The Measurement of Conducted Spurious Emissions

CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

1. LIMITS OF CONDUCTED SPURIOUS EMISSIONS EASUREMENT

Below 20dB of the highest emission level of operating band (in 100KHz Resolution Bandwidth, see Section 15.247(c)). Emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the limits specified in Section 15.209(a) (see Section 15.205(c)).

2. TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP	1093.4495.30	Dec. 19, 2003

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

3. TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 100 kHz bandwidth from band edge. The band edges was measured and recorded.

4. TEST SETUP

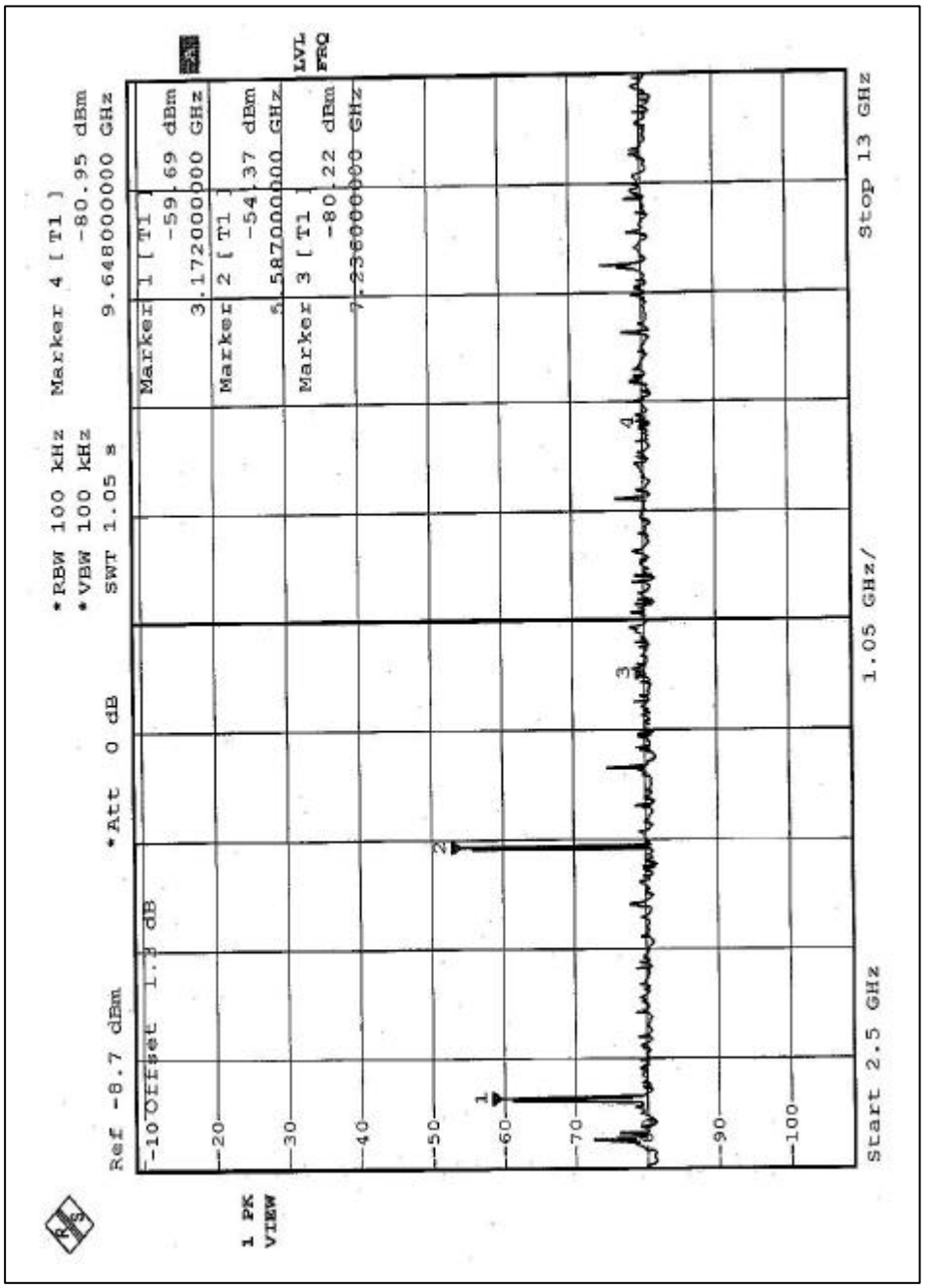
5. EUT OPERATING CONDITIONS

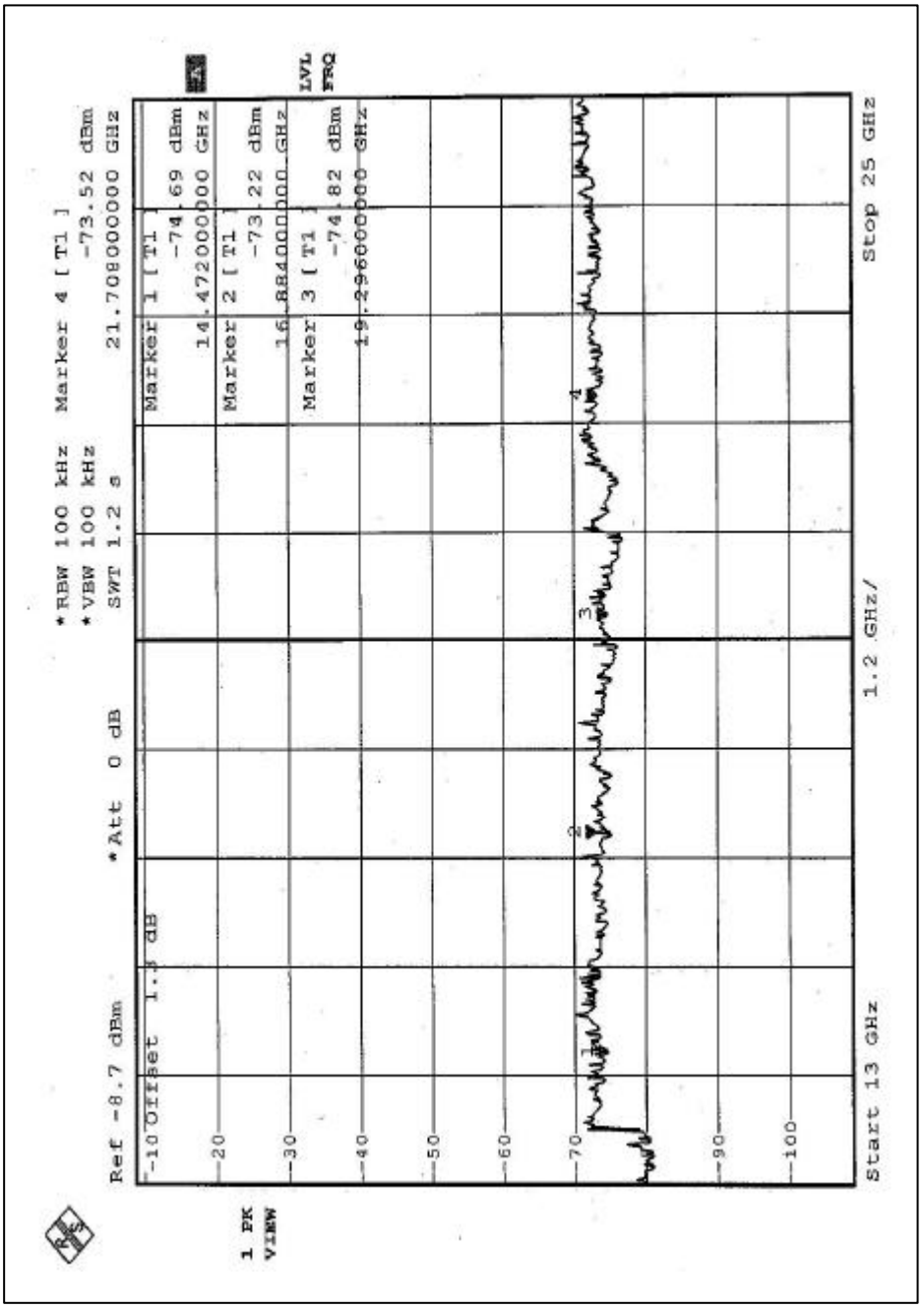
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

TEST RESULTS – For 802.11b

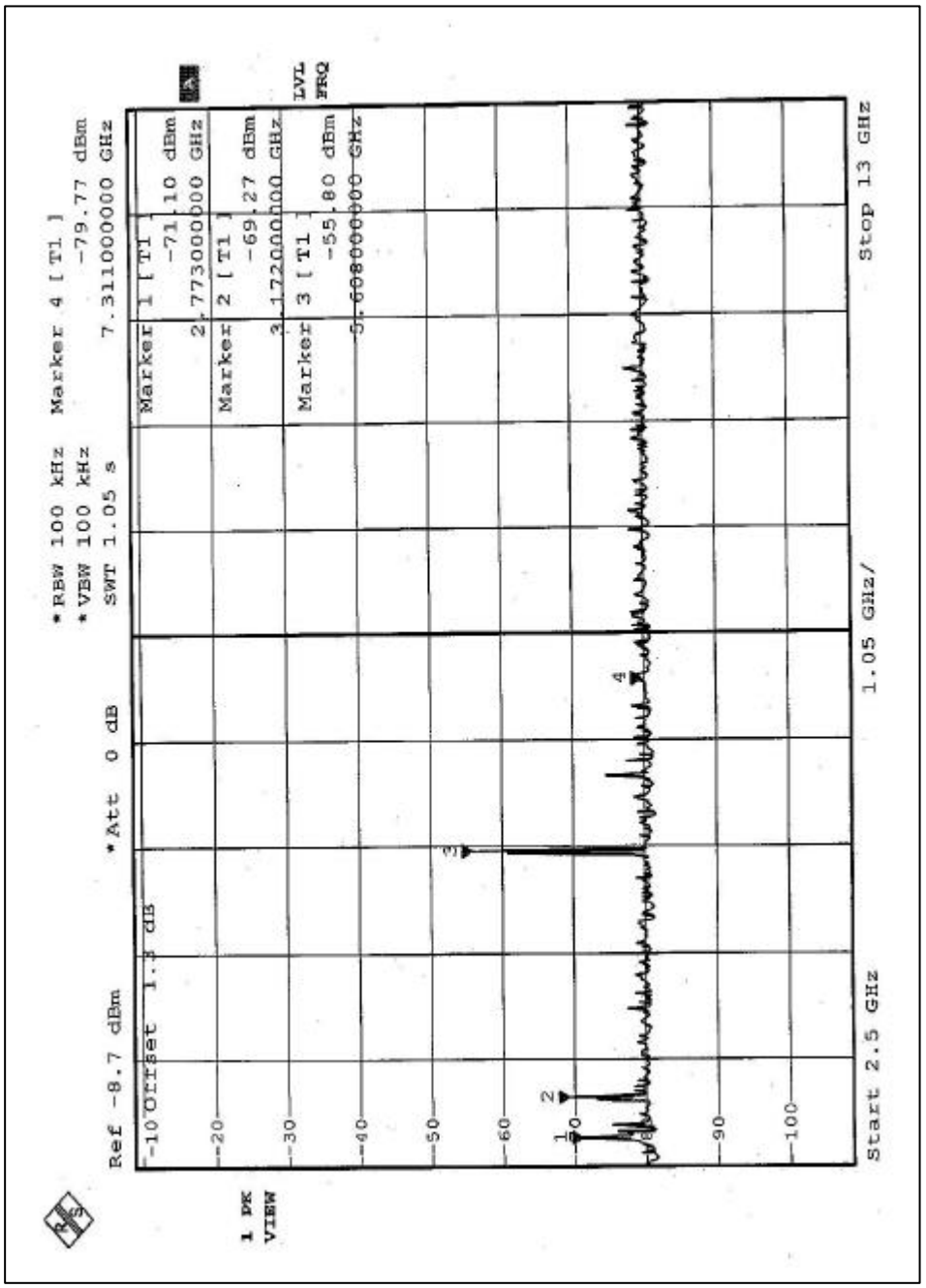
The spectrum plots are attached on the following 6 pages. It shows compliance with the requirement in part 15.247(C),.15.205 and 15.209.

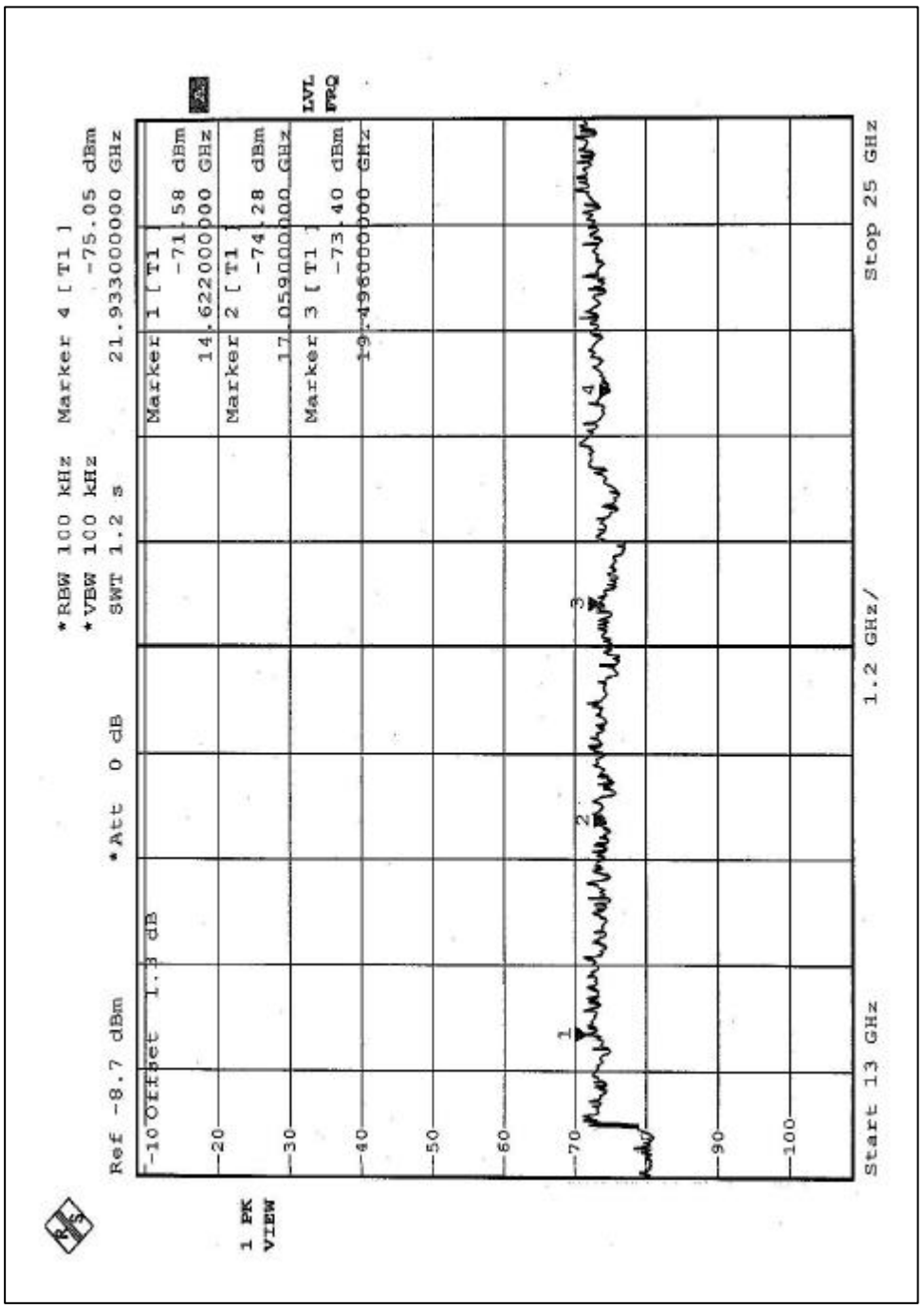
Ch1


*RBW 100 kHz
Marker 4 [T1]
-80.95 dBm
*VBW 100 kHz
9.648000000 GHz
Ref -8.7 dBm
*Att 0 dB
SWT 1.05 s
Marker 1 [T1]
-59.69 dBm
3.172000000 GHz
Marker 2 [T1]
-54.37 dBm
5.587000000 GHz
Marker 3 [T1]
-80.22 dBm
7.236000000 GHz
1 PK VIEW
Start 2.5 GHz
1.05 GHz/
Stop 13 GHz

