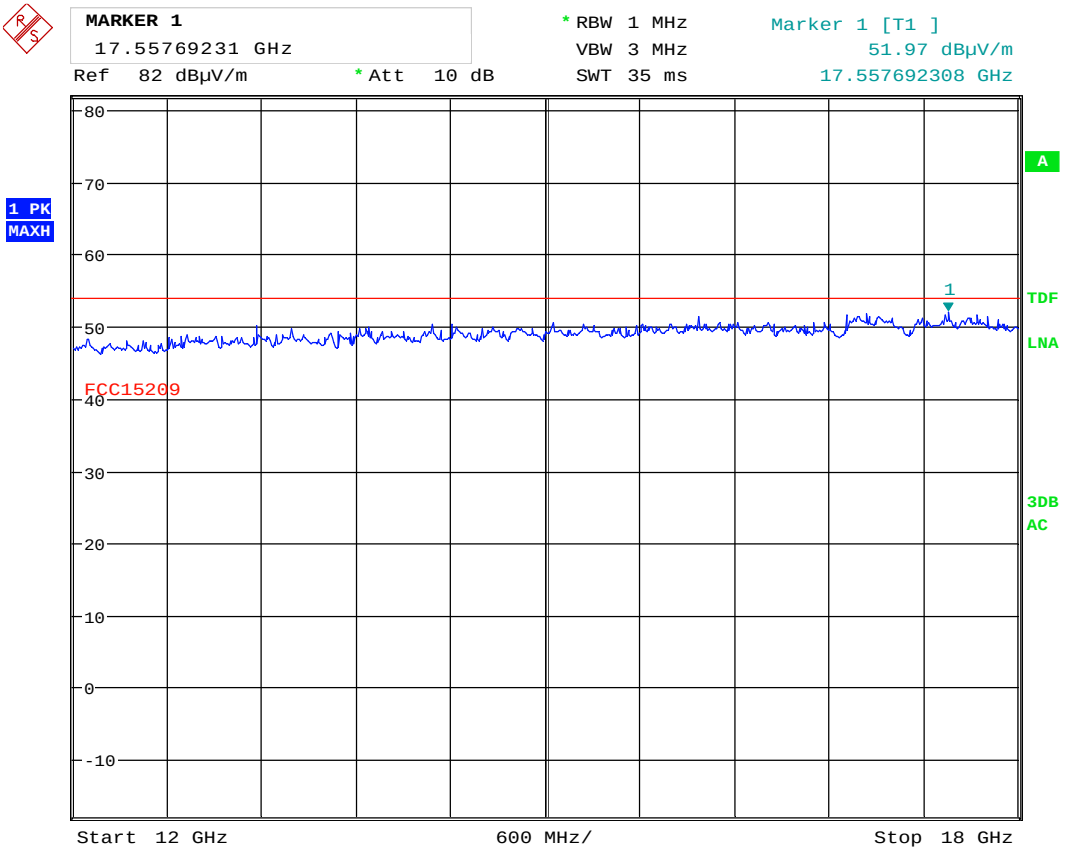
Date: 20.SEP.2018 06:54:34

HP: 6.5 - 12GHz @ 3m , PK scan , Ant.A, ch5814MHz



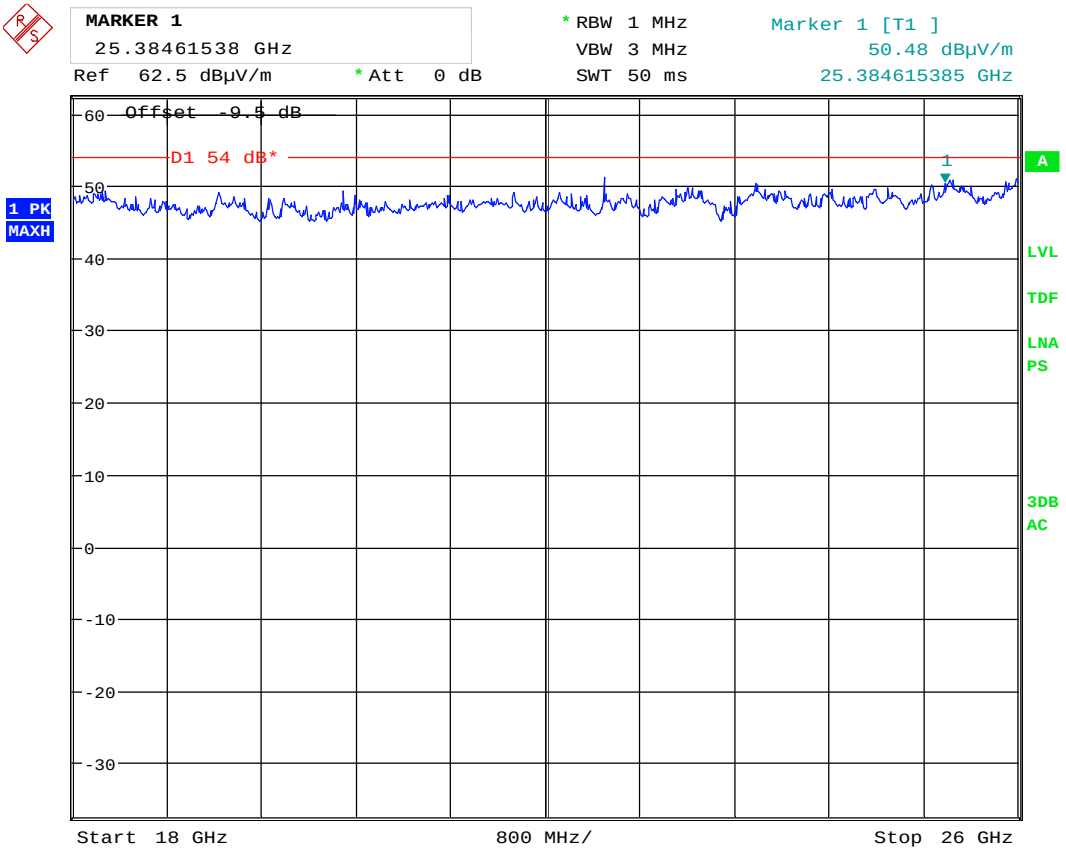
Date: 20.SEP.2018 07:09:19

VP: 12 - 18GHz @ 3m , PK scan , Ant.A



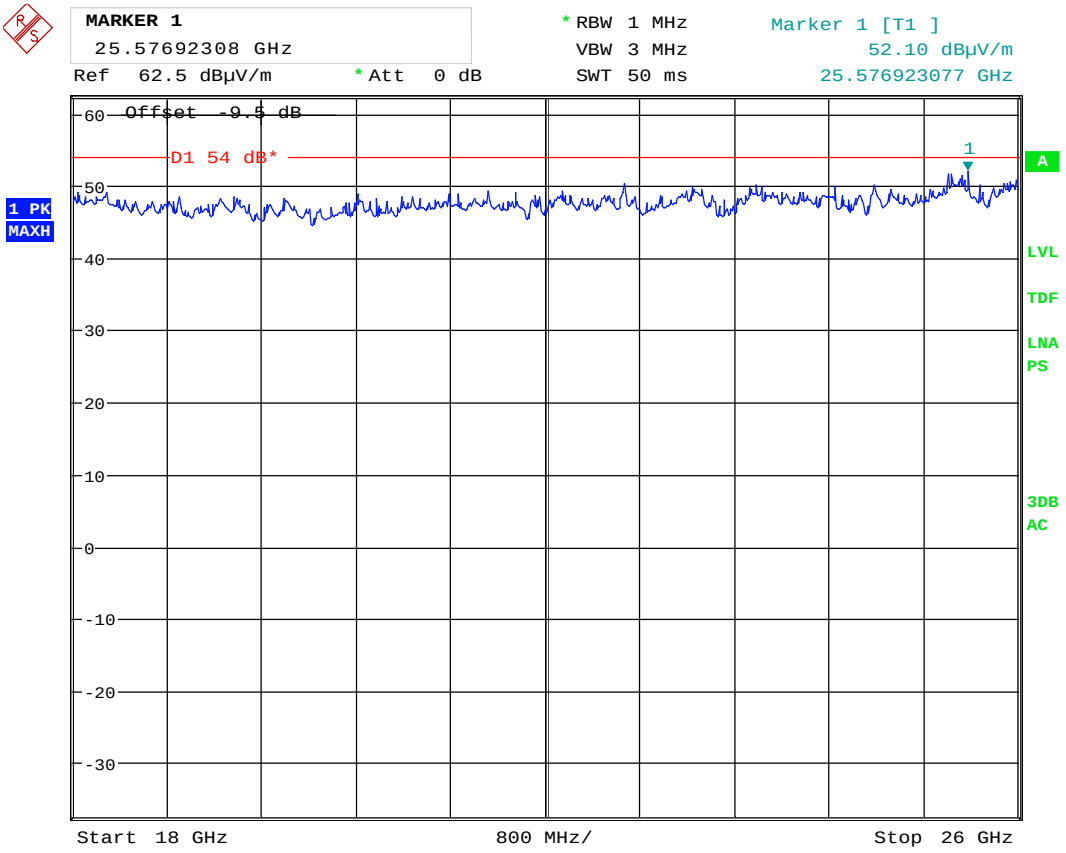
Date: 20.SEP.2018 07:10:53

HP: 12 - 18GHz @ 3m , PK scan , Ant.A



