

RADIO TEST REPORT – REP039901

Type of assessment:

Transmitters co-location

Applicant:

TOPCON POSITIONING SYSTEMS, INC.

7400 National Drive, Livermore CA 94551, USA

Model:

CL20

Variant:

CL-20 GLOBAL

FCC ID:

WR4-CL20

IC Registration number:

6050B-CL20

Specifications:

◆ **FCC 47 CFR Part 15 Subpart C, §15.209**

Radiated emission limits; general requirements.

◆ **RSS-Gen, Issue 5, April 2018, Amendment 1 (March 2019), Amendment 2 (February 2021), section 8.9**

Transmitter Emission Limits

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Date of issue: 2023-10-19

O. Frau

Tested by



Signature

R. Giampaglia

Reviewed by



Signature

Test location(s)

Company name	Nemko Spa
Address	Via del Carroccio, 4
City	Biassono
Province	MB
Postal code	20853
Country	Italy
Telephone	+39 039 220 12 01
Facsimile	+39 039 220 12 21
Website	www.nemko.com
Site number	FCC: 682159; IC: 9109A (10 m semi anechoic chamber)

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report. This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko Spa ISO/IEC 17025 accreditation.

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Table of contents

Table of contents	4
Section 1. Report summary	5
1.1 Applicant and manufacturer	5
1.2 Test specifications	5
1.3 Test methods	5
1.4 Statement of compliance	5
1.5 Exclusions	5
1.6 Test report revision history	5
Section 2. Summary of test results	6
2.1 FCC Part 15 Subpart C, general requirements test results	6
2.2 ISED RSS-Gen, Issue 5, test results	6
Section 3. Equipment under test (EUT) details	7
3.1 Sample information	7
3.2 EUT information	7
3.3 Technical information	7
3.4 EUT setup diagram	7
3.5 Product description and theory of operation	7
3.6 EUT exercise details	8
Section 4. Engineering considerations	9
4.1 Modifications incorporated in the EUT	9
4.2 Technical judgment	9
4.3 Deviations from laboratory tests procedures	9
Section 5. Test conditions	10
5.1 Atmospheric conditions	10
5.2 Power supply range	10
Section 6. Measurement uncertainty	11
6.1 Uncertainty of measurement	11
Section 7. Test equipment	12
7.1 Test equipment list	12
Section 8. Testing data	13
8.1 FCC 15.209 and RSS-Gen section 8.9 Radiated emission limits; general requirements	13
Section 9. Block diagrams of test set-ups	39
9.1 Radiated emissions set-up for frequencies below 1 GHz	39
9.2 Radiated emissions set-up for frequencies above 1 GHz	39
Section 10. Photos	40
10.1 Photos of the test set-up	40
10.2 Photos of the EUT	41

Section 1. Report summary

1.1 Applicant and manufacturer

Company name	TOPCON POSITIONING SYSTEMS, INC.
Address	7400 National Drive, Livermore CA 94551, USA

1.2 Test specifications

FCC 47 CFR Part 15 Subpart C, §15.209	Radiated emission limits; general requirements.
RSS-Gen Issue 5, April 2018, Amendment 1 (March 2019), Amendment 2 (February 2021) – section 8.9	Transmitter Emission Limits for Licence-Exempt Radio Apparatus

1.3 Test methods

ANSI C63.10 v2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
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1.4 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was performed against all relevant requirements of the test standard except as noted in section 1.5 below. Results obtained indicate that the product under test complies in full with the requirements tested. The test results relate only to the items tested.

See “Summary of test results” for full details.

1.5 Exclusions

As per quote, the purpose of this report is verification of transmitters colocation. Only inter-modulation products within restricted bands were assessed, other requirements were excluded from the scope of this report.

1.6 Test report revision history

Revision #	Date of issue	Details of changes made to test report
REP039901	2023-10-19	Original report issued

Section 2. Summary of test results

2.1 FCC Part 15 Subpart C, general requirements test results

Part	Test description	Verdict
§15.209	Radiated emission limits; general requirements.	Pass

2.2 ISSED RSS-Gen, Issue 5, test results

Part	Test description	Verdict
8.9	Transmitter Emission Limits for Licence-Exempt Radio Apparatus	Pass

Section 3. Equipment under test (EUT) details

3.1 Sample information

Receipt date	2022-04-20
Nemko sample ID number	4632290002

3.2 EUT information

Model	CL-20 GLOBAL
Serial number	007-2212-0007-AA

3.3 Technical information

Frequency band	WIFI / BT: 2400 – 2483.5 MHz band GSM / PCS / WCDMA / LTE North America Bands
Type of modulation	GFSK, 802.11a/n, OFDM
Emission classification (F1D, G1D, D1D)	F1D, W7D
EUT power requirements	8 - 36 V DC 10W
Antenna information	The EUT uses the two dedicated antennas.

3.4 EUT setup diagram

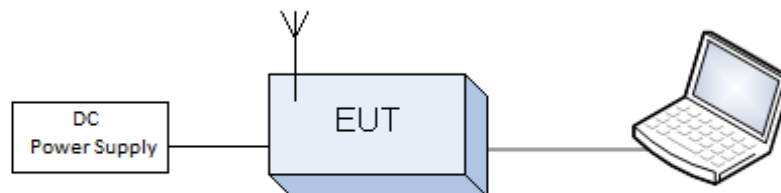


Figure 3.4-1: Setup diagram

3.5 Product description and theory of operation

The EUT is a USB-powered plug and play box hosted by a remote, LINUX based (kernel version 4.14.73), processor. It will provide 2G/3G/4G global and WiFi 802/11 b,g,n communication capability to the host processor, along with a multimode positioning system (a-GPS and telephone cell georeferencing) and an hardware based, highly secure encryption engine. Furthermore 1 high speed USB ports will be made available to the user.

3.6 EUT exercise details

The EUT has been forced in transmission mode using the following AT commands for the LARA-R6001 radio module:

AT+COPS=2

AT+UTEST=1

AT+UTEST=3,192,0,2,1,0 (GSM)

AT+UTEST=3,661,0,2,1,0 (PCS)

AT+UTEST=3,123094,24,5,1,0 (LTE B12)

The WIFI radio module has been forced in continuous transmission mode with a dedicated program using the following commands:

30 0

22 6 20 0

25 1

Section 4. Engineering considerations

4.1 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment.

4.2 Technical judgment

The EUT has WIFI and Bluetooth in 2.4 GHz band, WIFI is chosen to be the representative worst-case due to higher output power.

4.3 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures.

Section 5. Test conditions

5.1 Atmospheric conditions

In the laboratory, the following ambient conditions are respected for each test reported below:

Temperature	18 – 33 °C
Relative humidity	25 – 70 %
Air pressure	860 – 1060 mbar

The following instruments are used to monitor the environmental conditions:

Equipment	Manufacturer	Model no.	Asset no.	Cal date	Next cal.
Data logger con diagnosi in campo	Testo	175-H2	20012380/305	2022-12	2024-12
Data logger con diagnosi in campo	Testo	175-H2	38203337/703	2022-12	2024-12
Barometer	Castle	GPB 3300	072015	2023-04	2024-04

5.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages $\pm 5\%$, for which the equipment was designed.

Section 6. Measurement uncertainty

6.1 Uncertainty of measurement

The measurement uncertainty was calculated for each test and quantity listed in this test report, according to CISPR 16-4-2 and other specific test standard and is documented in Nemko Spa working manual WML1002.

The assessment of conformity for each test performed on the equipment is performed not taking into account the measurement uncertainty. The two following possible verdicts are stated in the report:

P (Pass) - The measured values of the equipment respect the specification limit at the points tested. The specific risk of false accept is up to 50% when the measured result is close to the limit.

F (Fail) - One or more measured values of the equipment do not respect the specification limit at the points tested. The specific risk of false reject is up to 50% when the measured result is close to the limit.

Hereafter Nemko's measurement uncertainties are reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Disturbance	Antenna distance 1 m, 3 m, 10 m 0.009 ÷ 200 MHz	5.0 dB	(1)
	Antenna distance 1 m, 3 m, 10 m 200 ÷ 1000 MHz	5.2 dB	(1)
	Antenna distance 1 m, 3 m, 10 m 1 ÷ 6 GHz	5.2 dB	(1)
	Antenna distance 1 m, 3 m 6 ÷ 18 GHz	5.5 dB	(1)
	Antenna distance 1 m, 3 m 18 ÷ 40 GHz	7.2 dB	(1)
Radiated Disturbance with large loop antenna system (LLAS)	0.009 ÷ 30 MHz	3.3 dB	(1)
Conducted Disturbance	0.02 ÷ 150 kHz with AMN	3.8 dB	(1)
	150 kHz ÷ 30 MHz with AMN	3.4 dB	(1)
	150 kHz ÷ 30 MHz with AAN	4.6 dB	(1)
	9 kHz ÷ 30 MHz with voltage probe	2.9 dB	(1)
	150 kHz ÷ 30 MHz with current probe	2.9 dB	(1)
Frequency	10 Hz ÷ 1 kHz	0.2 %	(1)
	1 kHz ÷ 40 GHz	10 ⁻⁶	(1)
Electromagnetic fields (EMF)	Magnetic, Electric and Electromagnetic fields: 0 Hz ÷ 40 GHz	25 %	(1)
Electrical quantities (voltage, current, resistance)	AC/DC Voltage 10 mV ÷ 1000 V 0÷100 kHz AC/DC Current 0.1 mA ÷ 400 A 0÷1 kHz Resistance 100 mΩ ÷ 10 MΩ	2.5 %	(1)

NOTES:

(1) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95 %

(2) The instruments used for this immunity test is according to the tolerances requested by the applicable standard

(3) The reported expanded uncertainty of measurement is related to the stimulus quantity

Section 7. Test equipment

7.1 Test equipment list

Table 7.1-1: Equipment list

Description	Manufacturer	Model	Identifier	Cal Date	Due Date
EMI Receiver	Rohde & Schwarz	ESW44	101620	2023-05	2024-05
Antenna Trilog 25-2000 MHz	Schwarzbeck Mess-Elektronik	VULB9168	9168-242	2021-06	2024-06
Antenna 1 - 18 GHz	Schwarzbeck Mess-Elektronik	STLP9148	STLP 9148-152	2021-09	2024-09
Double Ridge Horn Antenna	RFSpin	DRH40	061106A40	2023-02	2026-02
Broadband Amplifier	Schwarzbeck Mess-Elektronik	BBV9718C	00121	2023-08	2024-08
Broadband Bench Top Amplifier	Sage	STB-1834034030-KFKF-L1	18490-01	2023-04	2024-04
Semi-anechoic chamber	Nemko S.p.a.	10m semi-anechoic chamber	530	2021-09	2024-09

Section 8. Testing data

8.1 FCC 15.209 and RSS-Gen section 8.9 Radiated emission limits; general requirements

8.1.1 Definitions and limits

FCC:

(f) In accordance with §15.33(a), in some cases the emissions from an intentional radiator must be measured to beyond the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator because of the incorporation of a digital device. If measurements above the tenth harmonic are so required, the radiated emissions above the tenth harmonic shall comply with the general radiated emission limits applicable to the incorporated digital device, as shown in §15.109 and as based on the frequency of the emission being measured, or, except for emissions contained in the restricted frequency bands shown in §15.205, the limit on spurious emissions specified for the intentional radiator, whichever is the higher limit. Emissions which must be measured above the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator and which fall within the restricted bands shall comply with the general radiated emission limits in §15.109 that are applicable to the incorporated digital device.

ISED:

Except when the requirements applicable to a given device state otherwise, emissions from licence-exempt transmitters shall comply with the field strength limits shown in Table below. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission.

Table 8.1-1: FCC §15.209 and RSS-Gen – Radiated emission limits

Frequency, MHz	Field strength of emissions		Measurement distance, m
	µV/m	dBµV/m	
0.009–0.490	2400/F	$67.6 - 20 \times \log_{10}(F)$	300
0.490–1.705	24000/F	$87.6 - 20 \times \log_{10}(F)$	30
1.705–30.0	30	29.5	30
30–88	100	40.0	3
88–216	150	43.5	3
216–960	200	46.0	3
above 960	500	54.0	3

Notes: In the emission table above, the tighter limit applies at the band edges.

For frequencies above 1 GHz the limit on peak RF emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test

Table 8.1-2: ISED restricted frequency bands

MHz	MHz	MHz	GHz
0.090–0.110	12.57675–12.57725	399.9–410	7.25–7.75
0.495–0.505	13.36–13.41	608–614	8.025–8.5
2.1735–2.1905	16.42–16.423	960–1427	9.0–9.2
3.020–3.026	16.69475–16.69525	1435–1626.5	9.3–9.5
4.125–4.128	16.80425–16.80475	1645.5–1646.5	10.6–12.7
4.17725–4.17775	25.5–25.67	1660–1710	13.25–13.4
4.20725–4.20775	37.5–38.25	1718.8–1722.2	14.47–14.5
5.677–5.683	73–74.6	2200–2300	15.35–16.2
6.215–6.218	74.8–75.2	2310–2390	17.7–21.4
6.26775–6.26825	108–138	2483.5–2500	22.01–23.12
6.31175–6.31225	149.9–150.05	2655–2900	23.6–24.0
8.291–8.294	156.52475–156.52525	3260–3267	31.2–31.8
8.362–8.366	156.7–156.9	3332–3339	36.43–36.5
8.37625–8.38675	162.0125–167.17	3345.8–3358	
8.41425–8.41475	167.72–173.2	3500–4400	
12.29–12.293	240–285	4500–5150	Above 38.6
12.51975–12.52025	322–335.4	5350–5460	

Note: Certain frequency bands listed in Table 8.1-2 and above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

Table 8.1-3: FCC restricted frequency bands

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	Above 38.6
13.36–13.41			

8.1.2 Test summary

Verdict	Pass
Tested by	P. Barbieri

8.1.3 Observations, settings and special notes

The spectrum was searched from 30 MHz to 40 GHz.

Different channel setting has been investigated as per provided by client's setup, only the worst-case is presented. Radiated measurements were performed at a distance of 3 m.

The intermodulation product found at 694 MHz fall outside the restricted frequency bands so the limits of -13 dBm applied (82.2 dBμV/m = -13 dBm + 95.23 dB). The same limits apply to the spurious emissions of the 2G/3G/4G radio module.

