FCC TEST REPORT

CATEGORY	:	Mobile
PRODUCT NAME	:	Dual mode 2.4GHz / 5GHz Access Point
FCC ID.	:	QZE200
FILING TYPE	:	Certification
BRAND NAME	:	Trapeze
MODEL NAME	:	MP-372
APPLICANT	:	**Trapeze Networks, Inc.** 5753 W. Las Positas Blvd. Pleasanton, CA 94588, US
MANUFACTURER	:	**Alpha Networks Inc.** No.8, Li-shing Road VII, Science-based Industrial Park,Hsinchu, Taiwan
ISSUED BY	:	**SPORTON INTERNATIONAL INC.** 6F, No. 106, Sec. 1, Hsin Tai Wu Rd., His Chih, Taipei Hsien, Taiwan, R.O.C.

Statements:

Only the test result of 802.11a part is shown in this test report.
(5150MHz ~ 5250MHz, 5250MHz ~ 5350MHz)

The test result in this report refers exclusively to the presented test model / sample.
Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

Certificate or Test Report could not be used by the applicant to claim the product endorsement by CNLA, NVLAP or any agency of U.S. government.

The test equipment used to perform the test are calibrated and traceable to NML/ROC or NIST/USA.

1190
ILAC MRA

Table of Contents

History of this test report

Original Report Issue Date: Mar. 07, 2005

Report No.: FR530403

■ No additional attachment.

☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

CERTIFICATE OF COMPLIANCE

with

47 CFR FCC Part 15 Subpart C (Section 15.407)

PRODUCT NAME	:	Dual mode 2.4GHz / 5GHz Access Point
BRAND NAME	:	Trapeze
MODEL NAME	:	MP-372
APPLICANT	:	**Trapeze Networks, Inc.** 5753 W. Las Positas Blvd. Pleasanton, CA 94588, US
MANUFACTURER	:	**Alpha Networks Inc.** No.8, Li-shing Road VII, Science-based Industrial Park,Hsinchu, Taiwan

I **HEREBY** CERTIFY THAT:

The measurements shown in this test report were made in accordance with the procedures given in ANSI C63.4 - 2003 and all test are performed according to 47 CFR FCC Part 15. Testing was carried out on Mar. 05, 2005 at SPORTON International Inc. LAB.

Dr. Alan Lane
Vice General Manager
Sporton International Inc.

1. General Description of Equipment under Test

1.1. Applicant

Trapeze Networks, Inc.
5753 W. Las Positas Blvd. Pleasanton, CA 94588, US

1.2. Manufacturer

Alpha Networks Inc.
No.8, Li-shing Road VII, Science-based Industrial Park,Hsinchu, Taiwan

1.3. Basic Description of Equipment under Test

This product is a Wireless Access Point with 802.11a/b/g wireless solution. The technical data has been listed on section " Features of Equipment under Test ". 4 types of antenna are filed in this project for both 2.4GHz and 5GHz operating frequency band. There are 2 antenna ports in this product for external antenna connection, one is for 2.4GHz band, the other is for 5GHz band. This product will use 5GHz and 2.4GHz band antenna with the same beam width together.

1.4. Features of Equipment under Test

Items	Description
Type of Modulation	OFDM (16QAM / 64QAM / DQPSK / DBPSK)
Number of Channels	8
Frequency Band	5150MHz ~ 5250MHz, 5250MHz ~ 5350MHz
Carrier Frequency Range	5180MHz~5240MHz, 5260MHz~5320MHz
Carrier Frequency	See section 1.6 for details
Data Rate	6, 12, 18, 24, 36, 48, 54 Mbps
Channel Bandwidth	18MHz
Max. Conducted Output Power	See section 1.7 for details
Antenna Type	See section 1.5 for details
Communication Type	Half-Duplex
Testing Duty Cycle	100.00%
Power Rating (DC/AC, Voltage)	4.5VDC from LAN System
Test Power Source	110.00V AC
Temperature Range (Operating)	0 ~ 50 °C

1.5. Antenna Description

4 types of antenna were filed in this project.