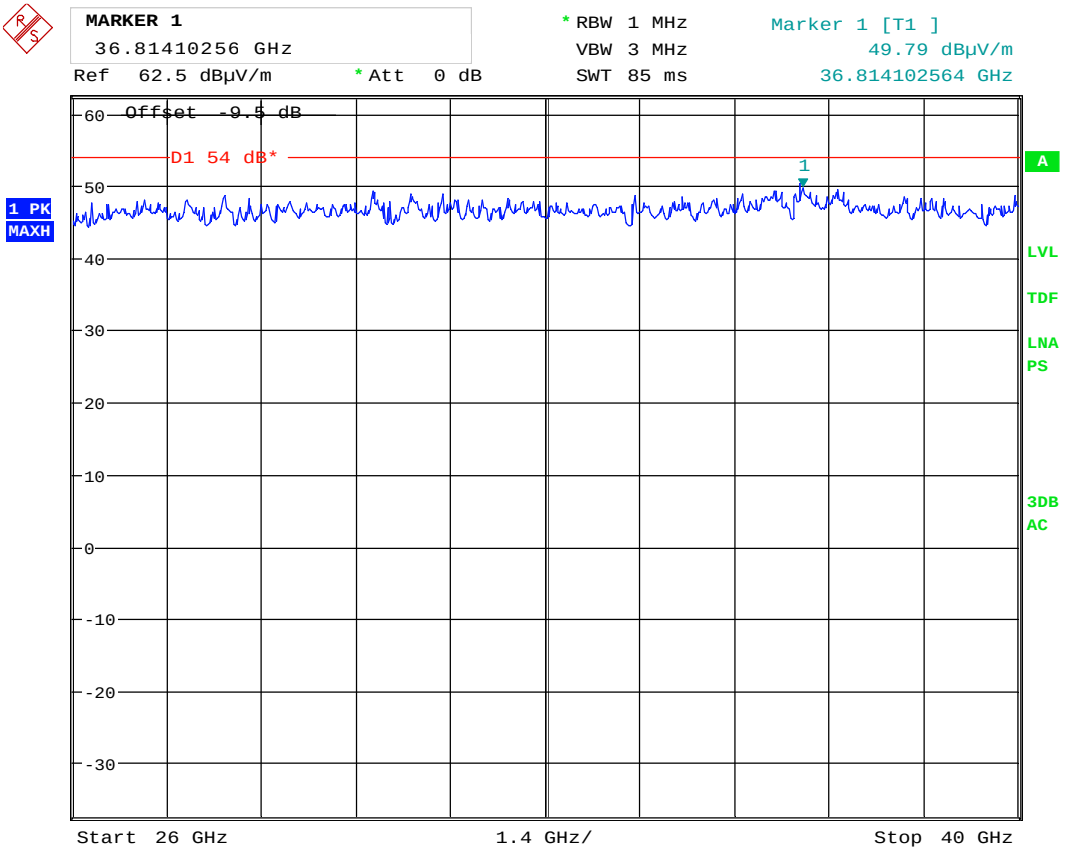
Date: 20.SEP.2018 08:04:22

VP: 18 - 26GHz @ 1m , PK scan , Ant.A



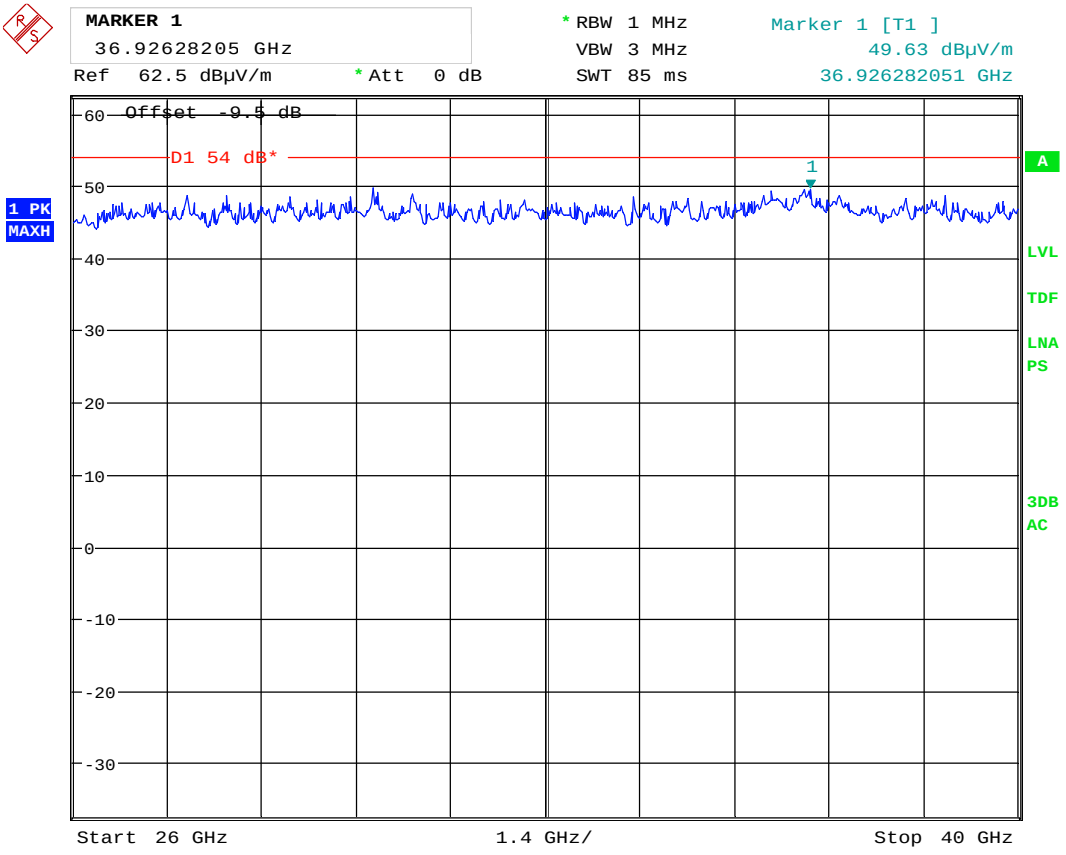
Date: 20.SEP.2018 08:05:26

HP: 18 - 26GHz @ 1m , PK scan , Ant.A



Date: 20.SEP.2018 07:59:13

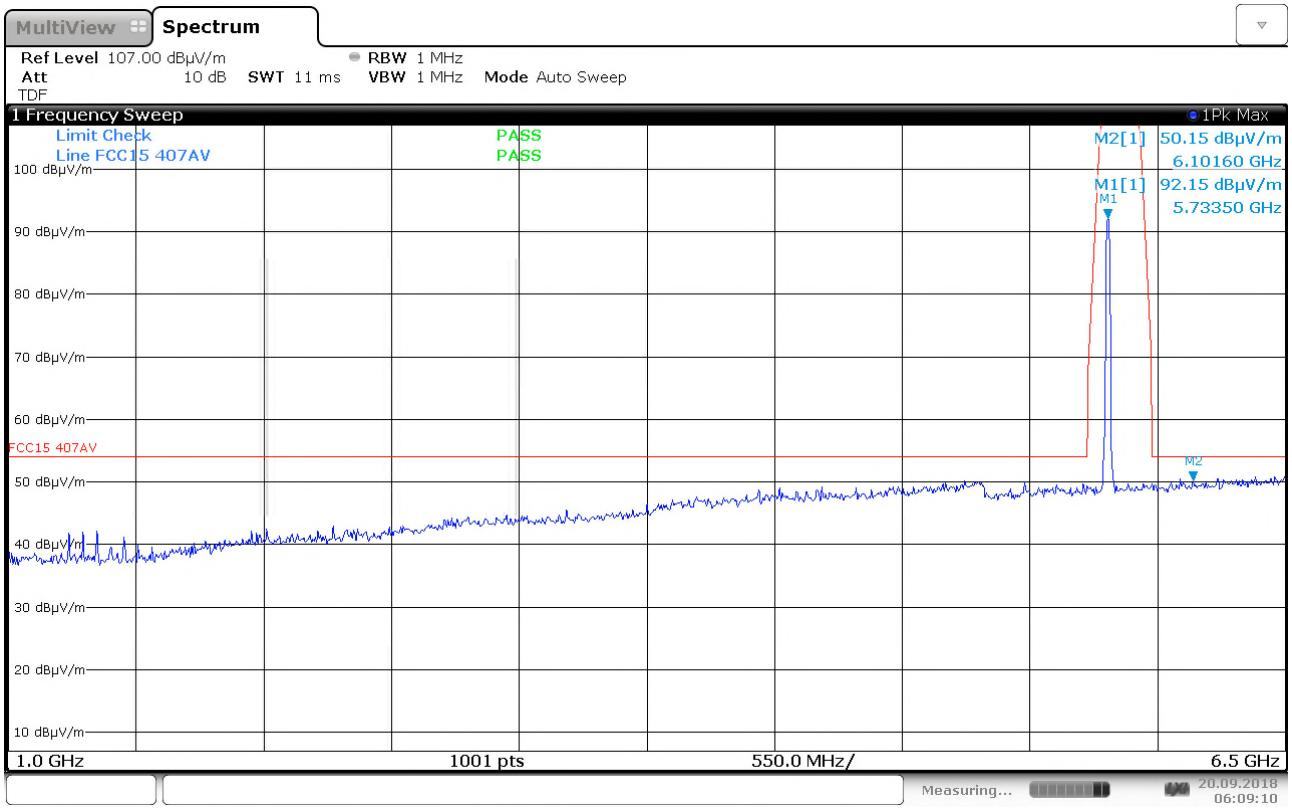
VP: 26 - 40GHz @ 1m , PK scan , Ant.A