Receiver settings for radiated measurements within restricted bands 30 MHz to 1 GHz:

Resolution bandwidth:	120 kHz
Detector mode:	Quasi-Peak

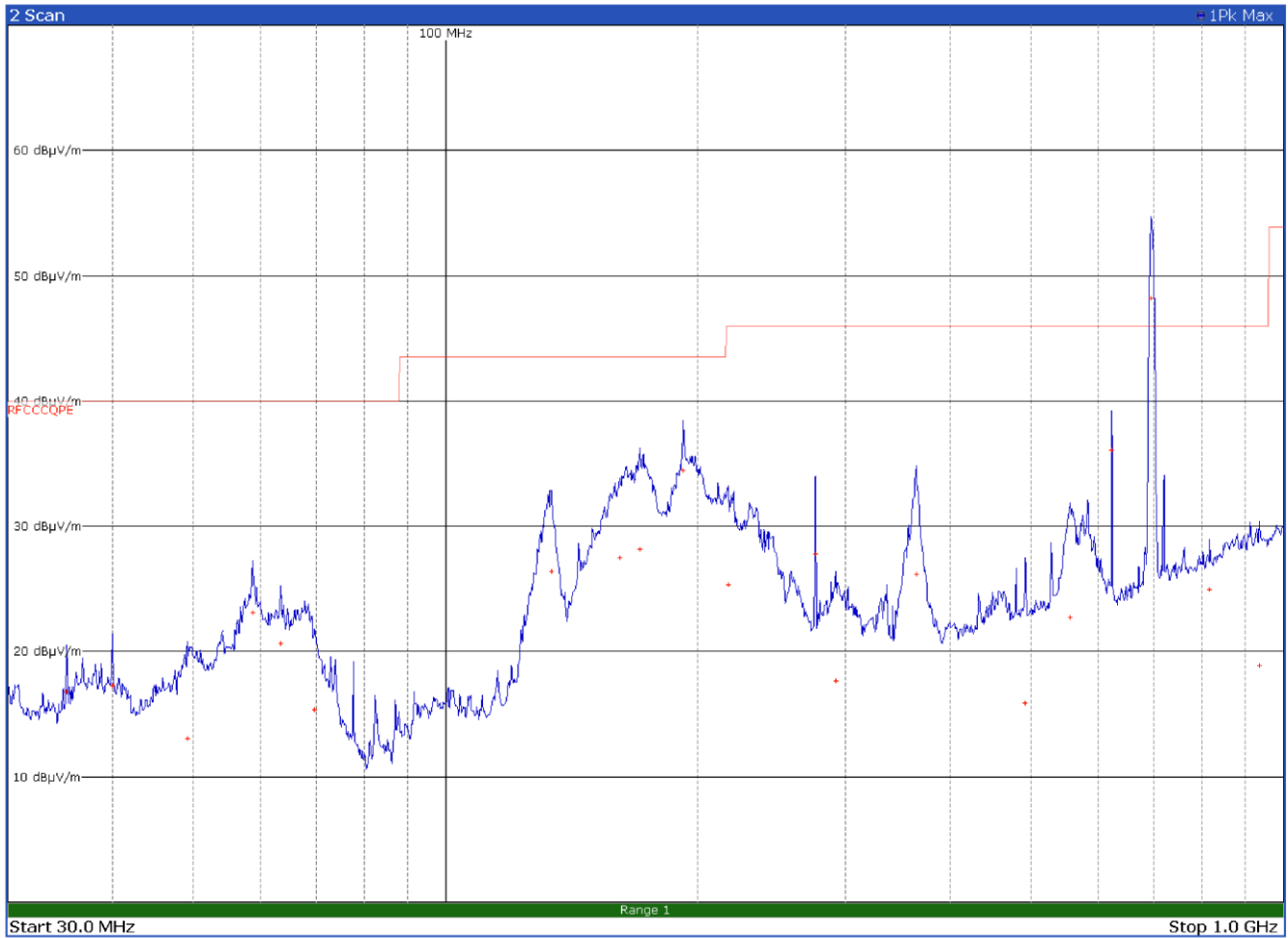
Receiver settings for peak radiated measurements within restricted bands above 1 GHz:

Resolution bandwidth:	1 MHz
Detector mode:	Peak

Receiver settings for average radiated measurements within restricted bands above 1 GHz:

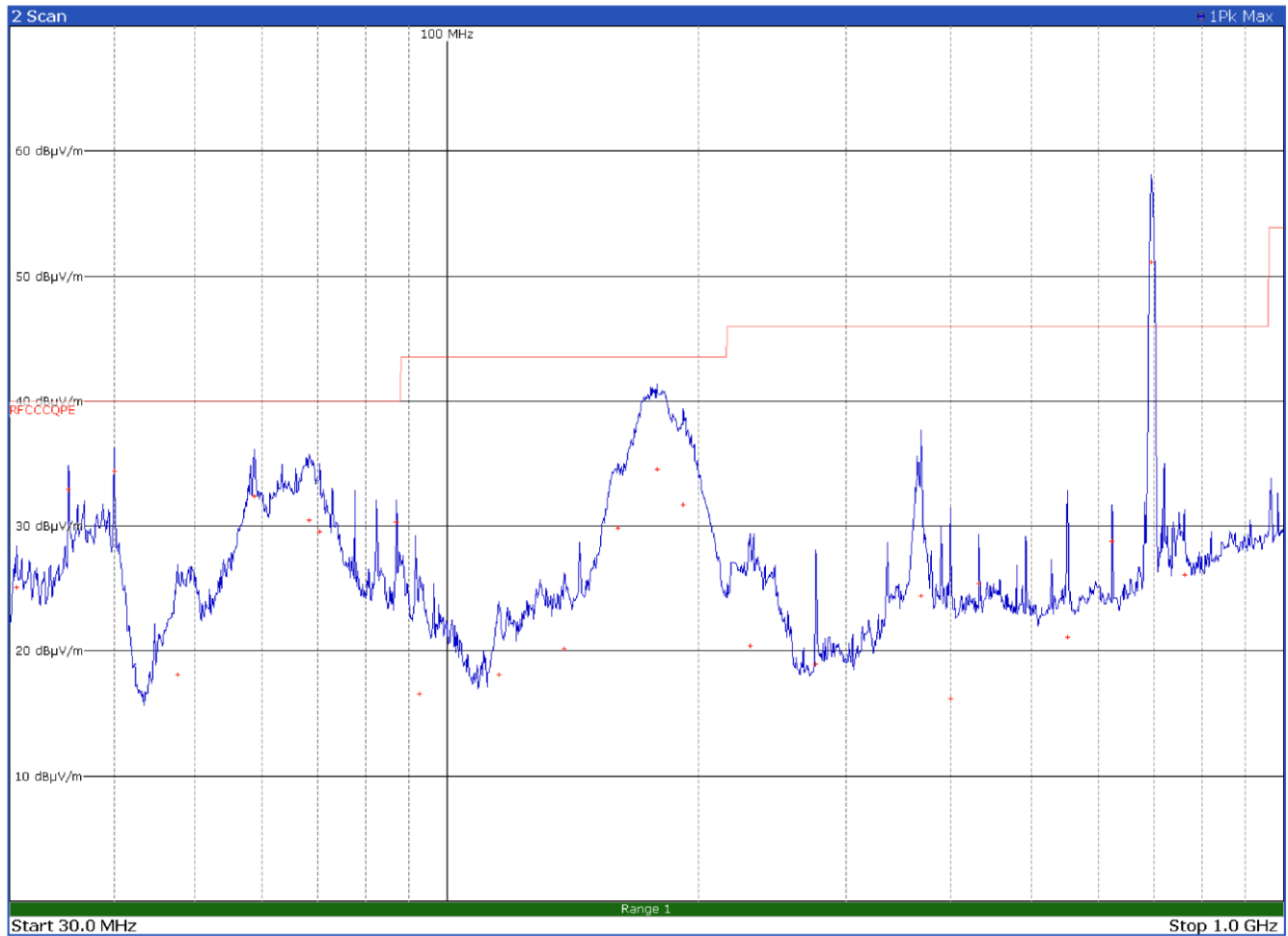
Resolution bandwidth:	1 MHz
Detector mode:	Average

8.1.4 Test data for PCS 1900 at 1880 MHz and WIFI 802.11g at 2437 MHz



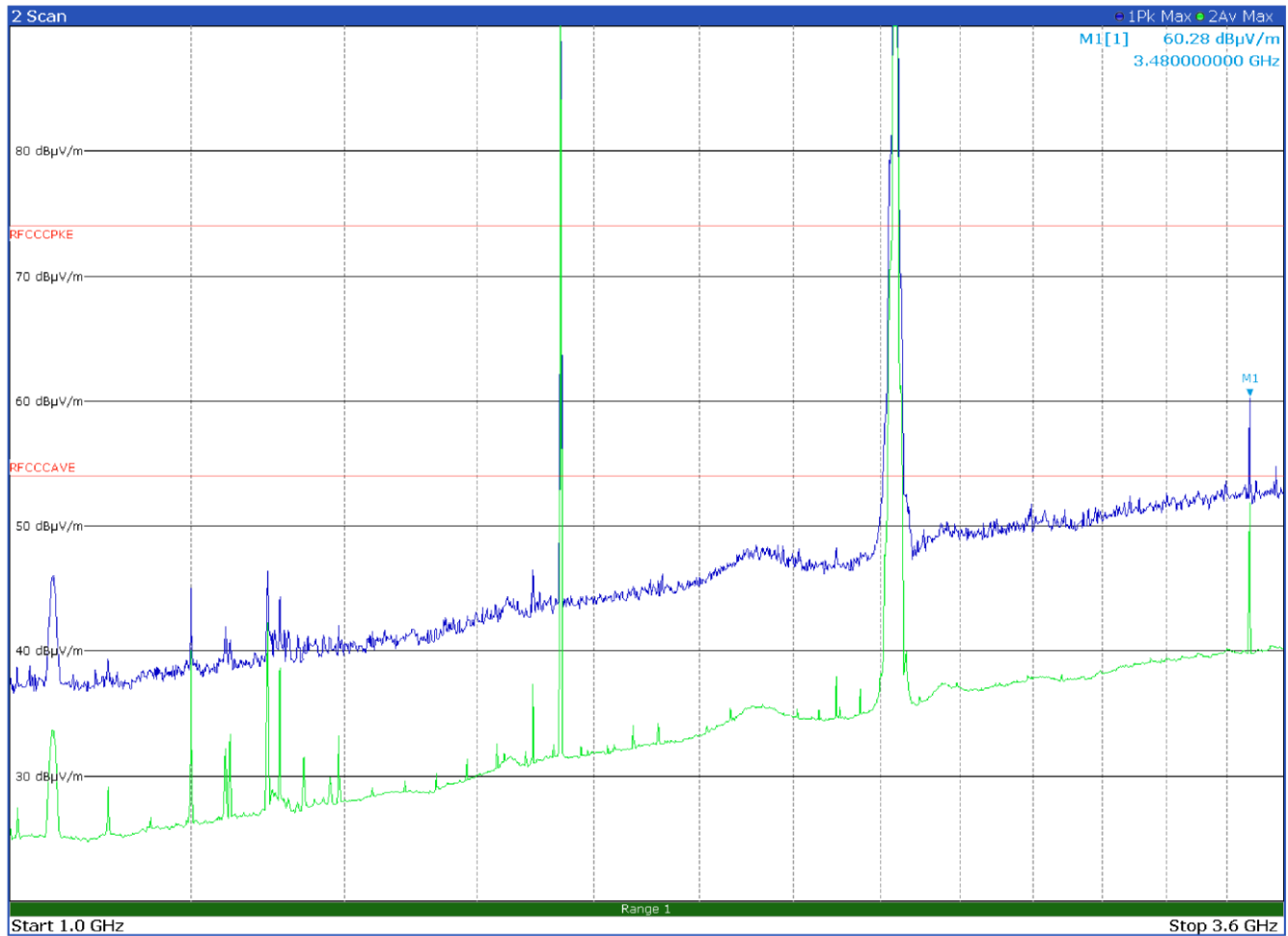
Antenna in horizontal polarization

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
35.2800	16.9	40.0	-23.1	QP
39.9900	17.3	40.0	-22.7	QP
49.1100	13.1	40.0	-26.9	QP
58.8000	23.1	40.0	-16.9	QP
63.5100	20.7	40.0	-19.3	QP
69.6900	15.4	40.0	-24.6	QP
133.6800	26.5	43.5	-17.0	QP
161.1300	27.6	43.5	-15.9	QP
170.5200	28.2	43.5	-15.3	QP
192.0000	34.5	43.5	-9.0	QP
217.2300	25.3	46.0	-20.7	QP
276.0600	27.8	46.0	-18.2	QP
292.0800	17.7	46.0	-28.3	QP
364.5000	26.2	46.0	-19.8	QP
492.0000	15.9	46.0	-30.1	QP
556.4700	22.7	46.0	-23.3	QP
624.0000	36.1	46.0	-9.9	QP
694.5900	54.6	82.2	-27.6	Pk



Antenna in vertical polarization

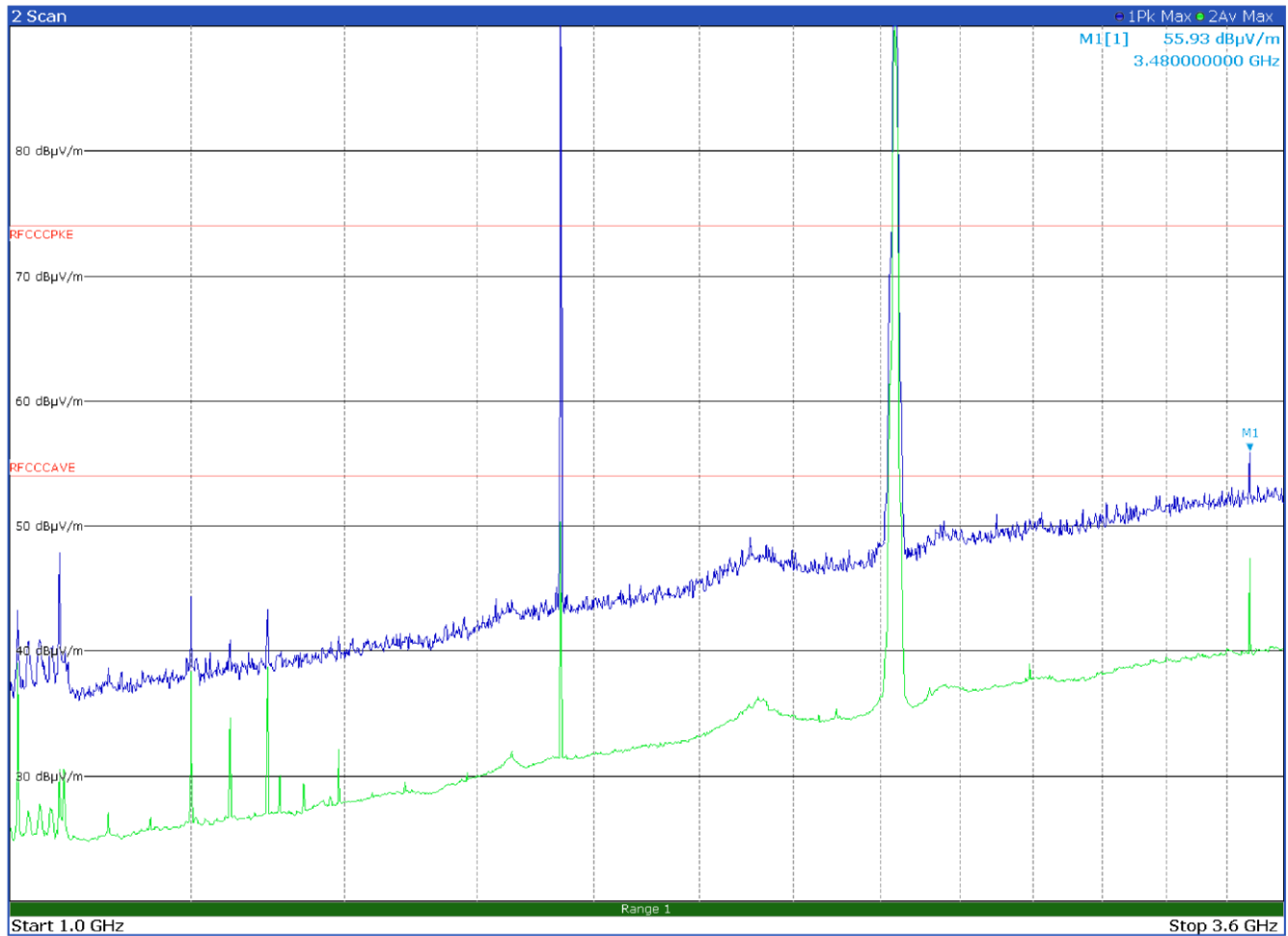
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
30.5700	25.1	40.0	-14.9	QP
35.2800	32.9	40.0	-7.1	QP
39.9900	34.4	40.0	-5.6	QP
58.8000	32.4	40.0	-7.6	QP
68.3400	30.5	40.0	-9.5	QP
70.4700	29.6	40.0	-10.4	QP
87.0300	30.4	40.0	-9.6	QP
138.1500	20.2	43.5	-23.3	QP
160.2000	29.9	43.5	-13.6	QP
178.4100	34.6	43.5	-8.9	QP
191.6100	31.7	43.5	-11.8	QP
369.0000	24.4	46.0	-21.6	QP
399.7800	16.3	46.0	-29.7	QP
432.0000	25.5	46.0	-20.5	QP
552.1200	21.1	46.0	-24.9	QP
624.0000	28.8	46.0	-17.2	QP
694.5900	58.3	82.2	-23.9	Pk
761.1900	26.1	46.0	-19.9	QP