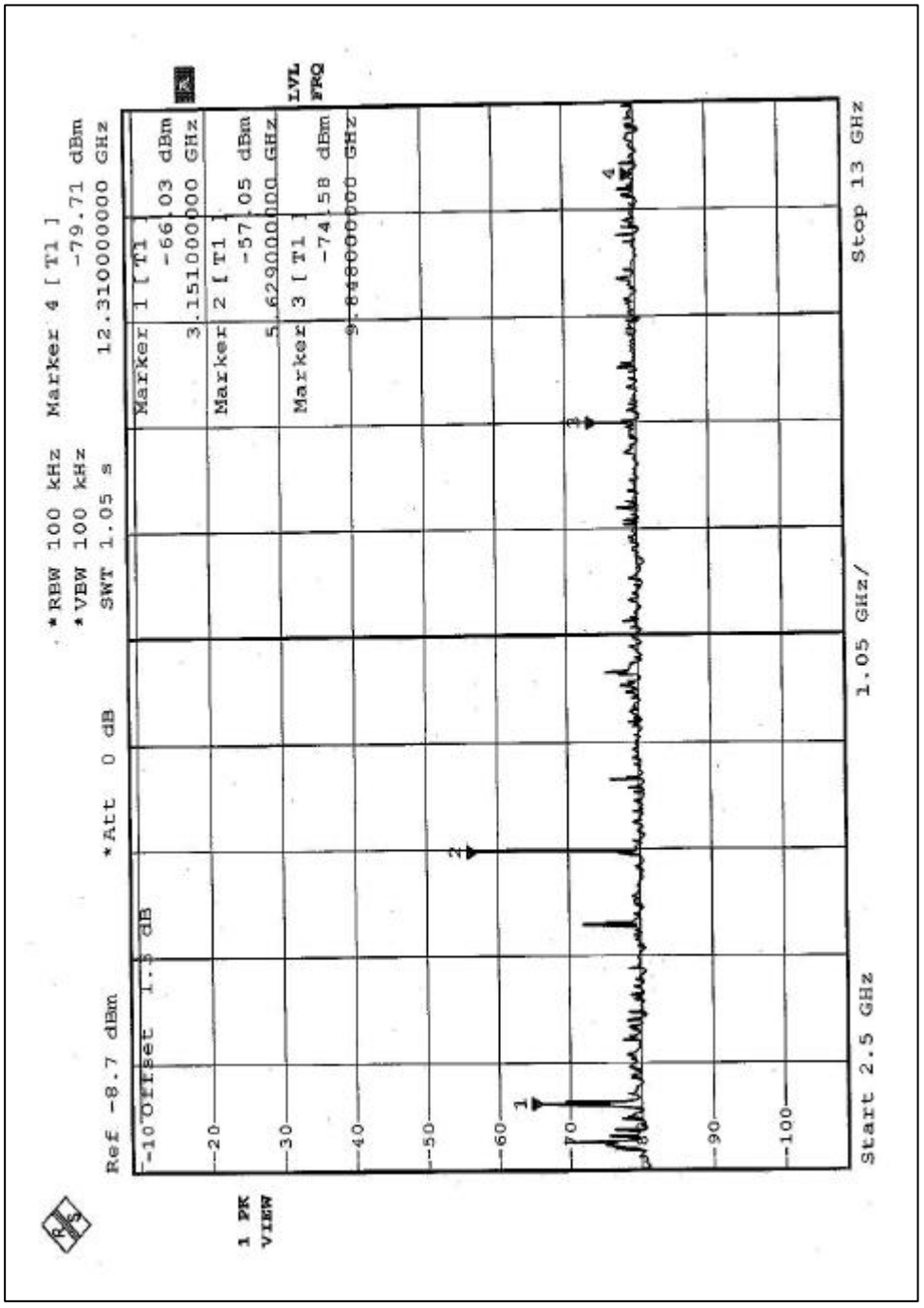

RBW 100 kHz
VBW 100 kHz
SWT 1.2 s
Marker 4 [T1]
-73.52 dBm
21.70800000 GHz
Ref -8.7 dBm
Att 0 dB
Offset 1.3 dB
Marker 1 [T1]
-74.69 dBm
14.47200000 GHz
Marker 2 [T1]
-73.22 dBm
16.88400000 GHz
Marker 3 [T1]
-74.82 dBm
19.29600000 GHz
LVL
FRQ
1 PK
VIEW
Start 13 GHz
1.2 GHz/
Stop 25 GHz

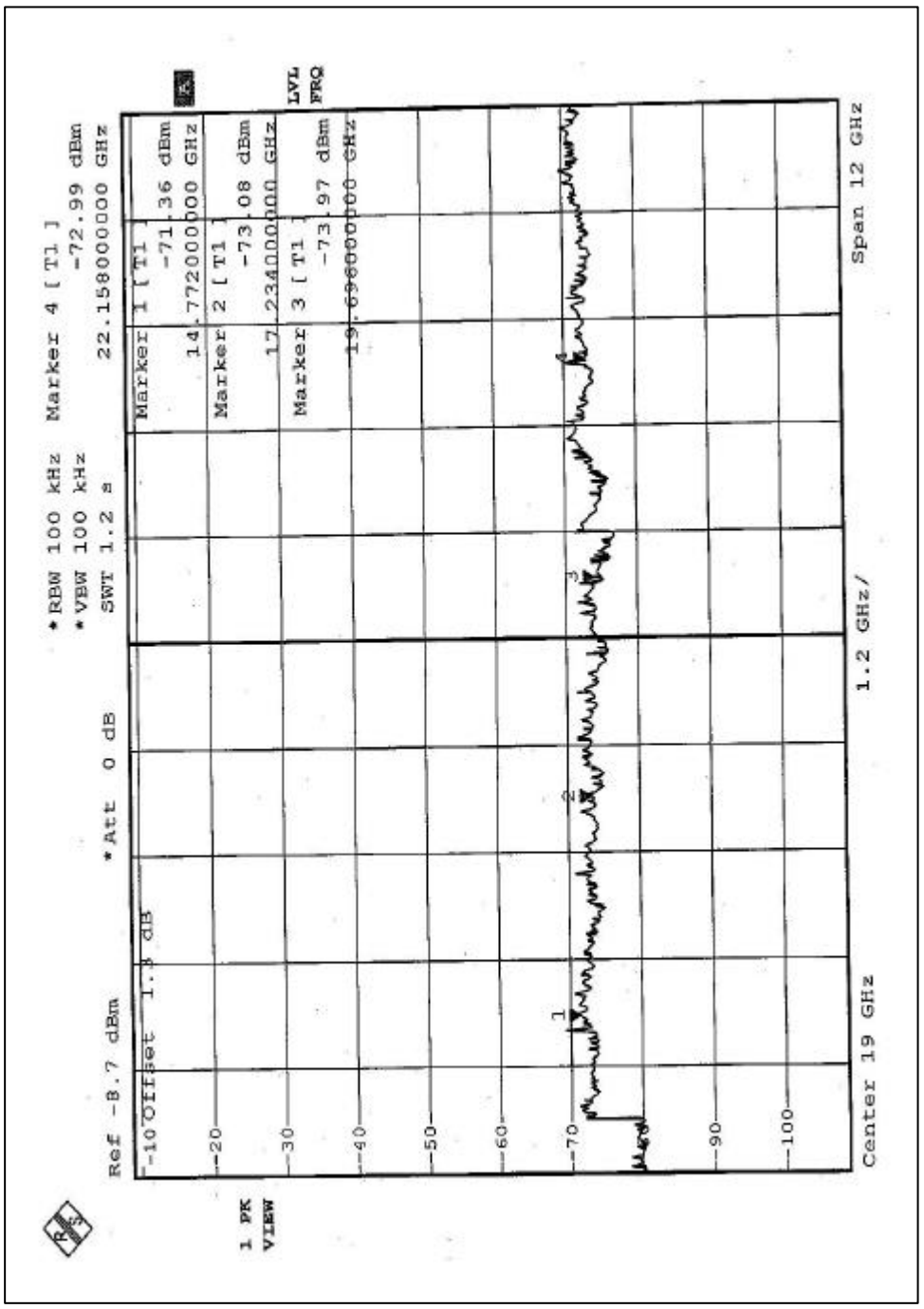
Ch6


RBW 100 kHz
VBW 100 kHz
SWT 1.05 s
Marker 4 [T1]
-79.77 dBm
7.311000000 GHz
Ref -8.7 dBm
Offset 1.3 dB
Att 0 dB
Marker 1 [T1]
-71.10 dBm
2.773000000 GHz
Marker 2 [T1]
-69.27 dBm
3.172000000 GHz
Marker 3 [T1]
-55.80 dBm
5.608000000 GHz
LVL
FRQ
1 PK
VIEW
Start 2.5 GHz
1.05 GHz/
Stop 13 GHz


*RBW 100 kHz
*VBW 100 kHz
SWT 1.2 s
Marker 4 [T1]
-75.05 dBm
21.933000000 GHz
Ref -8.7 dBm
*Att 0 dB
Offset 1.3 dB
1 PK
VIEW
Marker 1 [T1]
-71.58 dBm
14.622000000 GHz
Marker 2 [T1]
-74.28 dBm
17.059000000 GHz
Marker 3 [T1]
-73.40 dBm
19.496000000 GHz
LVL
FRQ
Start 13 GHz
1.2 GHz/
Stop 25 GHz

Ch11

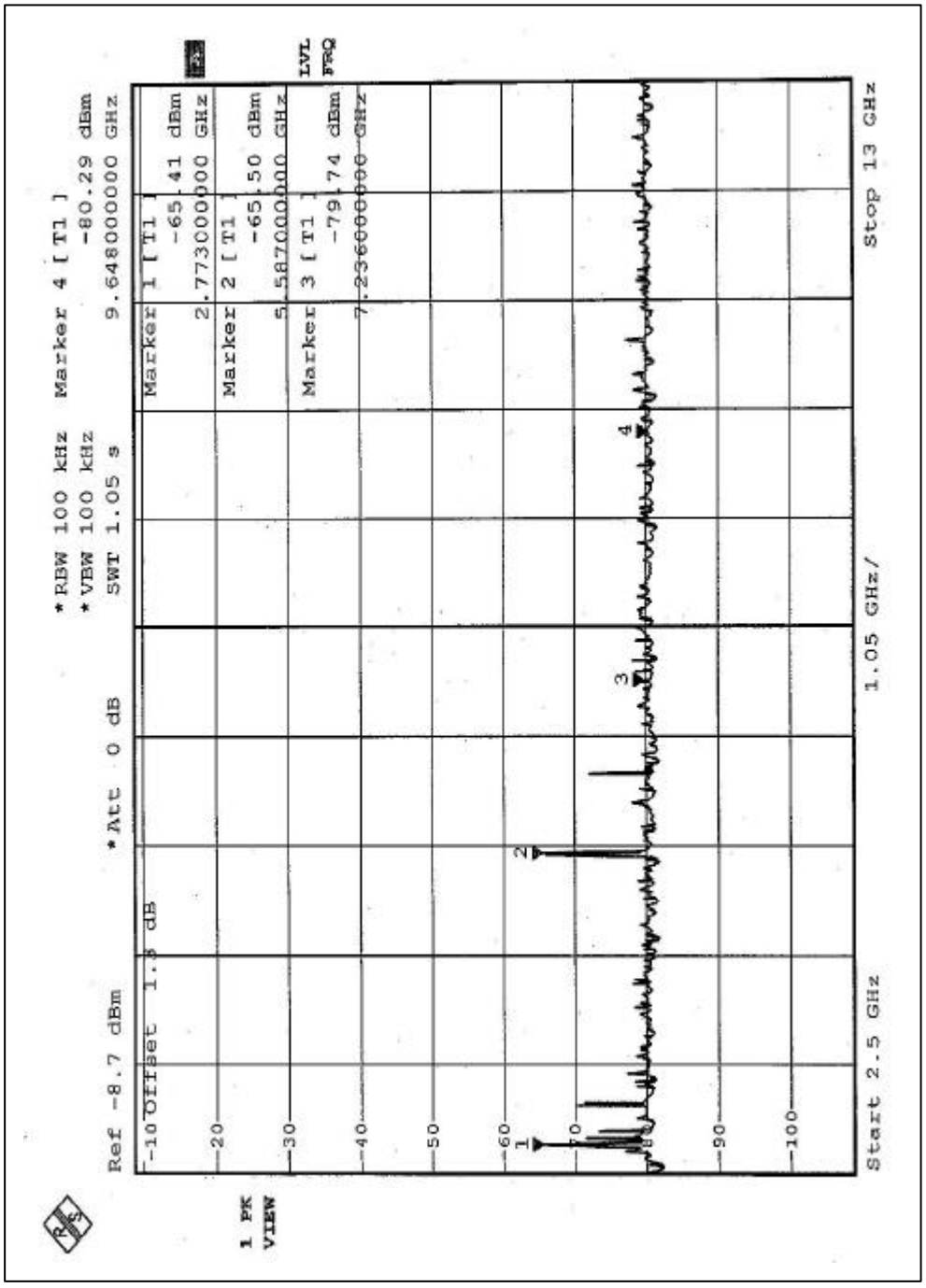

*RBW 100 kHz
*VBW 100 kHz
SWT 1.05 s
Marker 4 [T1]
-79.71 dBm
12.310000000 GHz
Ref -8.7 dBm
*Att 0 dB
Offset 1.5 dB
Marker 1 [T1]
-66.03 dBm
3.151000000 GHz
Marker 2 [T1]
-57.05 dBm
5.629000000 GHz
Marker 3 [T1]
-74.58 dBm
9.848000000 GHz
LVL
FRQ
1 PK
VIEW
Start 2.5 GHz
1.05 GHz/
Stop 13 GHz

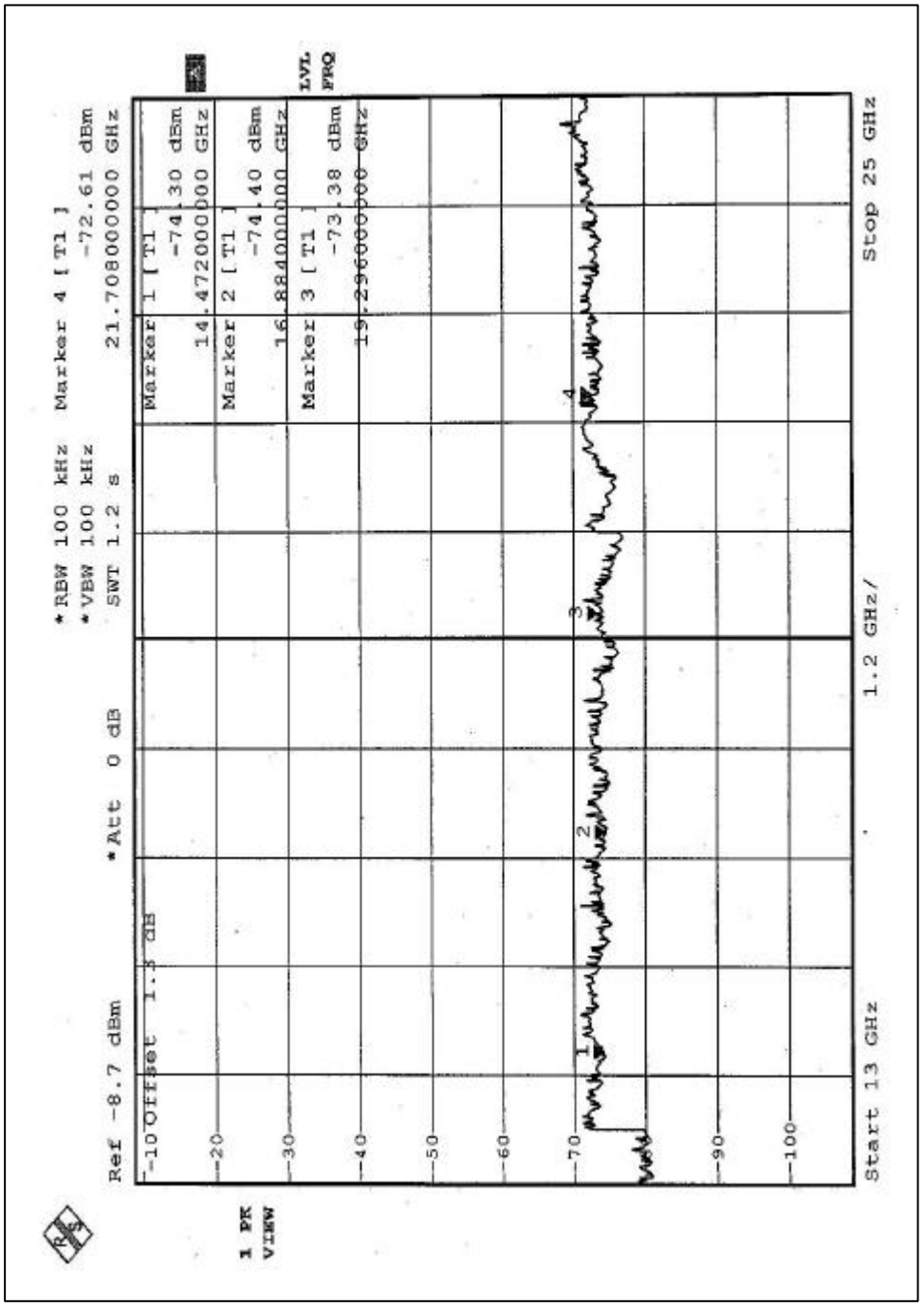

*RBW 100 kHz
*VBW 100 kHz
SWT 1.2 s
Marker 4 [T1]
-72.99 dBm
22.158000000 GHz
Ref -8.7 dBm
Offset 1.3 dB
*Att 0 dB
Marker 1 [T1
-71.36 dBm
14.772000000 GHz
Marker 2 [T1
-73.08 dBm
17.234000000 GHz
Marker 3 [T1
-73.97 dBm
19.696000000 GHz
LVL
FRQ
1 PK
VIEW
Center 19 GHz
1.2 GHz/
Span 12 GHz

TEST RESULTS – For 802.11g

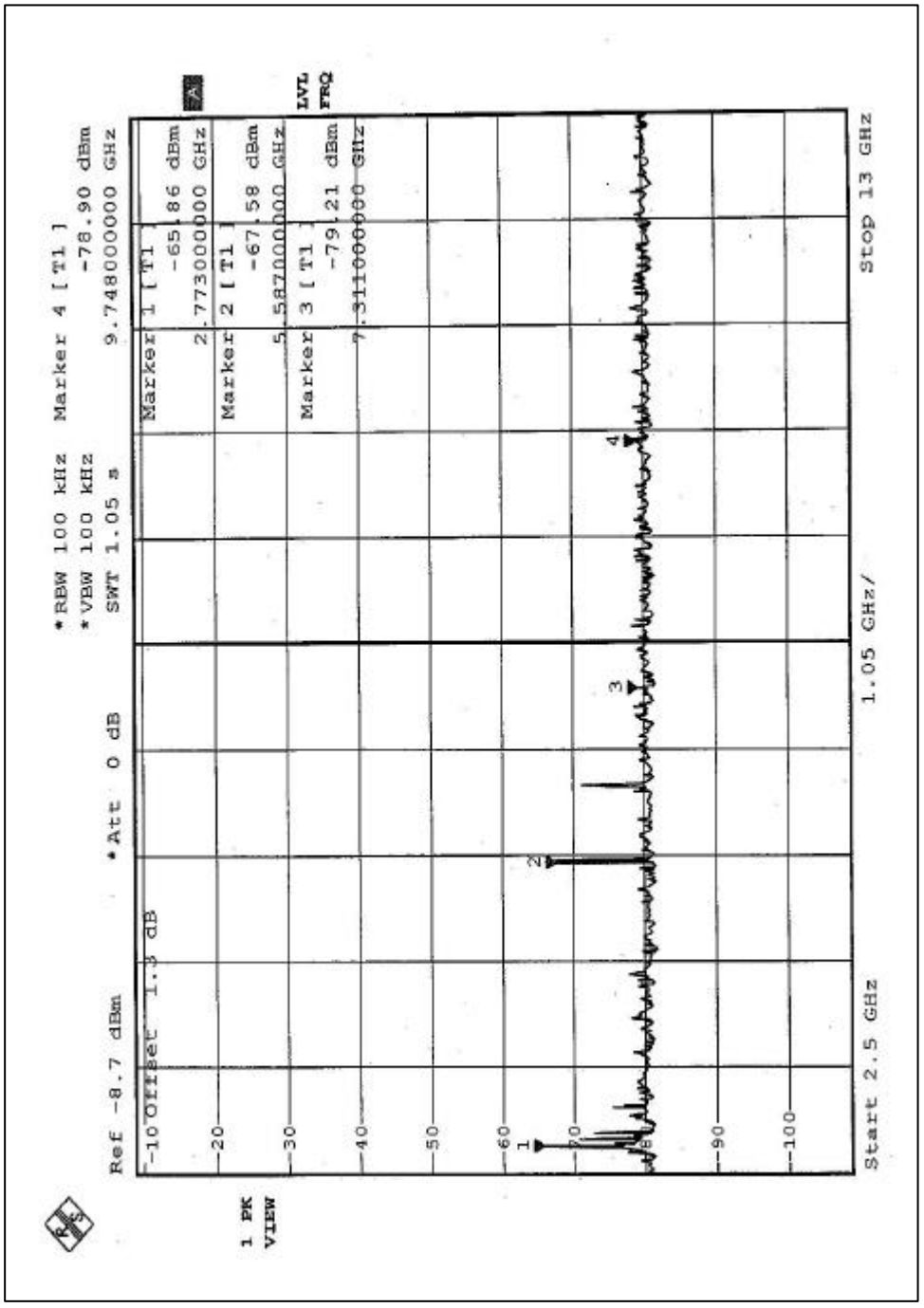
The spectrum plots are attached on the following 6 pages. It shows compliance with the requirement in part 15.247(C),.15.205 and 15.209.