No.	Antenna Type	Gain (dBi)
1	Internal PIFA Antenna (CAF94400)	4.00dBi @5.0GHz
2	External Panel Antenna ANT-5180 (ASTN6H) 180°	10.80dBi @5.0GHz
3	External Panel Antenna ANT-5120 (ASTN6T) 120°	12.50dBi @5.0GHz
4	External Panel Antenna ANT-5060 (ASTN6S) 60°	14.50dBi @5.0GHz

1.6. Table for Carrier Frequencies

Frequency Bands			
5150MHz ~ 5250MHz		**5250MHz ~ 5350MHz**	
Channel	**Frequency**	**Channel**	**Frequency**
36	5180 MHz	52	5260 MHz
40	5200 MHz	56	5280 MHz
44	5220 MHz	60	5300 MHz
48	5240 MHz	64	5320 MHz

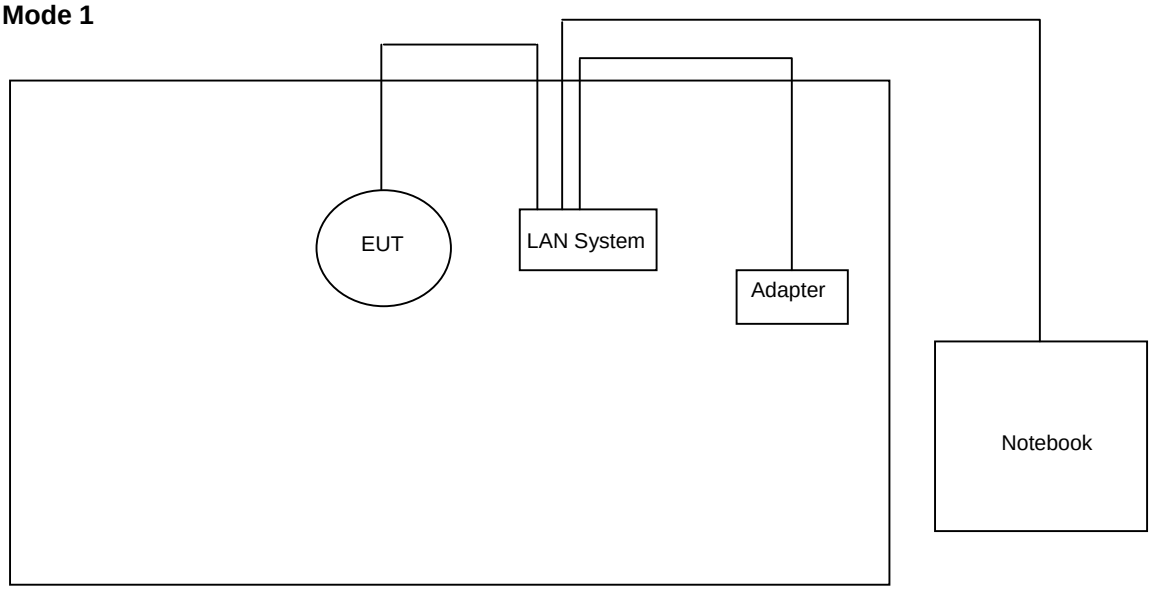
1.7. Table for Maximum Conducted Output Power

Maximum Conducted Output Power (dBm)	
Frequency Bands 5150MHz ~ 5250MHz	**Frequency Bands 5250MHz ~ 5350MHz**
Internal Antenna: 16.85	Internal Antenna: 21.61
External Antenna: 7.99	External Antenna: 14.93

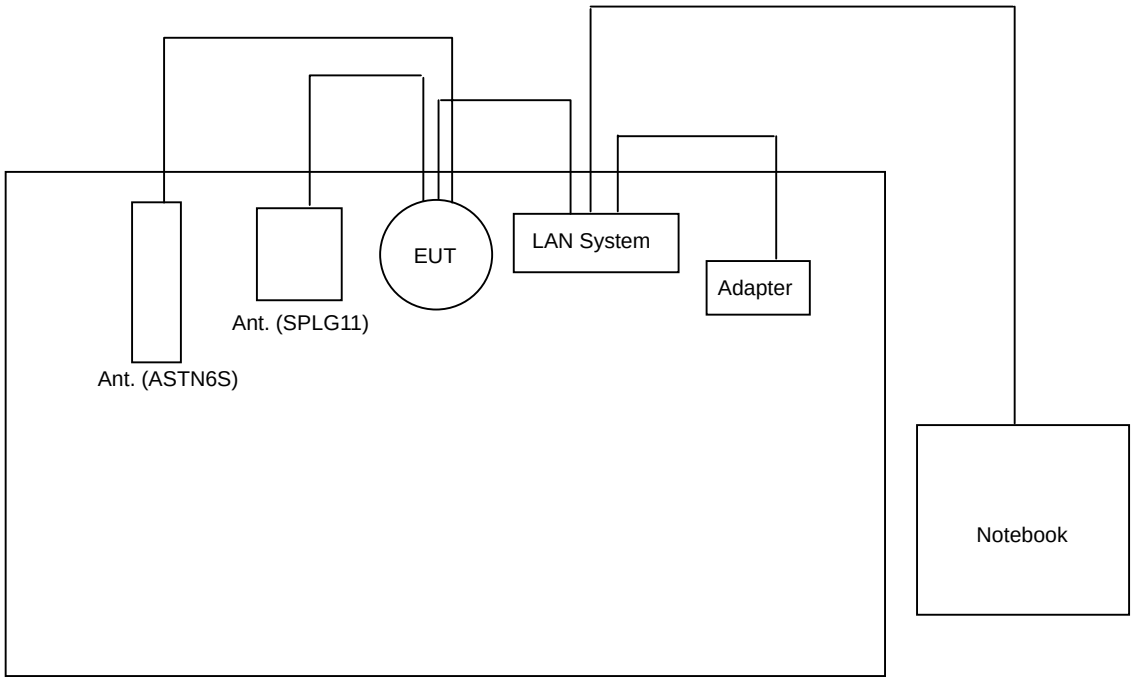
2. Test Configuration of the Equipment under Test