Antenna in horizontal polarization

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
3480.0000	60.3	82.2	-21.9	Pk

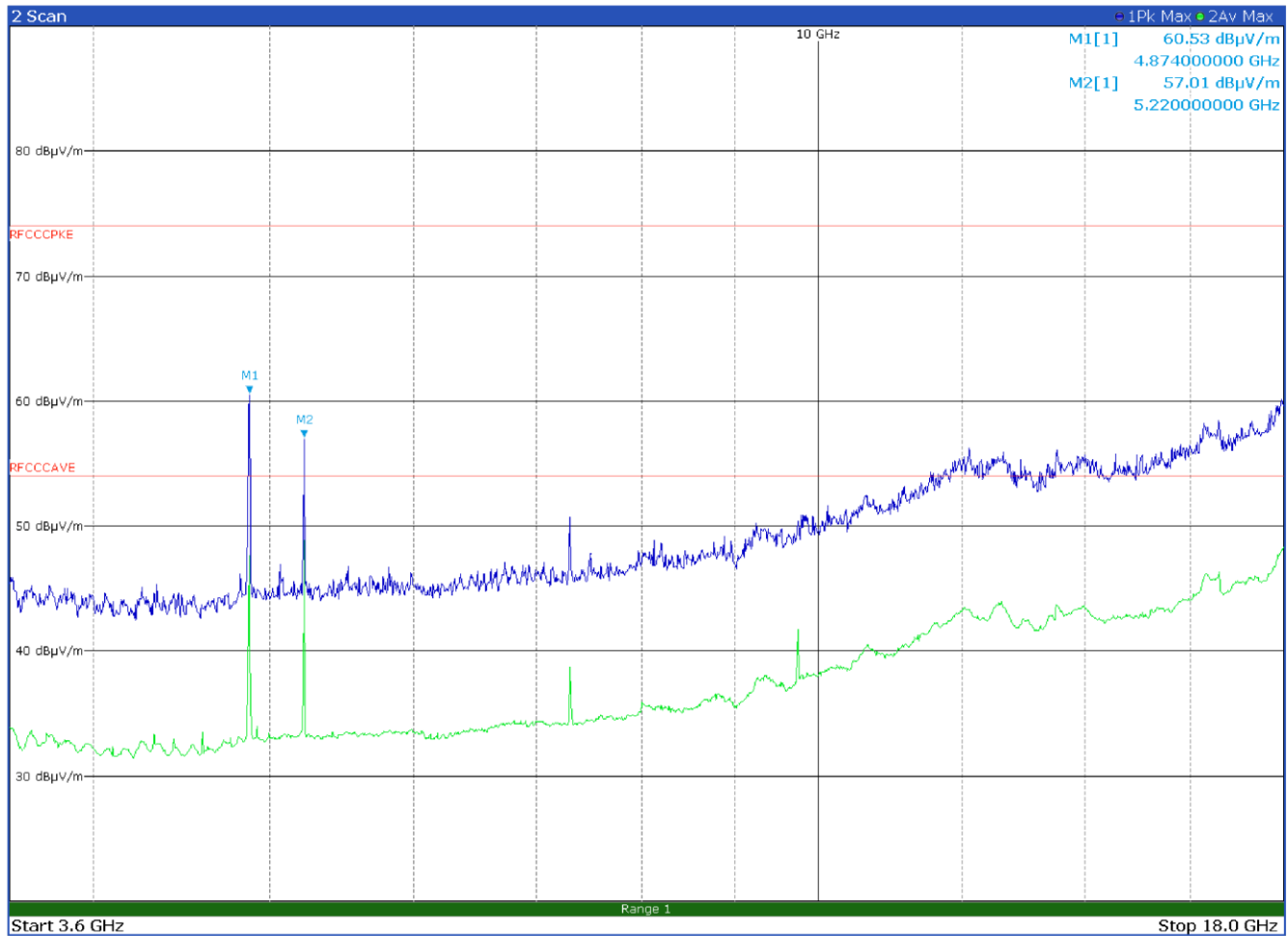
Limit exceeded by carriers – No inter-modulation product founds



Antenna in vertical polarization

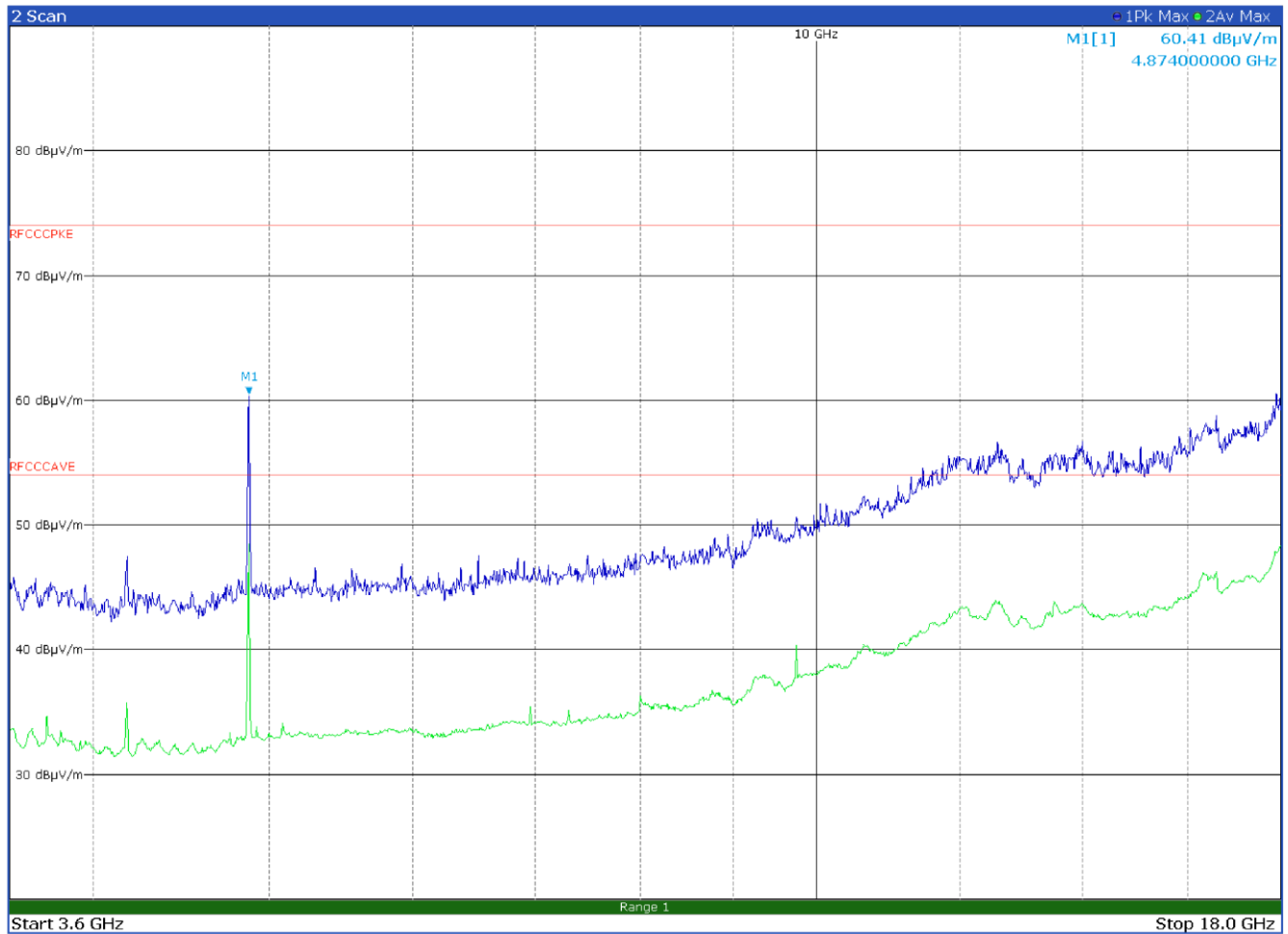
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
3480.0000	55.9	82.2	-26.3	Pk

Limit exceeded by carriers – No inter-modulation product founds



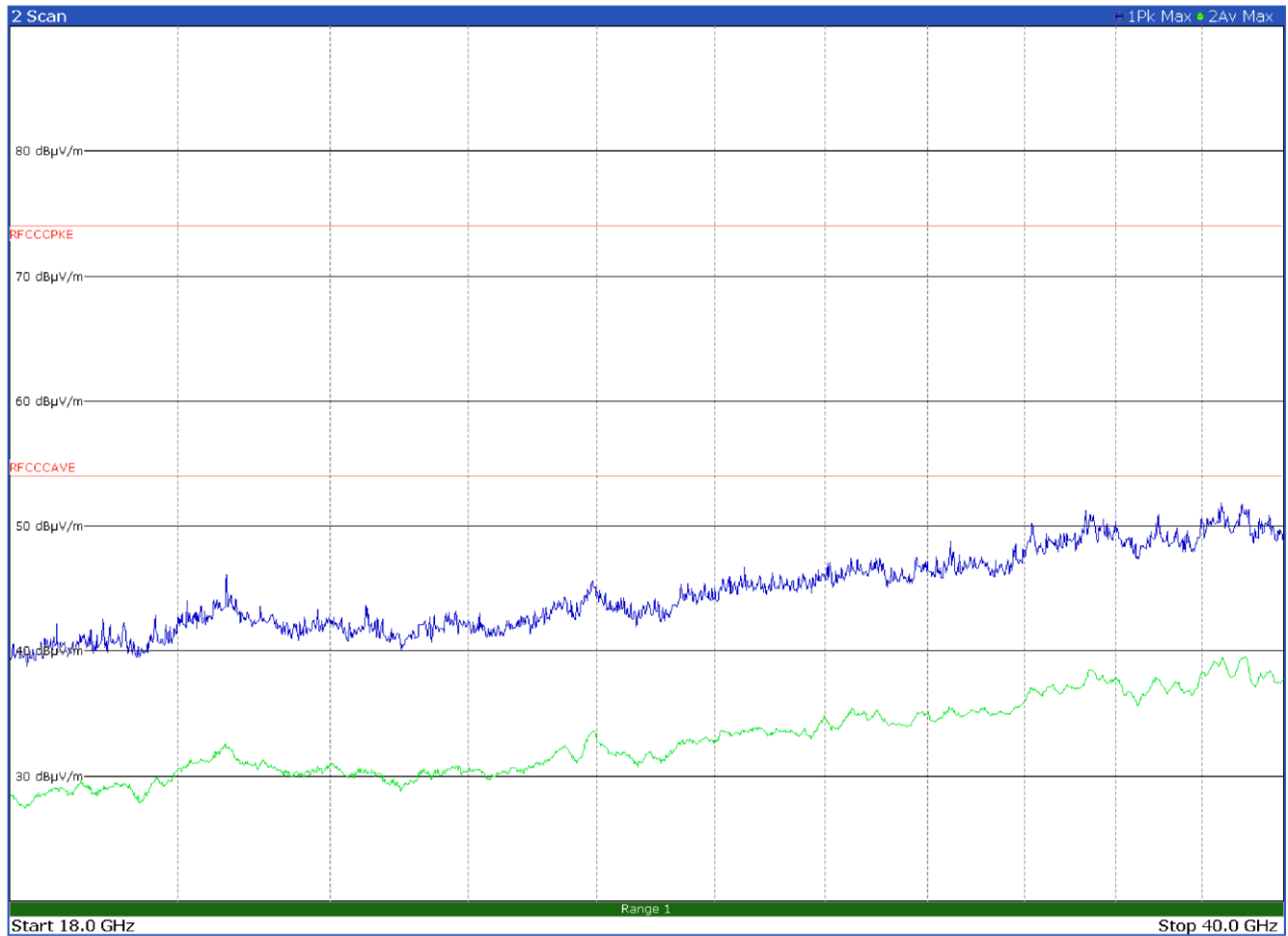
Antenna in horizontal polarization – No inter-modulation product founds

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
4874.0000	60.5	74.0	-13.5	Pk
4874.0000	52.5	54.0	-1.5	Pk
5220.0000	57.0	82.2	-25.2	Pk