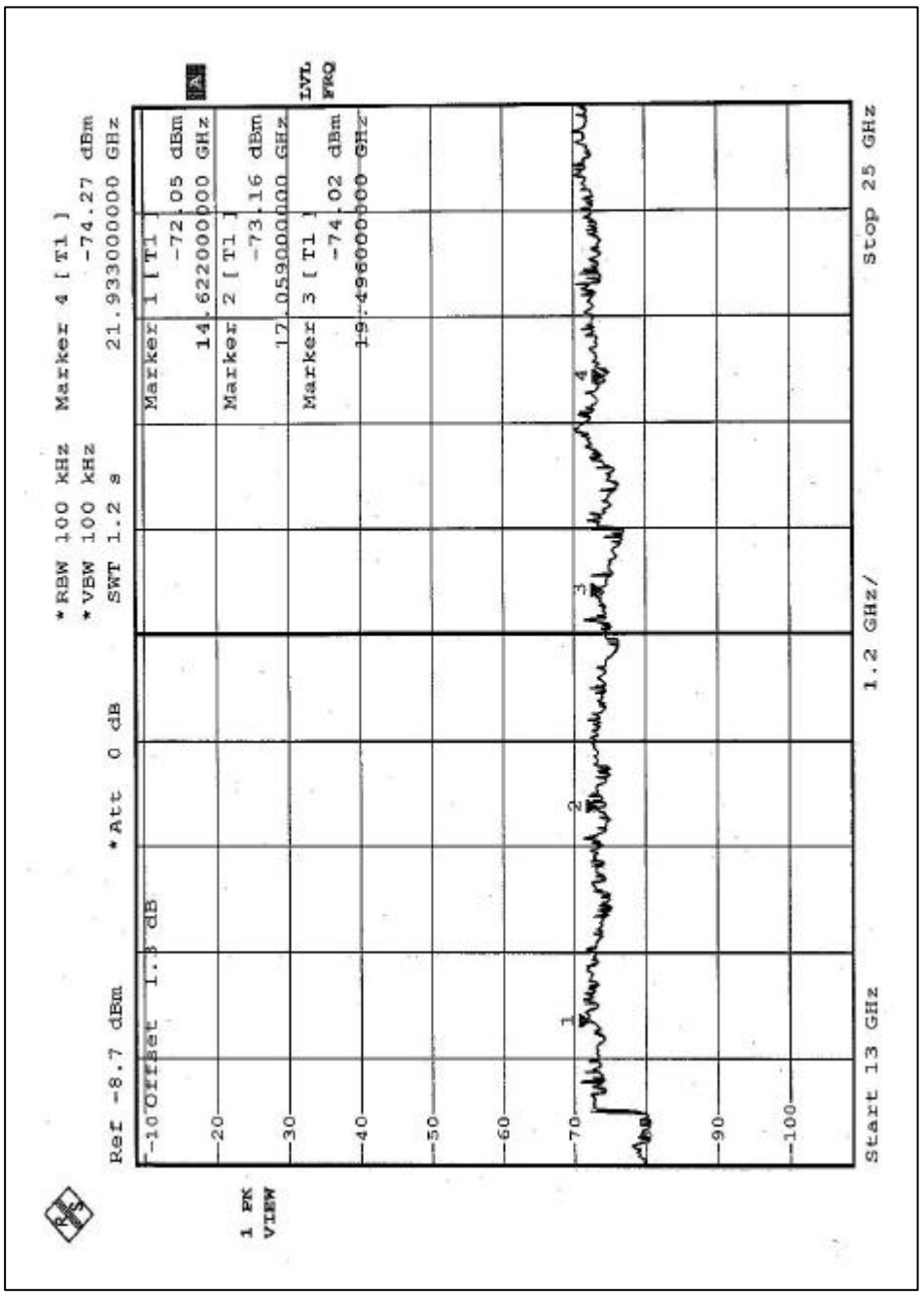
Ch1


RBW 100 kHz
VBW 100 kHz
SWT 1.05 s
Marker 4 [T1]
-80.29 dBm
9.648000000 GHz
Ref -8.7 dBm
Offset 1.3 dB
Att 0 dB
Marker 1 [T1]
-65.41 dBm
2.773000000 GHz
Marker 2 [T1]
-65.50 dBm
5.587000000 GHz
Marker 3 [T1]
-79.74 dBm
7.236000000 GHz
1 PK VIEW
Start 2.5 GHz
1.05 GHz/
Stop 13 GHz

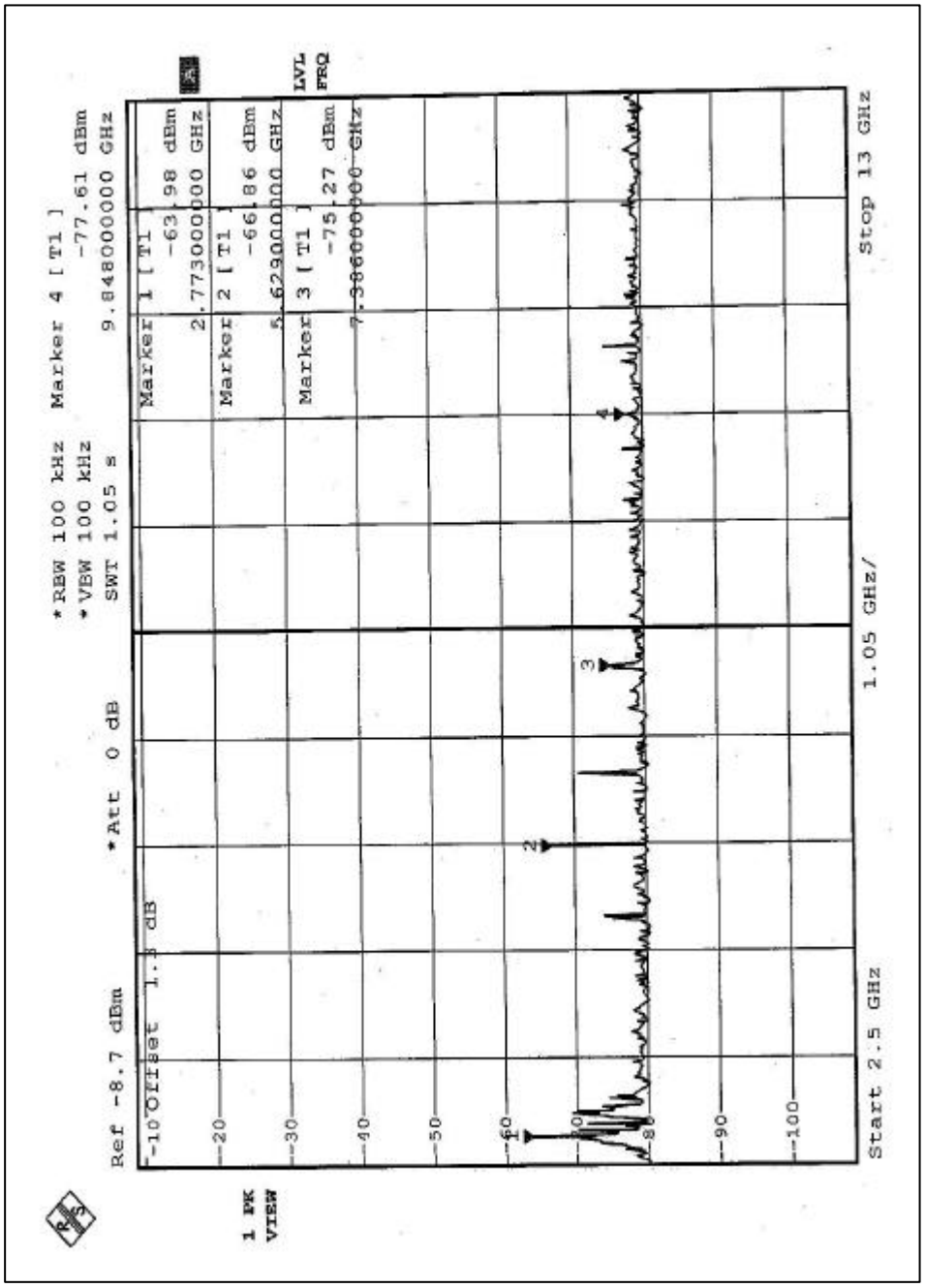

*RBW 100 kHz
*VBW 100 kHz
SWT 1.2 s
Marker 4 [T1]
-72.61 dBm
21.708000000 GHz
Ref -8.7 dBm
Offset 1.3 dB
*Att 0 dB
1 PK
VIEW
Marker 1 [T1]
-74.30 dBm
14.472000000 GHz
Marker 2 [T1]
-74.40 dBm
16.884000000 GHz
Marker 3 [T1]
-73.38 dBm
19.296000000 GHz
LVL
FRQ
Start 13 GHz
1.2 GHz/
Stop 25 GHz

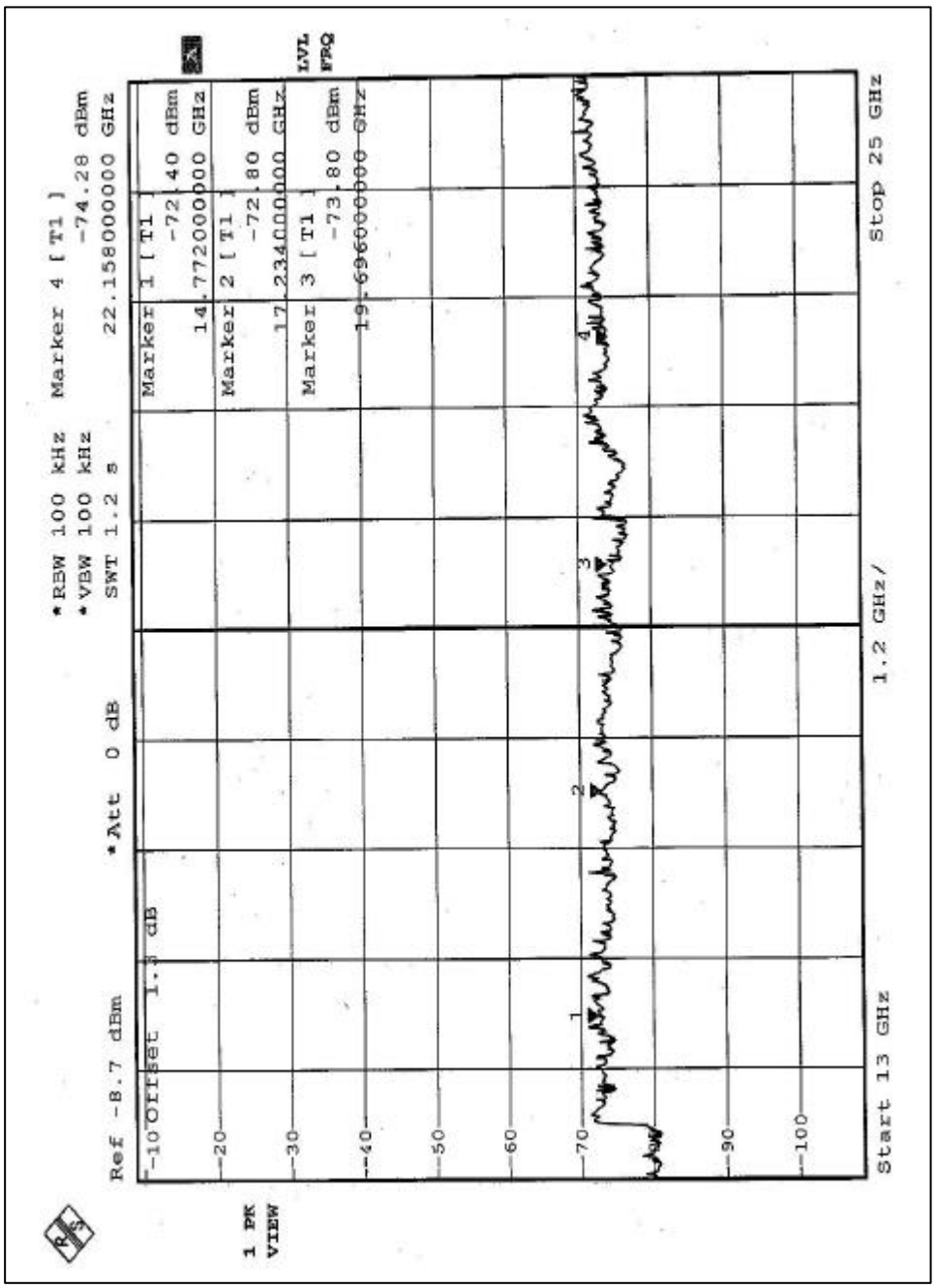
Ch6


*RBW 100 kHz
*VBW 100 kHz
SWT 1.05 s
Marker 4 [T1]
-78.90 dBm
9.748000000 GHz
Ref -8.7 dBm
Offset 1.3 dB
*Att 0 dB
Marker 1 [T1]
-65.86 dBm
2.773000000 GHz
Marker 2 [T1]
-67.58 dBm
5.587000000 GHz
Marker 3 [T1]
-79.21 dBm
7.311000000 GHz
LVL
FRQ
1 PK
VIEW
Start 2.5 GHz
1.05 GHz/
Stop 13 GHz


*RBW 100 kHz
*VBW 100 kHz
SWT 1.2 s
Marker 4 [T1]
-74.27 dBm
21.933000000 GHz
Ref -8.7 dBm
Offset 1.3 dB
*Att 0 dB
1 PK
VIEW
Marker 1 [T1]
-72.05 dBm
14.622000000 GHz
Marker 2 [T1]
-73.16 dBm
17.059000000 GHz
Marker 3 [T1]
-74.02 dBm
19.496000000 GHz
LVL
FRQ
Start 13 GHz
1.2 GHz/
Stop 25 GHz

Ch11


*RBW 100 kHz
*VBW 100 kHz
SWT 1.05 s
Marker 4 [T1]
-77.61 dBm
9.848000000 GHz
Ref -8.7 dBm
*Att 0 dB
Offset 1.1 dB
Marker 1 [T1]
-63.98 dBm
2.773000000 GHz
Marker 2 [T1]
-66.86 dBm
5.629000000 GHz
Marker 3 [T1]
-75.27 dBm
7.306000000 GHz
1 PK
VIEW
LVL
FRQ
Start 2.5 GHz
1.05 GHz/
Stop 13 GHz