2.1. Connection Diagram of Test System

Mode 1



Mode 2



2.2. The Test Mode Description

1. For OFDM modulation, BPSK (64QAM) is the worst case on all test items.
2. Spurious emission below 1GHz is independent of channel selection, modulation and antenna type, so only channel 64 was tested.
3. AC conduction emission is independent of channel selection, modulation and antenna type, so only channel 64 was the tested.
4. There are 4 types of antennas, 3 of them are in the same type. So only 2 antennas was tested.
   Mode 1 : Internal Antenna (PIFA CAF94400 – Antenna 1)
   Mode 2 : External Antenna (Panel ASTN6S – Antenna 4)

2.3. Description of Test Supporting Units

Support unit	Brand	Model No.	Serial No.	FCC ID	Data cable (m)
Notebook	DELL	C600	10004	DoC	-
POE	-	-	-	-	-
Adapter	LB	SA06L48	-	-	1.5

3. General Information of Test

3.1. Test Facility

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiag, Tao Yuan Hsien, Taiwan, R.O.C.

: TEL 886-3-327-3456

: FAX 886-3-318-0055

Test Site No : 03CH03-HY / TH01-HY / CO04-HY

3.2. Test Conditions

Normal Voltage	: 110.00V (System Power)
Extreme Voltages	: 126.50V and 93.5V (System Power)
Normal Temperature	: 20˚C
Extreme Temperature	: 0 ˚C and 50 ˚C

3.3. Standards for Methods of Measurement

Here is the list of the standards followed in this test report.
ANSI C63.4-2003
47 CFR Part 15 Subpart C (Section 15.407)

3.4. Frequency Range Investigated

Radiated emission test: from 30 MHz to 10th carrier harmonic.

3.5. Test Distance

The test distance of radiated emission (30MHz~1GHz) test from antenna to EUT is 3 M.
The test distance of radiated emission (1GHz~10th carrier harmonic) test from antenna to EUT is 3 M.

3.6. Test Software

During testing, Channel & Power Controlling Software: This was provided by the manufacturer and is able to let the test engineer select the operating channel as well as the RF output power. The parameters for channel selection is trying to offer the test engineer the ability to fix the operating channel for testing, both normal data and continuously transmitting modes are allowed, and that for RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Power Parameter Table

Mode 1

Test Software	**ART**					
Test Channel	CH 36	CH 40	CH 48	CH 52	CH 56	CH 64
Test Frequency	5180MHz	5200MHz	5240MHz	5260MHz	5280MHz	5320MHz
TX Power	6.00	6.00	5.50	12.50	13.00	12.50

Mode 2

Test Software	**ART**					
Test Channel	CH 36	CH 40	CH 48	CH 52	CH 56	CH 64
Test Frequency	5180MHz	5200MHz	5240MHz	5260MHz	5280MHz	5320MHz
TX Power	13.50	13.00	13.00	19.00	19.00	19.00

4. List of Measurements

4.1. Summary of the Test Results

Applied Standard: 47 CFR Part 15 and Part 2

Paragraph	FCC Rule	Description of Test	Result
5.1	15.407	26dB Spectrum Bandwidth	Pass
5.2	15.407	Maximum Conducted Output Power	Pass
5.3	15.407	Peak Power Spectral Density	Pass
5.4	15.407	Ratio of the Peak Excursion	Pass
5.5	15.407	Band Edges Emission	Pass
5.6	15.407	Test of Frequency Stability	Pass
5.7	15.407	AC Power Line Conducted Emission	Pass
5.8	15.209/15.407	Spurious Radiated Emission	Pass
5.9	15.203/15.407	Antenna Requirement	Pass
5.10	2.1091	Maximum Permissible Exposure	Pass

5. Test Result

5.1. Test of 26dB Spectrum Bandwidth

5.1.1. Measuring Instruments

Item 18 of the table is on section 6.