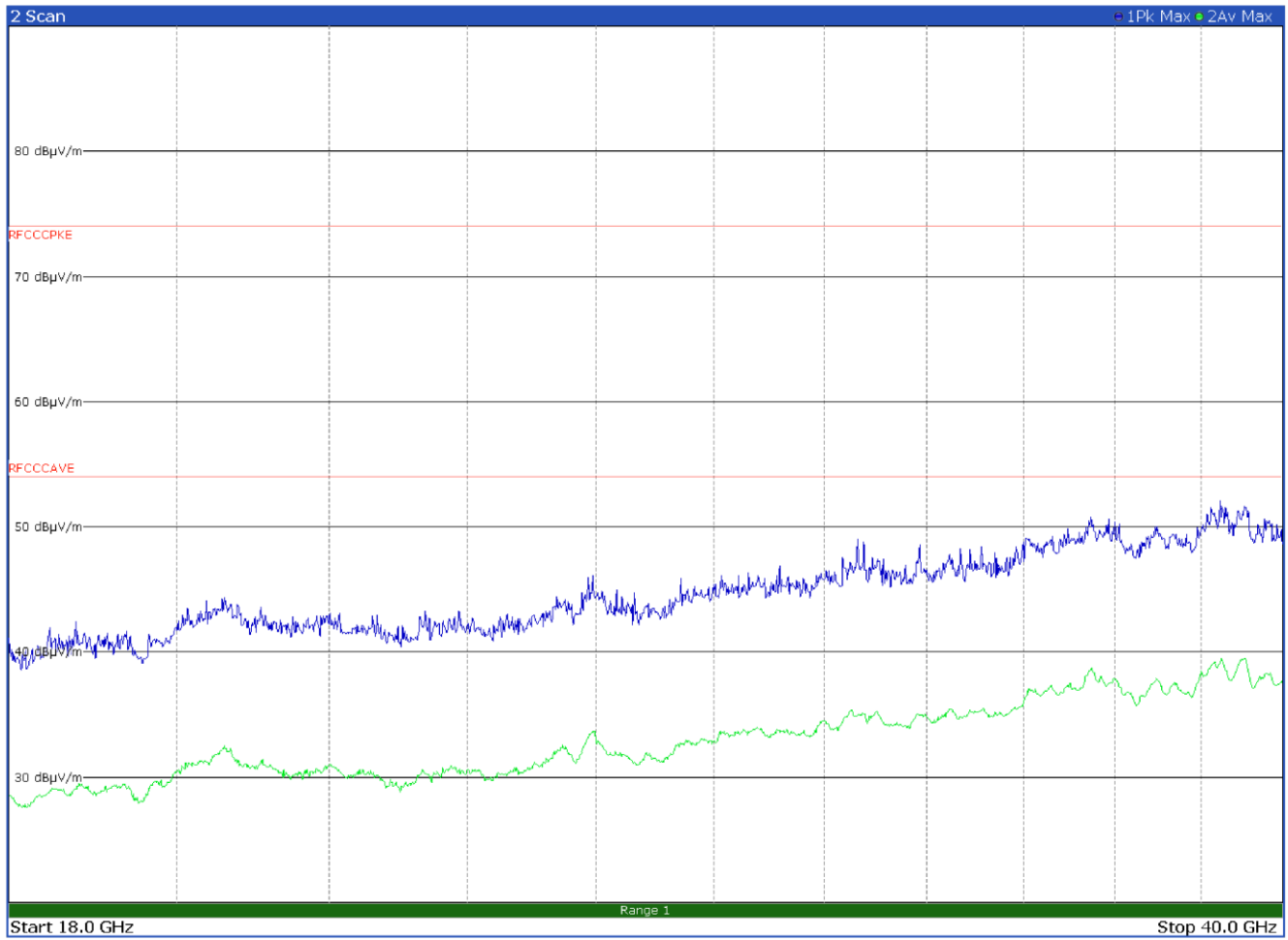


Antenna in vertical polarization – No inter-modulation product founds

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
4874.0000	60.4	74.0	-13.6	Pk
4874.0000	52.3	54.0	-1.7	Pk

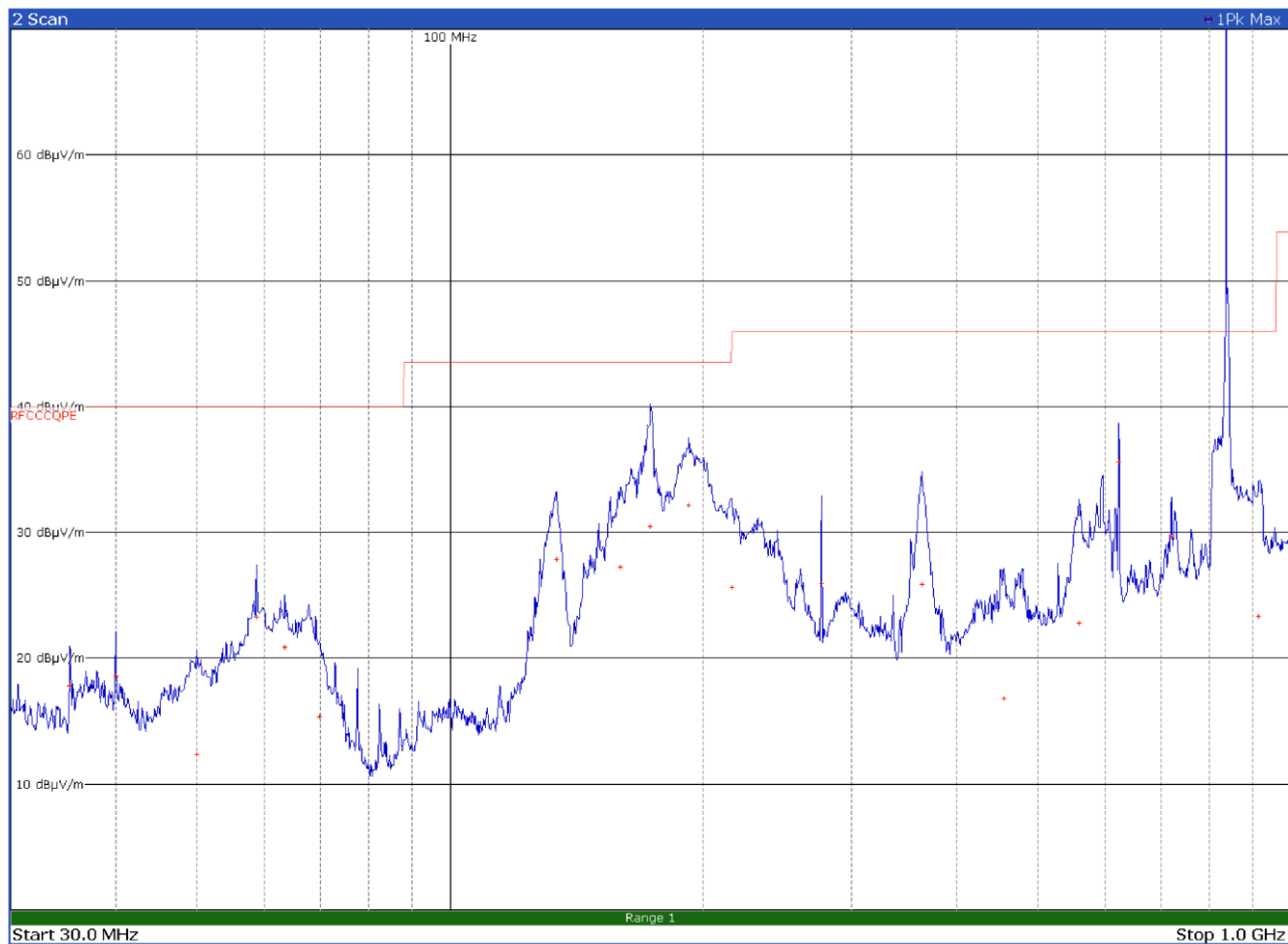


Antenna in horizontal polarization – No inter-modulation product founds



Antenna in vertical polarization – No inter-modulation product founds

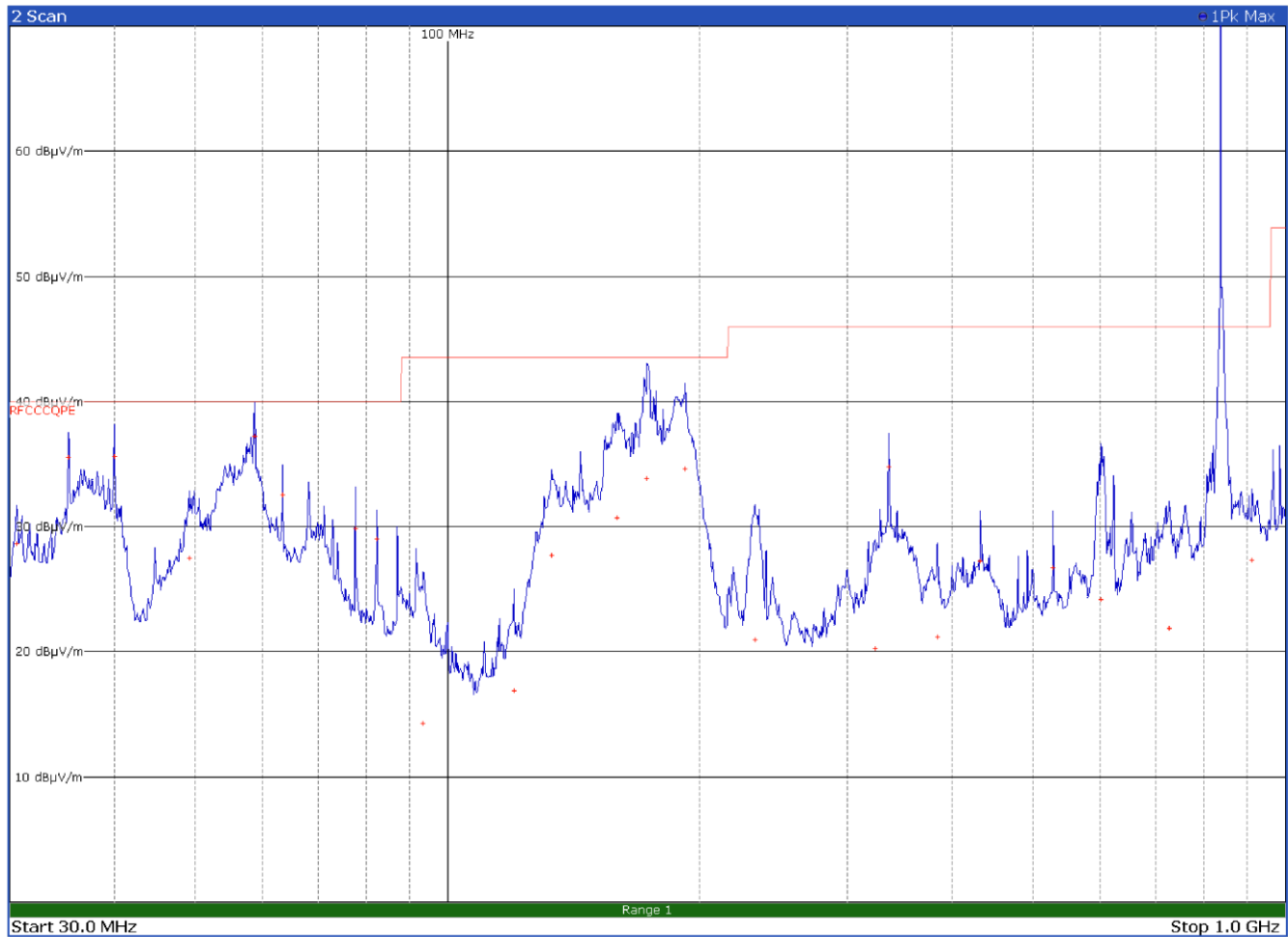
8.1.1 Test data for GSM 850 at 837 MHz and WIFI 802.11g at 2437 MHz



Antenna in horizontal polarization

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
35.2800	17.8	40.0	-22.2	QP
39.9900	18.6	40.0	-21.4	QP
49.9200	12.4	40.0	-27.6	QP
58.8000	23.3	40.0	-16.7	QP
63.4800	20.9	40.0	-19.1	QP
69.9000	15.4	40.0	-24.6	QP
133.6200	27.9	43.5	-15.6	QP
159.2400	27.3	43.5	-16.2	QP
172.8300	30.5	43.5	-13.0	QP
192.0300	32.2	43.5	-11.3	QP
215.9700	25.7	43.5	-17.8	QP
276.1200	26.0	46.0	-20.0	QP
363.6900	25.9	46.0	-20.1	QP
455.3100	16.8	46.0	-29.2	QP
559.5600	22.9	46.0	-23.1	QP
624.0300	35.7	46.0	-10.3	QP
720.0300	29.7	46.0	-16.3	QP
915.2400	23.3	46.0	-22.7	QP

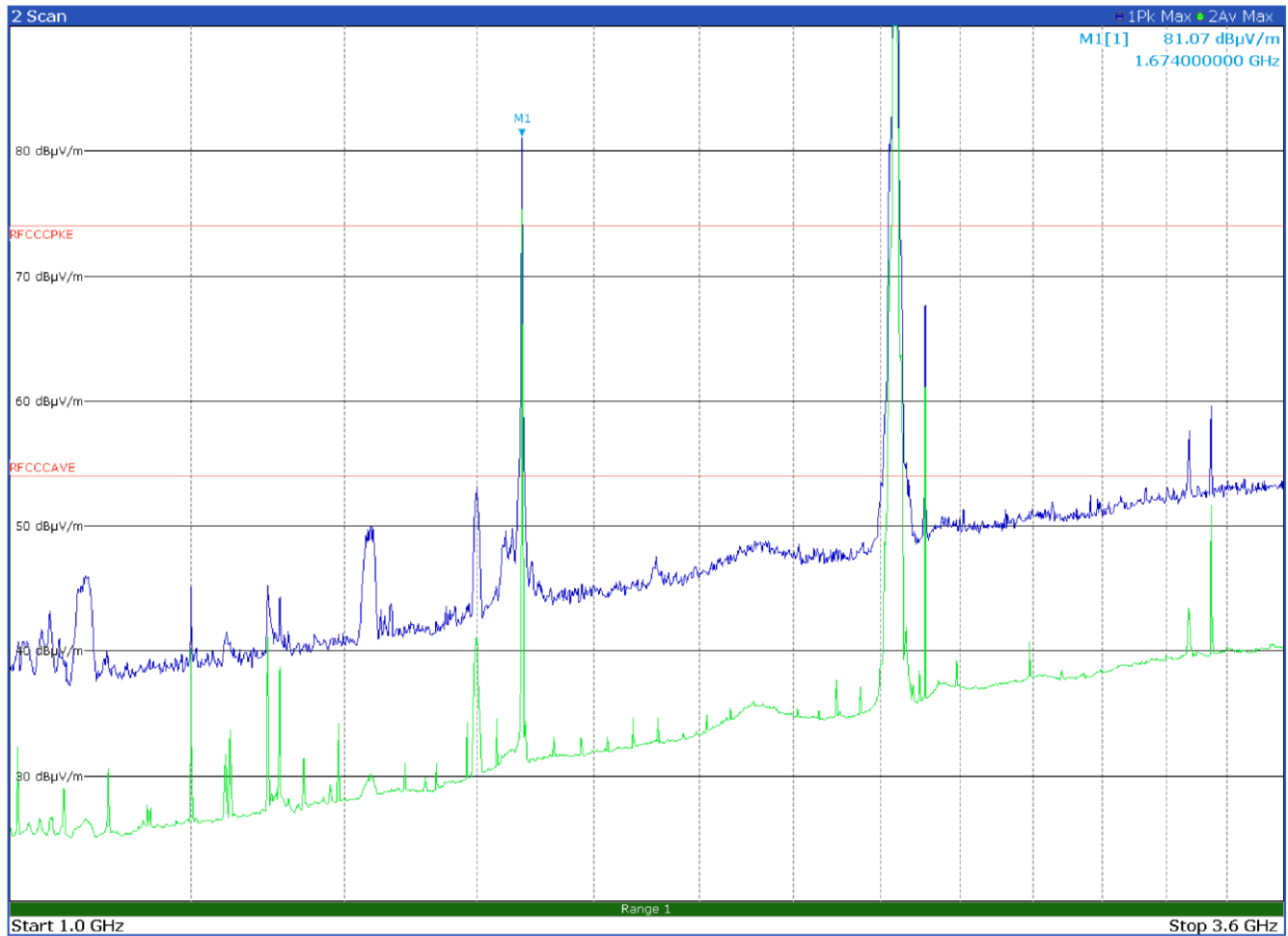
Limit exceeded by carriers



Antenna in vertical polarization

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
30.5700	28.7	40.0	-11.3	QP
35.2800	35.6	40.0	-4.4	QP
39.9900	35.7	40.0	-4.3	QP
49.1100	27.5	40.0	-12.5	QP
58.8000	37.2	40.0	-2.8	QP
63.5100	32.6	40.0	-7.4	QP
77.6100	29.9	40.0	-10.1	QP
82.3200	29.0	40.0	-11.0	QP
93.4800	14.3	43.5	-29.2	QP
133.0800	27.8	43.5	-15.7	QP
159.3600	30.7	43.5	-12.8	QP
172.8900	33.9	43.5	-9.6	QP
192.0000	34.7	43.5	-8.8	QP
232.5900	21.0	46.0	-25.0	QP
336.0000	34.8	46.0	-11.2	QP
432.0000	27.3	46.0	-18.7	QP
528.0000	26.7	46.0	-19.3	QP
602.7900	24.2	46.0	-21.8	QP
726.7500	21.9	46.0	-24.1	QP
912.0300	27.4	46.0	-18.6	QP