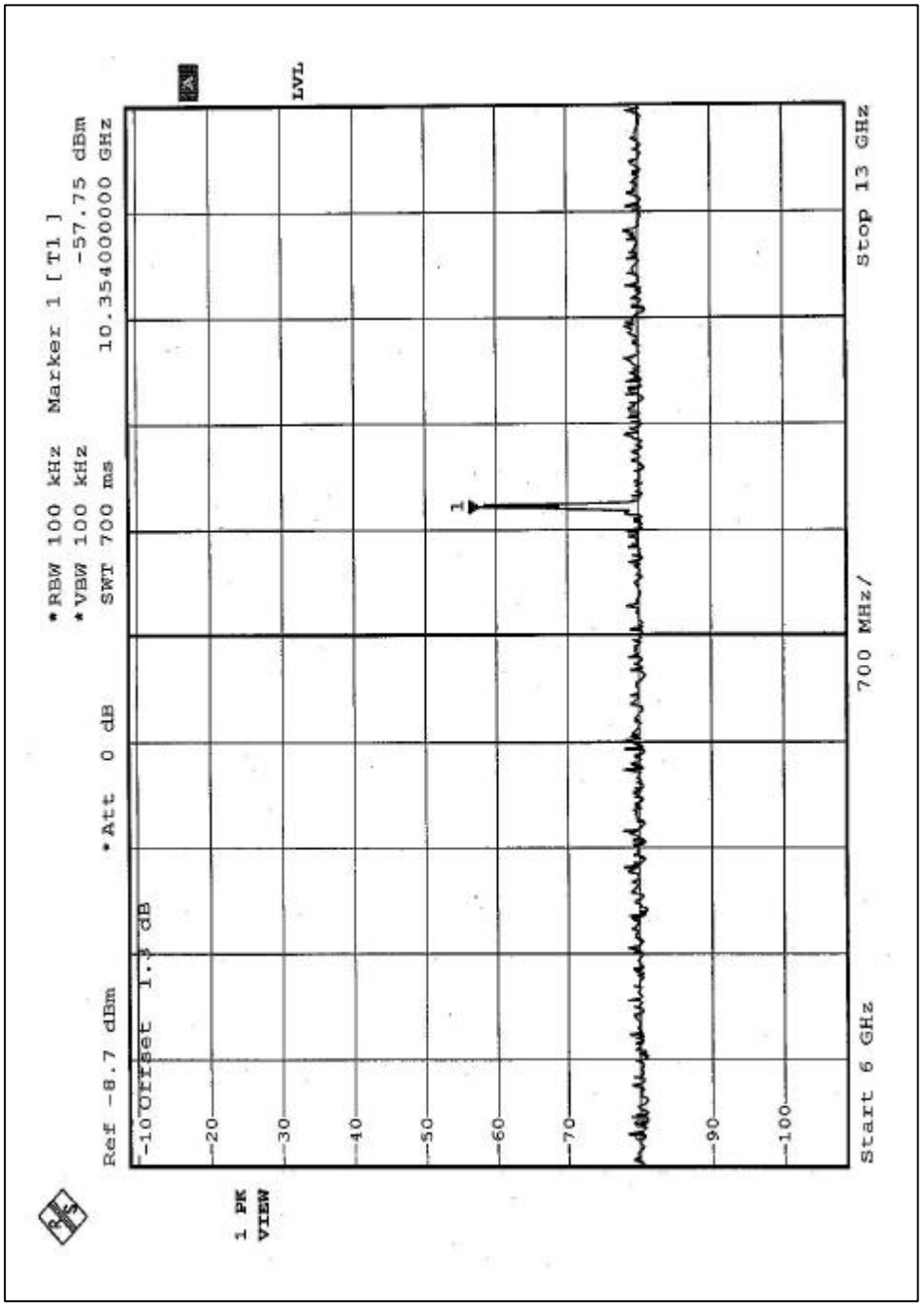

*RBW 100 kHz
*VBW 100 kHz
SWT 1.2 s
Marker 4 [T1]
-74.28 dBm
22.158000000 GHz
Ref -8.7 dBm
*Att 0 dB
Offset 1.8 dB
Marker 1 [T1]
-72.40 dBm
14.772000000 GHz
Marker 2 [T1]
-72.80 dBm
17.234000000 GHz
Marker 3 [T1]
-73.80 dBm
19.696000000 GHz
1 PK
VIEW
Start 13 GHz
1.2 GHz/
Stop 25 GHz

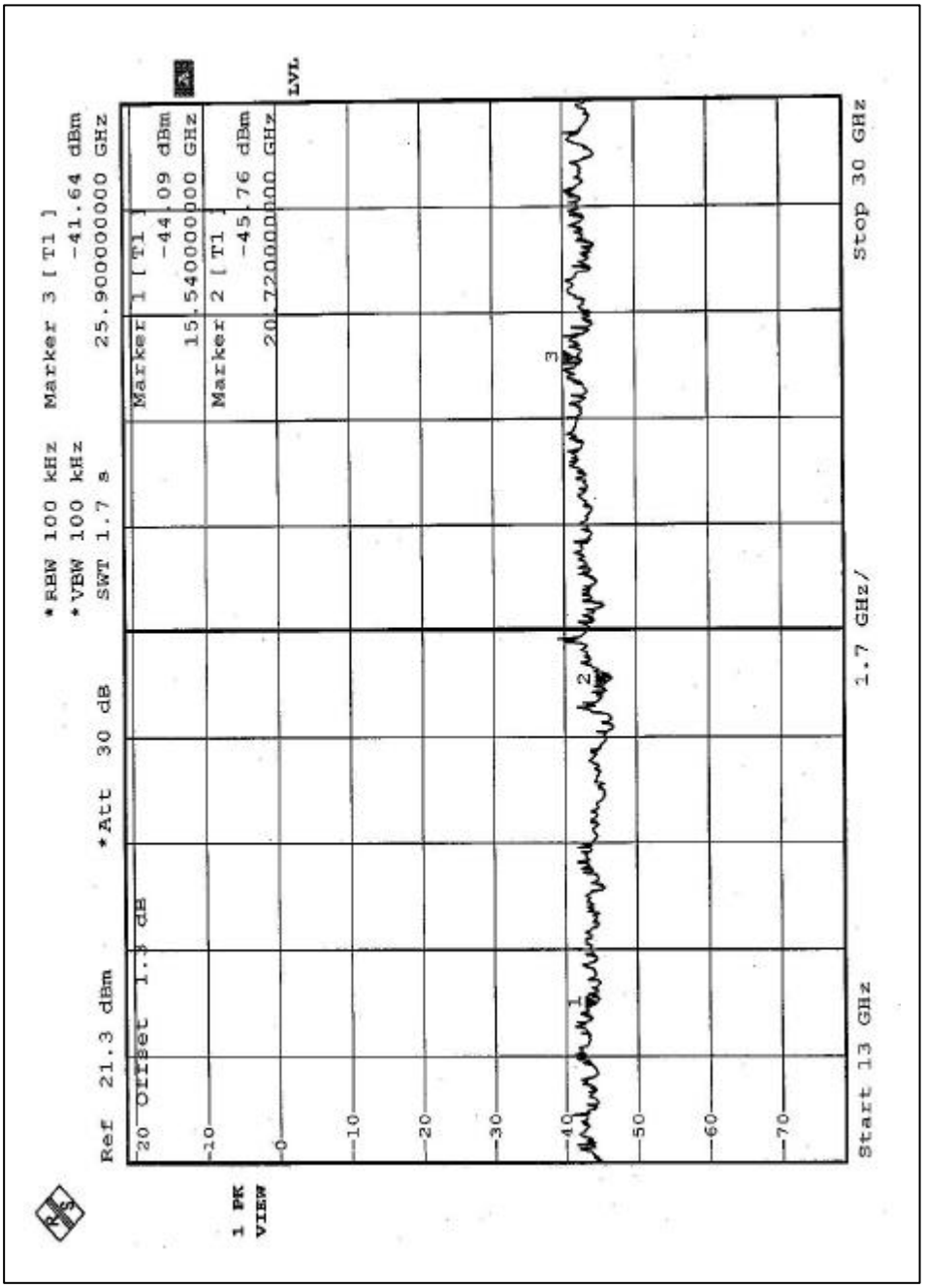
FOR FREQUENCY 5.15~5.35GHz

TEST RESULTS – For 802.11a, Normal mode

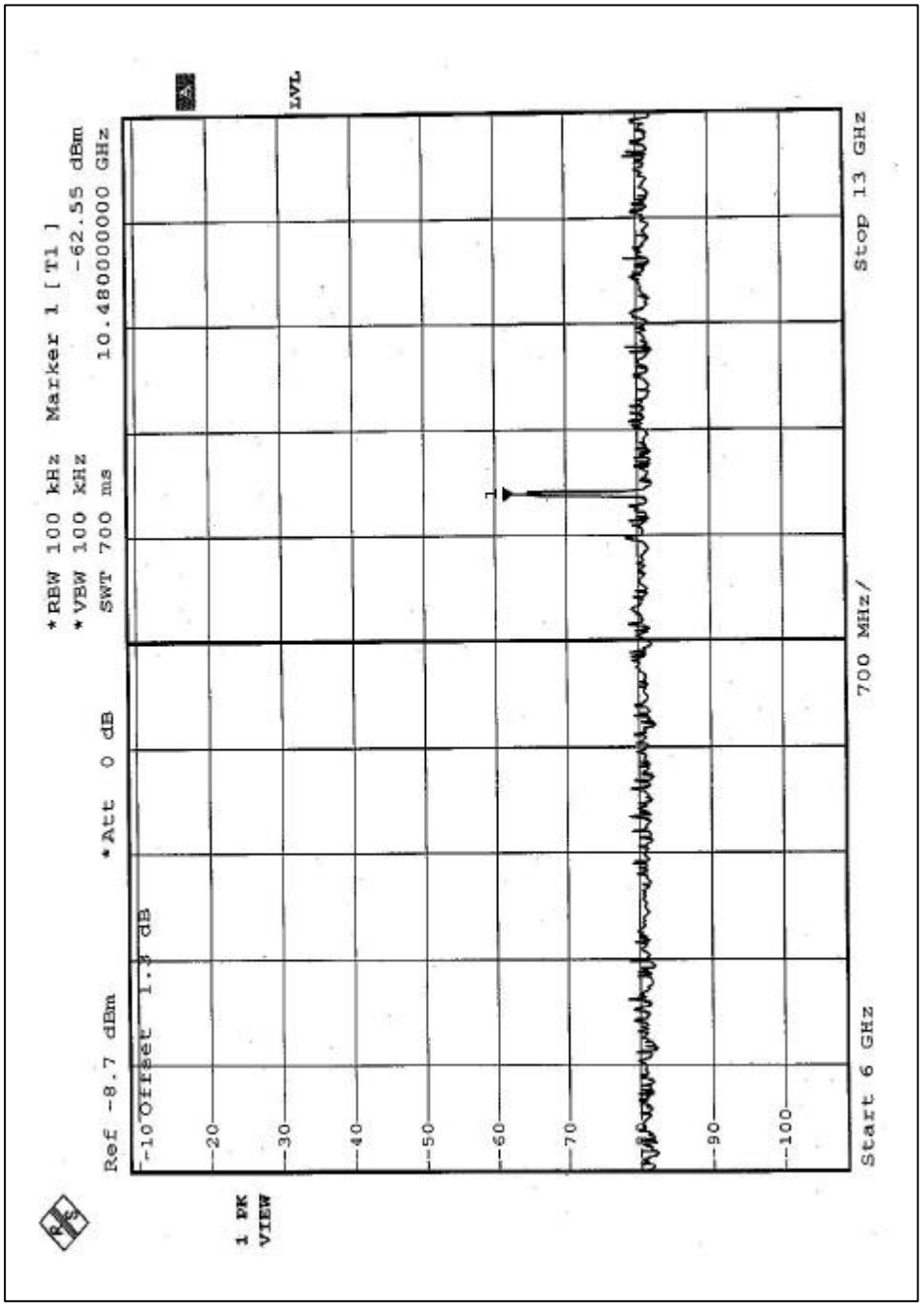
The spectrum plots are attached on the following 8 pages. It shows compliance with the requirement in part 15.407 (E),15.205 and 15.209.

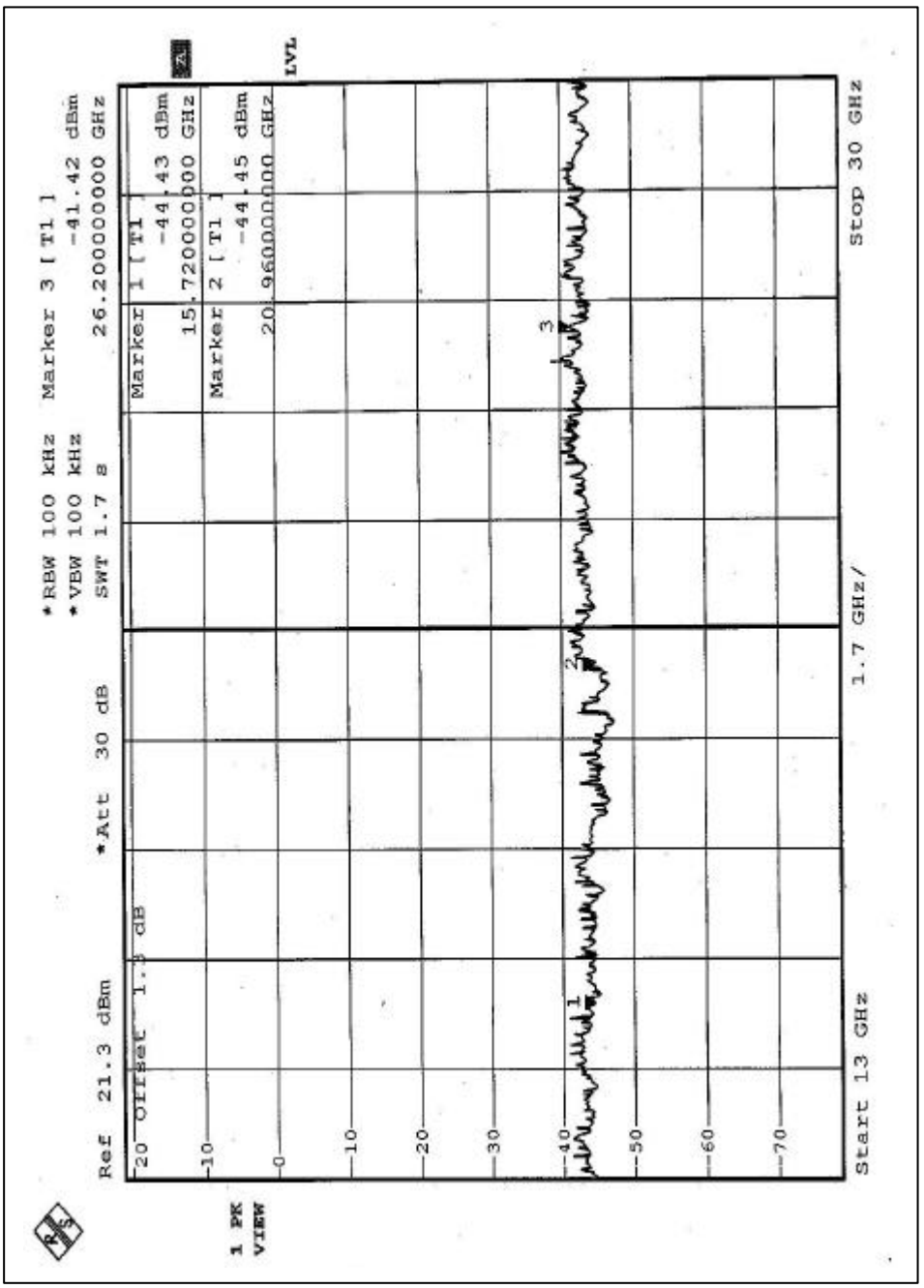
Ch1


RBW 100 kHz
VBW 100 kHz
SWT 700 ms
Marker 1 [T1]
-57.75 dBm
10.354000000 GHz
Ref -8.7 dBm
Att 0 dB
Offset 1.3 dB
1 PK
VIEW
Start 6 GHz
700 MHz/
Stop 13 GHz

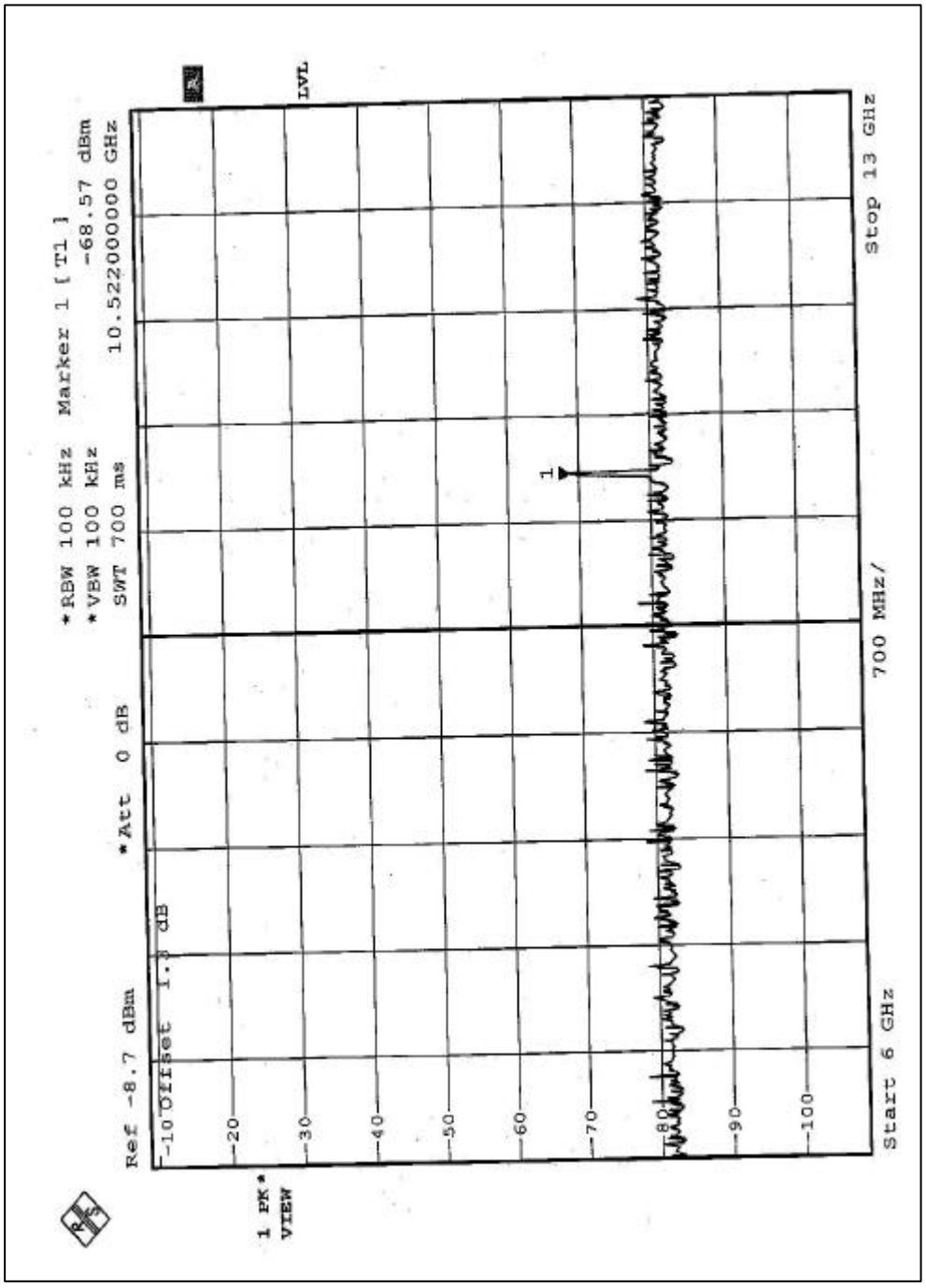

Ref 21.3 dBm
Offset 1.3 dB
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 1.7 s
Marker 3 [T1]
-41.64 dBm
25.900000000 GHz
Marker 1 [T1]
-44.09 dBm
15.540000000 GHz
Marker 2 [T1]
-45.76 dBm
20.720000000 GHz
1 PK VIEW
Start 13 GHz
1.7 GHz/
Stop 30 GHz