5.1.2. Test Procedures

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 300KHz and VBW to 1000KHz.
3. The spectrum width with level higher than 26dB below the peak level.

5.1.3. Test Setup Layout

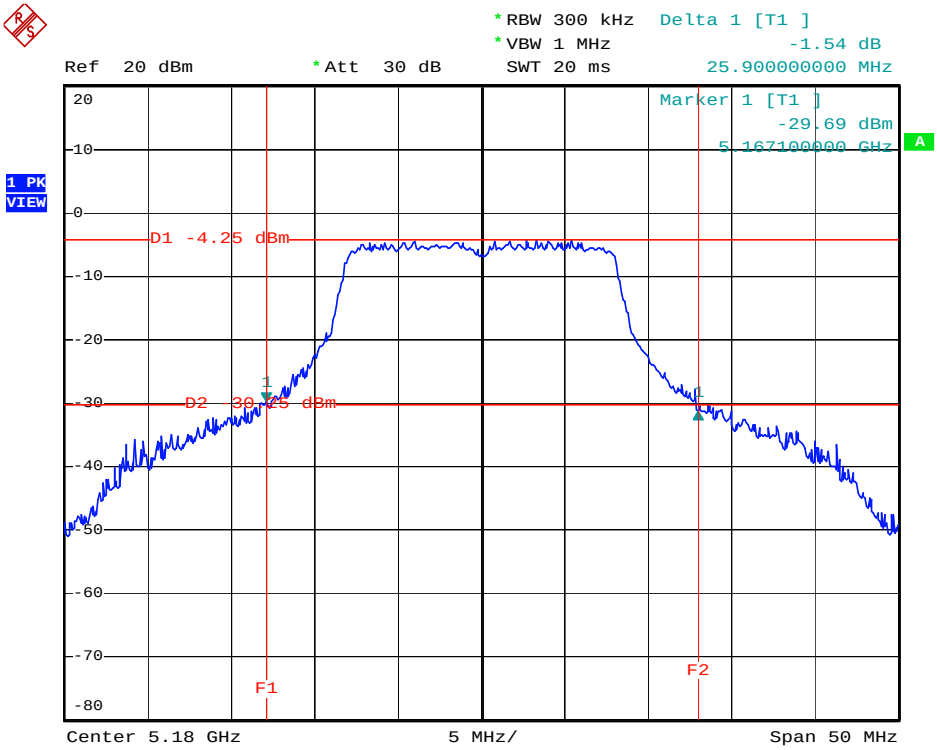
Spectrum Analyzer **EUT**

5.1.4. Test Result: See spectrum analyzer plots below

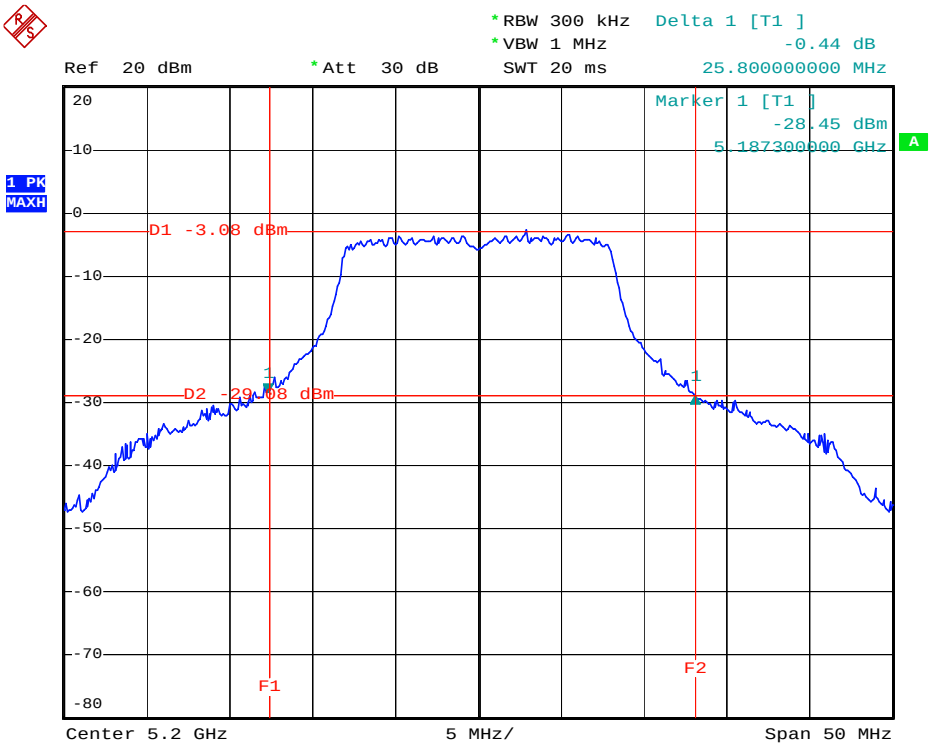
- Temperature: 15°C
- Relative Humidity: 62%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Steven Lu