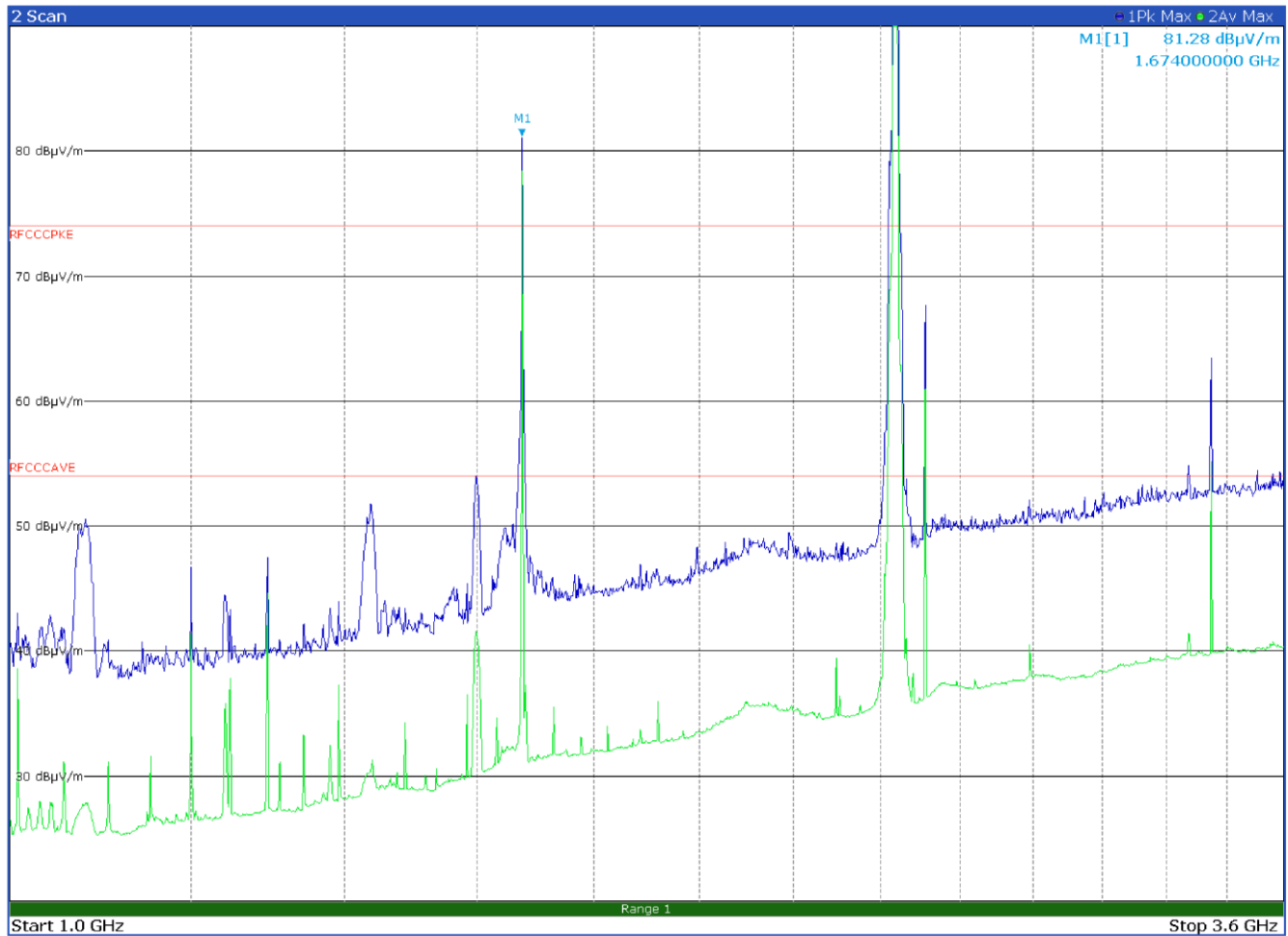
Limit exceeded by carriers



Antenna in horizontal polarization

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1200.0000	40.2	54.0	-13.8	Av
1296.0000	41.2	54.0	-12.8	Av
1598.2500	41.1	54.0	-12.9	Av
1674.0000	81.1	82.2	-1.1	Pk
2511.0000	67.7	82.2	-14.5	Pk
3348.0000	59.7	82.2	-22.5	Pk

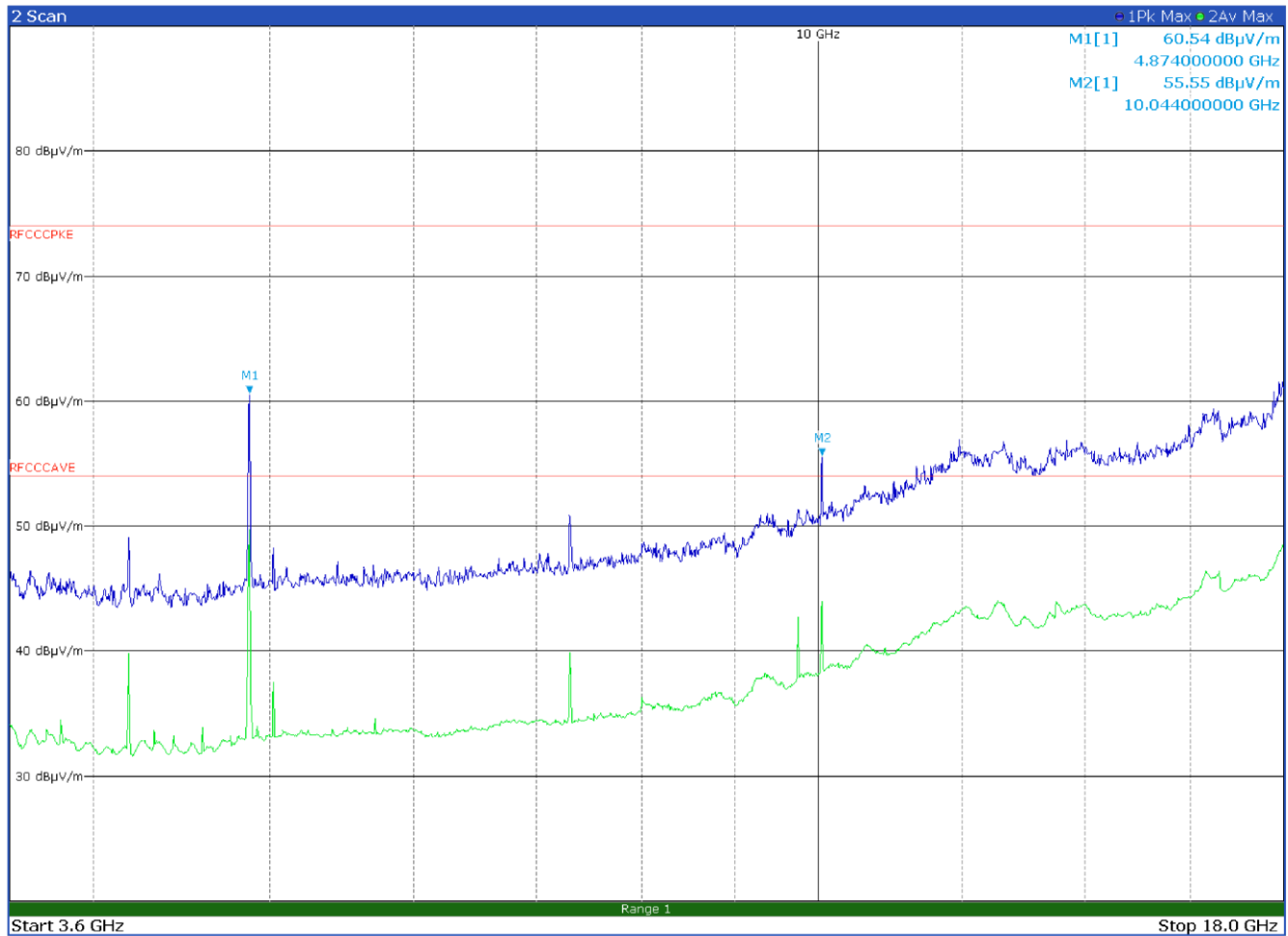
Limit exceeded by carrier



Antenna in vertical polarization

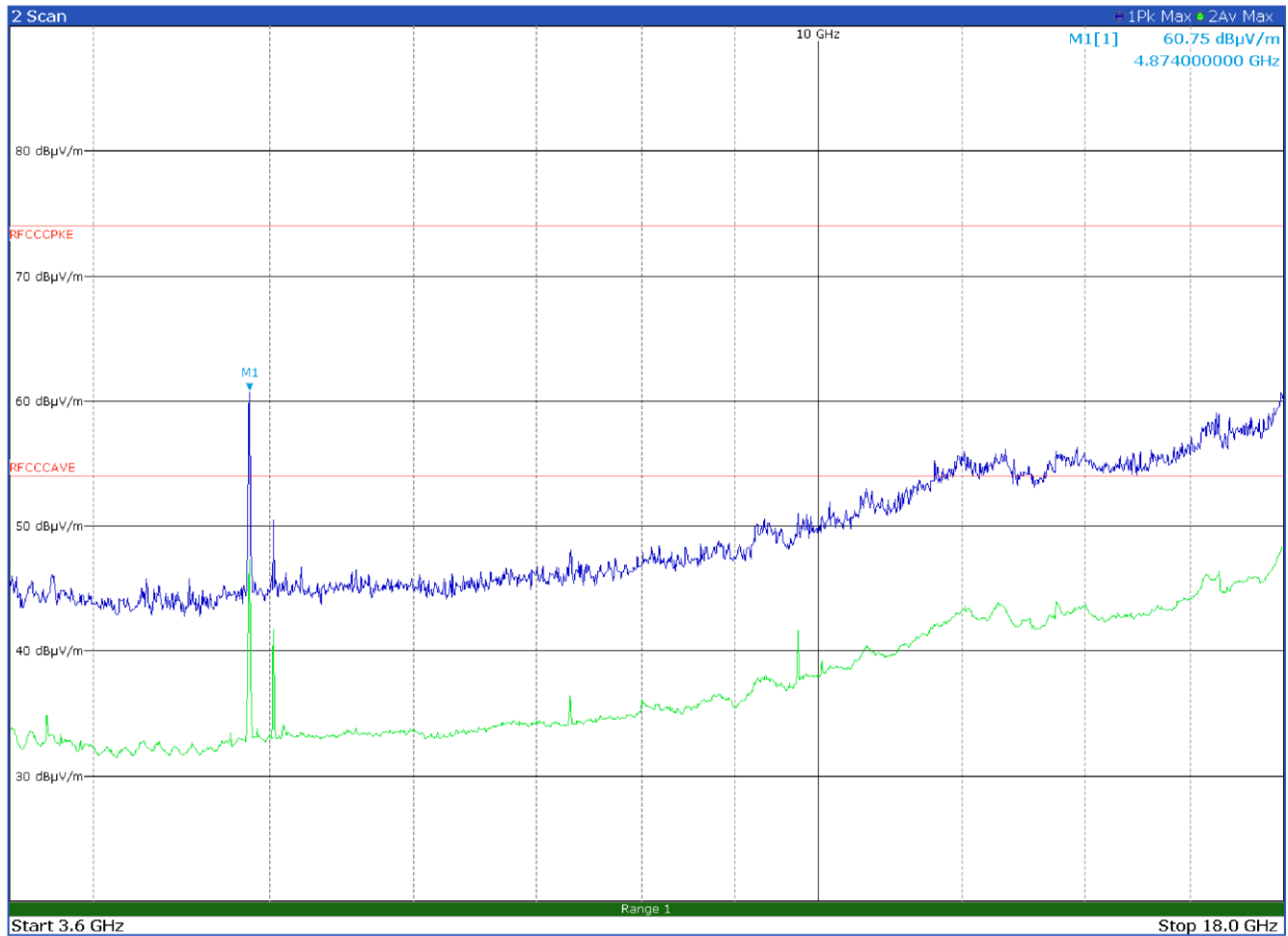
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1200.0000	41.4	54.0	-12.6	Av
1296.0000	44.7	54.0	-9.3	Av
1598.2500	41.6	54.0	-12.4	Av
1674.0000	81.3	82.2	-0.9	Pk
2511.2500	67.7	82.2	-14.5	Pk
3348.2500	63.5	82.2	-18.7	Pk

Limit exceeded by carrier



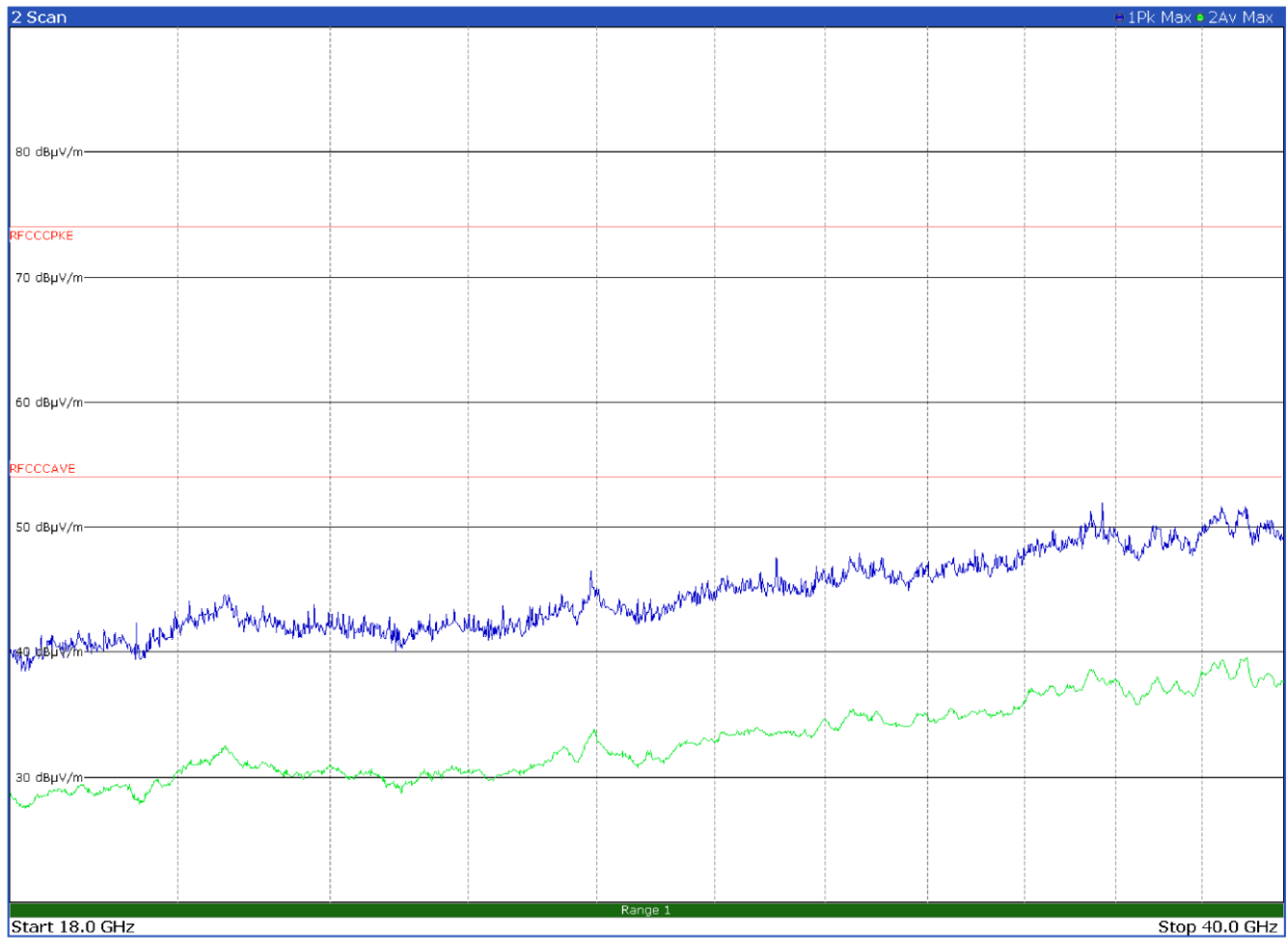
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
4874.0000	60.5	74.0	-13.5	Pk
4874.0000	52.6	54.0	-1.4	Pk
10044.0000	55.6	82.2	-26.6	Pk