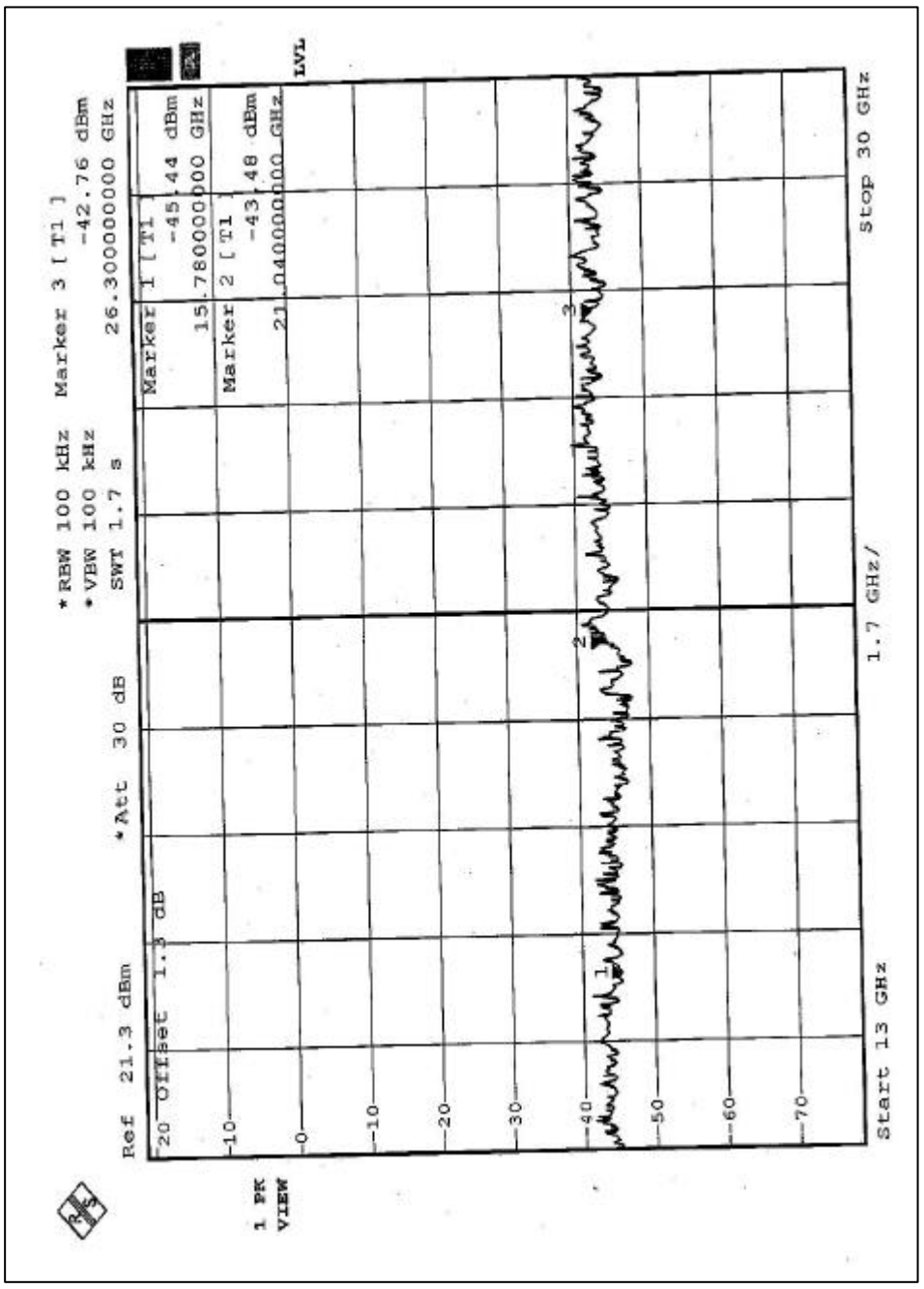
Ch4


*RBW 100 kHz
*VBW 100 kHz
SWT 700 ms
Marker 1 [T1]
-62.55 dBm
10.480000000 GHz
Ref -8.7 dBm
*Att 0 dB
Offset 1.3 dB
1 PK
VIEW
Start 6 GHz
700 MHz/
Stop 13 GHz

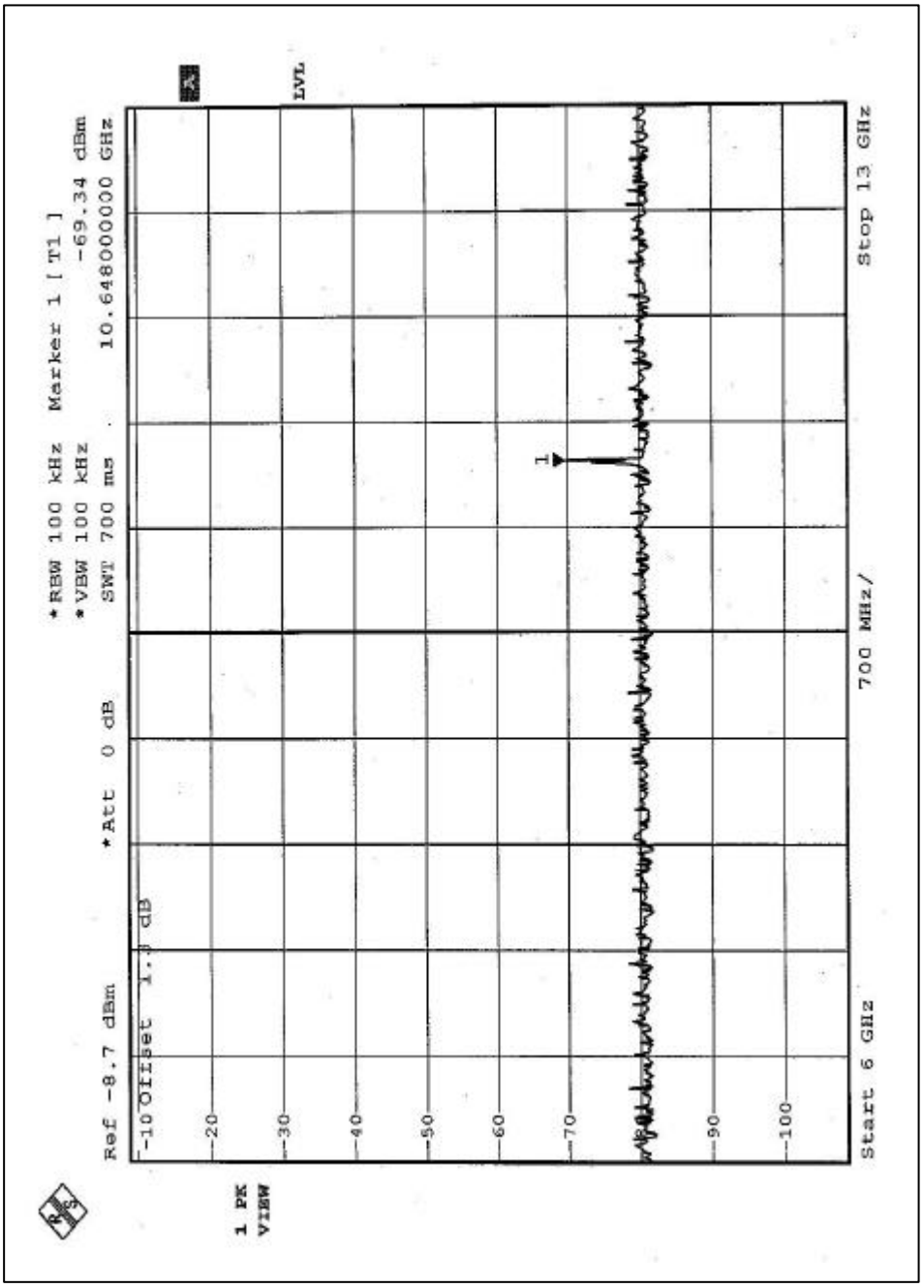

RBW 100 kHz
VBW 100 kHz
SWT 1.7 s
Marker 3 [T1]
-41.42 dBm
26.200000000 GHz
Ref 21.3 dBm
Offset 1.5 dB
Att 30 dB
Marker 1 [T1]
-44.43 dBm
15.720000000 GHz
Marker 2 [T1]
-44.45 dBm
20.960000000 GHz
1 PK
VIEW
LVL
Start 13 GHz
1.7 GHz/
Stop 30 GHz

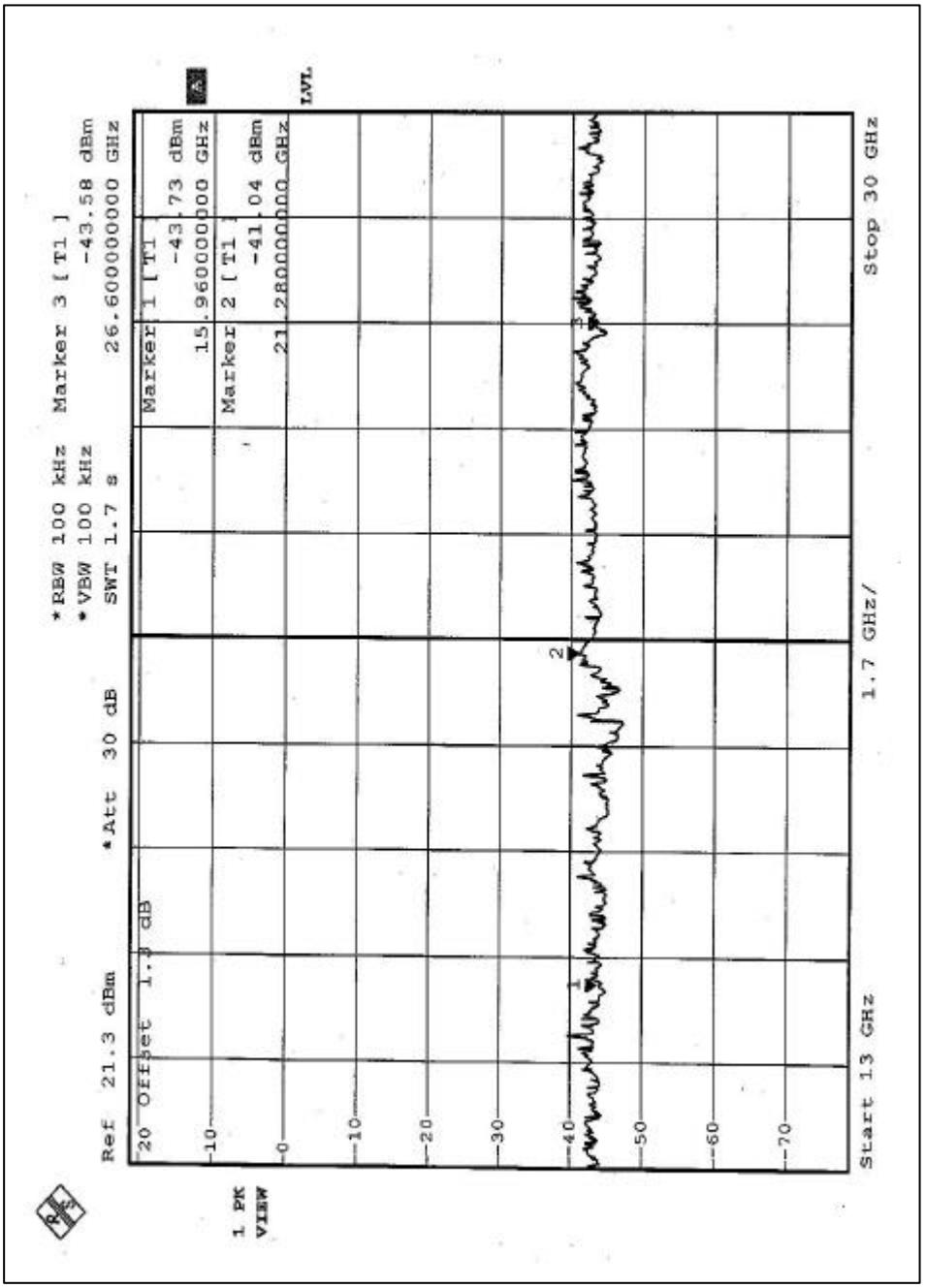
Ch5


Ref -8.7 dBm
*Att 0 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 700 ms
Marker 1 [T1]
-68.57 dBm
10.522000000 GHz
Offset 1.3 dB
1 PK*
VIEW
LVL
Start 6 GHz
700 MHz/
Stop 13 GHz


Ref 21.3 dBm
Offset 1.3 dB
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 1.7 s
Marker 3 [T1]
-42.76 dBm
26.300000000 GHz
Marker 1 [T1]
-45.44 dBm
15.780000000 GHz
Marker 2 [T1]
-43.48 dBm
21.040000000 GHz
1 PK
VIEW
Start 13 GHz
1.7 GHz/
Stop 30 GHz

Ch8

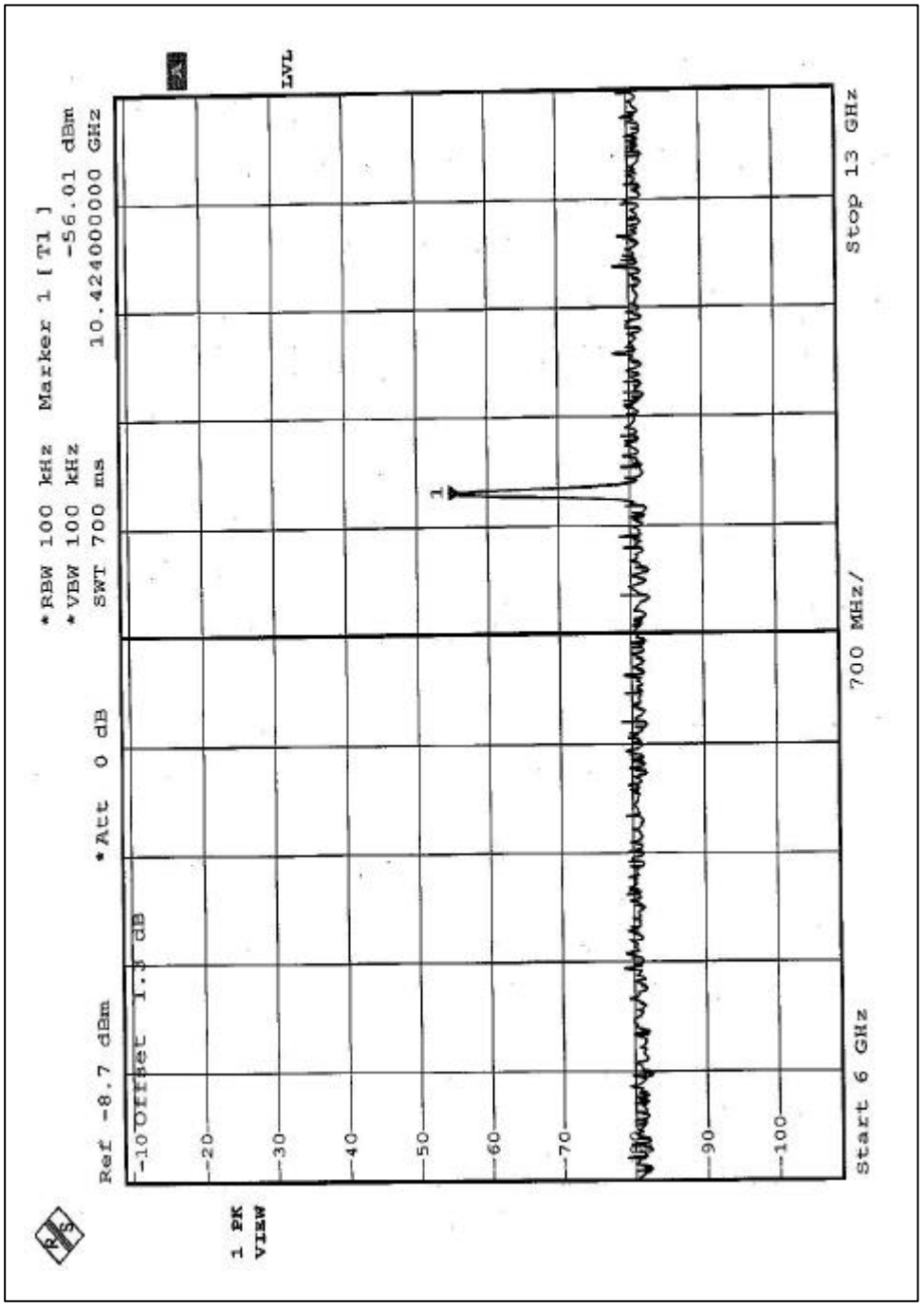

*RBW 100 kHz
*VBW 100 kHz
SWT 700 ms
Marker 1 [T1]
-69.34 dBm
10.648000000 GHz
Ref -8.7 dBm
Offset 1.3 dB
*Att 0 dB
1 PK
VIEW
Start 6 GHz
700 MHz/
Stop 13 GHz

