# Conducted emission

During Preliminary Tests, the following operating mode were investigated

| Channel / Frequency | Mode State | The worst operating condition |
|---|---|---|
| 1 (2405MHz) | Transmitting | □ |
| 8 (2440MHz) | Transmitting | ■ |
| 15 (2475MHz) | Transmitting | □ |

| Line | Frequency (MHz) | QP Level (dBuV) | Limit (dBuV) | Margin (dB) | Frequency (MHz) | AV Level (dBuV) | Limit (dBuV) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| HOT | 0.157 | 38.0 | 65.6 | 27.6 | 0.315 | 20.0 | 49.8 | 29.8 |
| | 0.185 | 33.9 | 64.3 | 30.4 | 0.421 | 22.1 | 47.4 | 25.3 |
| | 0.422 | 25.1 | 57.4 | 32.3 | 0.447 | 19.4 | 47.0 | 27.6 |
| | 0.525 | 20.5 | 56.0 | 35.5 | 0.550 | 17.1 | 46.0 | 28.9 |
| | 1.300 | 19.5 | 56.0 | 36.5 | 1.730 | 15.6 | 46.0 | 30.4 |
| | 4.255 | 20.3 | 56.0 | 35.7 | 4.995 | 16.5 | 46.0 | 29.5 |
| | 5.000 | 20.5 | 56.0 | 35.5 | 16.000 | 22.4 | 50.0 | 27.6 |
| | 18.375 | 22.9 | 60.0 | 37.1 | 18.495 | 19.8 | 50.0 | 30.2 |
| | 25.375 | 23.6 | 60.0 | 36.4 | 24.005 | 21.6 | 50.0 | 28.4 |
| NEUTRAL | 0.155 | 37.8 | 65.7 | 27.9 | 0.155 | 23.2 | 55.7 | 32.5 |
| | 0.180 | 34.4 | 64.5 | 30.1 | 0.310 | 18.6 | 50.0 | 31.4 |
| | 0.310 | 25.7 | 60.0 | 34.3 | 0.412 | 19.3 | 47.6 | 28.3 |
| | 0.685 | 18.8 | 56.0 | 37.2 | 0.540 | 16.5 | 46.0 | 29.5 |
| | 1.630 | 19.0 | 56.0 | 37.0 | 1.575 | 15.3 | 46.0 | 30.7 |
| | 2.435 | 19.3 | 56.0 | 36.7 | 4.780 | 16.2 | 46.0 | 29.8 |
| | 9.630 | 22.5 | 60.0 | 37.5 | 16.000 | 22.0 | 50.0 | 28.0 |
| | 16.000 | 25.4 | 60.0 | 34.6 | 18.615 | 21.4 | 50.0 | 28.6 |
| | 18.680 | 25.8 | 60.0 | 34.2 | 24.005 | 21.3 | 50.0 | 28.7 |

* Line Conducted Emissions Tabulated Data

*HCT*

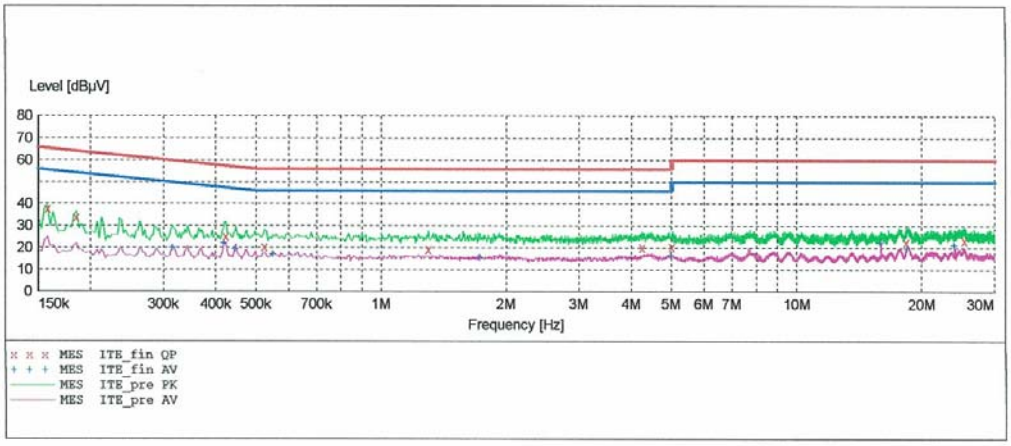
*EMC TEST LAB*

EUT: SCU-Z101
Manufacturer: NURI Telecom Co., Ltd.
Operating Condition: CALL MODE (2440 MHz)
Test Site: SHIELD ROOM
Operator: JH, PARK
Test Specification: CISPR 22 CLASS B
Comment: H

*SCAN TABLE: "CISPR 22 Voltage"*

Short Description: CISPR 22 Voltage

| Start Frequency | Stop Frequency | Step Width | Detector | Meas. Time | IF Bandw. | Transducer |
|---|---|---|---|---|---|---|
| 150.1 kHz | 500.0 kHz | 2.5 kHz | MaxPeak<br>Average | 10.0 ms | 9 kHz | None |
| 500.0 kHz | 5.0 MHz | 5.0 kHz | MaxPeak<br>Average | 10.0 ms | 9 kHz | None |
| 5.0 MHz | 30.0 MHz | 5.0 kHz | MaxPeak<br>Average | 10.0 ms | 9 kHz | None |




*MEASUREMENT RESULT: "ITE_fin QP"*

7/10/2005 6:26PM

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Line | PE |
|---|---|---|---|---|---|---|
| 0.157600 | 38.00 | 10.1 | 66 | 27.6 | --- | --- |
| 0.185100 | 33.90 | 10.1 | 64 | 30.4 | --- | --- |
| 0.422600 | 25.10 | 10.1 | 57 | 32.3 | --- | --- |
| 0.525000 | 20.50 | 10.1 | 56 | 35.5 | --- | --- |
| 1.300000 | 19.50 | 10.2 | 56 | 36.5 | --- | --- |
| 4.255000 | 20.30 | 10.3 | 56 | 35.7 | --- | --- |
| 5.000000 | 20.50 | 10.3 | 56 | 35.5 | --- | --- |
| 18.375000 | 22.90 | 10.5 | 60 | 37.1 | --- | --- |
| 25.375000 | 23.60 | 10.6 | 60 | 36.4 | --- | --- |

***MEASUREMENT RESULT: "ITE_fin AV"***

7/10/2005 6:26PM

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Line | PE |
|---|---|---|---|---|---|---|
| 0.315100 | 20.00 | 10.1 | 50 | 29.8 | --- | --- |
| 0.420100 | 22.10 | 10.1 | 47 | 25.3 | --- | --- |
| 0.447600 | 19.40 | 10.1 | 47 | 27.6 | --- | --- |
| 0.550000 | 17.10 | 10.1 | 46 | 28.9 | --- | --- |
| 1.730000 | 15.60 | 10.2 | 46 | 30.4 | --- | --- |
| 4.995000 | 16.50 | 10.3 | 46 | 29.5 | --- | --- |
| 16.000000 | 22.40 | 10.5 | 50 | 27.6 | --- | --- |
| 18.495000 | 19.80 | 10.5 | 50 | 30.2 | --- | --- |
| 24.005000 | 21.60 | 10.6 | 50 | 28.4 | --- | --- |

Page 2/2 7/10/2005 6:26PM HCT EMC LAB

*HCT*

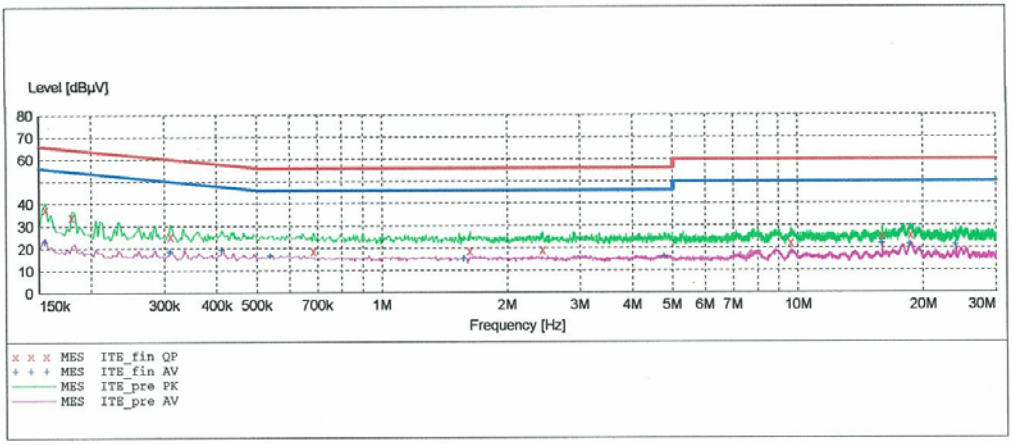
*EMC TEST LAB*

EUT: SCU-Z101
Manufacturer: NURI Telecom Co., Ltd.
Operating Condition: CALL MODE (2440 MHz)
Test Site: SHIELD ROOM
Operator: JH, PARK
Test Specification: CISPR 22 CLASS B
Comment: N