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Calculated Power Limit (dBm)	Applied Power Limit (dBm)
36	5180 MHz	25.90	18.13	17
40	5200 MHz	25.80	18.12	17
48	5240 MHz	26.10	18.17	17
52	5260 MHz	26.00	25.15	24
56	5280 MHz	26.00	25.15	24
64	5320 MHz	26.00	25.15	24

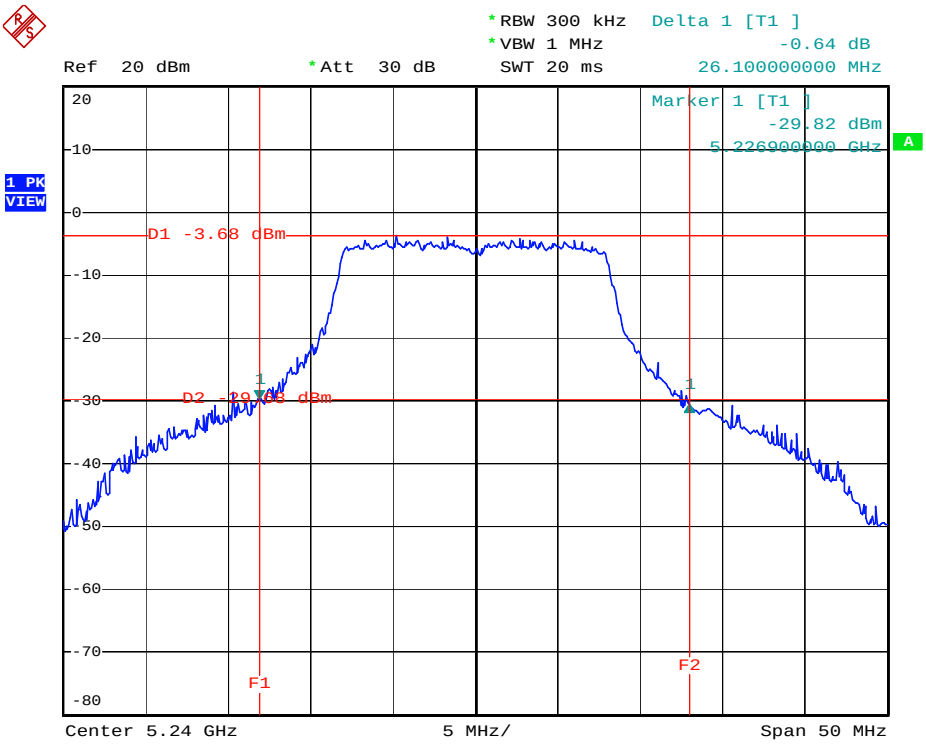
Channel: 36 / 5180 MHz



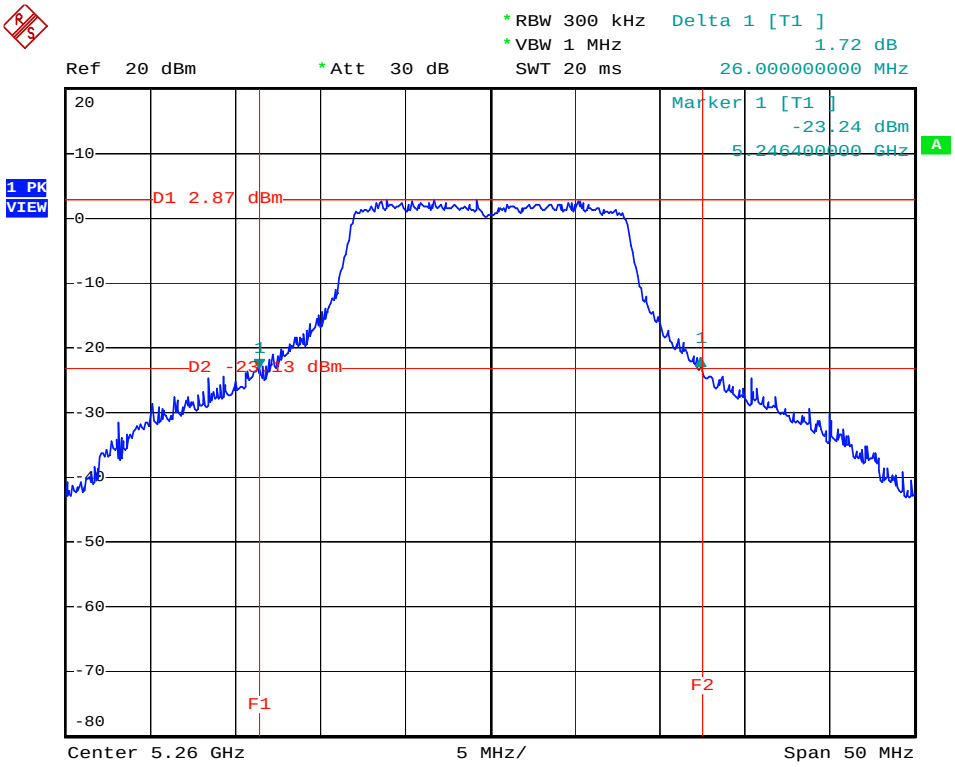
Channel: 40 / 5200 MHz