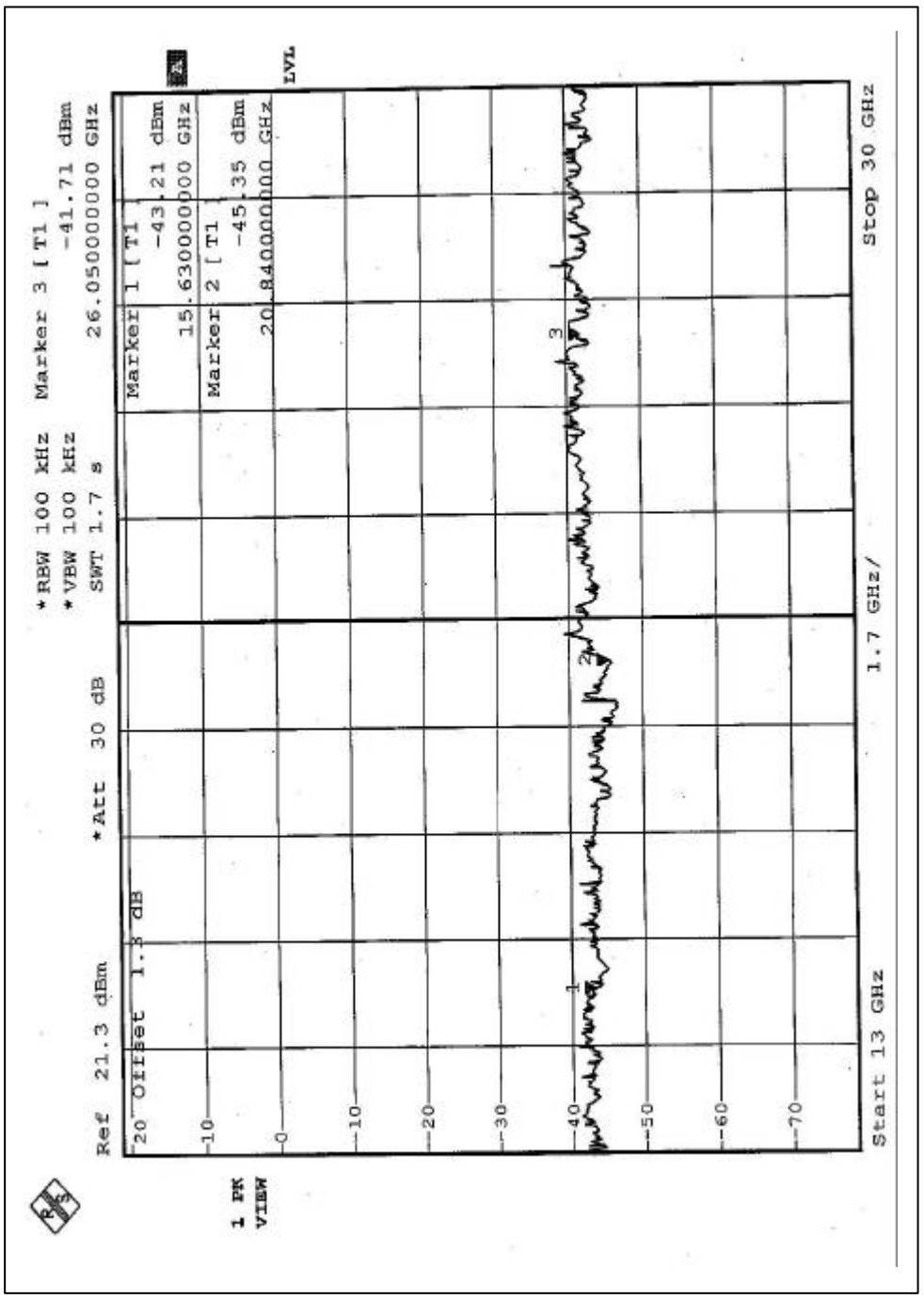

*RBW 100 kHz
*VBW 100 kHz
SWT 1.7 s
Marker 3 [T1]
-43.58 dBm
26.600000000 GHz
Ref 21.3 dBm
Offset 1.3 dB
*Att 30 dB
Marker 1 [T1]
-43.73 dBm
15.960000000 GHz
Marker 2 [T1]
-41.04 dBm
21.280000000 GHz
1 PK
VIEW
LVL
Start 13 GHz
1.7 GHz/
Stop 30 GHz

TEST RESULTS – For 802.11a, Turbo mode

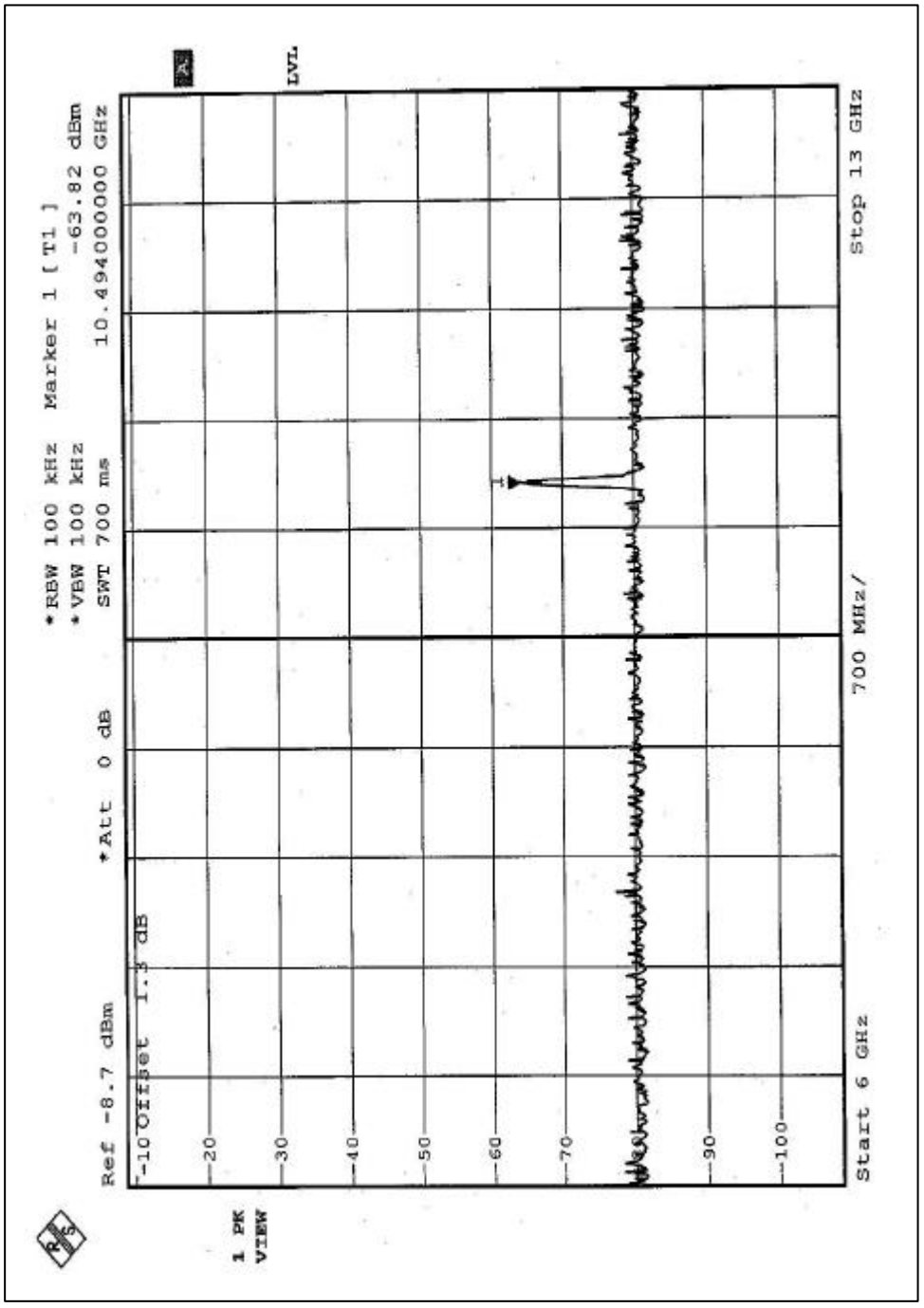
The spectrum plots are attached on the following 6 pages. It shows compliance with the requirement in part 15.407 (E),.15.205 and 15.209.

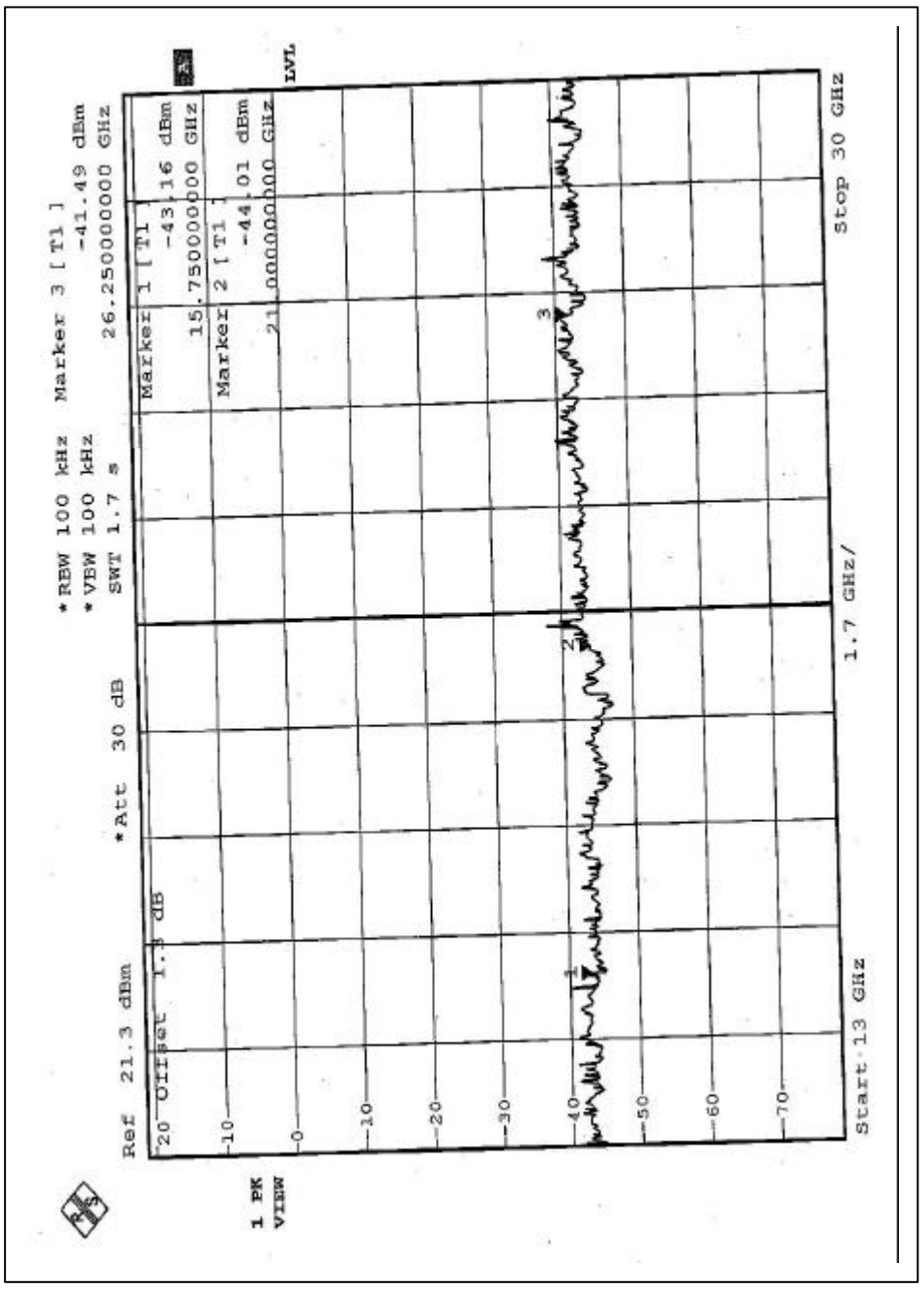
Ch1


Ref -8.7 dBm
Offset 1.3 dB
Att 0 dB
RBW 100 kHz
VBW 100 kHz
SWT 700 ms
Marker 1 [T1]
-56.01 dBm
10.424000000 GHz
1 PK
VIEW
LVL
Start 6 GHz
700 MHz/
Stop 13 GHz

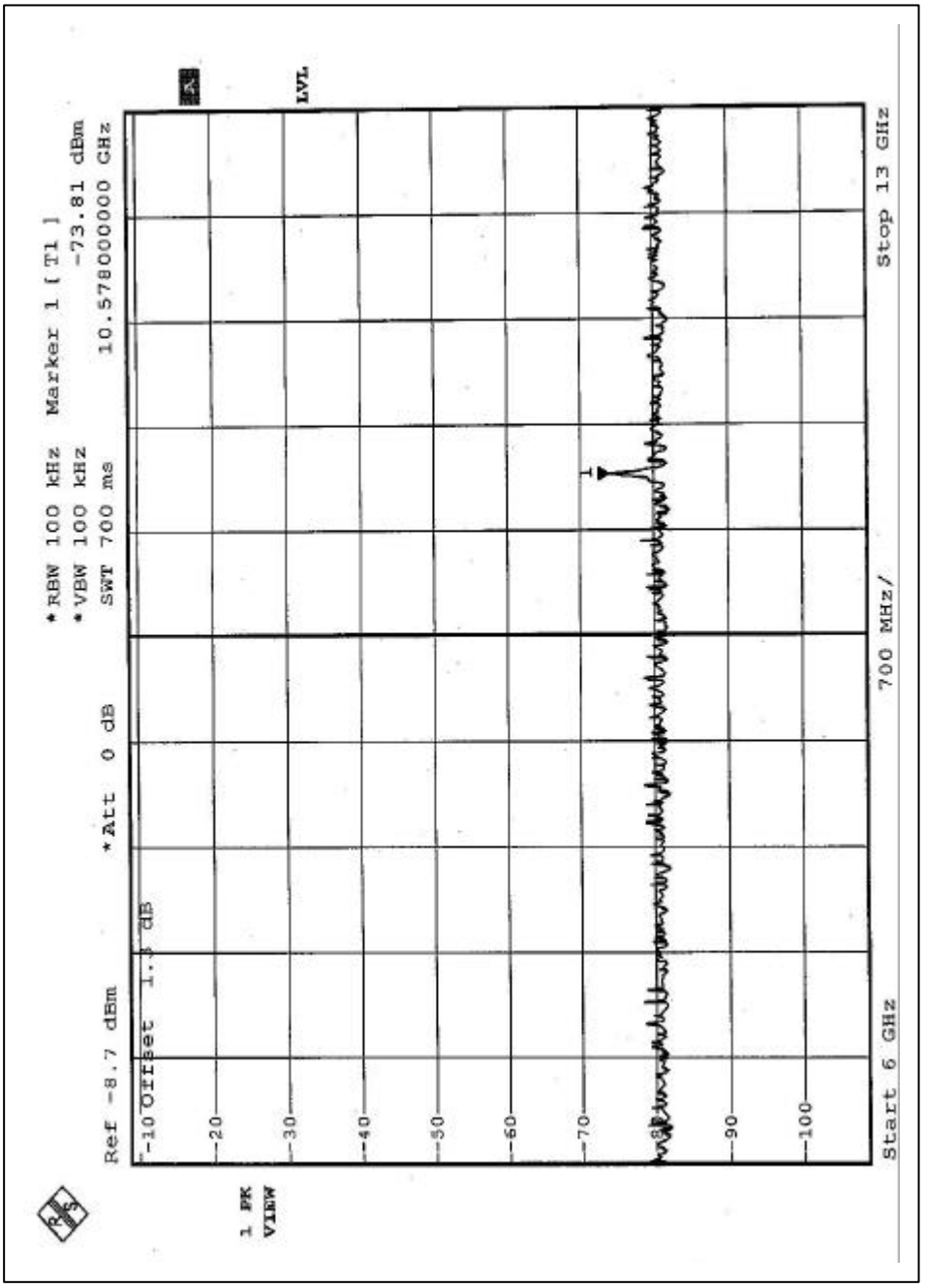

*RBW 100 kHz
*VBW 100 kHz
SWT 1.7 s
Marker 3 [T1]
-41.71 dBm
26.050000000 GHz
Ref 21.3 dBm
Offset 1.3 dB
*Att 30 dB
Marker 1 [T1
-43.21 dBm
15.630000000 GHz
Marker 2 [T1
-45.35 dBm
20.840000000 GHz
1 PK
VIEW
Start 13 GHz
1.7 GHz/
Stop 30 GHz

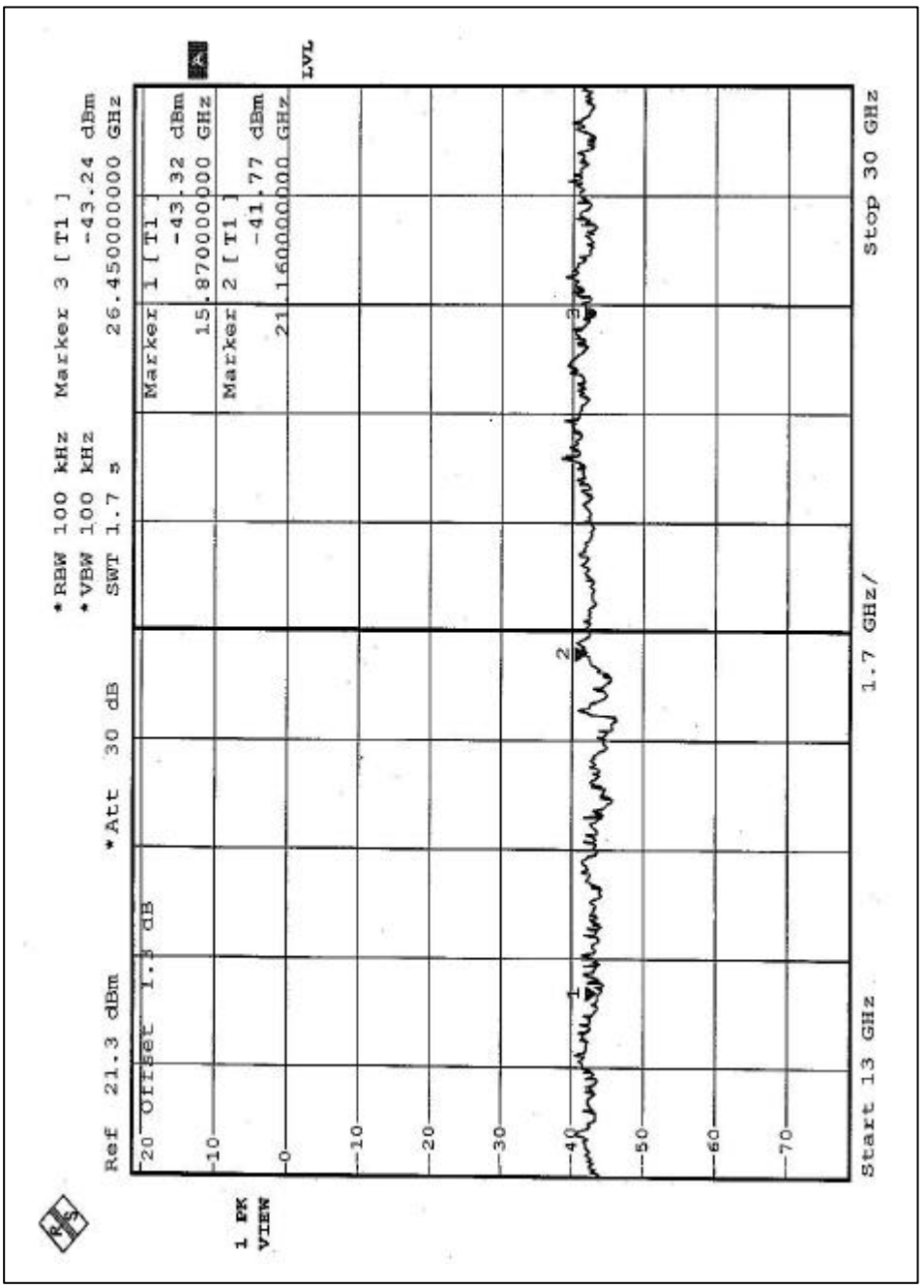
Ch2


Ref -8.7 dBm
*Att 0 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 700 ms
Marker 1 [T1]
-63.82 dBm
10.494000000 GHz
Offset 1.3 dB
1 PK
VIEW
LVL
Start 6 GHz
700 MHz/
Stop 13 GHz