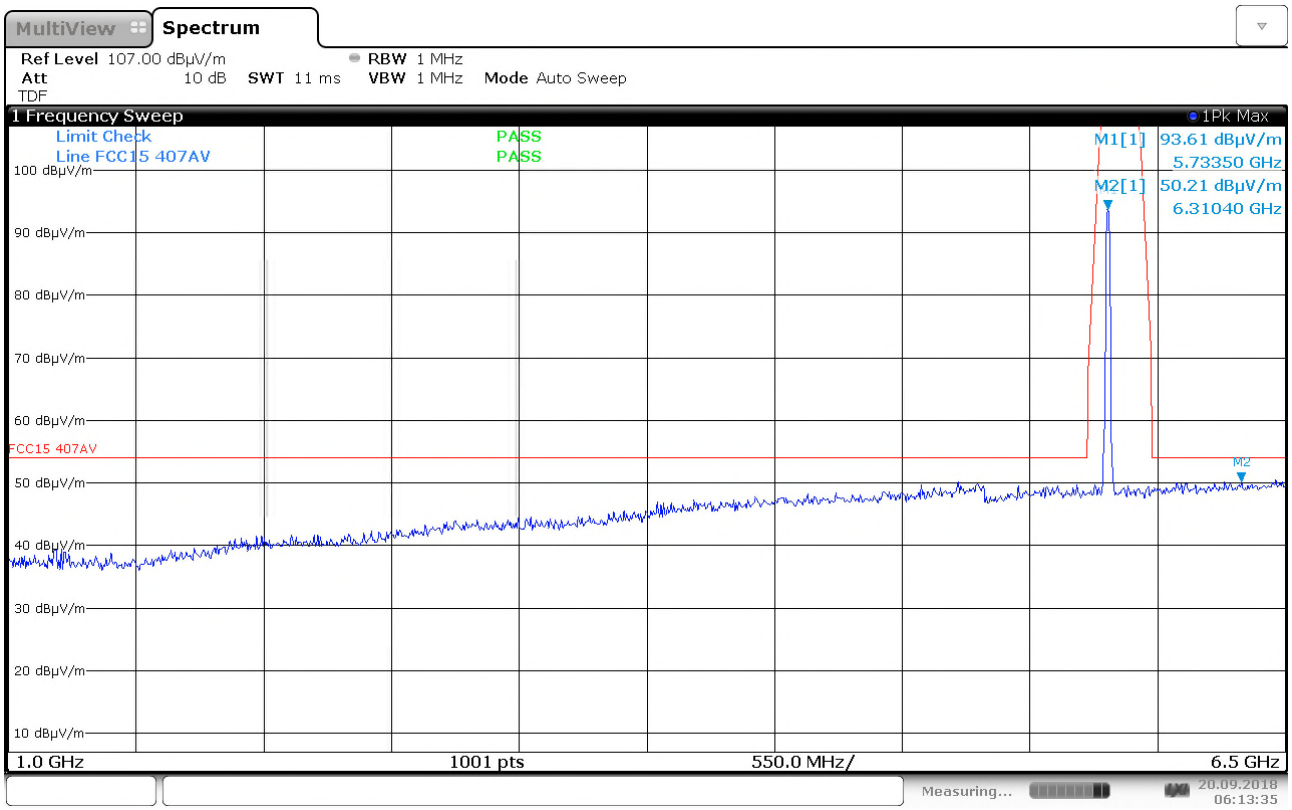
Date: 20.SEP.2018 08:00:06

HP: 26 - 40GHz @ 1m , PK scan , Ant.A

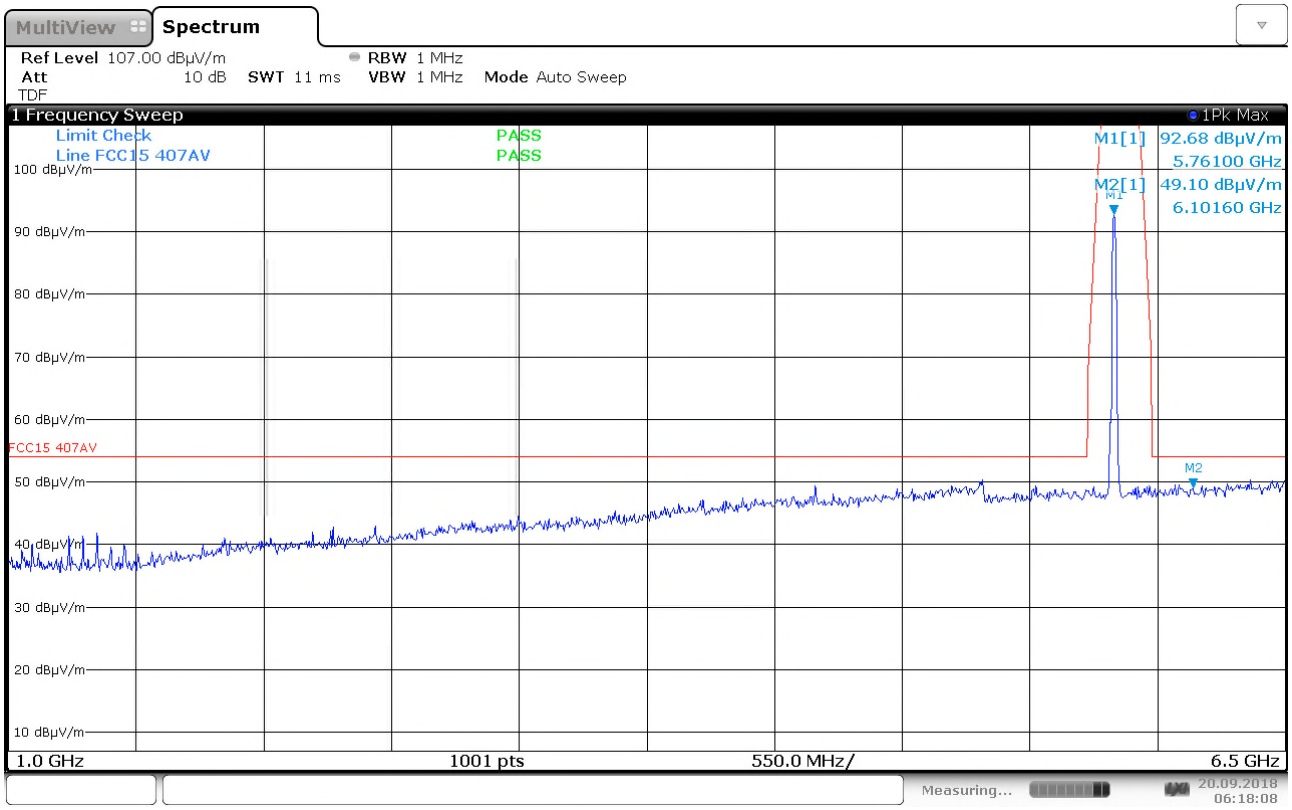
Antanna B



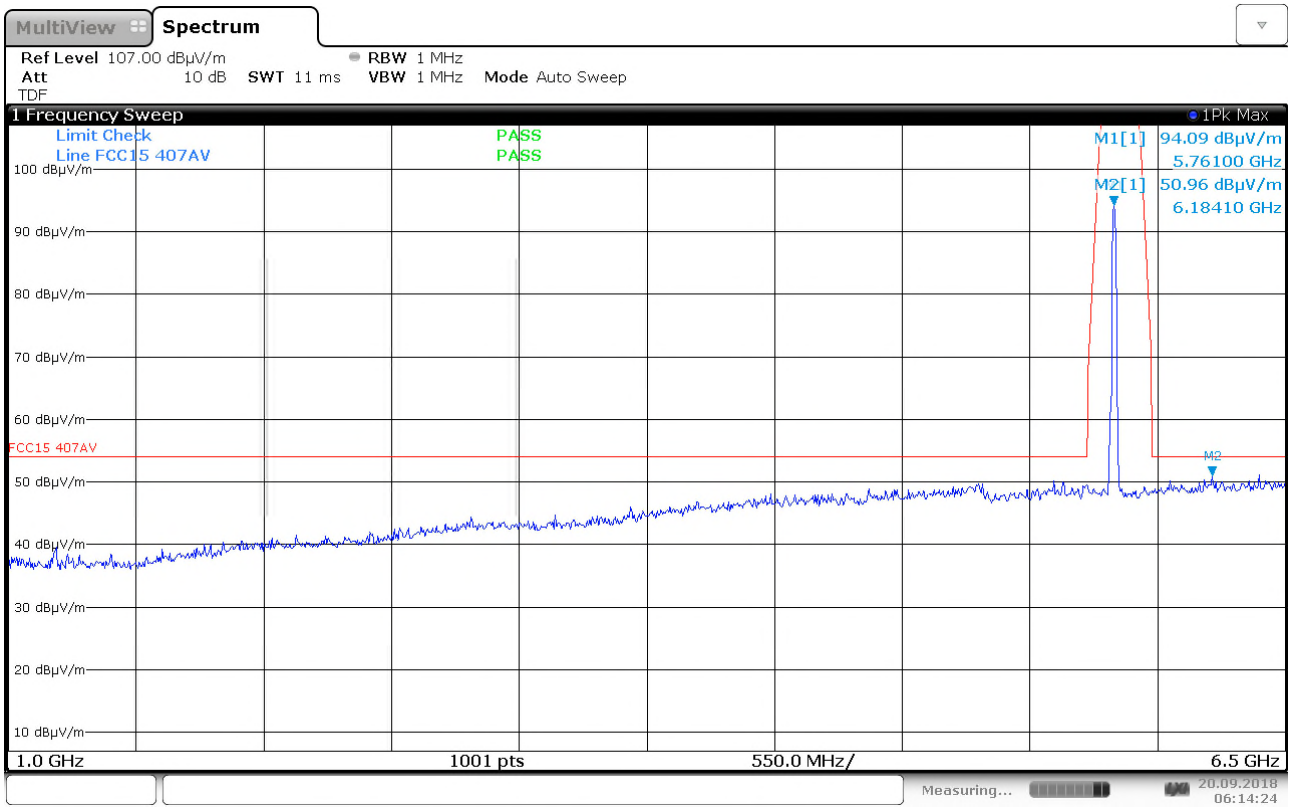
VP: 1 - 6.5GHz @ 3m , PK scan , Ant.B, ch5736MHz



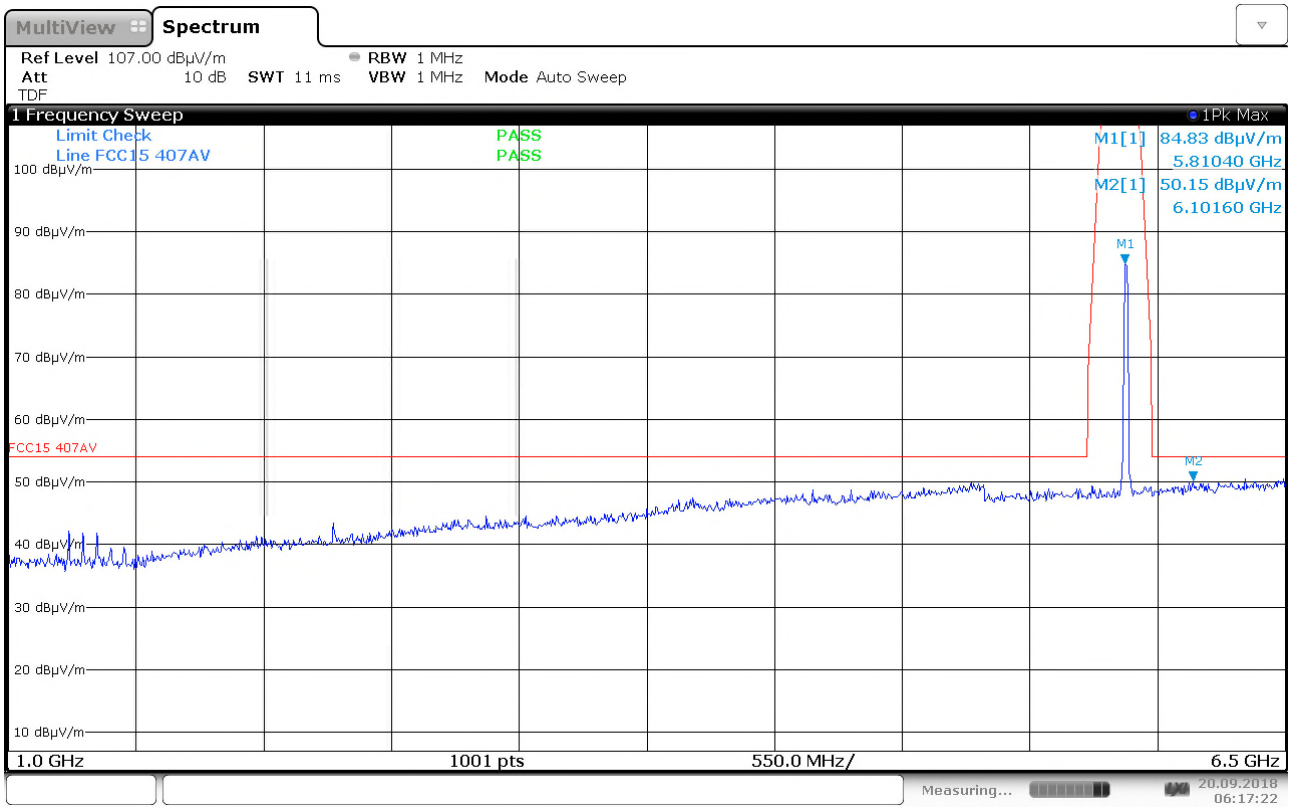
HP: 1 - 6.5GHz @ 3m , PK scan , Ant.B, ch5736MHz