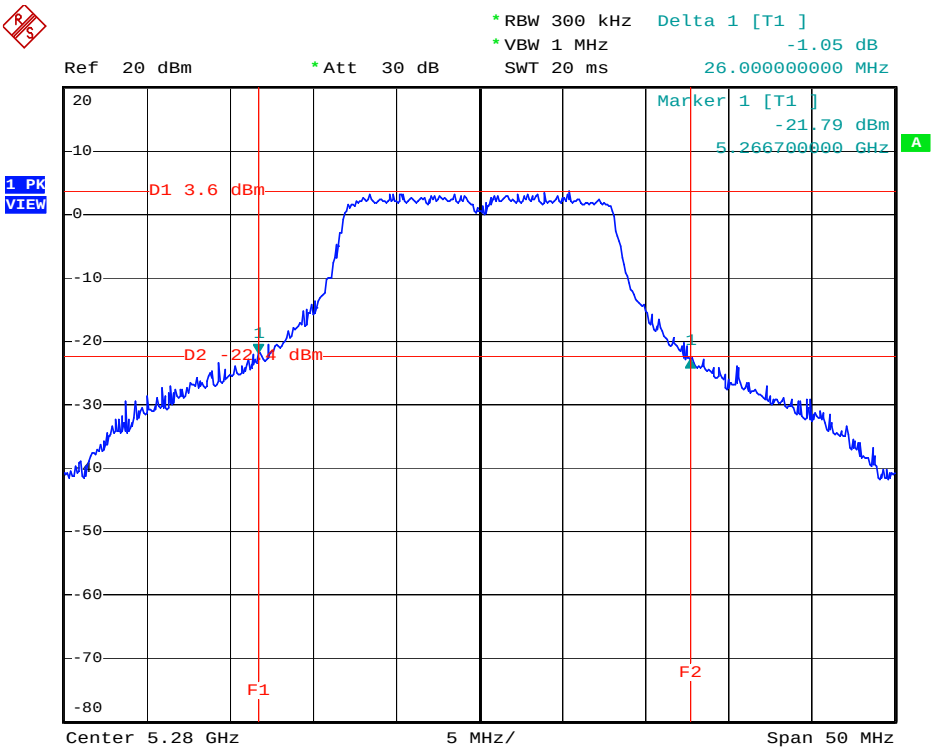
Channel: 48 / 5240 MHz



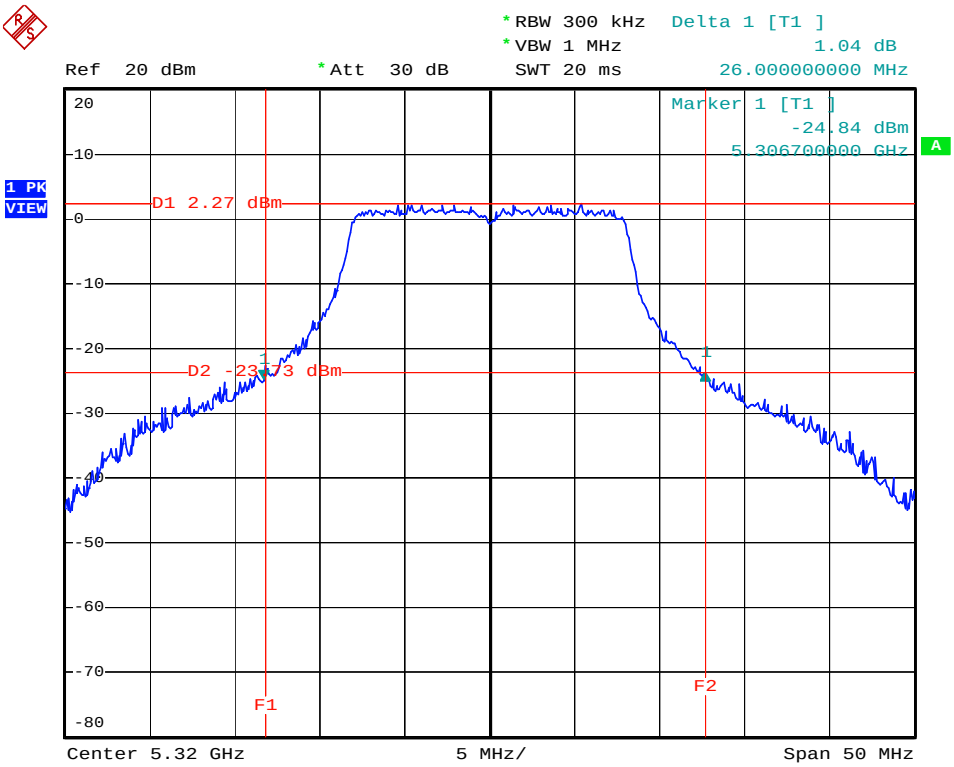
Channel: 52 / 5260 MHz



Channel: 56 / 5280 MHz



Channel: 64 / 5320 MHz



5.2. Test of Maximum Conducted Output Power

5.2.1. Measuring Instruments

Item 18 of the table is on section 6.

5.2.2. Test Procedures

1. According to FCC DA 02-2138 test procedure, EUT connected to spectrum analyzer, then used the channel power