*SCAN TABLE: "CISPR 22 Voltage"*

Short Description: CISPR 22 Voltage

| Start Frequency | Stop Frequency | Step Width | Detector | Meas. Time | IF Bandw. | Transducer |
|---|---|---|---|---|---|---|
| 150.1 kHz | 500.0 kHz | 2.5 kHz | MaxPeak<br>Average | 10.0 ms | 9 kHz | None |
| 500.0 kHz | 5.0 MHz | 5.0 kHz | MaxPeak<br>Average | 10.0 ms | 9 kHz | None |
| 5.0 MHz | 30.0 MHz | 5.0 kHz | MaxPeak<br>Average | 10.0 ms | 9 kHz | None |




*MEASUREMENT RESULT: "ITE_fin QP"*

7/10/2005 6:29PM

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Line | PE |
|---|---|---|---|---|---|---|
| 0.155100 | 37.80 | 10.1 | 66 | 27.9 | --- | --- |
| 0.180100 | 34.40 | 10.1 | 65 | 30.1 | --- | --- |
| 0.310100 | 25.70 | 10.1 | 60 | 34.3 | --- | --- |
| 0.685000 | 18.80 | 10.2 | 56 | 37.2 | --- | --- |
| 1.630000 | 19.00 | 10.2 | 56 | 37.0 | --- | --- |
| 2.435000 | 19.30 | 10.3 | 56 | 36.7 | --- | --- |
| 9.630000 | 22.50 | 10.4 | 60 | 37.5 | --- | --- |
| 16.000000 | 25.40 | 10.5 | 60 | 34.6 | --- | --- |
| 18.680000 | 25.80 | 10.5 | 60 | 34.2 | --- | --- |

***MEASUREMENT RESULT: "ITE_fin AV"***

7/10/2005 6:29PM

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Line | PE |
|---|---|---|---|---|---|---|
| 0.155100 | 23.20 | 10.1 | 56 | 32.5 | --- | --- |
| 0.310100 | 18.60 | 10.1 | 50 | 31.4 | --- | --- |
| 0.412600 | 19.30 | 10.1 | 48 | 28.3 | --- | --- |
| 0.540000 | 16.50 | 10.1 | 46 | 29.5 | --- | --- |
| 1.575000 | 15.30 | 10.2 | 46 | 30.7 | --- | --- |
| 4.780000 | 16.20 | 10.3 | 46 | 29.8 | --- | --- |
| 16.000000 | 22.00 | 10.5 | 50 | 28.0 | --- | --- |
| 18.615000 | 21.40 | 10.5 | 50 | 28.6 | --- | --- |
| 24.005000 | 21.30 | 10.6 | 50 | 28.7 | --- | --- |

Page 2/2 7/10/2005 6:29PM HCT EMC LAB

# Radiated emission (30MHz~25GHz)

During Preliminary Tests, the following operating mode were investigated

| Channel / Frequency | Mode State | The worst operation condition (X, Y, Z) |
|---|---|---|
| 1 (2405MHz) | Transmitting | X |
| 8 (2440MHz) | Transmitting | X |
| 15 (2475MHz) | Transmitting | X |

| Channel | Frequency MHz | ANT POL (H/V) | *Field Strength dBuV/m | Limit dBuV/m | Margin dB | Average dBuV/m | Limit dBuV/m | Margin dB |
|---|---|---|---|---|---|---|---|---|
| Ch 1 | 390.9 | V | 37.8 | 46.0 | 8.2 | 28.9 | 46.0 | 17.1 |
| | 216.0 | H | 32.6 | 43.5 | 10.9 | 23.4 | 43.5 | 20.1 |
| | 522.1 | V | 36.9 | 46.0 | 9.1 | 25.8 | 46.0 | 20.2 |
| | 698.4 | H | 36.9 | 46.0 | 9.1 | 26.4 | 46.0 | 19.6 |
| | 2553.38 | V | 55.5 | 74.0 | 18.5 | 48.0 | 54.0 | 6.0 |
| | 2553.38 | H | 47.4 | 74.0 | 26.6 | 35.6 | 54.0 | 18.4 |
| | 4809.29 | V | 58.4 | 74.0 | 15.6 | 48.6 | 54.0 | 5.4 |
| | 4809.29 | H | 52.2 | 74.0 | 21.8 | 38.8 | 54.0 | 15.2 |
| Ch 8 | 390.9 | V | 36.2 | 46.0 | 9.8 | 27.1 | 46.0 | 18.9 |
| | 216.0 | H | 39.4 | 43.5 | 4.1 | 28.9 | 43.5 | 14.6 |
| | 522.0 | V | 36.1 | 46.0 | 9.9 | 27.5 | 46.0 | 18.5 |
| | 239.9 | H | 37.2 | 46.0 | 8.8 | 27.4 | 46.0 | 18.6 |
| | 2587.52 | V | 47.4 | 74.0 | 26.6 | 35.4 | 54.0 | 18.6 |
| | 2587.52 | H | 45.7 | 74.0 | 28.3 | 32.5 | 54.0 | 21.5 |
| | 4879.25 | V | 54.6 | 74.0 | 19.4 | 43.1 | 54.0 | 10.9 |
| | 4879.25 | H | 52.3 | 74.0 | 21.7 | 38.7 | 54.0 | 15.3 |
| Ch 15 | 390.9 | V | 32.4 | 46.0 | 13.6 | 22.1 | 46.0 | 23.9 |
| | 216.0 | H | 38.9 | 43.5 | 4.6 | 27.8 | 43.5 | 15.7 |
| | 586.4 | V | 32.3 | 46.0 | 13.7 | 22.1 | 46.0 | 23.9 |
| | 698.5 | H | 36.8 | 46.0 | 9.2 | 27.7 | 46.0 | 18.3 |
| | 2627.29 | V | 53.3 | 74.0 | 20.7 | 45.9 | 54.0 | 8.1 |
| | 2627.29 | H | 46.5 | 74.0 | 27.5 | 34.1 | 54.0 | 19.9 |
| | 4950.49 | V | 54.8 | 74.0 | 19.2 | 42.1 | 54.0 | 11.9 |
| | 4950.49 | H | 54.2 | 74.0 | 19.8 | 40.3 | 54.0 | 13.7 |

* Field Strength is Quasi-Peak below 1GHz and Peak above 1GHz

# 6dB Bandwidth (Conducted)

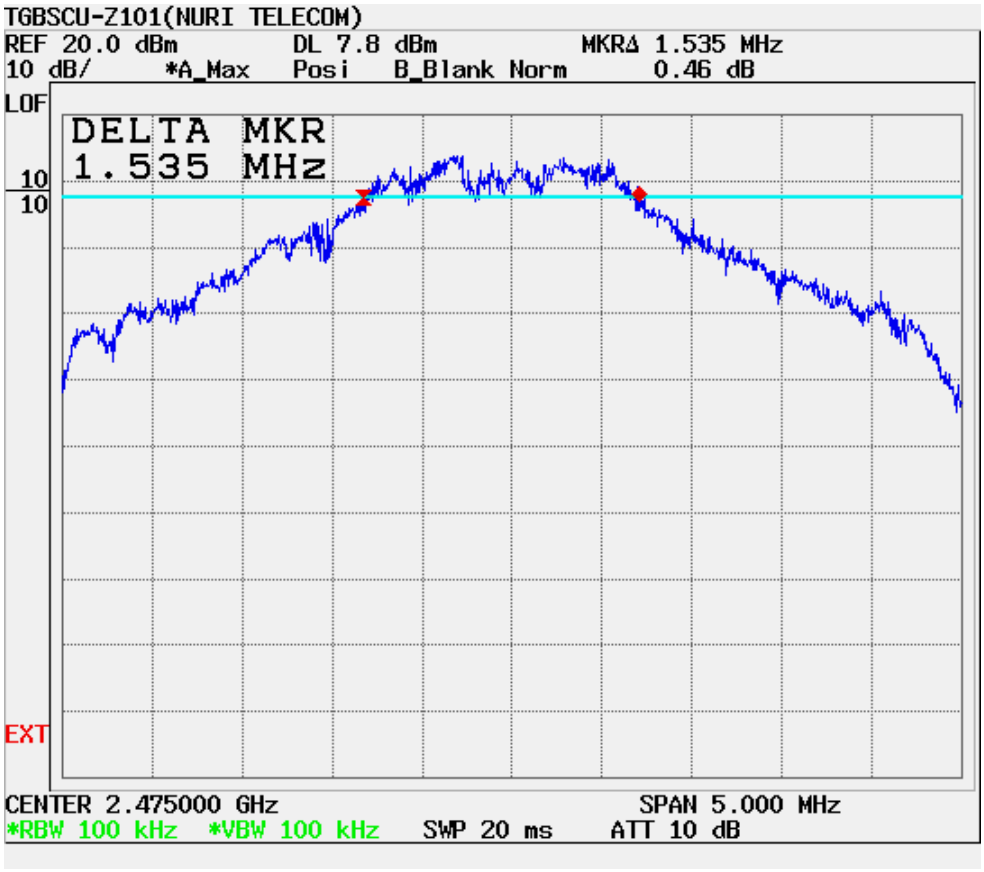
| Frequency (MHz) | 6dB Band width (MHz) | Limit (MHz) | Result |
|---|---|---|---|
| Ch1<br>2405 | 1.605 | >0.5 | Pass |
| Ch8<br>2440 | 1.595 | >0.5 | Pass |
| Ch15<br>2475 | 1.535 | >0.5 | Pass |

Please refer to graph as below:

(1) Ch. 1: 2405MHz


(2) Ch. 2: 2440MHz

(3) Ch. 3: 2475MHz



# Maximum peak output power (Conducted)

| CHANNEL | FREQ [MHz] | Peak | | Average | | Limit [dBm / W] |
|---|---|---|---|---|---|---|
| | | [dBm] | [mW] | [dBm] | [mW] | |
| 1 | 2405 | 16.25 | 42.2 | 15.93 | 39.2 | 30.0dBm/ 1W |
| 8 | 2440 | 16.01 | 39.9 | 15.71 | 37.2 | 30.0dBm/ 1W |
| 15 | 2475 | 17.44 | 55.5 | 17.19 | 52.3 | 30.0dBm/ 1W |

*Please refer to graph as below:

(1) CH1, Peak & Average

(2) CH8, Peak & Average

(3) CH15. Peak & Average

# Out of band emissions & Band Edge (Radiated)

1) Peak Detector (RBW=VBW=1MHz)

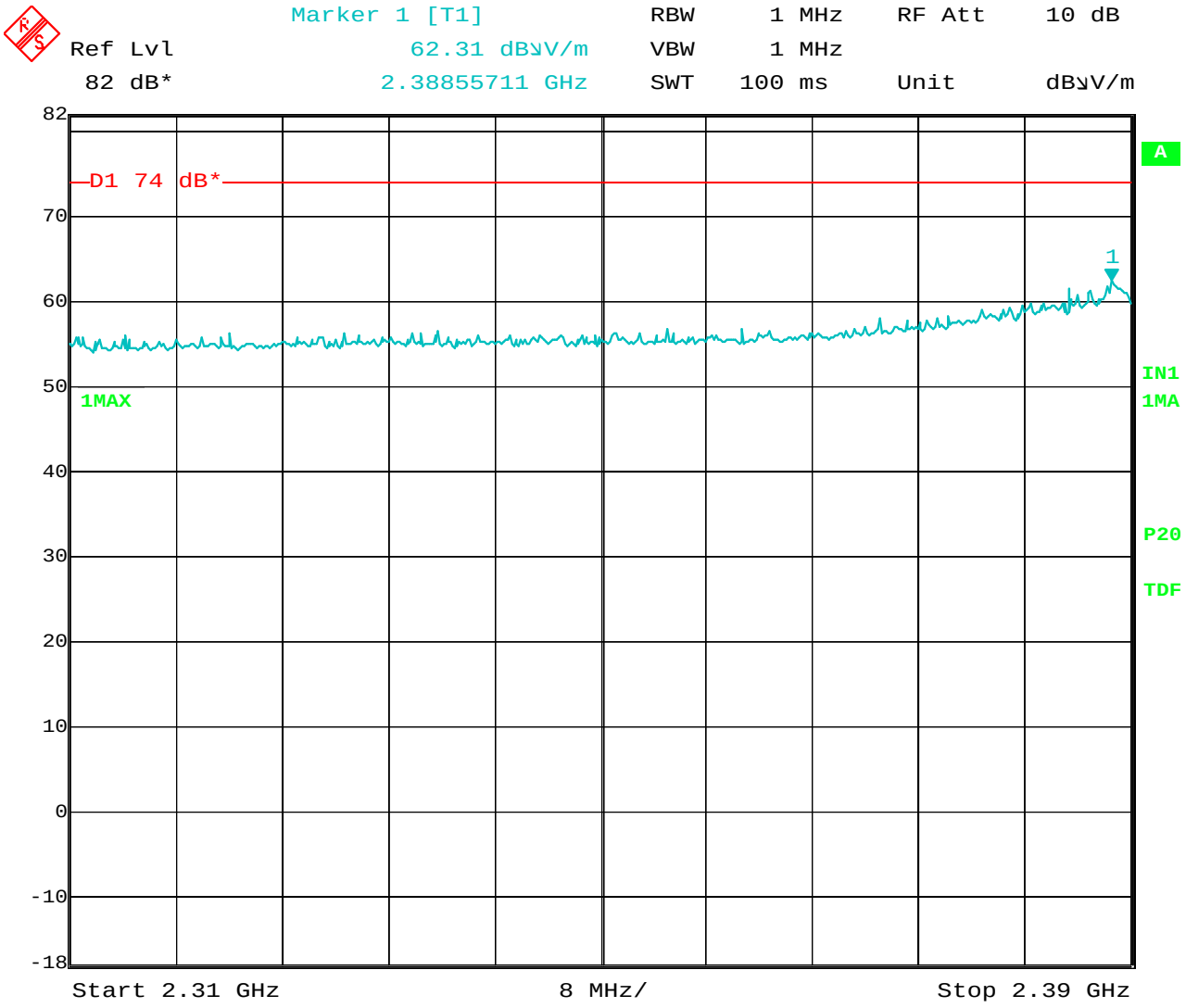
| CH. | FREQ [MHz] | Ant. Pol. (V / H) | RESULT [dBuV/m] | Limit [dBuV/m] | Margin [dB] |
|---|---|---|---|---|---|
| 1 | 2405 | V | 62.3 | 74.0 | 11.7 |
| | | H | 56.5 | 74.0 | 17.5 |
| 15 | 2475 | V | 67.3 | 74.0 | 6.7 |
| | | H | 57.4 | 74.0 | 16.6 |

2) Average Detector (RBW=1MHz, VBW=10Hz)

| CH. | FREQ [MHz] | Ant. Pol. (V / H) | RESULT [dBuV/m] | Limit [dBuV/m] | Margin [dB] |
|---|---|---|---|---|---|
| 1 | 2405 | V | 46.3 | 54.0 | 7.7 |
| | | H | 40.6 | 54.0 | 13.4 |
| 15 | 2475 | V | 49.5 | 54.0 | 4.5 |
| | | H | 39.9 | 54.0 | 14.1 |

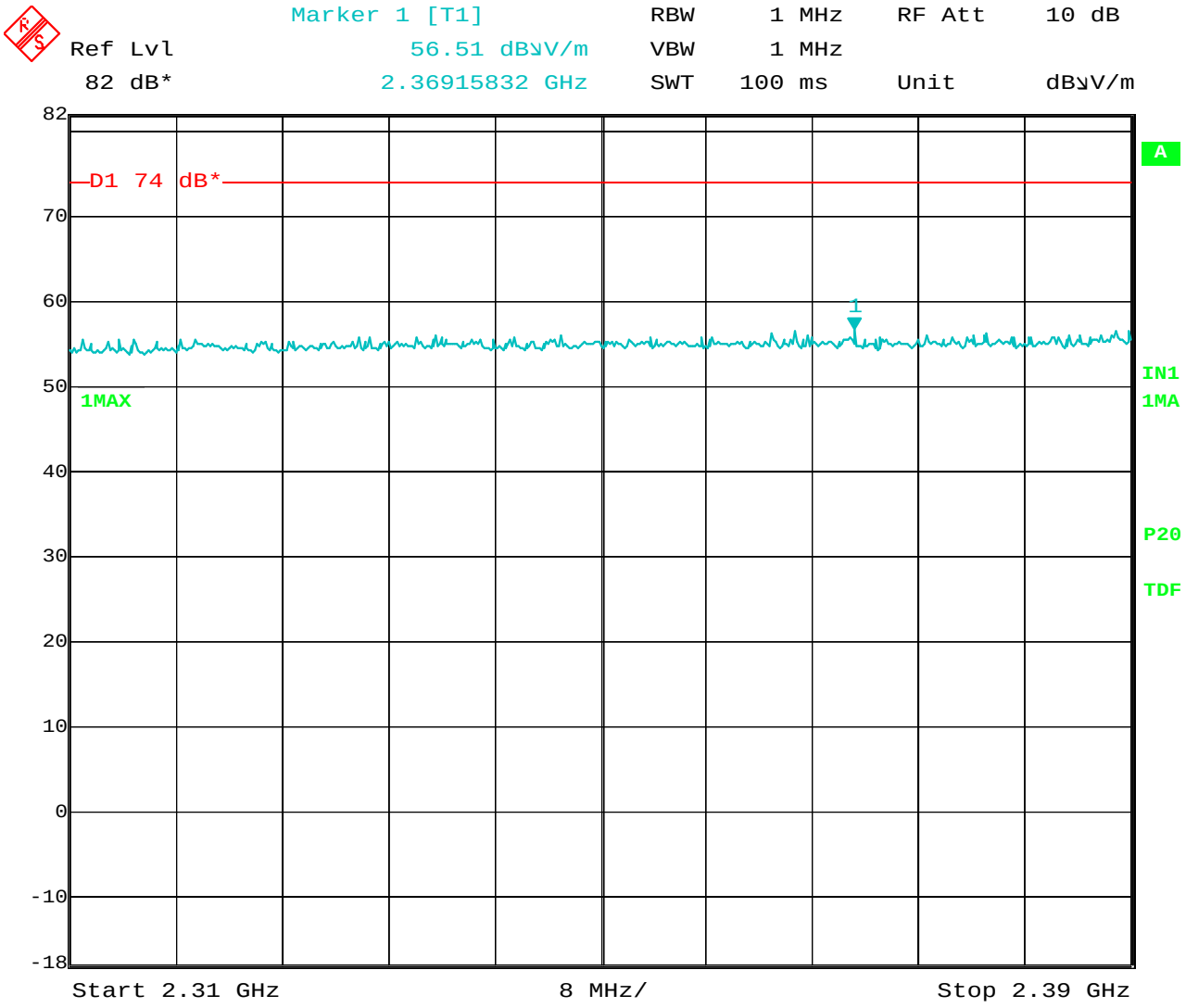
*Please refer to graph as below:

(1) PEAK DETECOTR , CH 1, Vertical



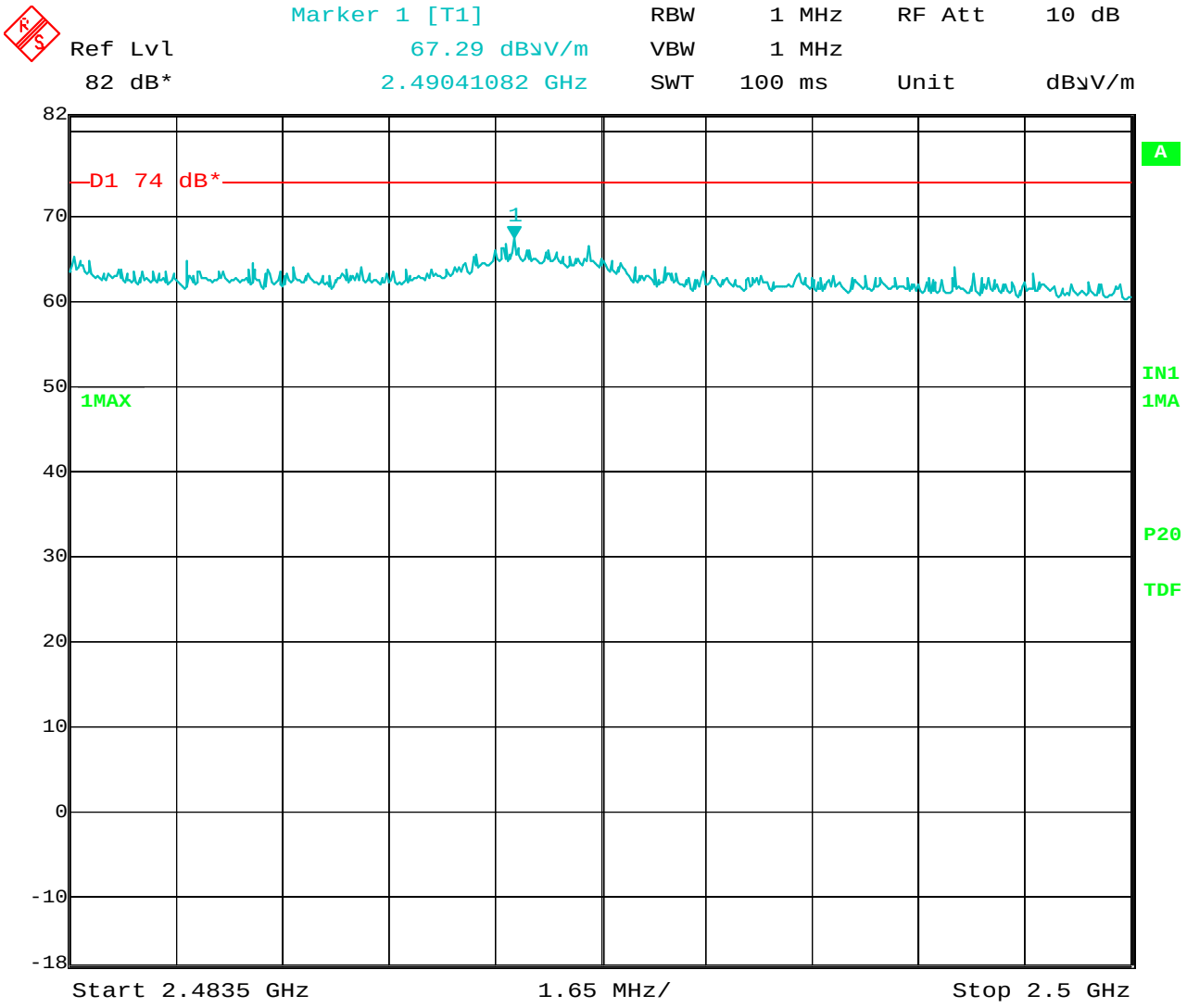

Title: TGBSCU-Z101
Date: 15.JUL.2005 17:25:25

(2) PEAK DETECOTR , CH 1, Horizontal



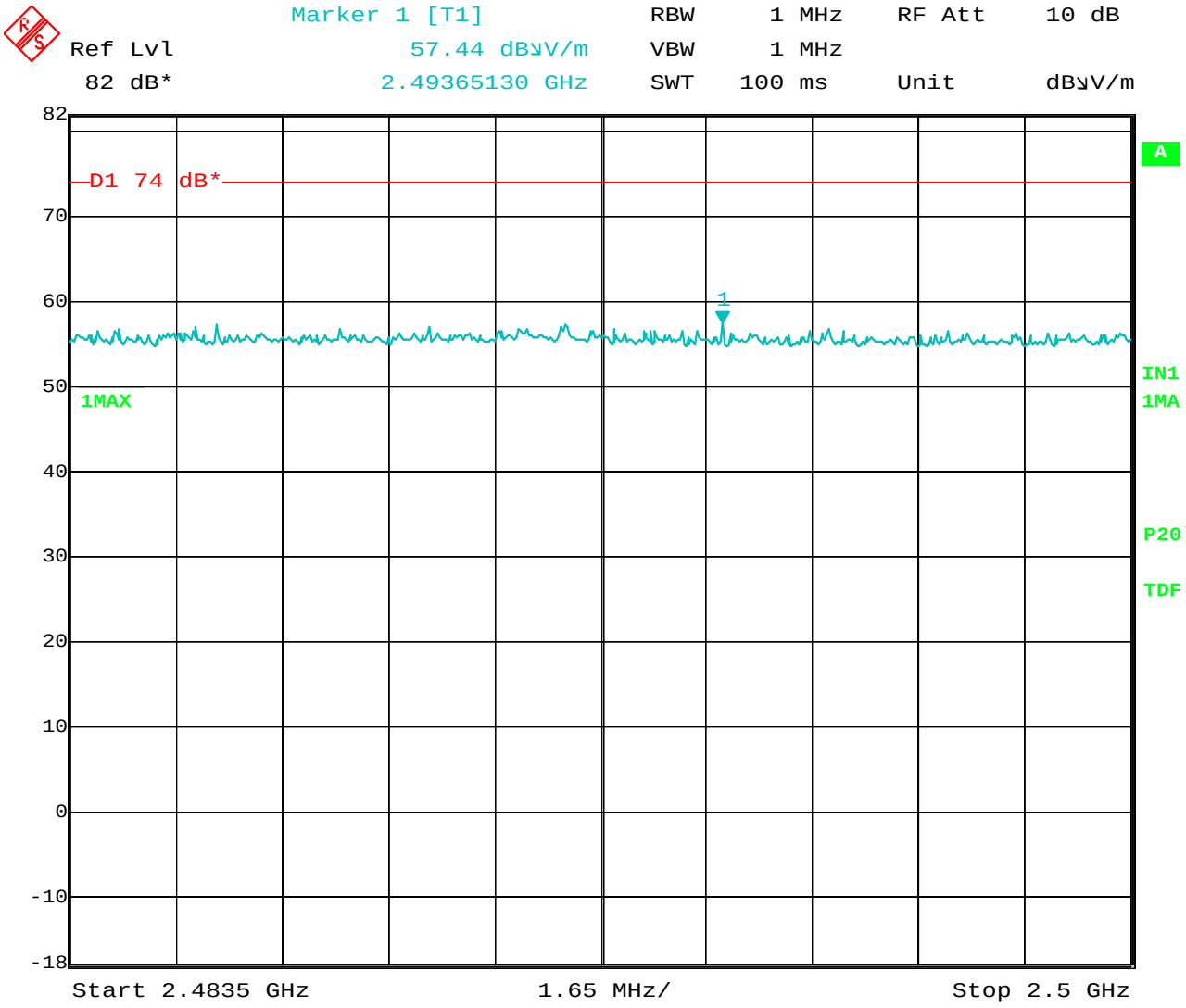

Title: TGBSCU-Z101
Date: 15.JUL.2005 17:32:52

(3) PEAK DETECOTR , CH 15, Vertical



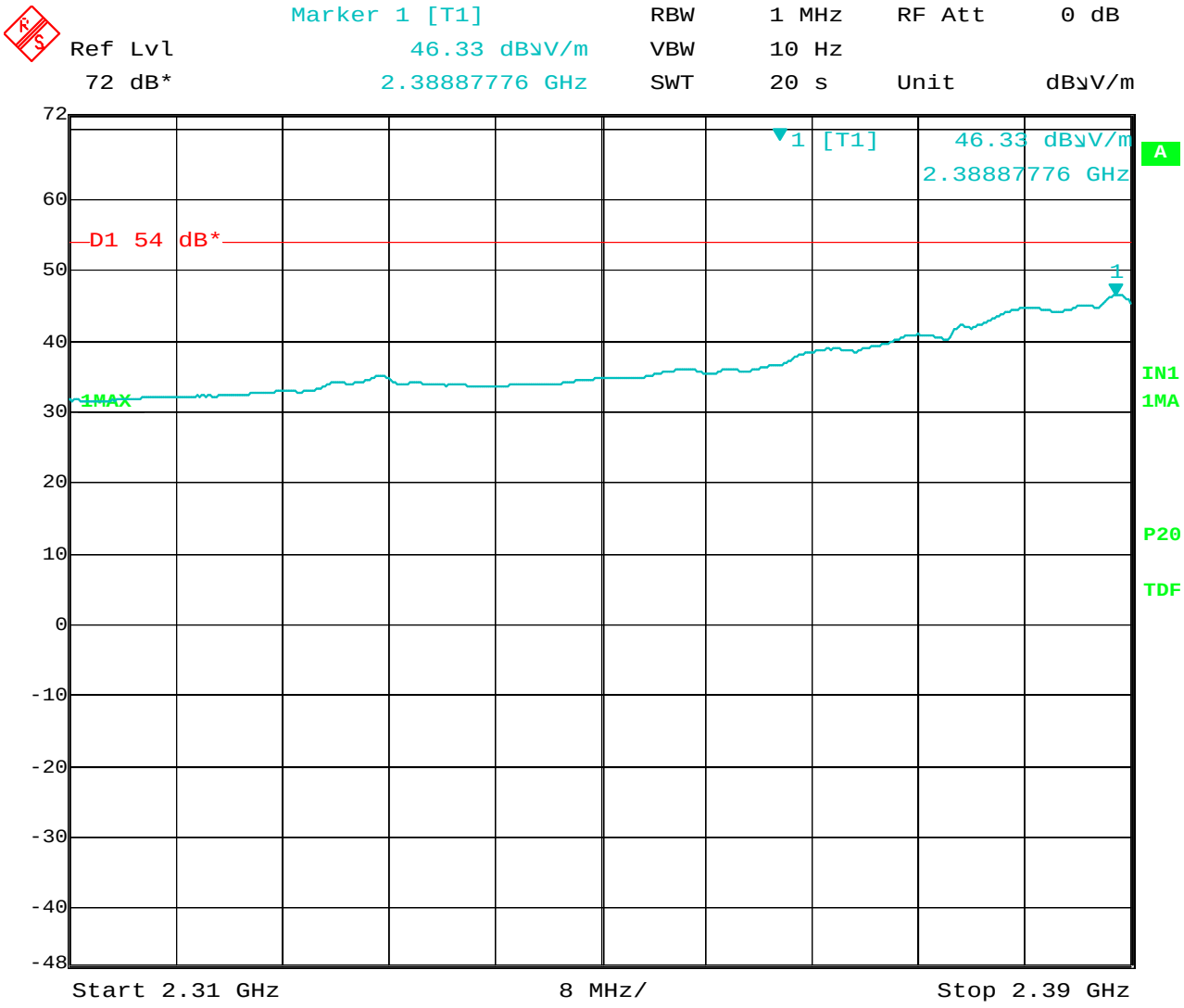

Title: TGBSCU-Z101
Date: 15.JUL.2005 17:27:57

(4) PEAK DETECOTR , CH 15, Horizontal