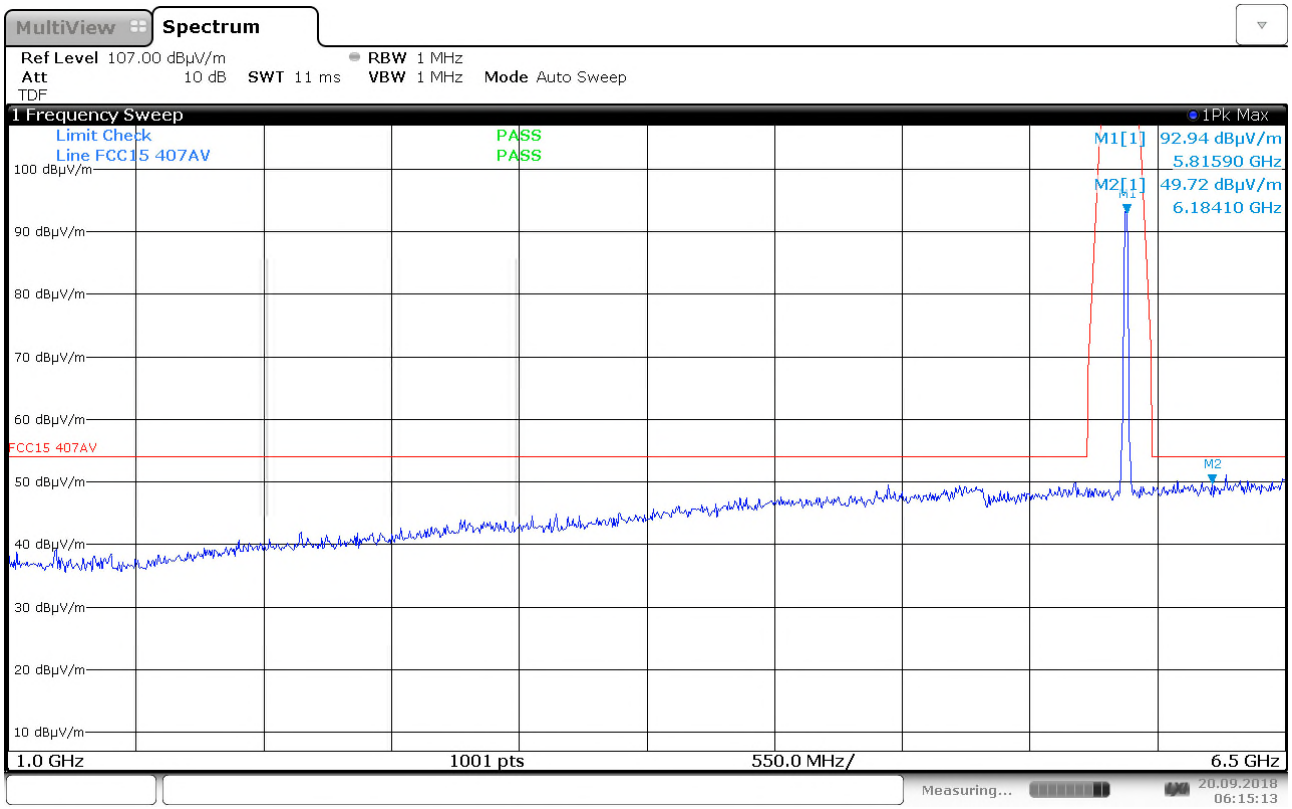
VP: 1 - 6.5GHz @ 3m , PK scan , Ant.B, ch5762MHz



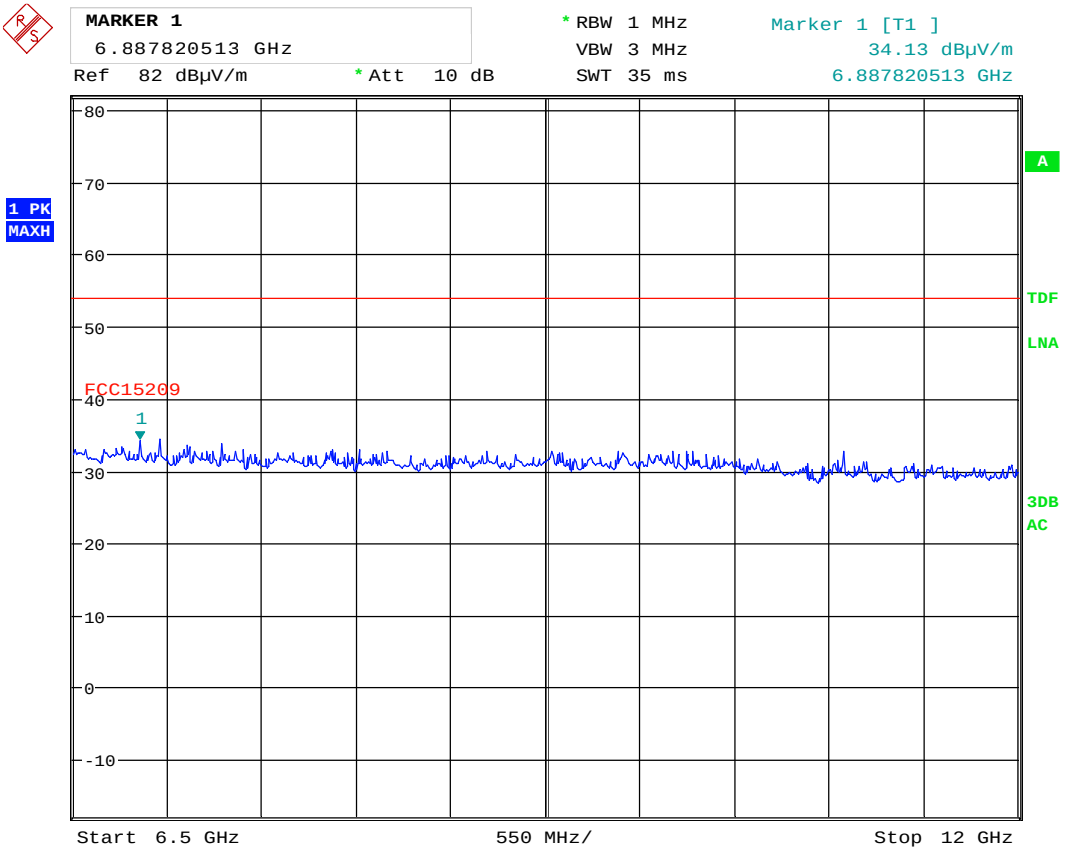
HP: 1 - 6.5GHz @ 3m , PK scan , Ant.B, ch5762MHz