function of spectrum analyzer and calculated total average power range is more than 26dB bandwidth.
2. Repeated the 1 for the middle and highest channel of the EUT.

5.2.3. Test Setup Layout

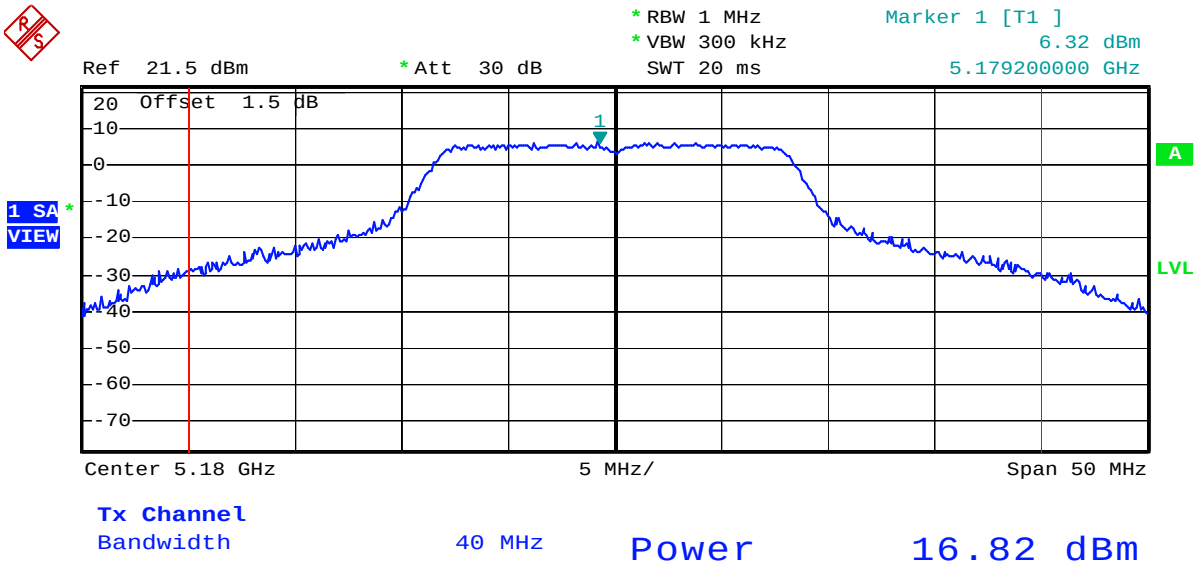
Spectrum Analyzer **EUT**

5.2.4. Test Result of Conducted Power (Mode 1)

- Temperature: 15°C
- Relative Humidity: 62%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Steven Lu