*RBW 100 kHz
*VBW 100 kHz
SWT 1.7 s
Marker 3 [T1]
-41.49 dBm
26.250000000 GHz
Ref 21.3 dBm
Offset 1.3 dB
*Att 30 dB
1 PK
VIEW
Marker 1 [T1]
-43.16 dBm
15.750000000 GHz
Marker 2 [T1]
-44.01 dBm
21.000000000 GHz
Start 13 GHz
1.7 GHz/
Stop 30 GHz

Ch3


Ref -8.7 dBm
*Att 0 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 700 ms
Marker 1 [T1]
-73.81 dBm
10.578000000 GHz
Offset 1.1 dB
1 PK
VIEW
LVL
Start 6 GHz
700 MHz/
Stop 13 GHz

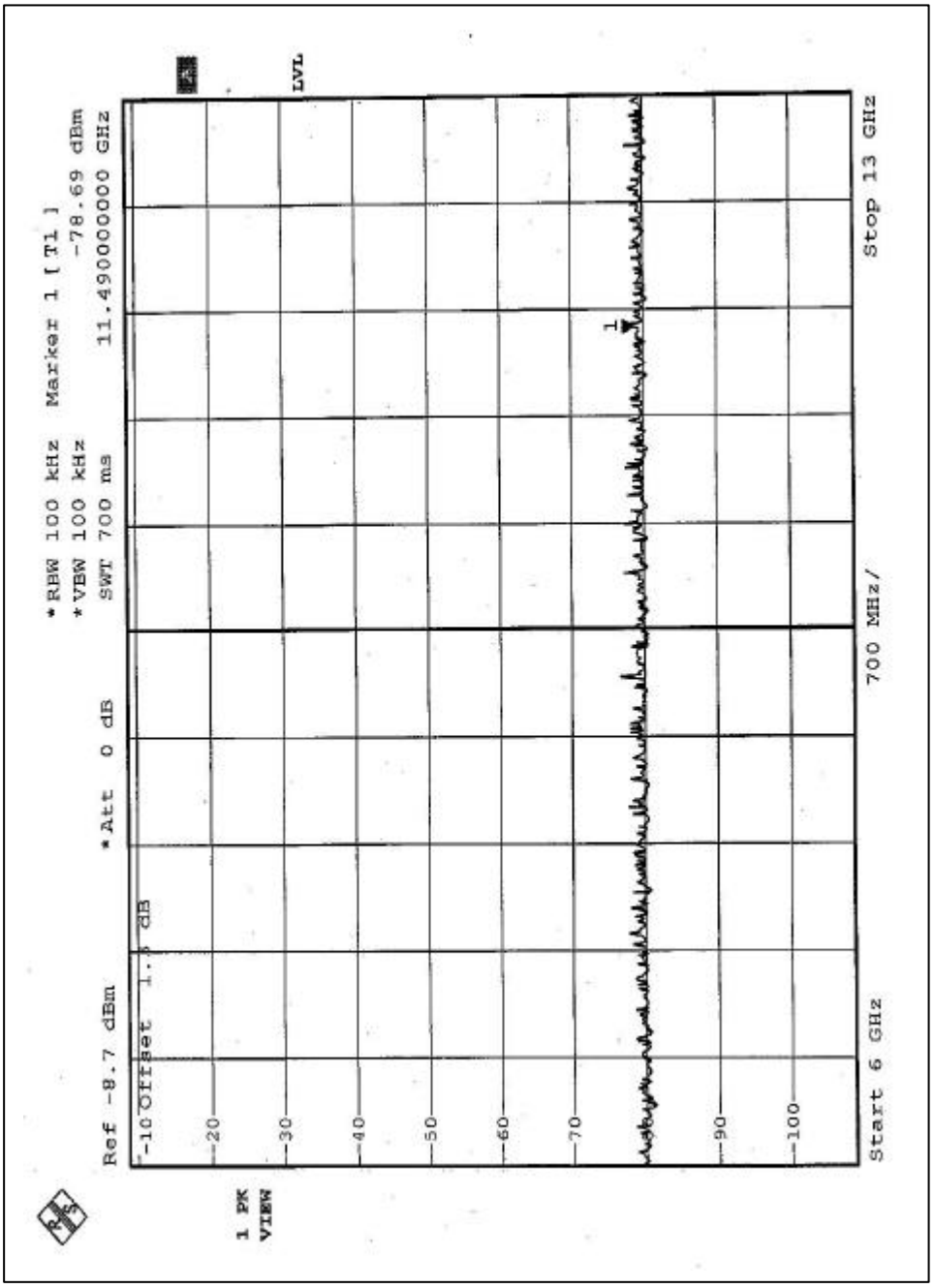

*RBW 100 kHz
*VBW 100 kHz
SWT 1.7 s
Marker 3 [T1]
-43.24 dBm
26.450000000 GHz
Ref 21.3 dBm
Offset 1.3 dB
*Att 30 dB
Marker 1 [T1]
-43.32 dBm
15.870000000 GHz
Marker 2 [T1]
-41.77 dBm
21.160000000 GHz
1 PK
VIEW
Start 13 GHz
1.7 GHz/
Stop 30 GHz

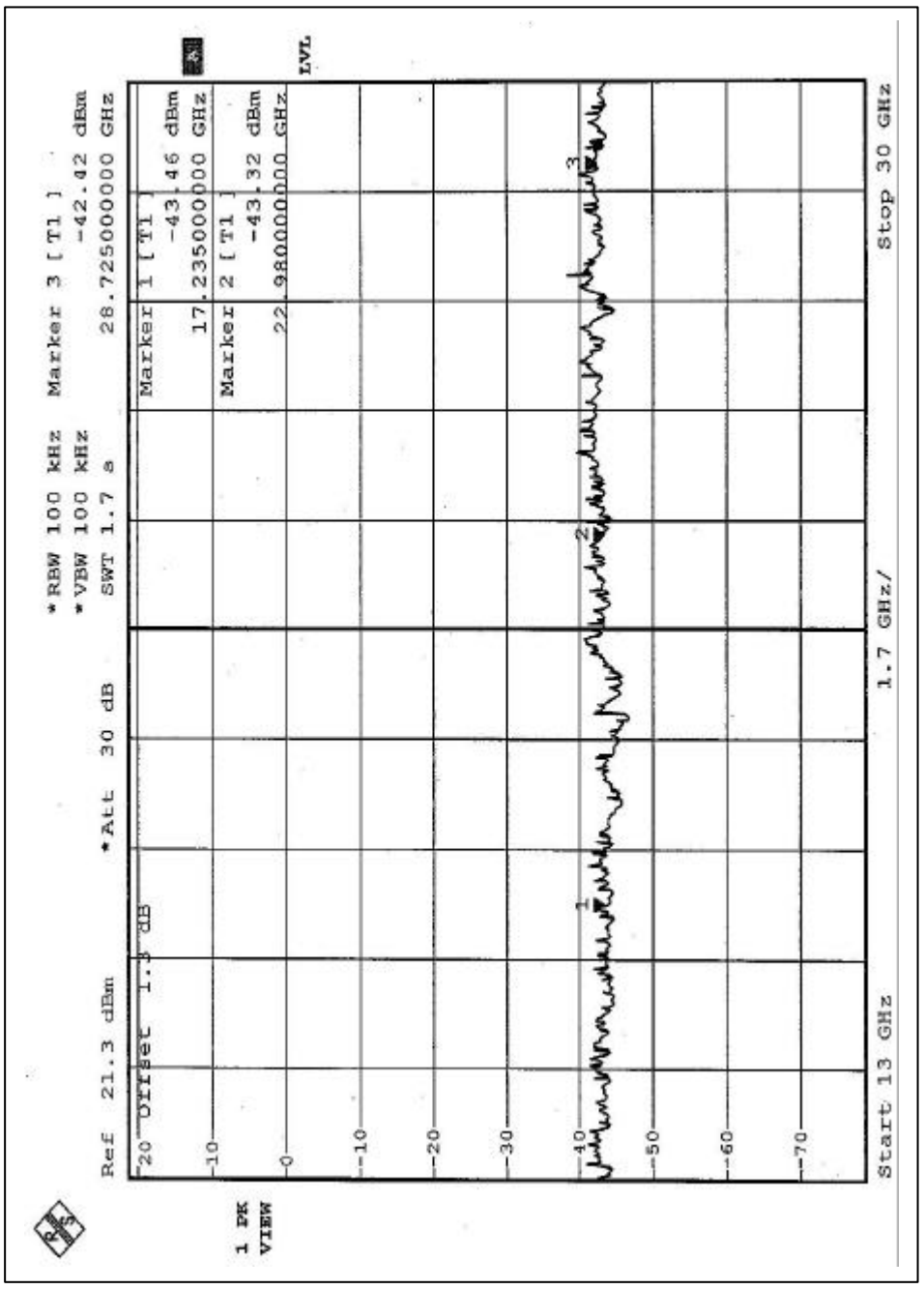
FOR FREQUENCY 5.725~5.850GHz

TEST RESULTS – For 802.11a, Normal mode

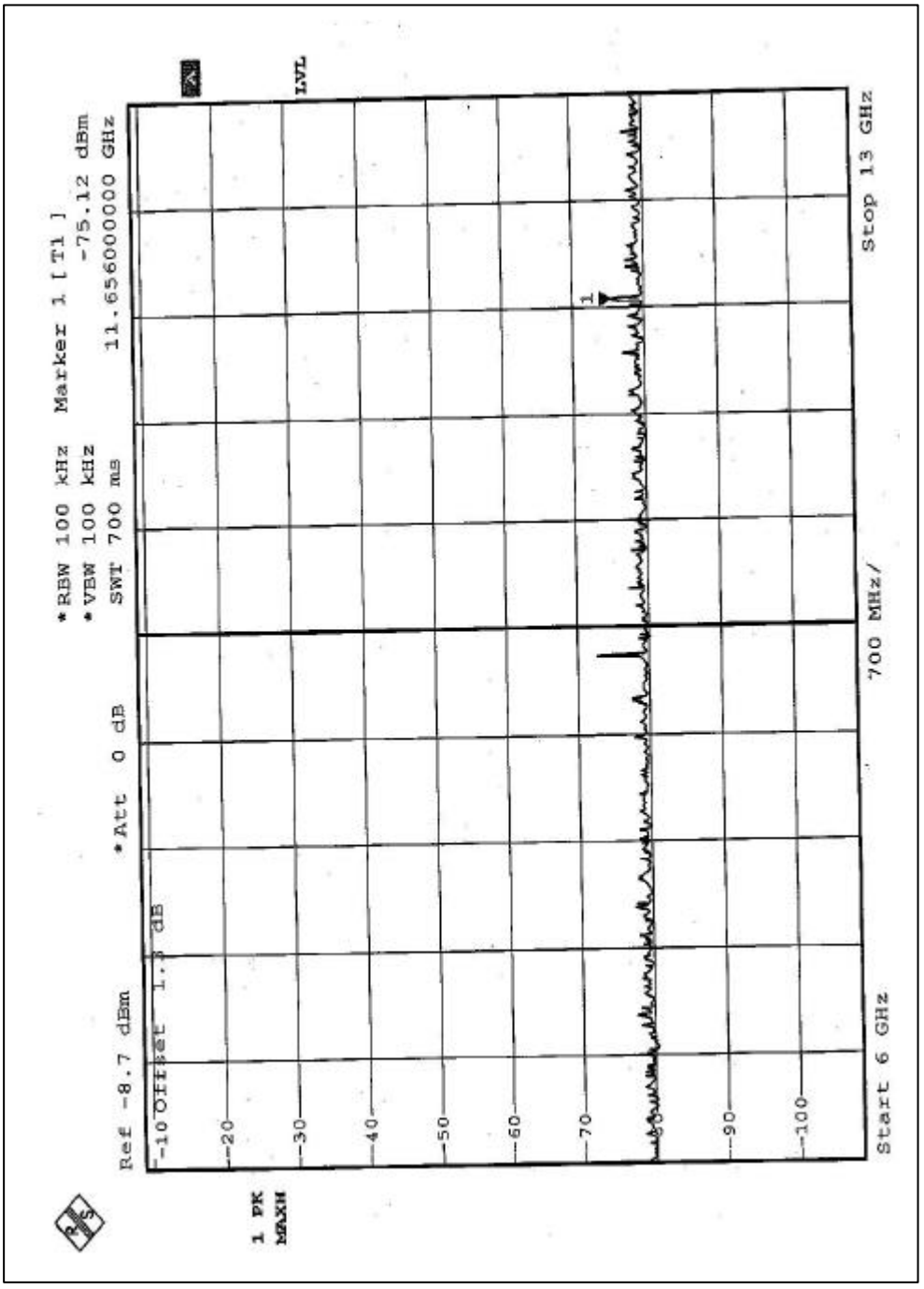
The spectrum plots are attached on the following 4 pages. It shows compliance with the requirement in part 15.247(C),15.205 and 15.209.

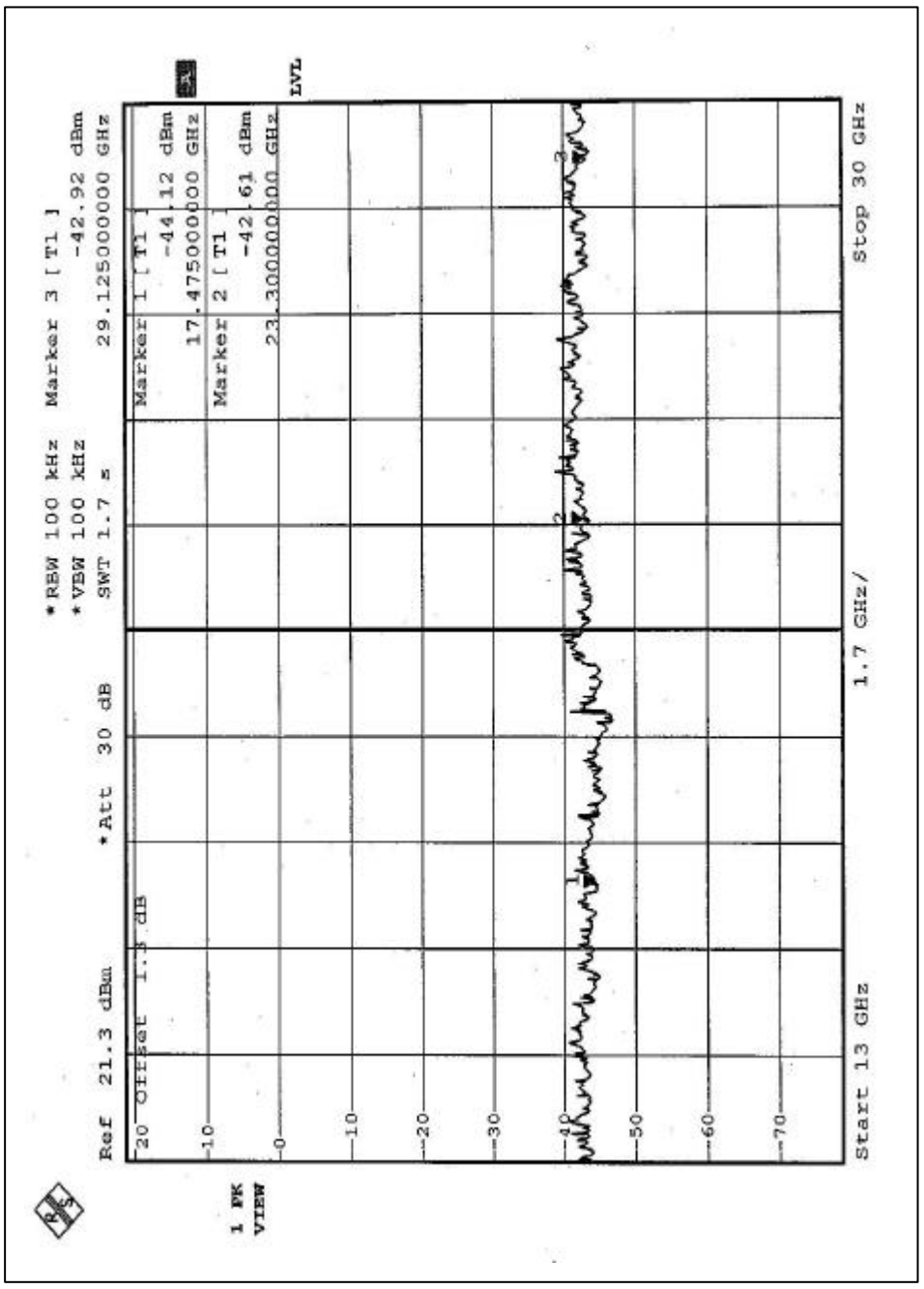
Ch9


Ref -8.7 dBm
Att 0 dB
RBW 100 kHz
VBW 100 kHz
SWT 700 ms
Marker 1 [T1]
-78.69 dBm
11.490000000 GHz
Offset 1.5 dB
1 PK
VIEW
Start 6 GHz
700 MHz/
Stop 13 GHz