VP: 1 - 6.5GHz @ 3m , PK scan , Ant.B, ch5814MHz

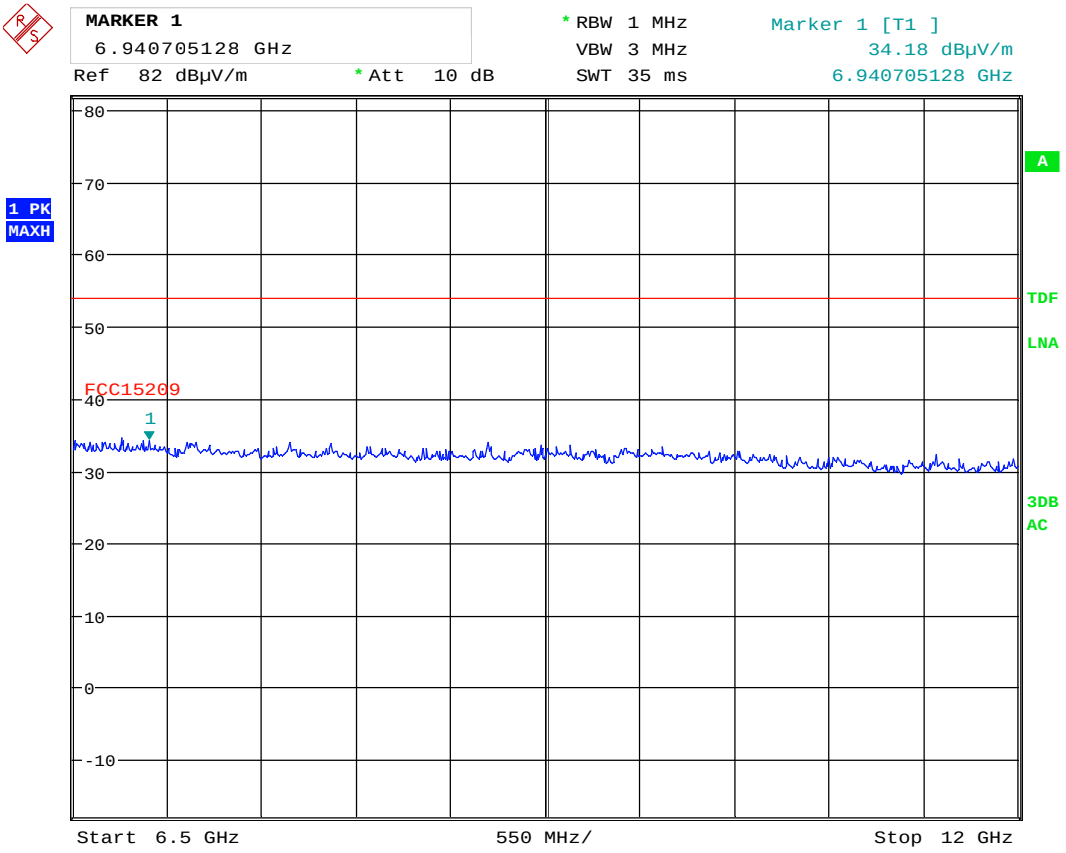


HP: 1 - 6.5GHz @ 3m , PK scan , Ant.B, ch5814MHz



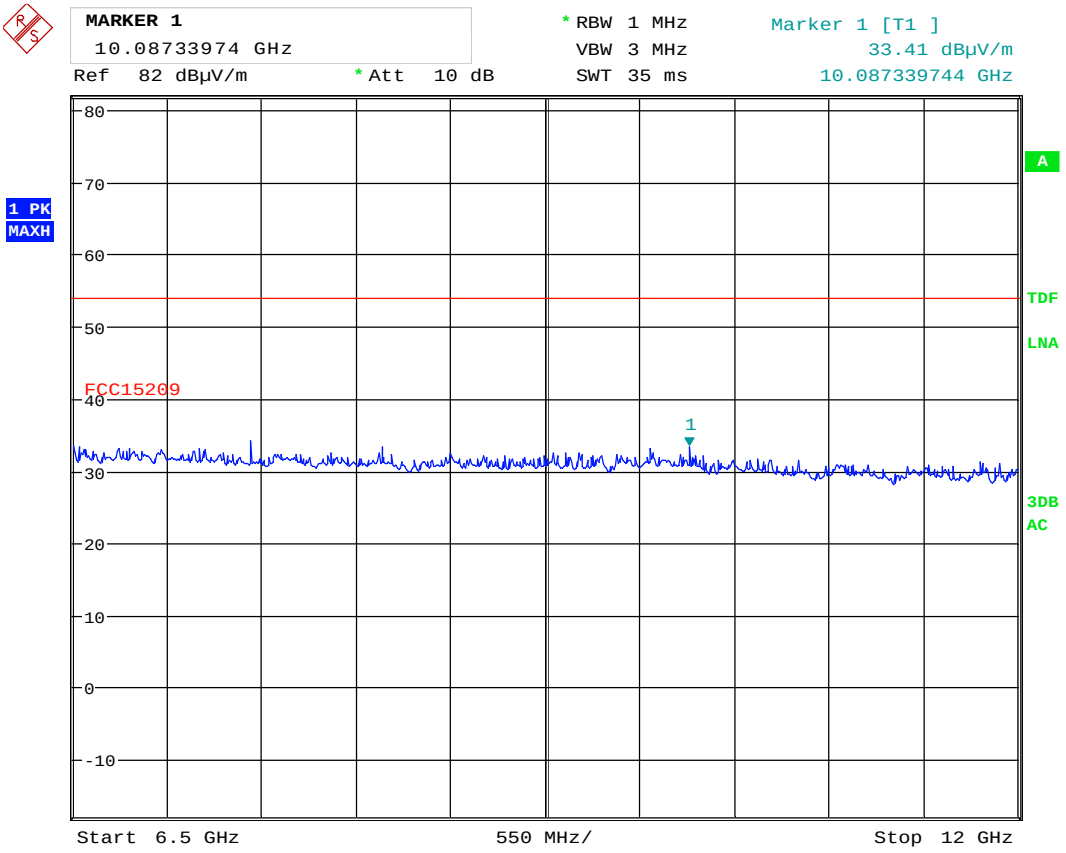
Date: 20.SEP.2018 06:47:54

VP: 6.5 - 12GHz @ 3m , PK scan , Ant.B, ch5736MHz



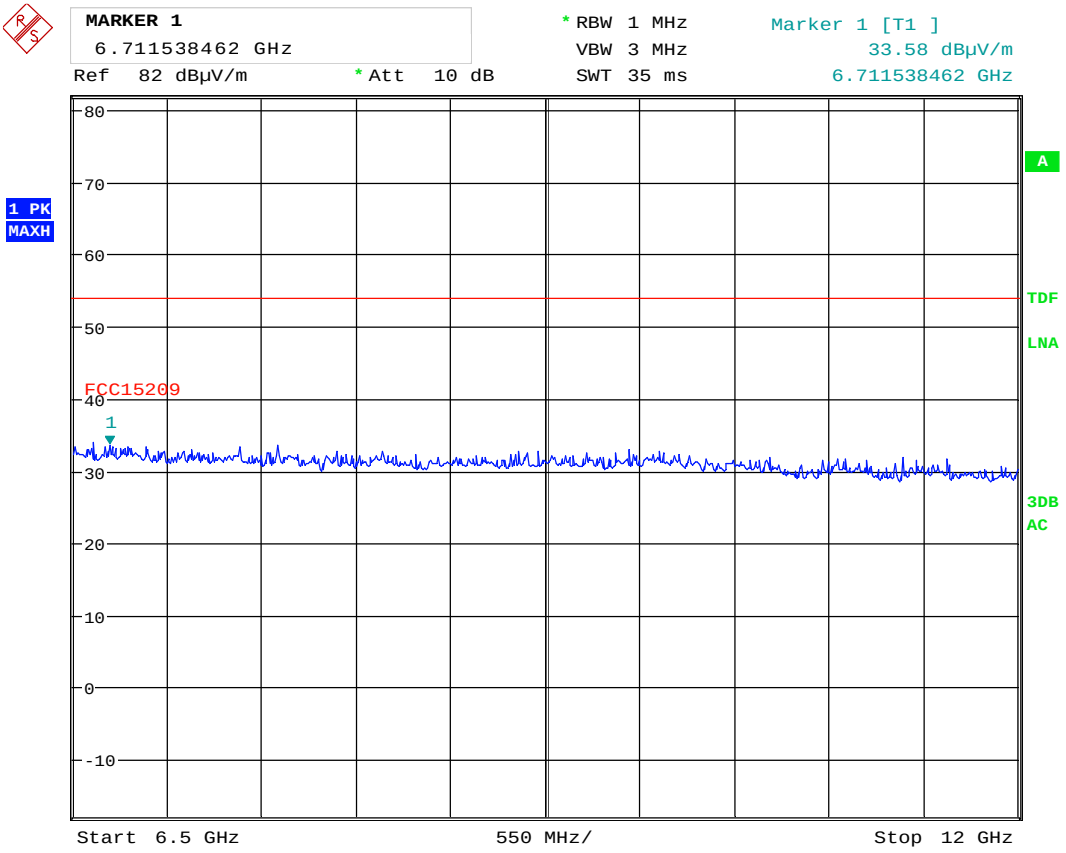
Date: 20.SEP.2018 06:46:39

HP: 6.5 - 12GHz @ 3m , PK scan , Ant.B, ch5736MHz



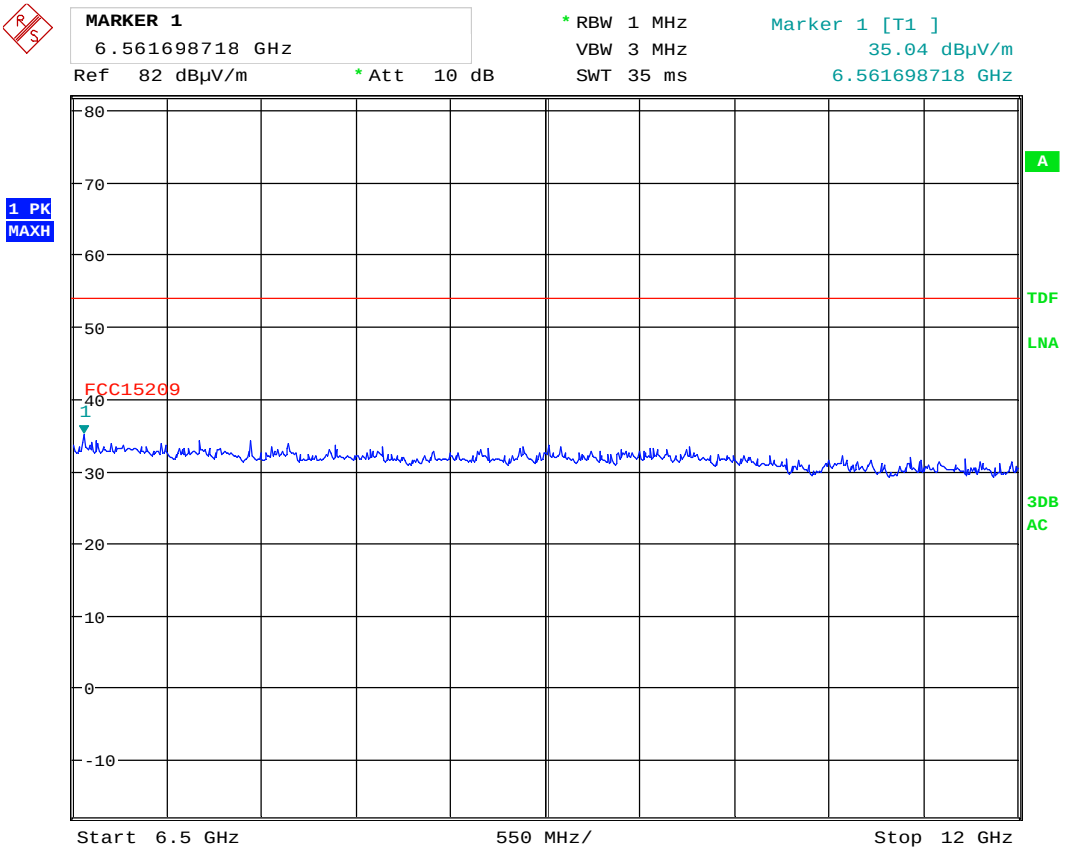
Date: 20.SEP.2018 06:50:19

VP: 6.5 - 12GHz @ 3m , PK scan , Ant.B, ch5762MHz