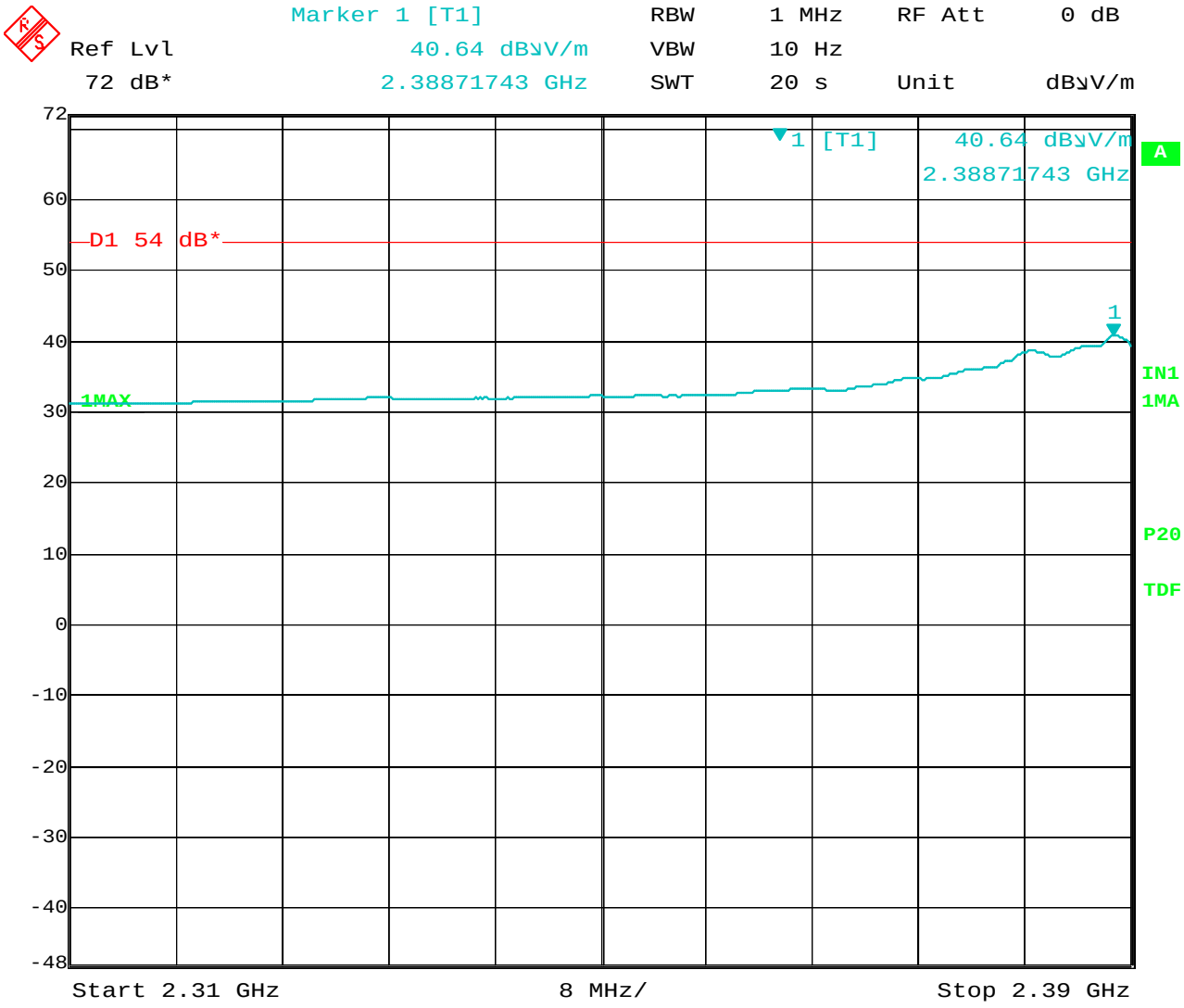

Title: TGBSCU-Z101
Date: 15.JUL.2005 17:30:05

(5) AVERAGE DETECOTR , CH 1, Vertical



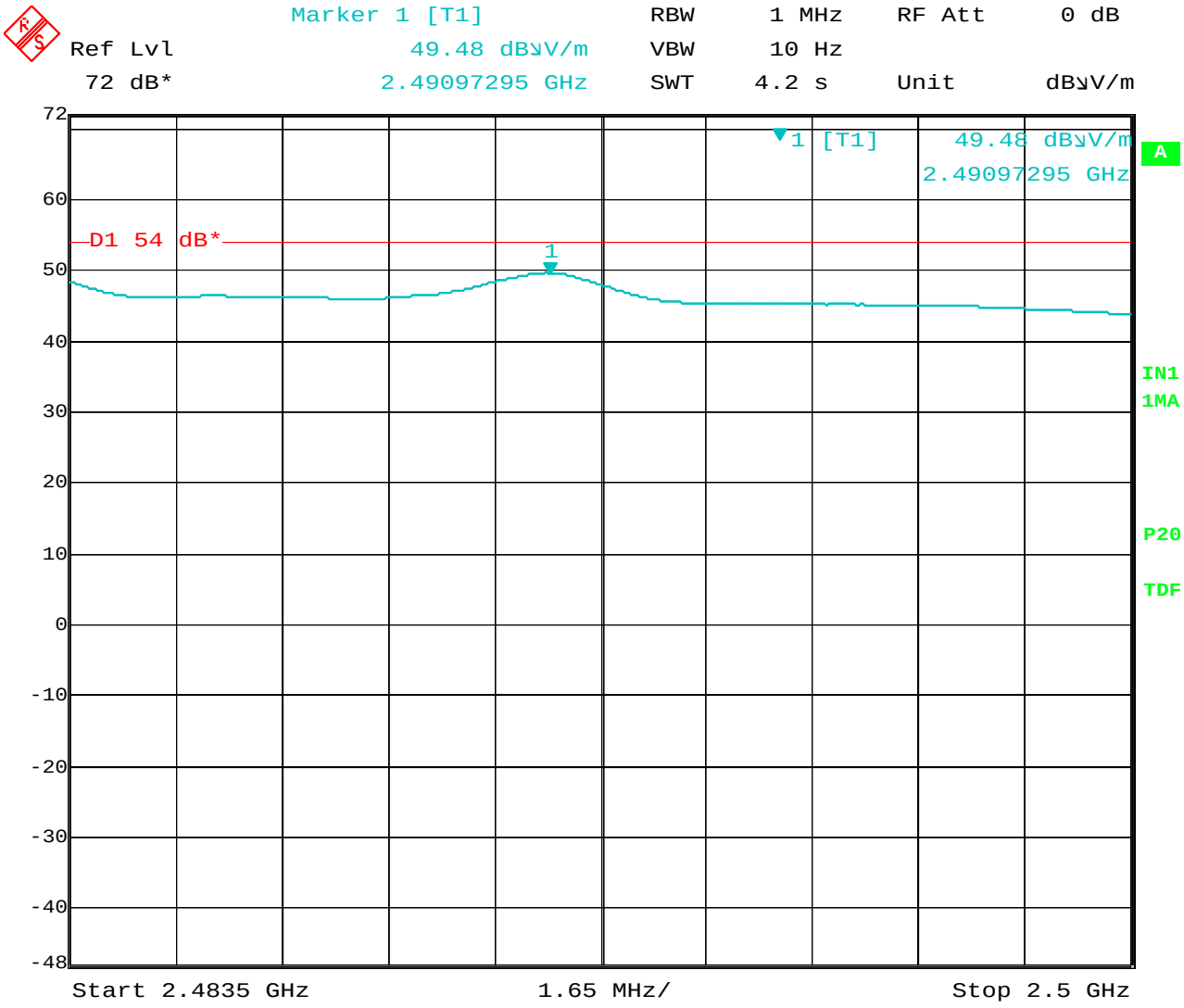

Title: TGBSCU-Z101
Date: 10.JUL.2005 13:37:04

(6) AVERAGE DETECOTR , CH 1, Horizontal



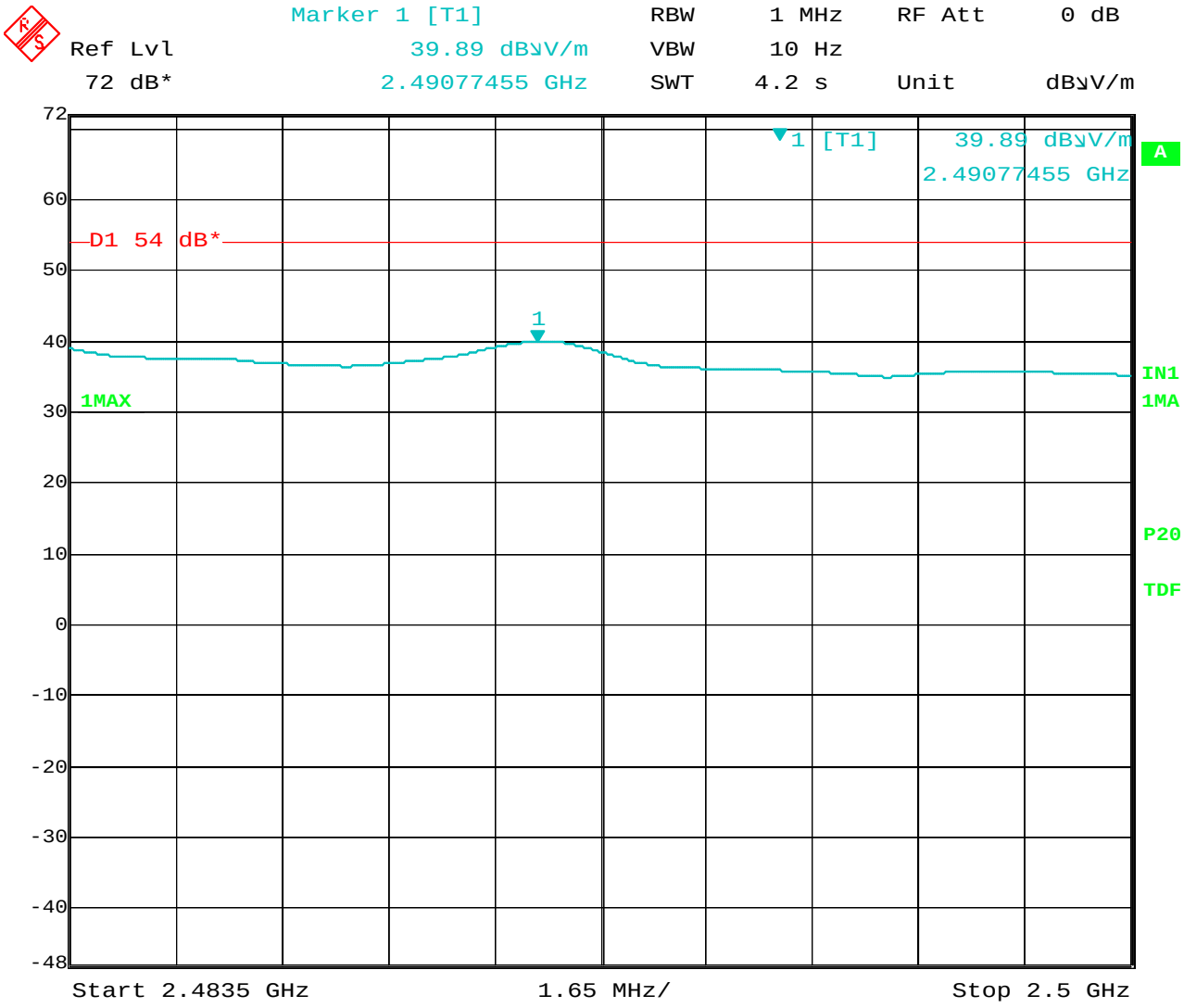

Title: TGBSCU-Z101
Date: 10.JUL.2005 13:34:22

(7) AVERAGE DETECOTR , CH 15, Vertical




Title: TGBSCU-Z101
Date: 10.JUL.2005 13:18:39