Antenna in horizontal polarization – No inter-modulation product founds

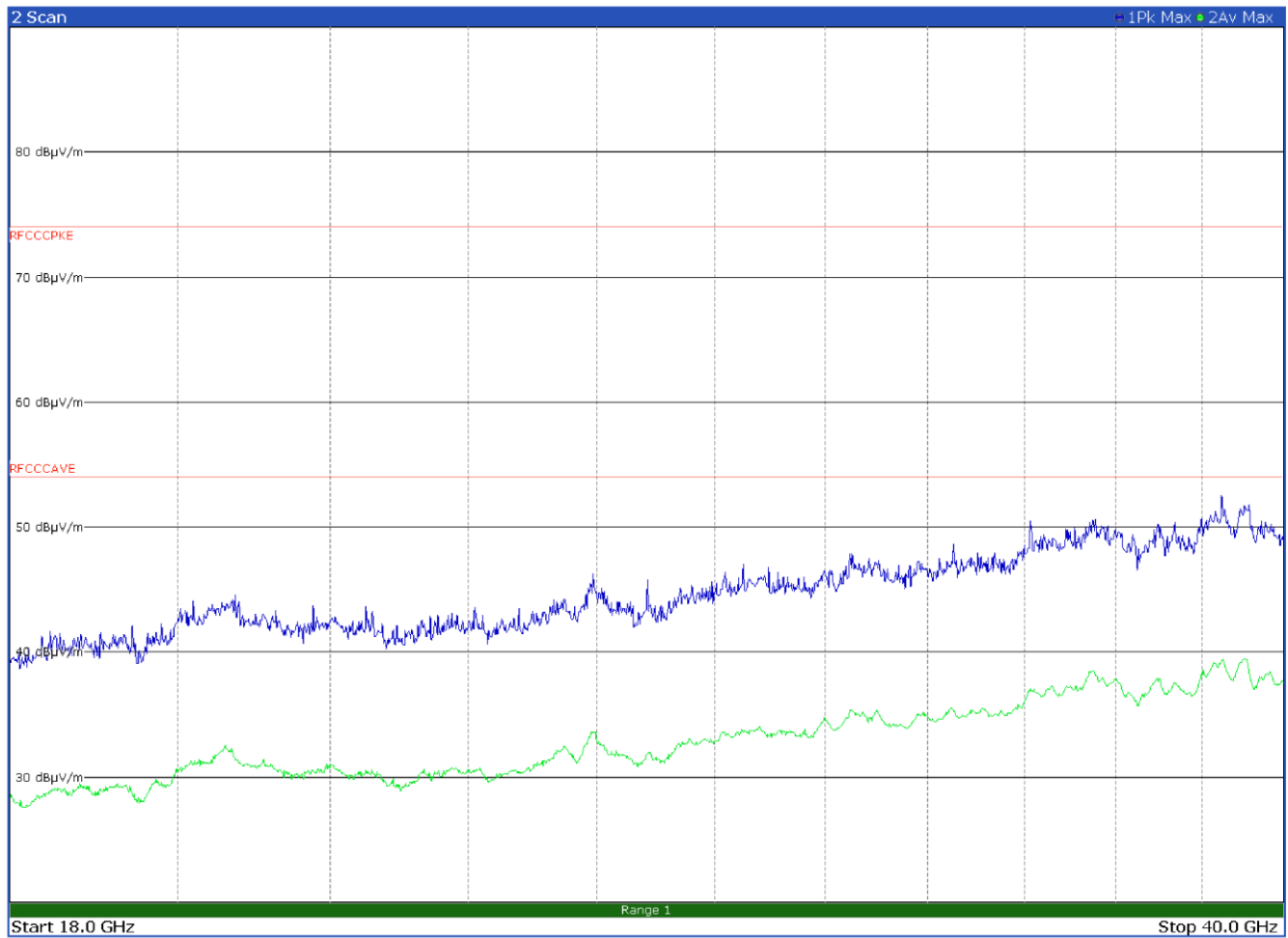


Antenna in vertical polarization – No inter-modulation product founds

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
4874.0000	60.8	74.0	-13.2	Pk
4874.0000	53.0	54.0	-1.0	Pk

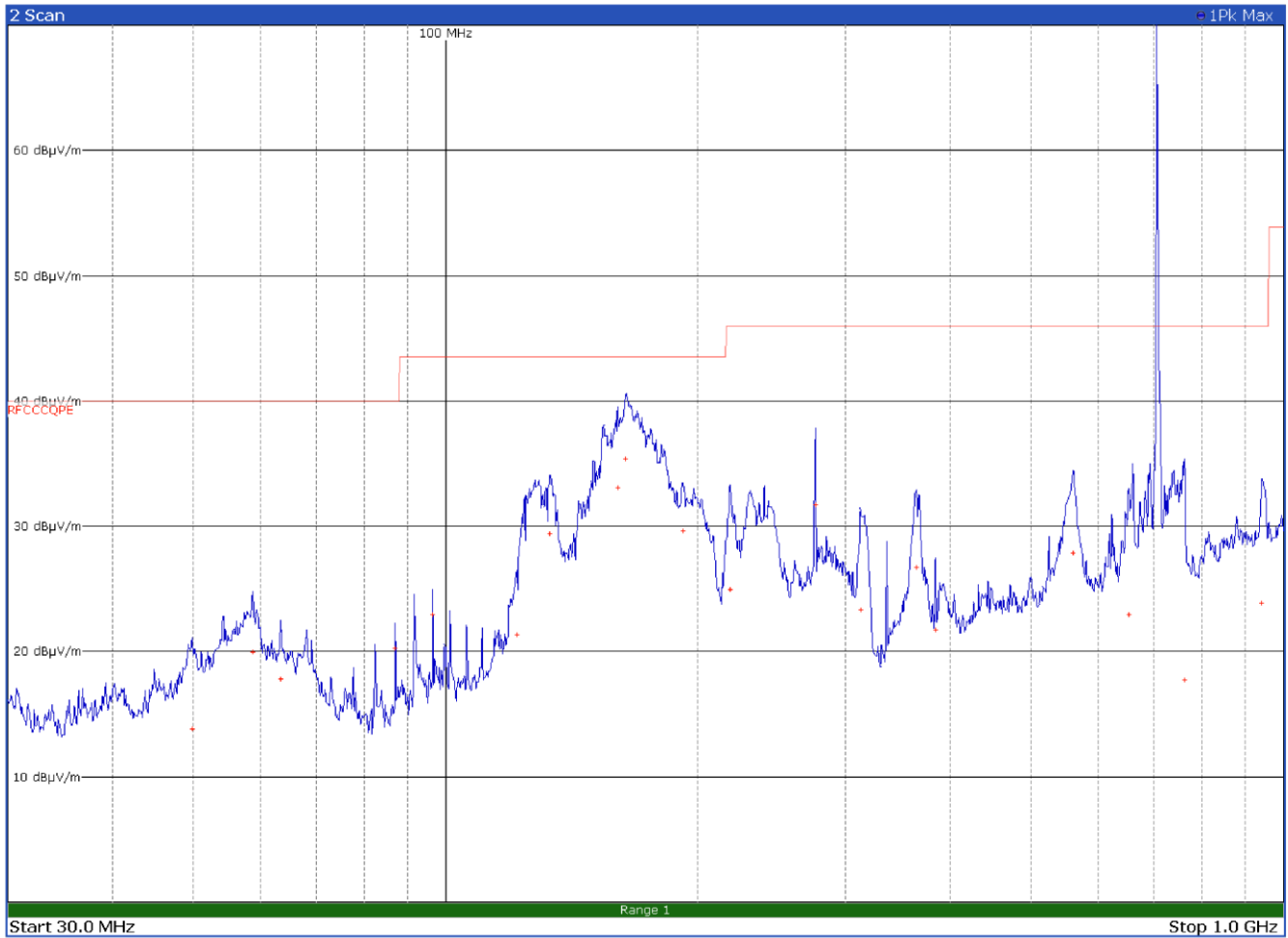


Antenna in horizontal polarization – No inter-modulation product founds



Antenna in vertical polarization – No inter-modulation product founds

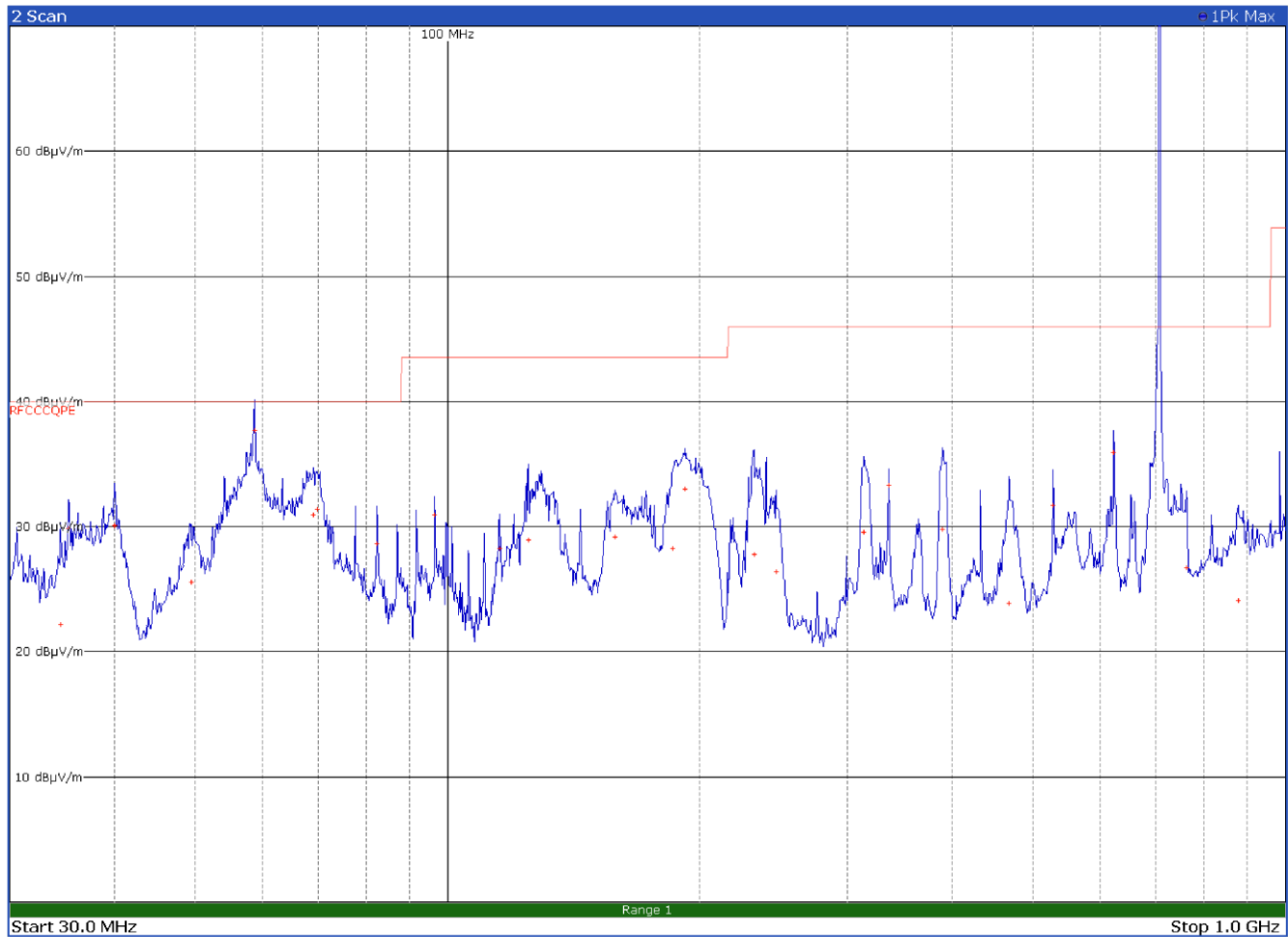
8.1.1 Test data for LTE B12 at 782 MHz and WIFI 802.11g at 2437 MHz



Antenna in horizontal polarization

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
49.7700	13.8	40.0	-26.2	QP
58.7700	20.0	40.0	-20.0	QP
63.5100	17.8	40.0	-22.2	QP
87.0300	20.3	40.0	-19.7	QP
96.4200	23.0	43.5	-20.5	QP
133.1700	29.4	43.5	-14.1	QP
160.2600	33.1	43.5	-10.4	QP
164.0700	35.5	43.5	-8.0	QP
192.0000	29.7	43.5	-13.8	QP
218.2500	25.0	46.0	-21.0	QP
276.2700	31.7	46.0	-14.3	QP
312.5400	23.3	46.0	-22.7	QP
364.9800	26.8	46.0	-19.2	QP
384.0000	21.8	46.0	-24.2	QP
561.6000	27.9	46.0	-18.1	QP
652.9200	23.0	46.0	-23.0	QP
761.1600	17.8	46.0	-28.2	QP
942.2400	23.9	46.0	-22.1	QP