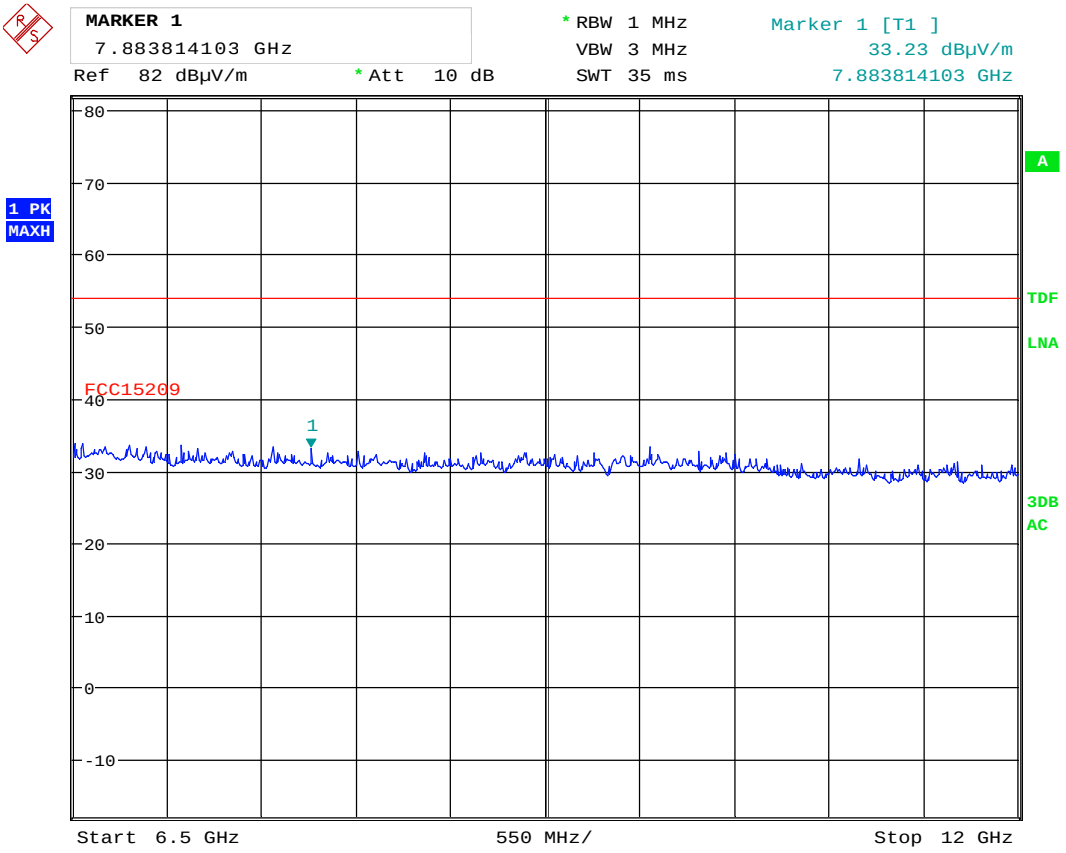
Date: 20.SEP.2018 06:49:44

HP: 6.5 - 12GHz @ 3m , PK scan , Ant.B, ch5762MHz



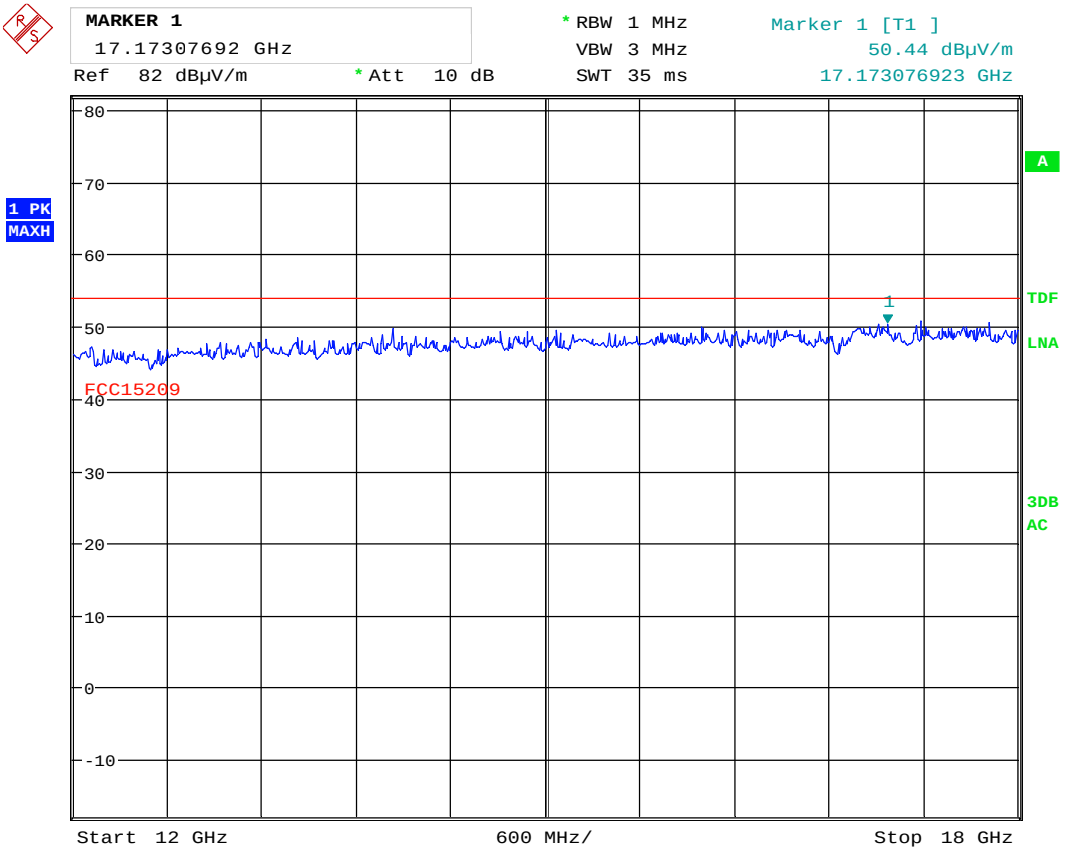
Date: 20.SEP.2018 06:50:58

VP: 6.5 - 12GHz @ 3m , PK scan , Ant.B, ch5814MHz



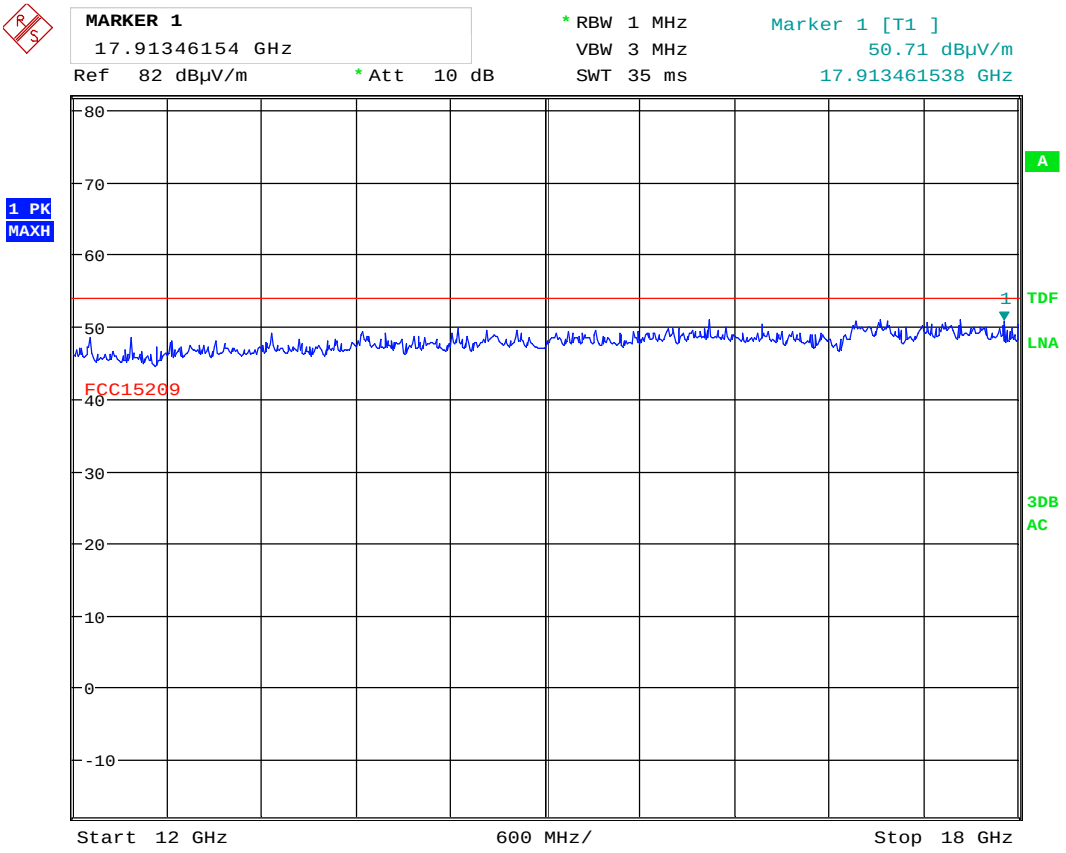
Date: 20.SEP.2018 06:51:29

HP: 6.5 - 12GHz @ 3m , PK scan , Ant.B, ch5814MHz



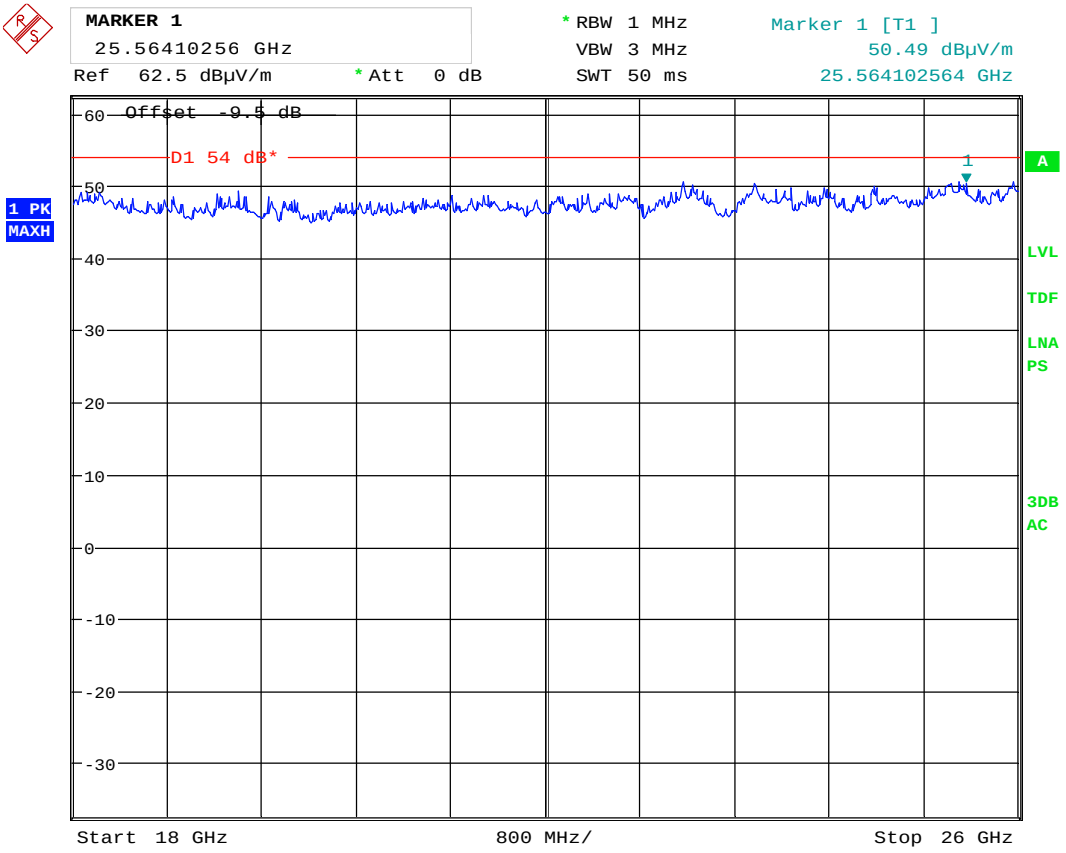
Date: 20.SEP.2018 07:12:10

VP: 12 - 18GHz @ 3m , PK scan , Ant.B