(8) AVERAGE DETECOTR , CH 15, Horizontal



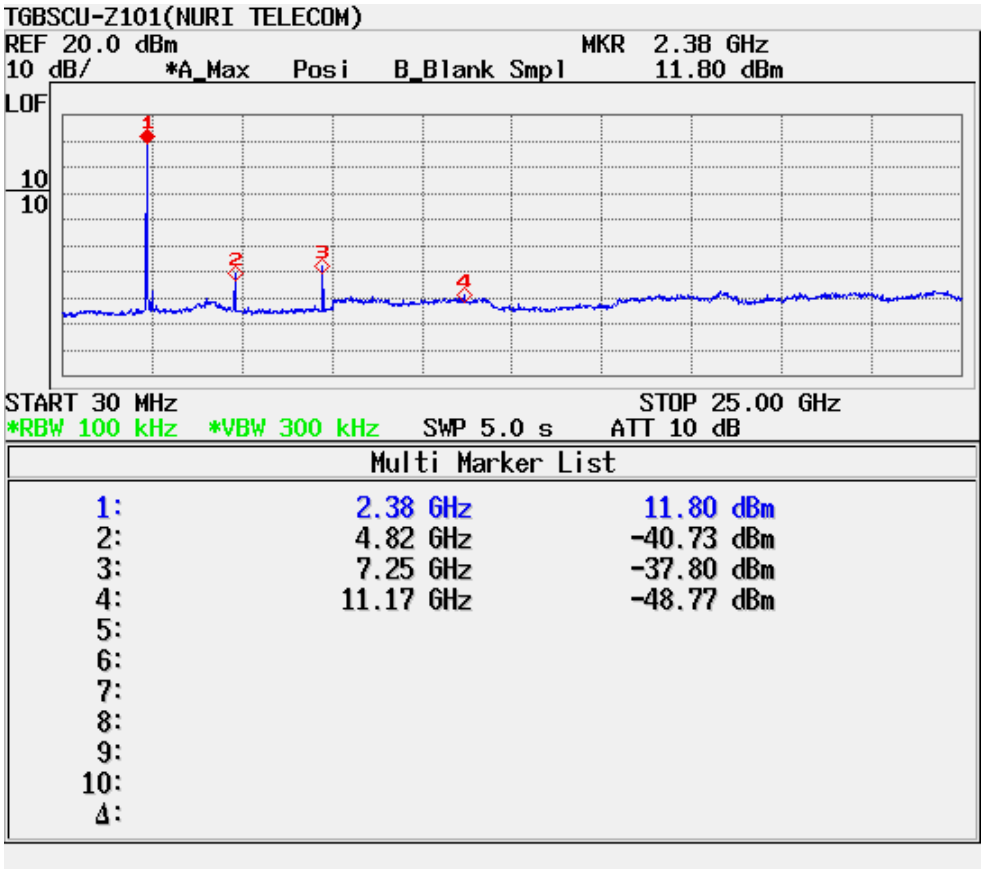

Title: TGBSCU-Z101
Date: 10.JUL.2005 13:21:21

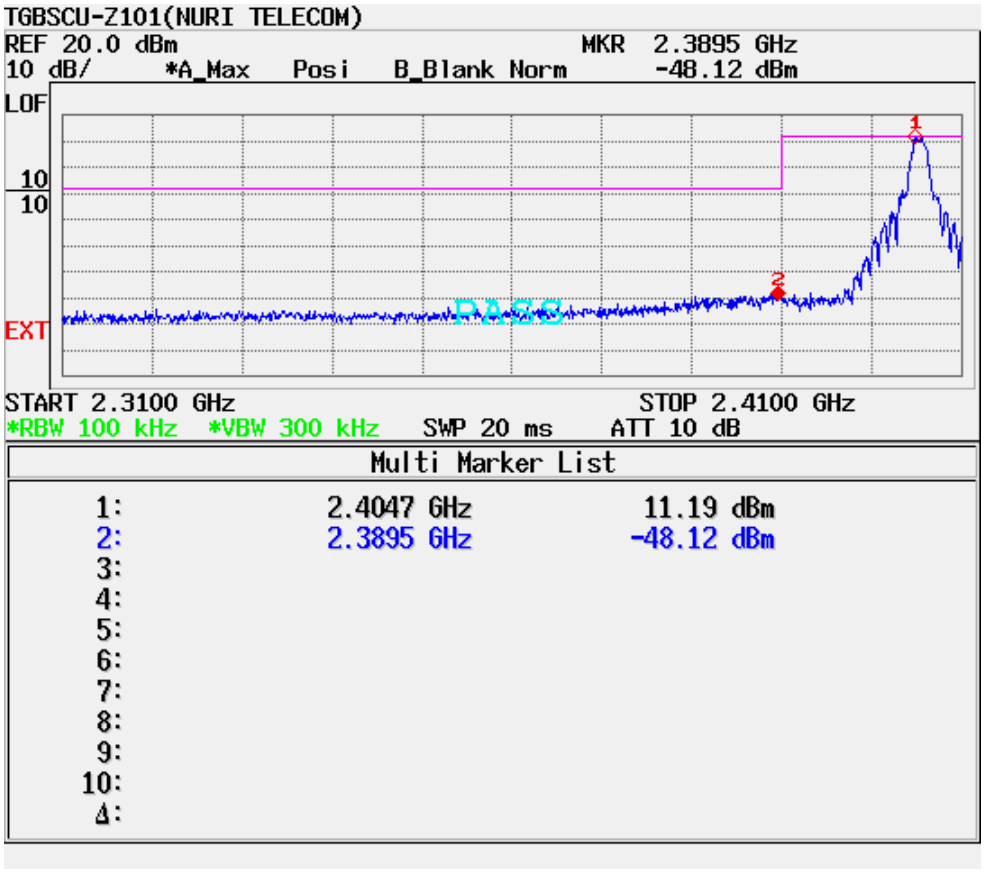
# Out of band emissions & Band Edge (Conducted)

| CH. | FREQ [MHz] | RESULT [dBc] | Limit [dBc] | Margin [dB] |
|---|---|---|---|---|
| 1 | 2405 | 49.6 | 20.0 | 29.6 |
| 8 | 2440 | 49.9 | 20.0 | 29.9 |
| 15 | 2475 | 47.6 | 20.0 | 27.6 |