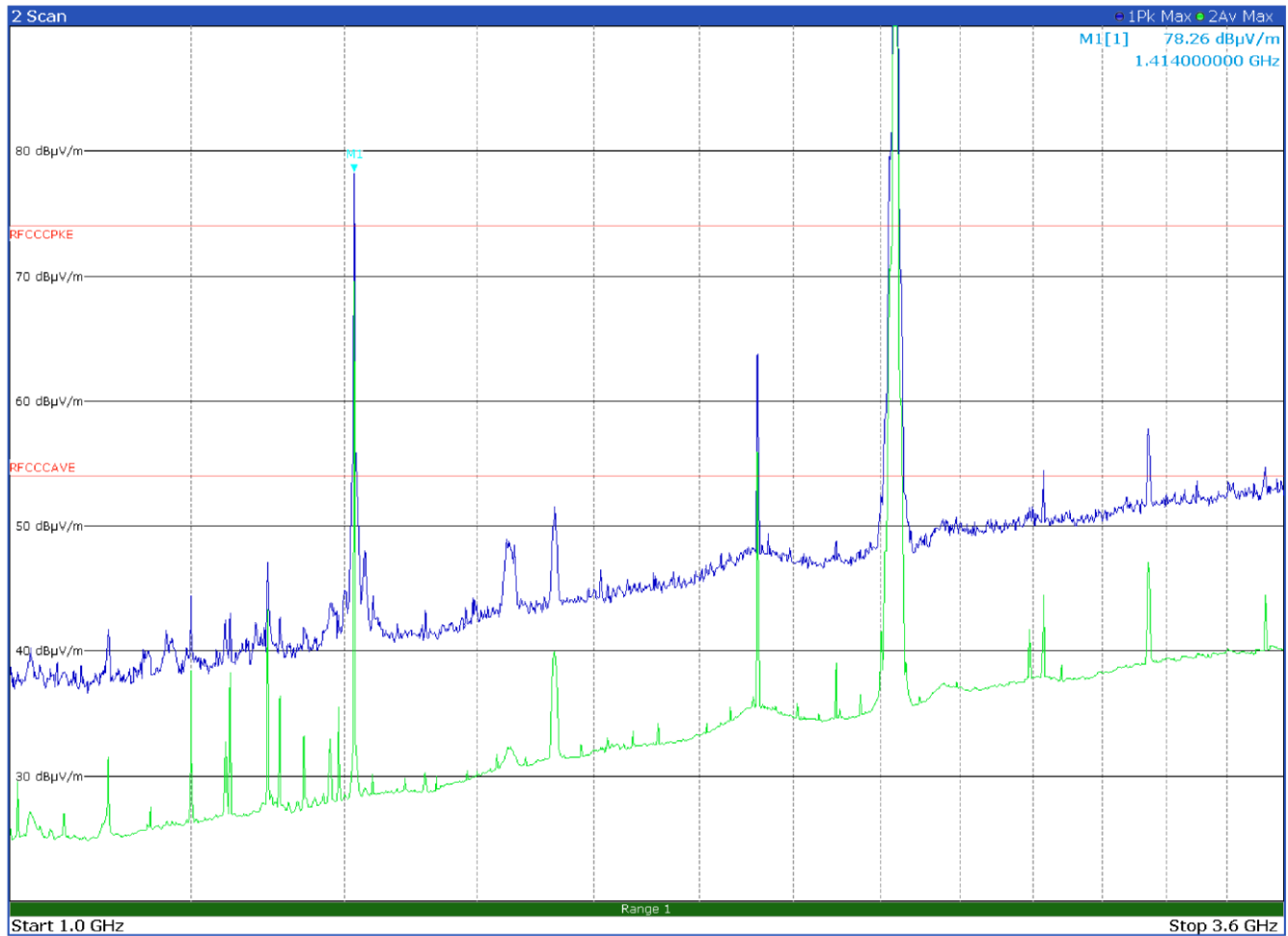
Limit exceeded by carriers



Antenna in vertical polarization

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
34.4700	22.2	40.0	-17.8	QP
35.2800	29.9	40.0	-10.1	QP
39.9900	30.2	40.0	-9.8	QP
49.3500	25.6	40.0	-14.4	QP
58.8000	37.8	40.0	-2.2	QP
69.1500	31.0	40.0	-9.0	QP
69.7800	31.5	40.0	-8.5	QP
82.3200	28.7	40.0	-11.3	QP
96.4200	31.0	43.5	-12.5	QP
115.2300	28.3	43.5	-15.2	QP
124.7100	29.0	43.5	-14.5	QP
158.3100	29.2	43.5	-14.3	QP
185.3100	28.3	43.5	-15.2	QP
192.0000	33.0	43.5	-10.5	QP
231.9300	27.8	46.0	-18.2	QP
313.8000	29.6	46.0	-16.4	QP
336.0000	33.4	46.0	-12.6	QP
389.9400	29.8	46.0	-16.2	QP
528.0000	31.8	46.0	-14.2	QP
624.0000	36.0	46.0	-10.0	QP
761.6100	26.7	46.0	-19.3	QP

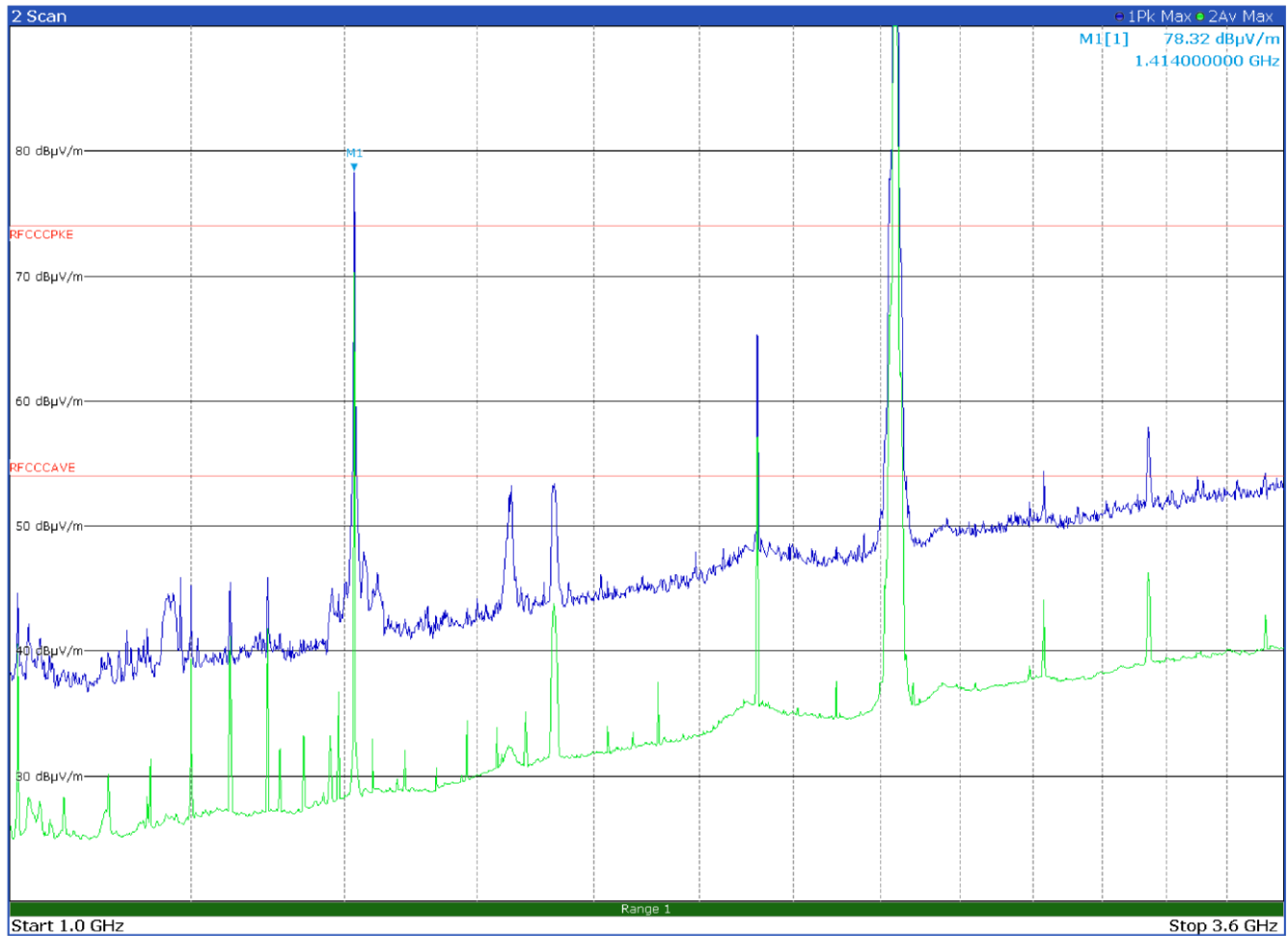
Limit exceeded by carriers



Antenna in horizontal polarization – No inter-modulation product founds

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1296.0000	43.4	54.0	-10.6	Av
1414.0000	78.3	82.2	-3.9	Pk
1728.7500	40.0	54.0	-14.0	Av
2121.0000	63.8	82.2	-18.4	Pk
2828.2500	44.5	54.0	-9.5	Av
3142.2500	47.1	54.0	-6.9	Av

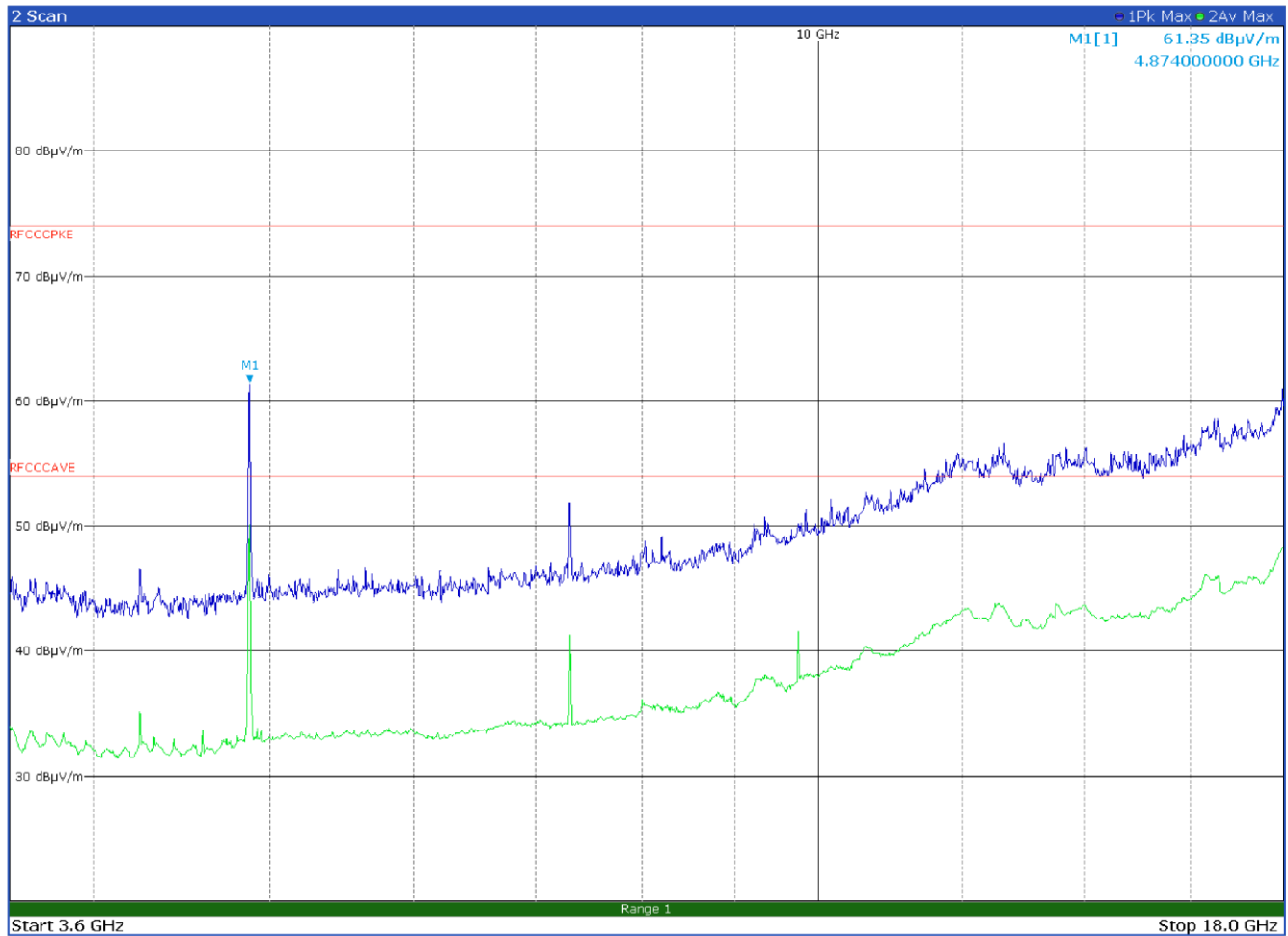
Limit exceeded by carrier



Antenna in vertical polarization – No inter-modulation product founds

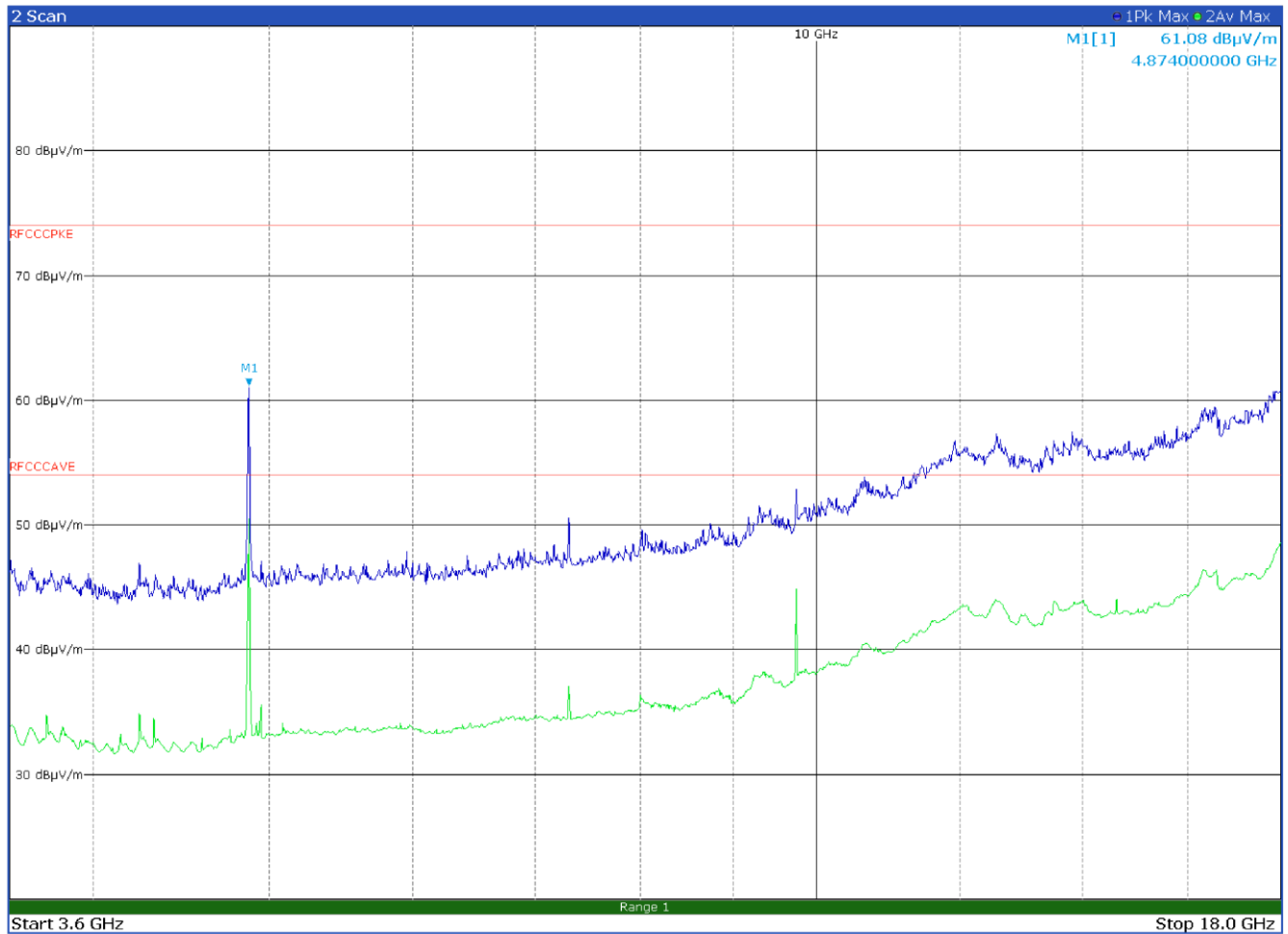
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1008.0000	40.6	54.0	-13.4	Av
1200.0000	39.4	54.0	-14.6	Av
1248.0000	41.3	54.0	-12.7	Av
1296.0000	41.8	54.0	-12.2	Av
1414.0000	78.4	82.2	-3.8	Pk
1728.2500	43.8	54.0	-10.2	Av
2121.0000	65.3	82.2	-16.9	Pk
2828.2500	44.2	54.0	-9.8	Av
3142.2500	46.3	54.0	-7.7	Av