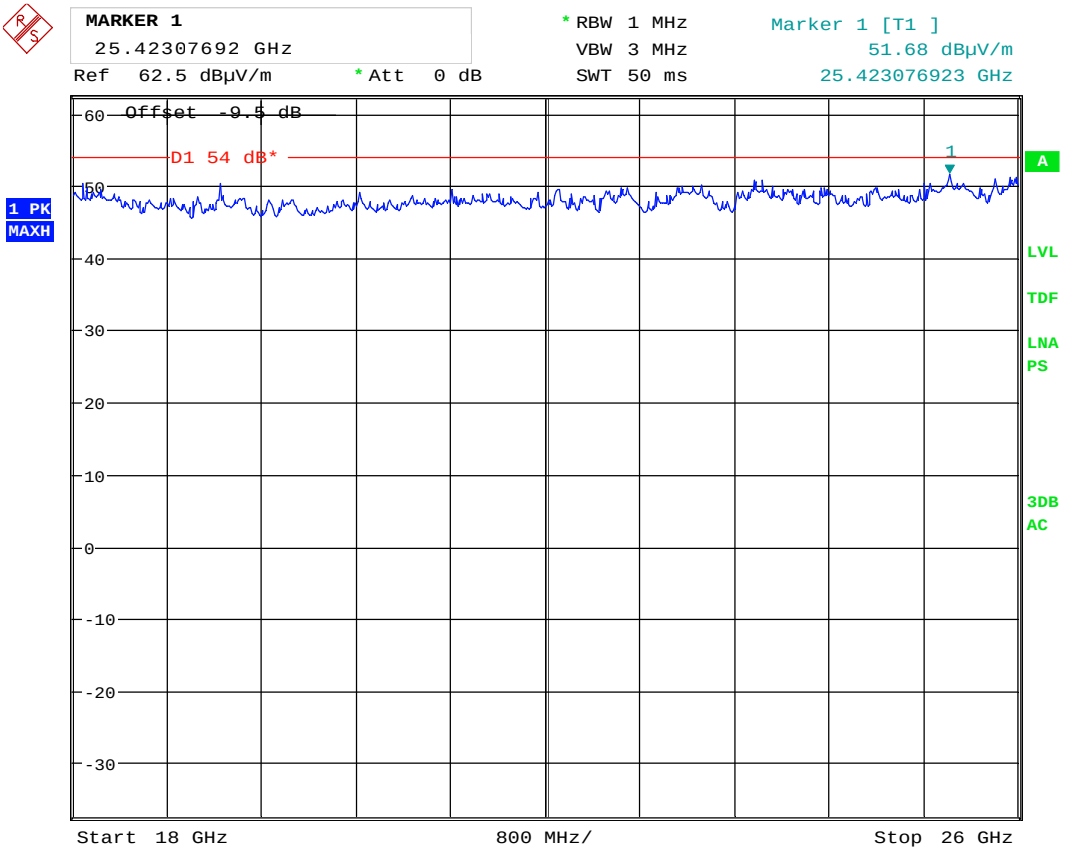
Date: 20.SEP.2018 07:11:32

HP: 12 - 18GHz @ 3m , PK scan , Ant.B



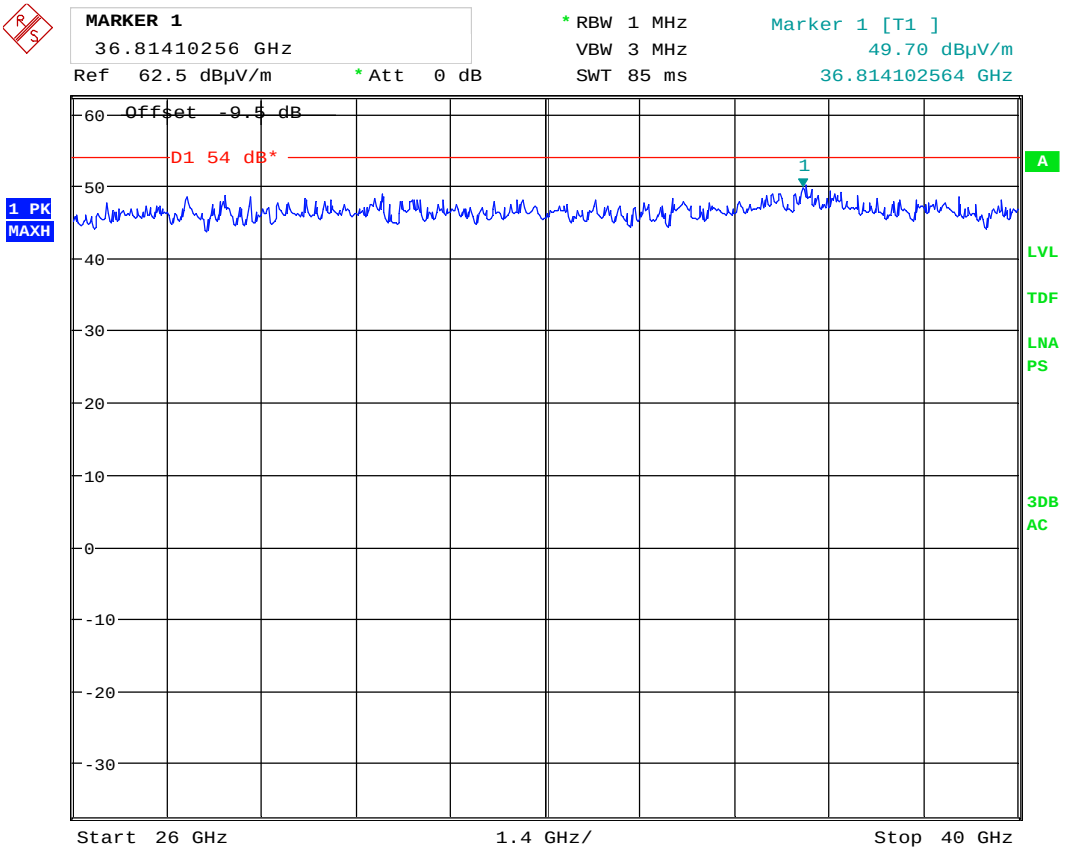
Date: 20.SEP.2018 08:06:46

VP: 18 - 26GHz @ 1m , PK scan , Ant.B



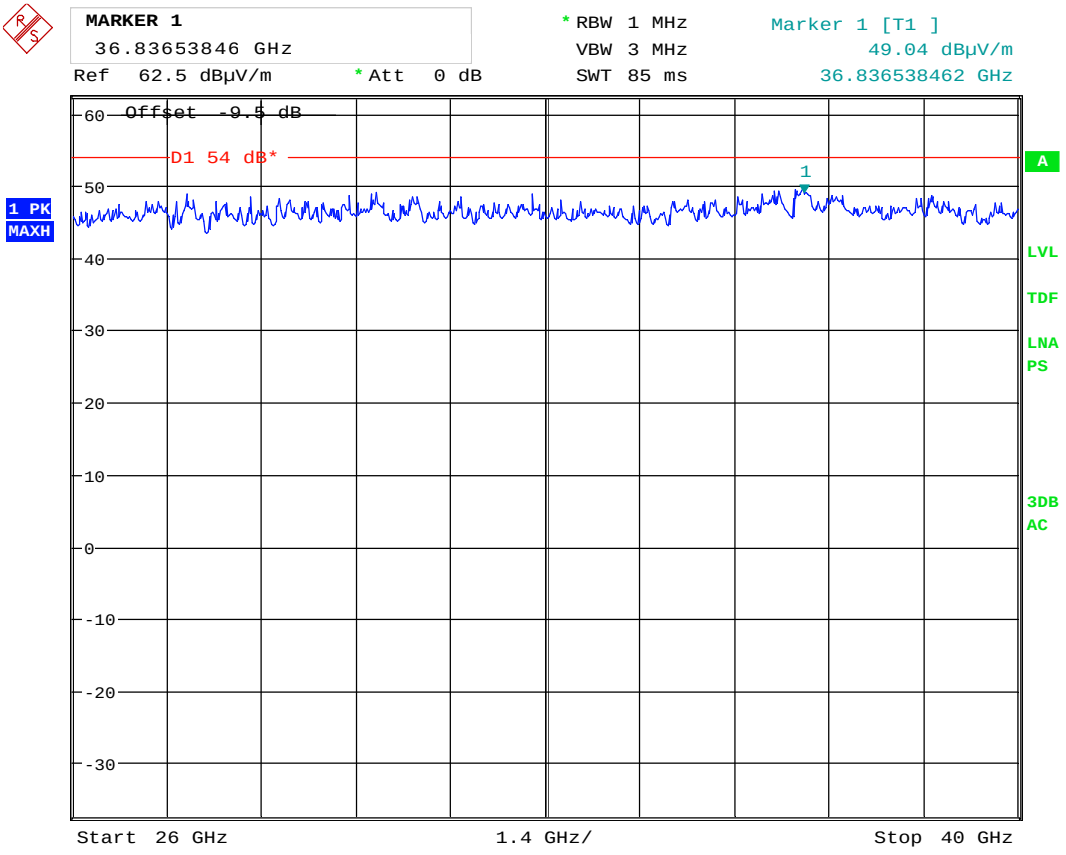
Date: 20.SEP.2018 08:06:20

HP: 18 - 26GHz @ 1m , PK scan , Ant.B



Date: 20.SEP.2018 08:01:23

VP: 26 - 40GHz @ 1m , PK scan , Ant.B



Date: 20.SEP.2018 08:00:54

HP: 26 - 40GHz @ 1m , PK scan , Ant.B

3.11 Frequency Stability

FCC 15.407(g)