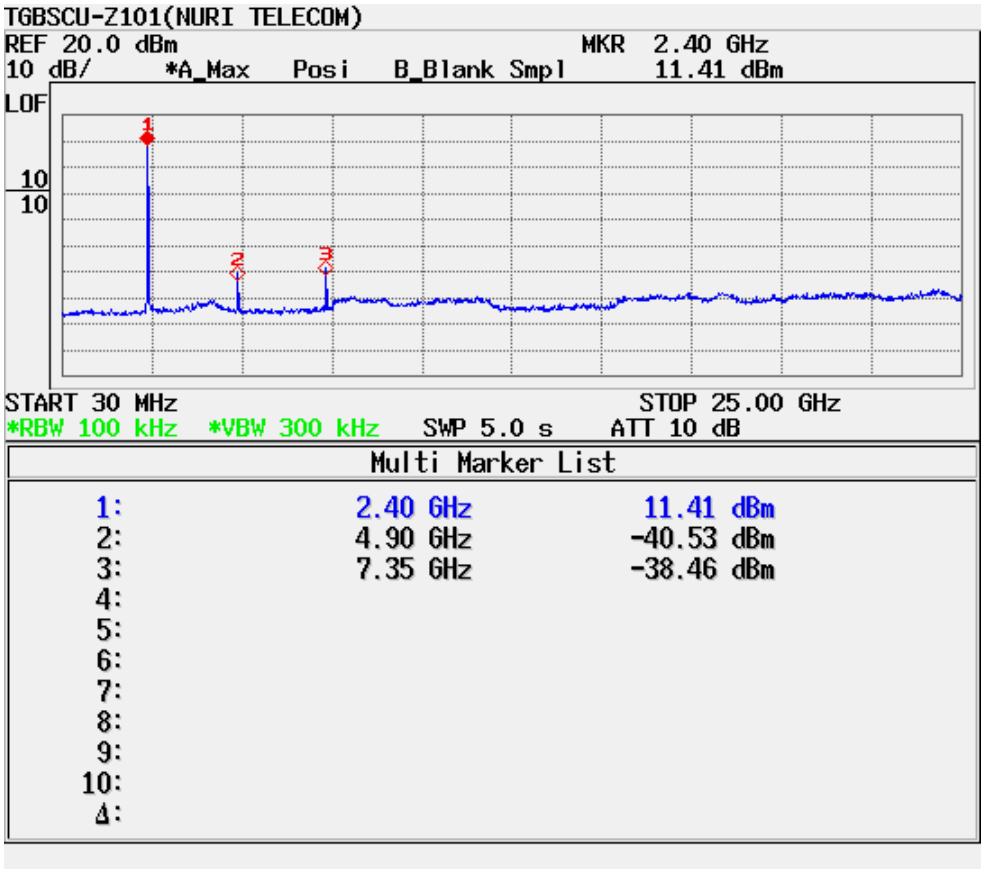
*Please refer to graph as below:

(1) Ch 1

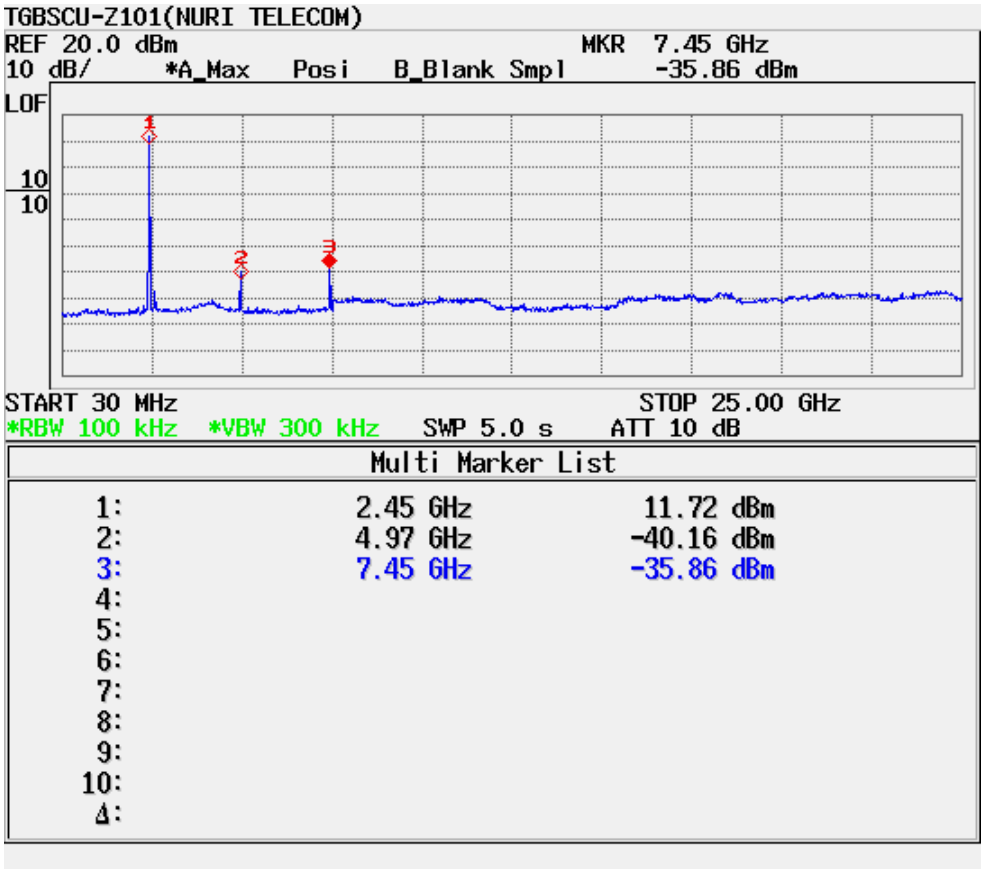

TGBSCU-Z101(NURI TELECOM)
REF 20.0 dBm
MKR 2.38 GHz
10 dB/ *A_Max Posi B_Blank Smpl
11.80 dBm
LOF
10
10
START 30 MHz
STOP 25.00 GHz
*RBW 100 kHz *VBW 300 kHz SWP 5.0 s ATT 10 dB
Multi Marker List
1: 2.38 GHz 11.80 dBm
2: 4.82 GHz -40.73 dBm
3: 7.25 GHz -37.80 dBm
4: 11.17 GHz -48.77 dBm
5:
6:
7:
8:
9:
10:
Δ:

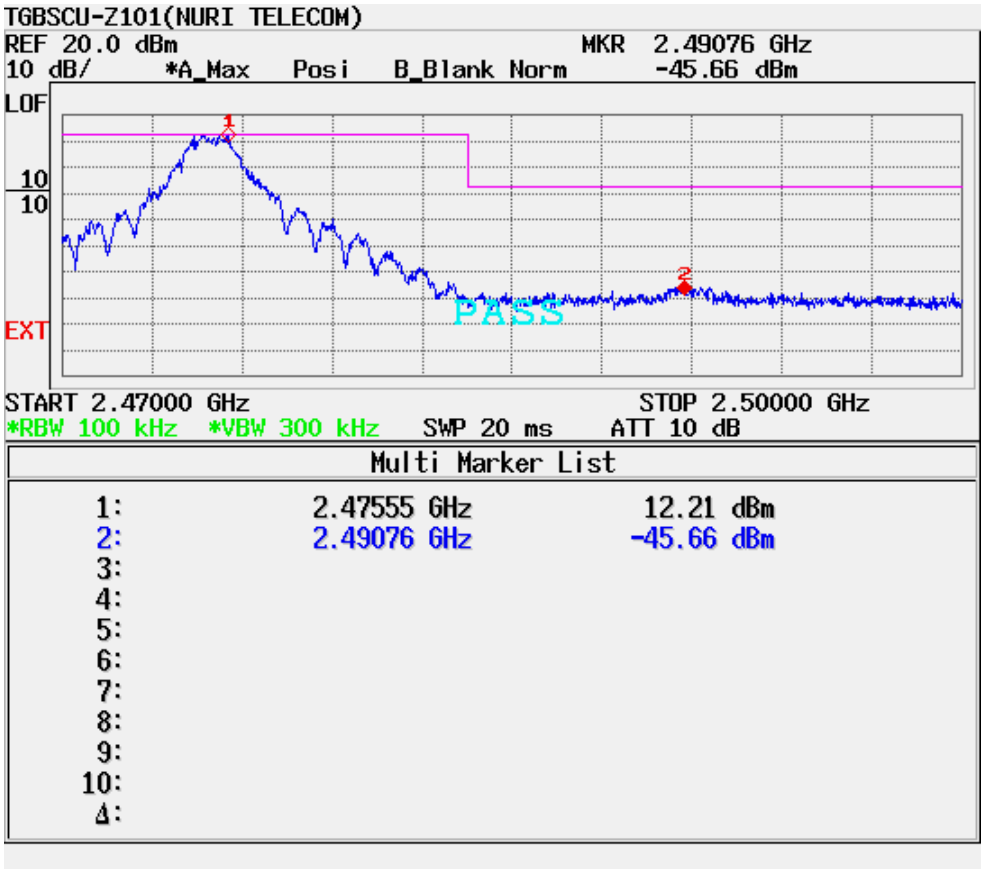

TGBSCU-Z101(NURI TELECOM)
REF 20.0 dBm
MKR 2.3895 GHz
10 dB/ *A_Max Posi B_Blank Norm
-48.12 dBm
LOF
10
10
EXT
START 2.3100 GHz
STOP 2.4100 GHz
*RBW 100 kHz *VBW 300 kHz SWP 20 ms ATT 10 dB
Multi Marker List
1: 2.4047 GHz 11.19 dBm
2: 2.3895 GHz -48.12 dBm
3:
4:
5:
6:
7:
8:
9:
10:
Δ:

(2) Ch 8


TGBSCU-Z101(NURI TELECOM)
REF 20.0 dBm
MKR 2.40 GHz
10 dB/ *A_Max Posi B_Blank Smpl
11.41 dBm
LOF
10
10
START 30 MHz
STOP 25.00 GHz
*RBW 100 kHz *VBW 300 kHz SWP 5.0 s ATT 10 dB
Multi Marker List
1: 2.40 GHz 11.41 dBm
2: 4.90 GHz -40.53 dBm
3: 7.35 GHz -38.46 dBm
4:
5:
6:
7:
8:
9:
10:
Δ:

(3) Ch 15


TGBSCU-Z101(NURI TELECOM)
REF 20.0 dBm
MKR 7.45 GHz
10 dB/ *A_Max Posi B_Blank Smpl -35.86 dBm
LOF
10
10
START 30 MHz
STOP 25.00 GHz
*RBW 100 kHz *VBW 300 kHz SWP 5.0 s ATT 10 dB
Multi Marker List
1: 2.45 GHz 11.72 dBm
2: 4.97 GHz -40.16 dBm
3: 7.45 GHz -35.86 dBm
4:
5:
6:
7:
8:
9:
10:
Δ:

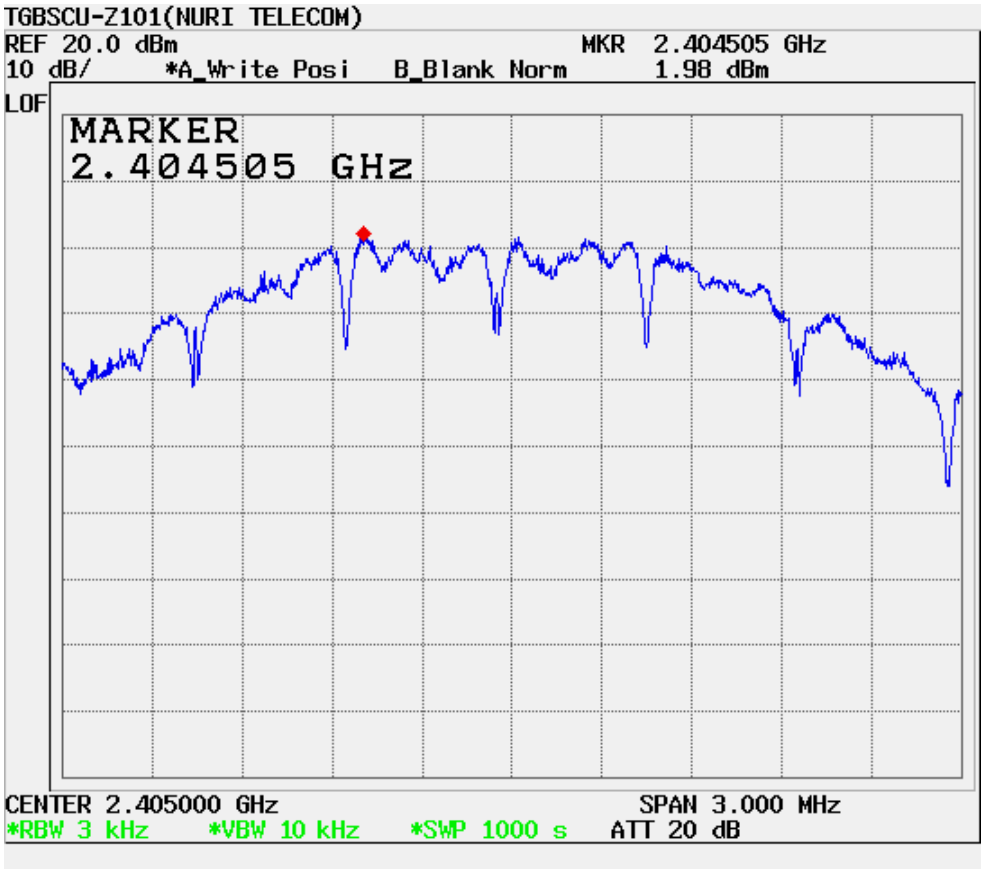

TGBSCU-Z101(NURI TELECOM)
REF 20.0 dBm
MKR 2.49076 GHz
10 dB/ *A_Max Posi B_Blank Norm -45.66 dBm
LOF
10
10
EXT
PASS
START 2.47000 GHz
STOP 2.50000 GHz
*RBW 100 kHz *VBW 300 kHz SWP 20 ms ATT 10 dB
Multi Marker List
1: 2.47555 GHz 12.21 dBm
2: 2.49076 GHz -45.66 dBm
3:
4:
5:
6:
7:
8:
9:
10:
Δ:

# Power Spectral Density (Conducted)

| CH. | FREQ [MHz] | RESULT [dBm] | Limit [dBm] | Margin [dB] |
|---|---|---|---|---|
| 1 | 2405 | 2.0 | 8.0 | 6.0 |
| 8 | 2440 | 2.3 | 8.0 | 5.7 |
| 15 | 2475 | 1.5 | 8.0 | 6.5 |

*Please refer to graph as below:

(1) Ch 1


TGBSCU-Z101(NURI TELECOM)
REF 20.0 dBm
MKR 2.404505 GHz
10 dB/ *A_Write Posi B_Blank Norm
1.98 dBm
LOF
MARKER
2.404505 GHz
CENTER 2.405000 GHz
SPAN 3.000 MHz
*RBW 3 kHz *VBW 10 kHz *SWP 1000 s ATT 20 dB

(2) Ch 8


TGBSCU-Z101(NURI TELECOM)
REF 20.0 dBm
MKR 2.439646 GHz
10 dB/ *A_Write Posi B_Blank Norm
2.30 dBm
LOF
MARKER
2.439646 GHz
CENTER 2.440000 GHz
SPAN 3.000 MHz
*RBW 3 kHz *VBW 10 kHz *SWP 1000 s ATT 20 dB

(3) Ch 15


TGBSCU-Z101(NURI TELECOM)
REF 20.0 dBm
MKR 2.475384 GHz
10 dB/ *A_Write Posi B_Blank Norm
1.55 dBm
LOF
MARKER
2.475384 GHz
CENTER 2.475000 GHz
SPAN 3.000 MHz
*RBW 3 kHz
*VBW 10 kHz
*SWP 1000 s
ATT 20 dB