Limit exceeded by carrier



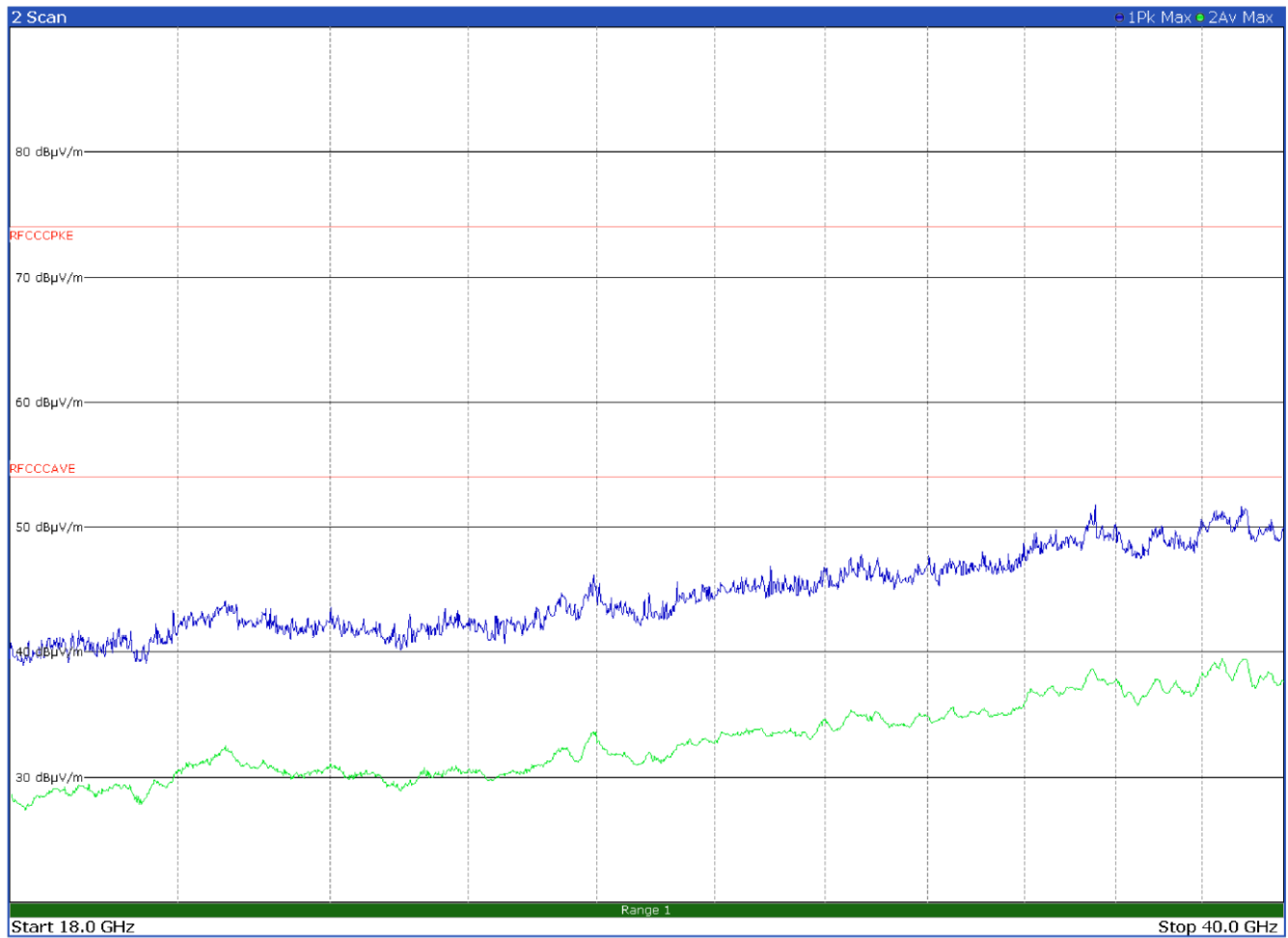
Antenna in horizontal polarization – No inter-modulation product founds

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
4874.0000	61.4	74.0	-12.6	Pk
4874.0000	53.5	54.0	-0.5	Pk

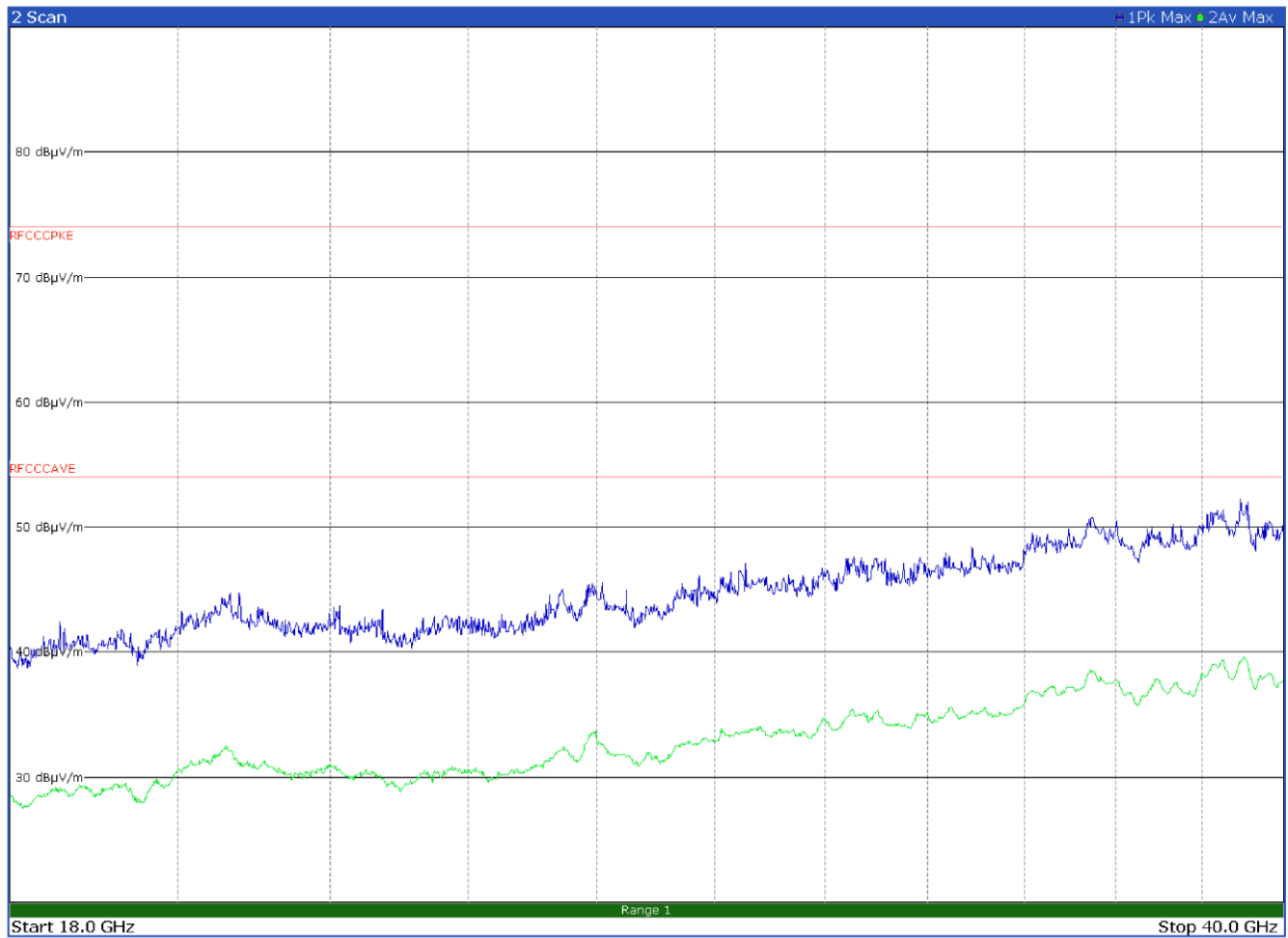


Antenna in vertical polarization – No inter-modulation product founds

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
4874.0000	61.1	74.0	-12.9	Pk
4874.0000	53.3	54.0	-0.7	Pk



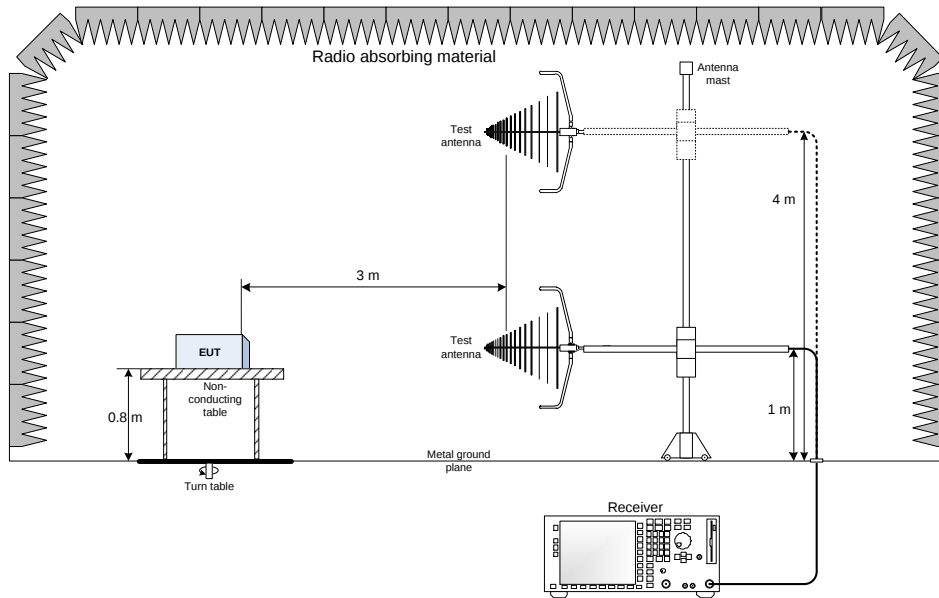
Antenna in horizontal polarization – No inter-modulation product founds



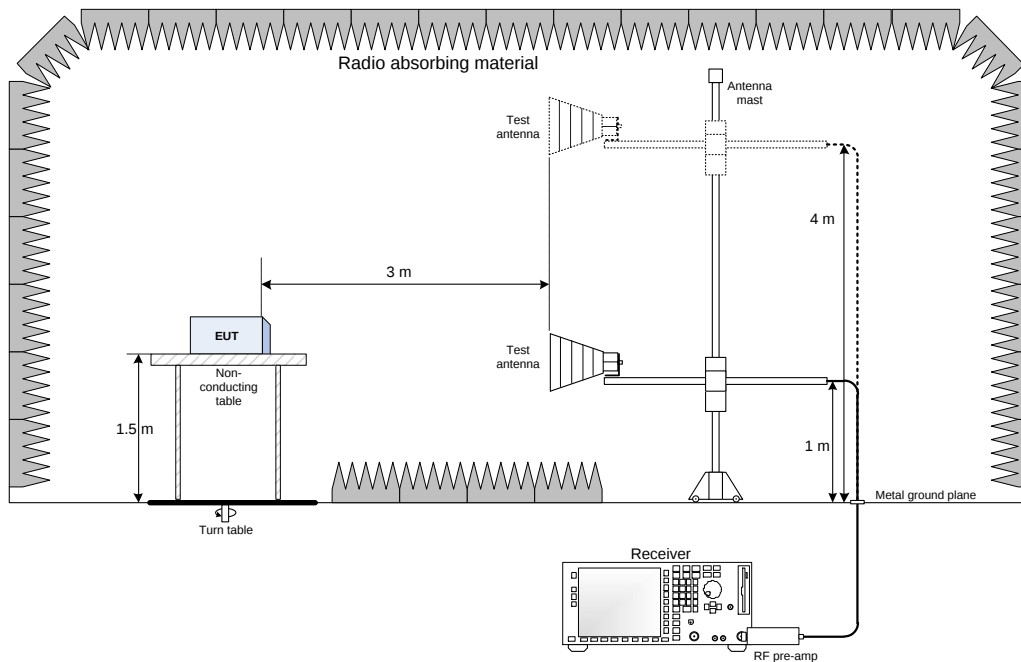
Antenna in vertical polarization – No inter-modulation product founds

Section 9. Block diagrams of test set-ups

9.1 Radiated emissions set-up for frequencies below 1 GHz



9.2 Radiated emissions set-up for frequencies above 1 GHz

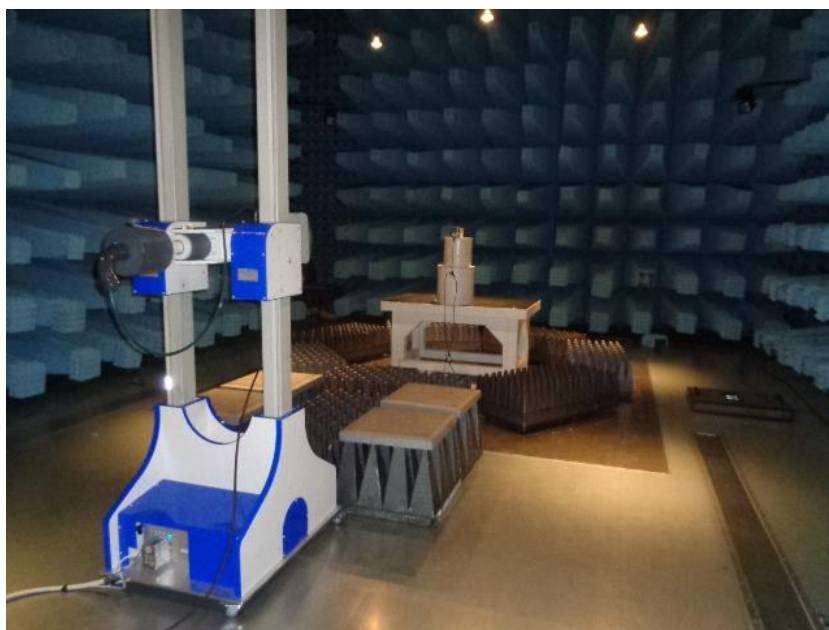


Section 10. Photos

10.1 Photos of the test set-up



Radiated emission below 1 GHz



Radiated emission above 1 GHz

10.2 Photos of the EUT





End of report