RSS-Gen: 6.11

Test Results: Complies

Measurement Data:

Assigned band 5725MHz – 5825MHz

Temperature	Carrier 5736MHz Frequency Drift (ppm)	Carrier 5814MHz Frequency Drift (ppm)
+50°C	-1.41	-0.14
+40 °C	-0.48	-0.88
+30 °C	-0.48	-0.10
+20 °C	-0.44	-0.31
+10 °C	1.17	0.91
0 °C	2.98	2.89
-10 °C	3.91	3.88
-20 °C	3.81	3.81

The manufacturer rated power USB: 5Vdc

The test was performed with the counter function of a spectrum analyzer.

The upper and lower temperatures used are the outer limits specified by in the RSS-Gen 6.11 (a)(b) for licence-exampt devices.

Frequency Stability requirement:

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

3.12 Measurement Uncertainty

Measurement Uncertainty Values		
Test Item		**Uncertainty**
Output Power		±0.5 dB
Power Spectral Density		±0.5 dB
Out of Band Emissions, Conducted	**< 3.6 GHz**	±0.6 dB
	> 3.6 GHz	±0.9 dB
Spurious Emissions, Radiated	**< 1 GHz**	±2.5 dB
	> 1 GHz	±2.2 dB
Emission Bandwidth		±4 %
Power Line Conducted Emissions		+2.9 / -4.1 dB
Spectrum Mask Measurements	**Frequency**	±5 %
	Amplitude	±1.0 dB
Frequency Error		±0.6 ppm
Temperature Uncertainty		±1 °C

All uncertainty values are expanded standard uncertainty to give a confidence level of 95%, based on coverage factor k=2

4 LIST OF TEST EQUIPMENT

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries are identified (numbered) by the Test Laboratory.

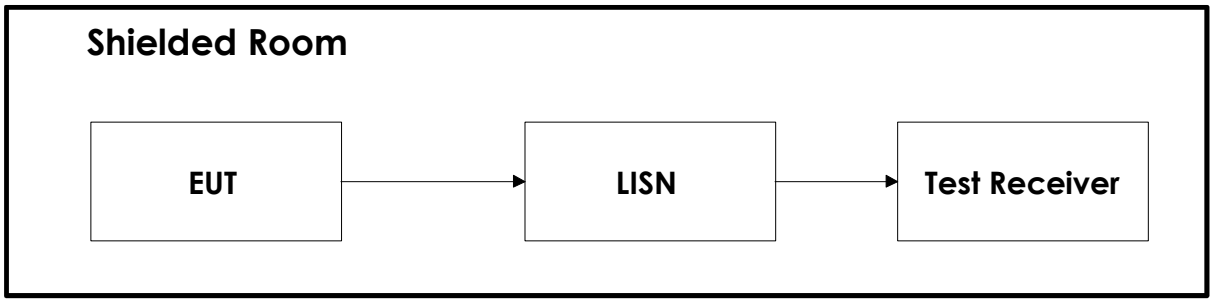
No.	Model	Description	Manufacturer	Asset no.	Cal. date	Cal. Due
1	ESCI	EMI Receiver	Rohde & Schwarz	N-4259	2017.10	2019.10
2	ENV216	Two-Line V-Network	Rohde & Schwarz	LR 1665	2017.11	2019.11
3	FSW46	Spectrum Analyzer	Rohde & Schwarz	LR 1690	2018.01	2019.01
4	ESU40	Measuring Receiver	Rohde & Schwarz	LR 1639	2018.03	2020.03
5	3115	Horn Antenna	EMCO	LR 1330	2013.11	2020.11
6	8449B	Pre-amplifier	Hewlett Packard	LR 1322	2018.07	2019.07
7	637	Antenna Horn	Narda	LR 097	2009.01	2020.01
8	PM7320X	Antenna Horn	Sivers Lab	LR 102	2009.01.26	2020.01
9	DBF-520-20	Antenna Horn	Systron Donner	LR 100	2009.01.26	2020.01
10	638	Antenna Horn	Narda	LR 1480	2010.06.17	2020.06
11	JS4	Pre-amplifier	Miteq	LR 1591	2018.08	2019.08
12	WHKX6.6/18 G-8SS	HP filter	Wainwright	LR 1619	COU	
13	6812B	AC power source	Agilent	LR 1515	2017.09	2019.07
14	ST18/SMAm/Nm/36iln	RF cable	Huber+Suhner	LR 1737	COU	
15	4768-10	Attenuator	Narda	LR 1696	COU	
16	TY 80	Climatic chamber	ACS	LR 1083	2018.03	2019.03
17	Model 87 V	Multi meter	Fluke	LR 1600	2018.02	2020.02

COU = Cal on Use

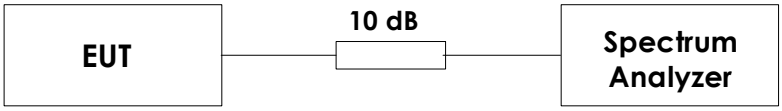
Test Software List			
Description	**Manufacturer**	**Model**	**Version**
EMC 32	Rohde & Schwarz	/	V10.40.10
GPIB shot	Rohde & Schwarz	/	V2.7
RSCommander	Rohde & Schwarz	/	V1.9.2 (64bit)

5 BLOCK DIAGRAM

5.1 Power Line Conducted Emission

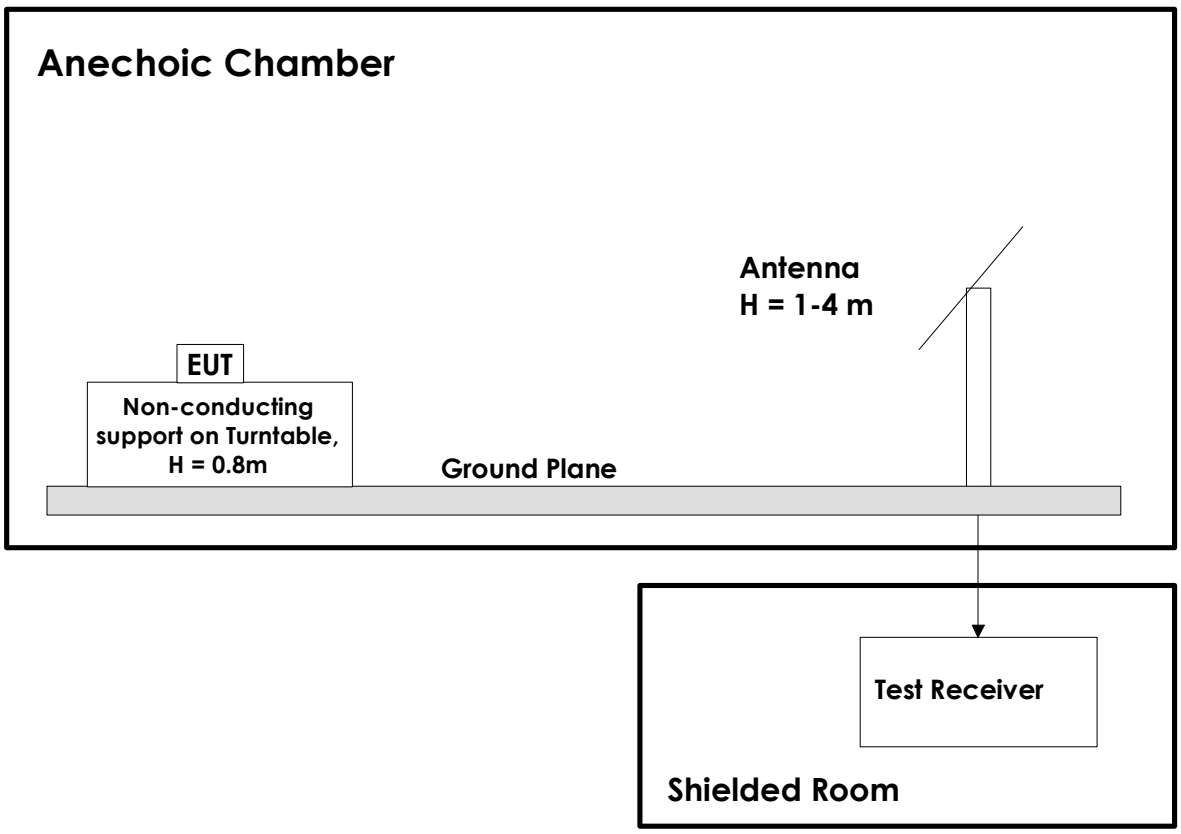


5.2 Conducted Tests



This test set-up is used for all Conducted tests. For the Frequency Stability test the EUT was placed in a climatic chamber.

5.3 Test Site Radiated Emission



This test set-up was used for the radiated measurements. The EUT support height was 0.8m for frequencies below 1 GHz and 1.5m for frequencies above 1 GHz.

For frequencies above 1 GHz the ground plane between the EUT and the measuring antenna was covered by absorbers.

Revision history

Version	Date	Comment	Sign
1.00	2018.09.21	First version	gns