*RBW 100 kHz
*VBW 100 kHz
SWT 1.7 s
Marker 3 [T1]
-42.42 dBm
28.725000000 GHz
Ref 21.3 dBm
Offset 1.3 dB
*Att 30 dB
Marker 1 [T1]
-43.46 dBm
17.235000000 GHz
Marker 2 [T1]
-43.32 dBm
22.980000000 GHz
1 PK
VIEW
Start 13 GHz
1.7 GHz/
Stop 30 GHz

Ch13

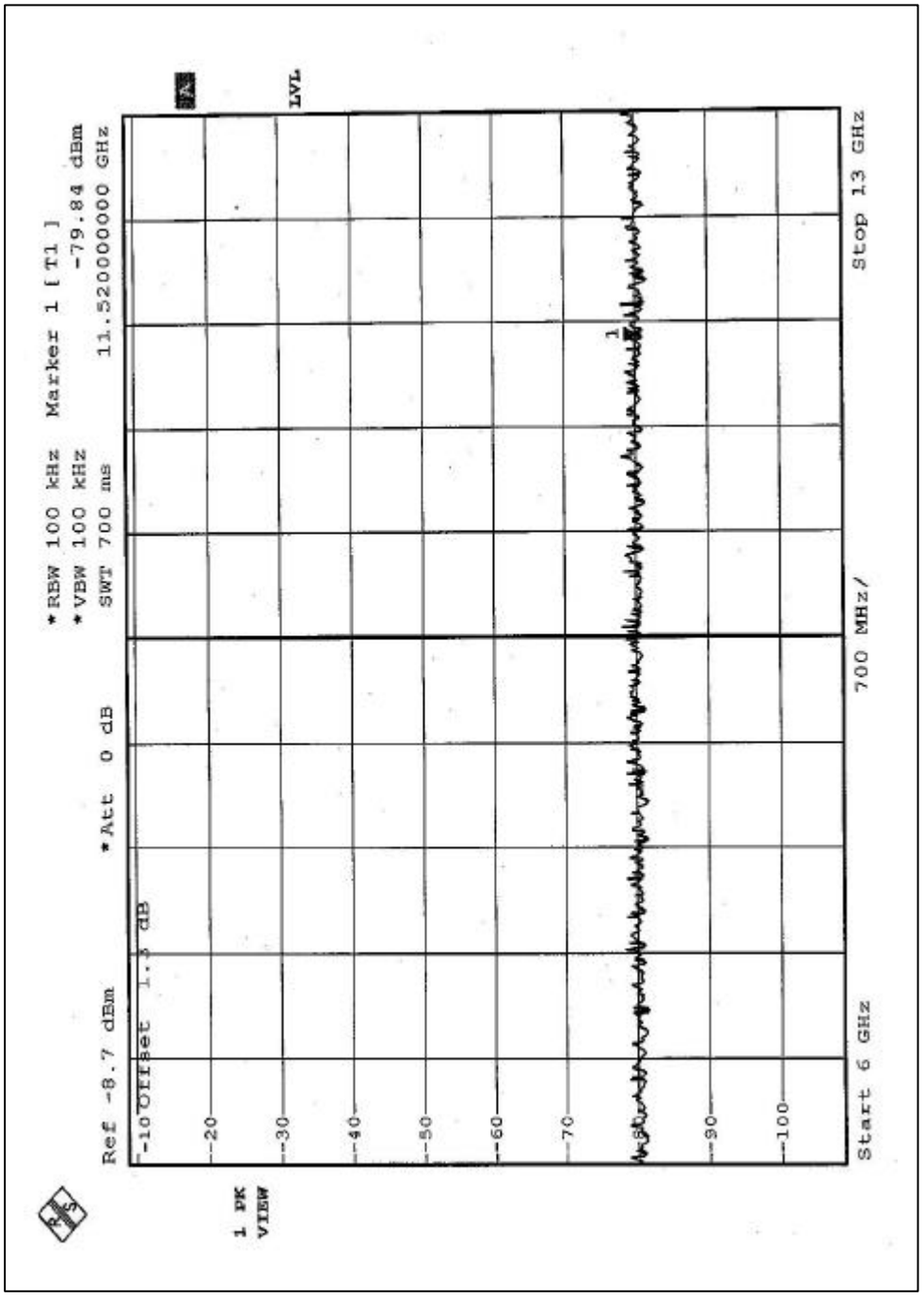

Ref -8.7 dBm
Offset 1.3 dB
*Att 0 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 700 ms
Marker 1 [T1]
-75.12 dBm
11.656000000 GHz
1 PK
MAXH
Start 6 GHz
700 MHz/
Stop 13 GHz

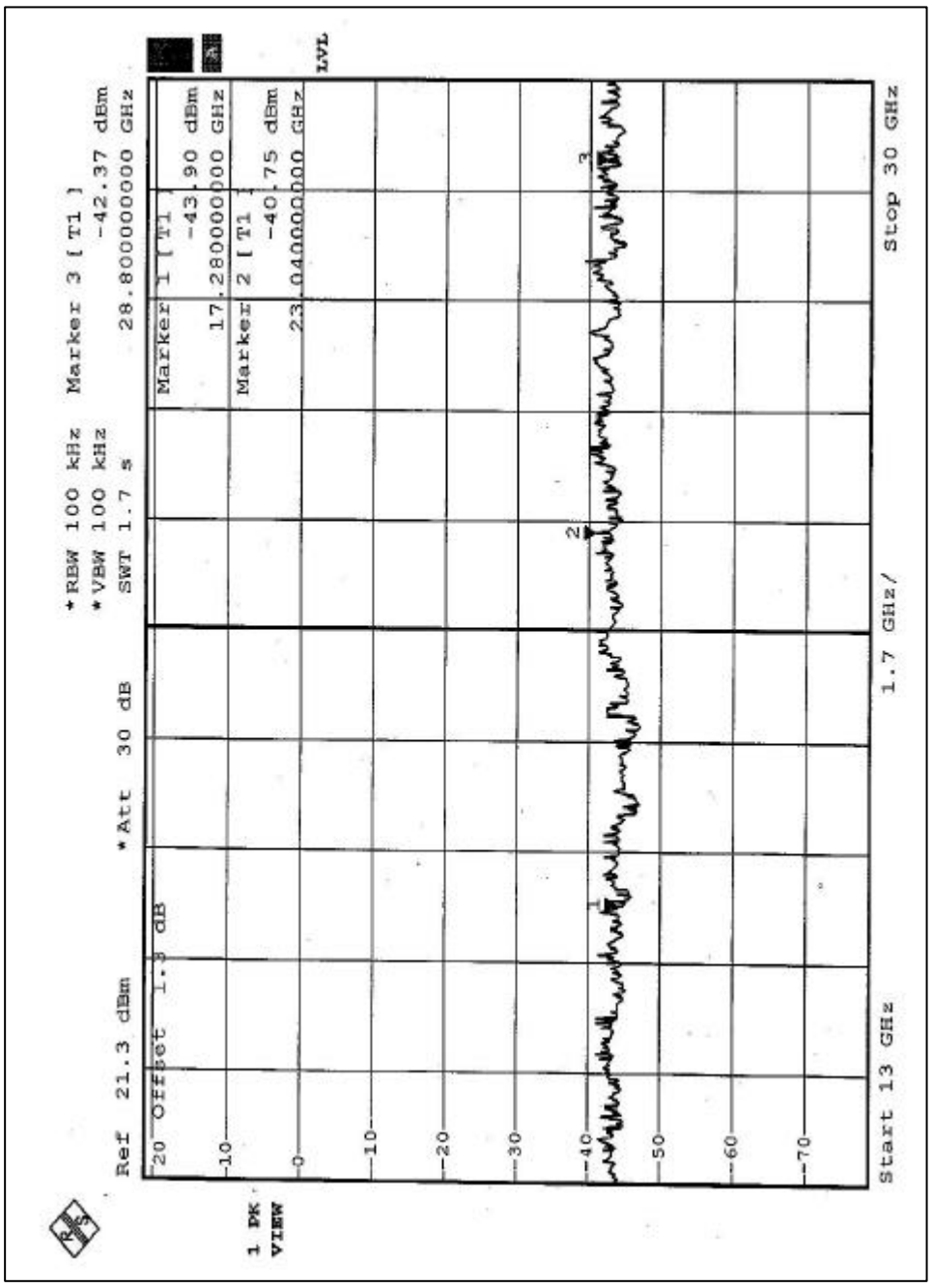

*RBW 100 kHz
*VBW 100 kHz
SWT 1.7 s
Marker 3 [T1]
-42.92 dBm
29.125000000 GHz
Ref 21.3 dBm
Offset 1.5 dB
*Att 30 dB
Marker 1 [T1]
-44.12 dBm
17.475000000 GHz
Marker 2 [T1]
-42.61 dBm
23.300000000 GHz
1 PK
VIEW
LVL
Start 13 GHz
1.7 GHz/
Stop 30 GHz

TEST RESULTS – For 802.11a, Turbo mode

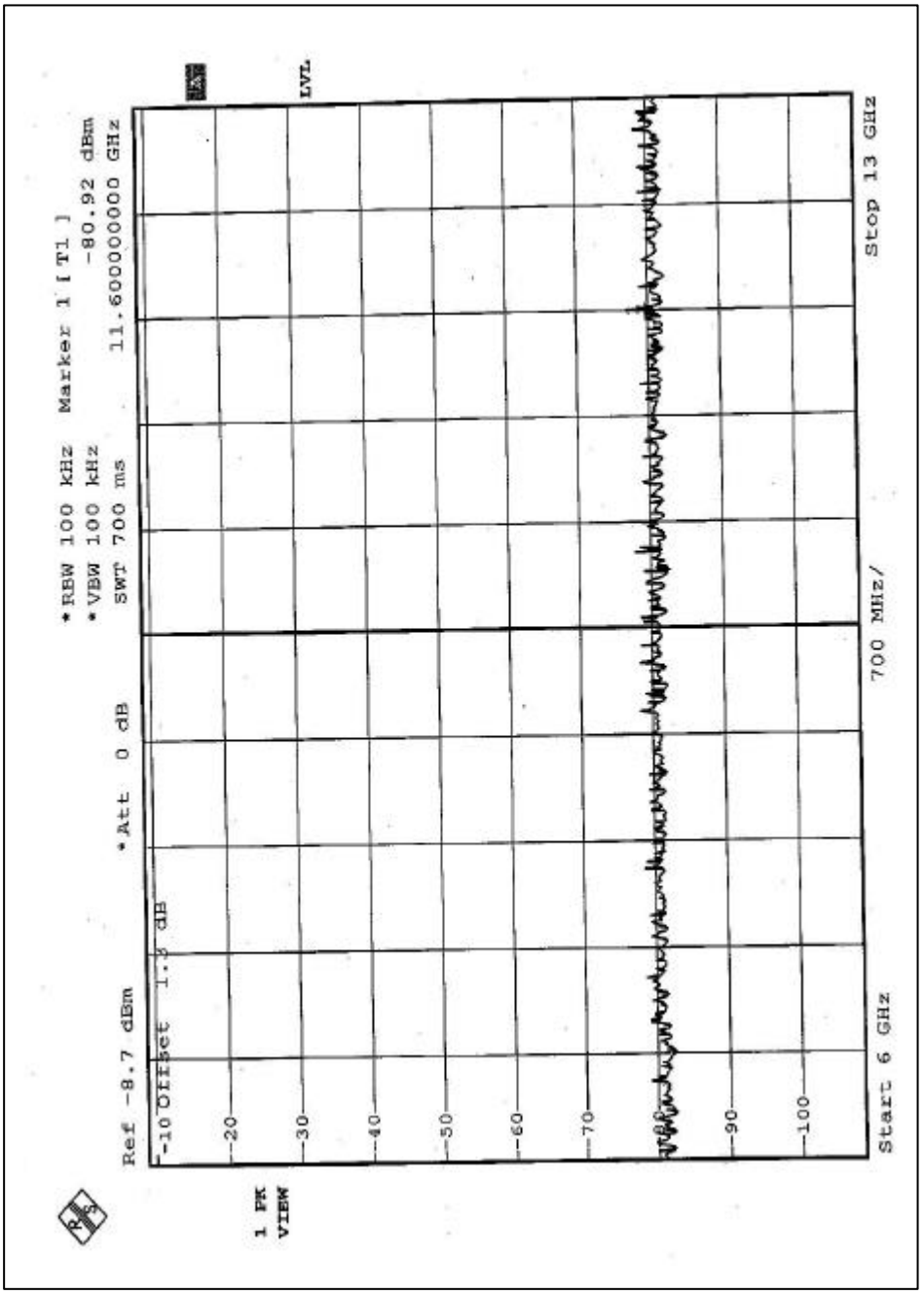
The spectrum plots are attached on the following 4 pages. It shows compliance with the requirement in part 15.247(C),.15.205 and 15.209.

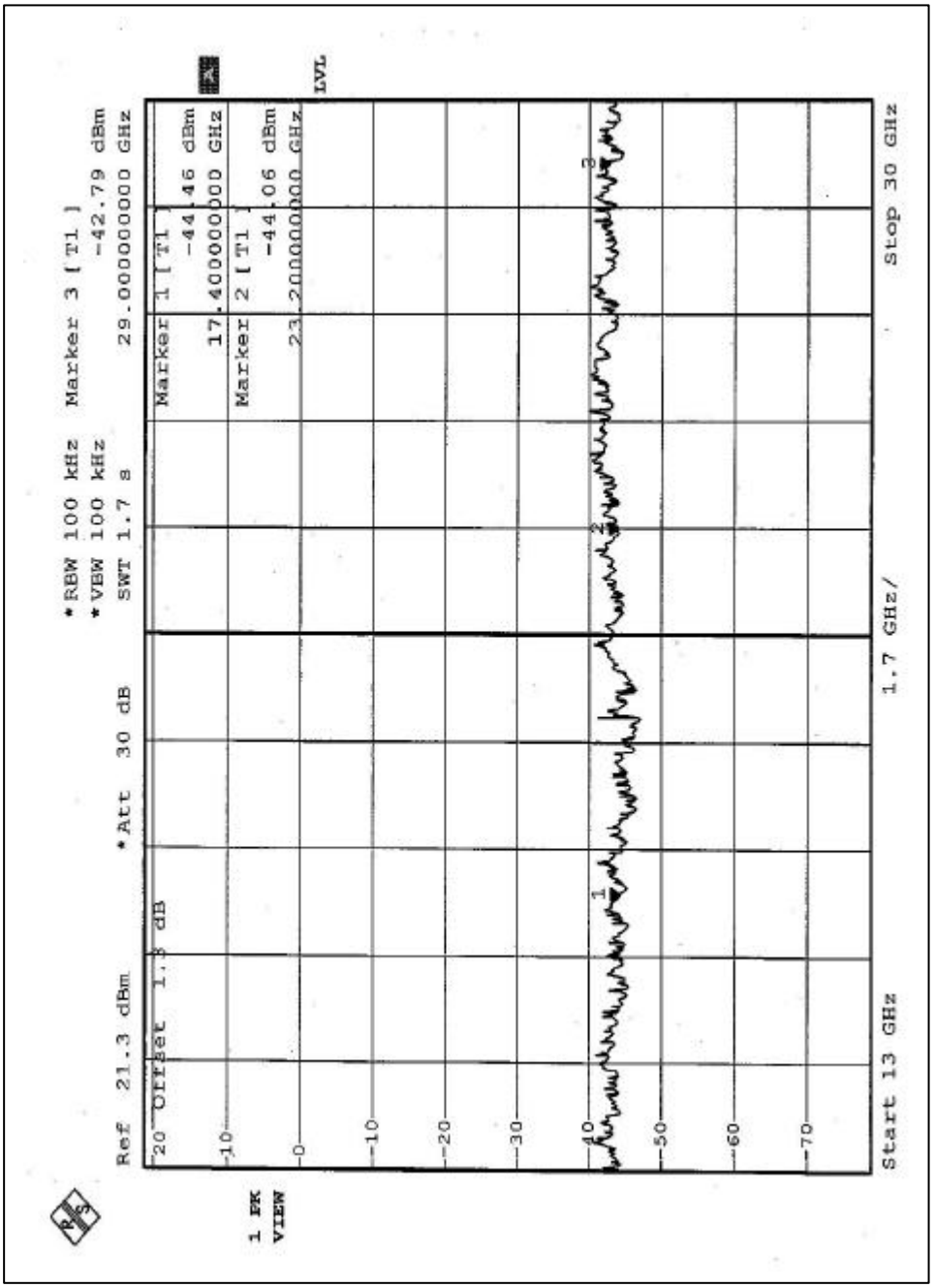
Ch4


Ref -8.7 dBm
*Att 0 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 700 ms
Marker 1 [T1]
-79.84 dBm
11.520000000 GHz
Offset 1.5 dB
1 PK
VIEW
Start 6 GHz
700 MHz/
Stop 13 GHz


*RBW 100 kHz
*VBW 100 kHz
SWT 1.7 s
Marker 3 [T1]
-42.37 dBm
28.800000000 GHz
Ref 21.3 dBm
Offset 1.3 dB
*Att 30 dB
Marker 1 [T1]
-43.90 dBm
17.280000000 GHz
Marker 2 [T1]
-40.75 dBm
23.040000000 GHz
1 PK
VIEW
Start 13 GHz
1.7 GHz/
Stop 30 GHz

Ch5


RBW 100 kHz
VBW 100 kHz
SWT 700 ms
Marker 1 [T1]
-80.92 dBm
11.600000000 GHz
Att 0 dB
Offset 1.3 dB
Ref -8.7 dBm
1 PK
VIEW
Start 6 GHz
700 MHz/
Stop 13 GHz


*RBW 100 kHz
*VBW 100 kHz
SWT 1.7 s
Marker 3 [T1]
-42.79 dBm
29.000000000 GHz
Ref 21.3 dBm
Offset 1.3 dB
*Att 30 dB
Marker 1 [T1]
-44.46 dBm
17.400000000 GHz
Marker 2 [T1]
-44.06 dBm
23.200000000 GHz
1 PK
VIEW
LVL
Start 13 GHz
1.7 GHz/
Stop 30 GHz