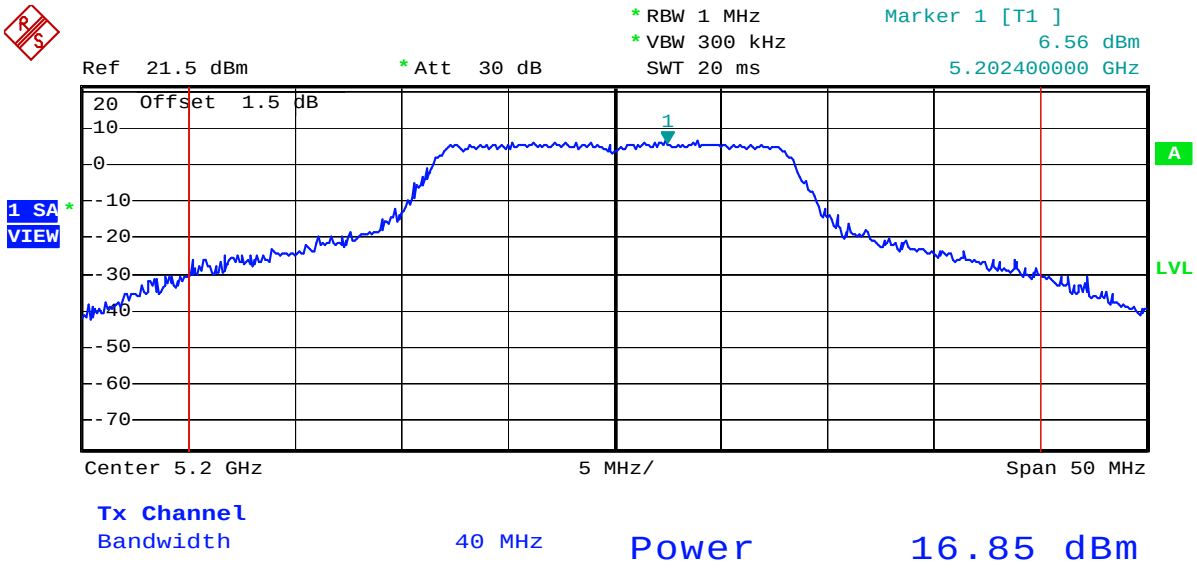
Channel	Frequency (MHz)	Output Power (dBm)	Limits (dBm)
36	5180 MHz	16.82	17
40	5200 MHz	16.85	17
48	5240 MHz	16.79	17
52	5260 MHz	21.61	24
56	5280 MHz	21.47	24
64	5320 MHz	21.54	24

Channel: 36 / 5180 MHz



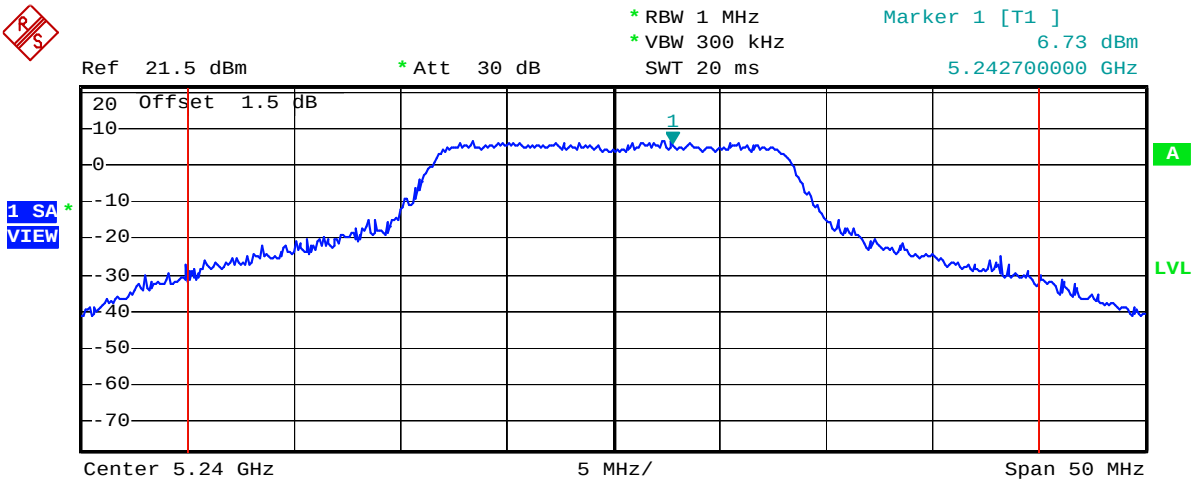
Tx Channel
Bandwidth 40 MHz **Power 16.82 dBm**

Channel: 40 / 5200 MHz



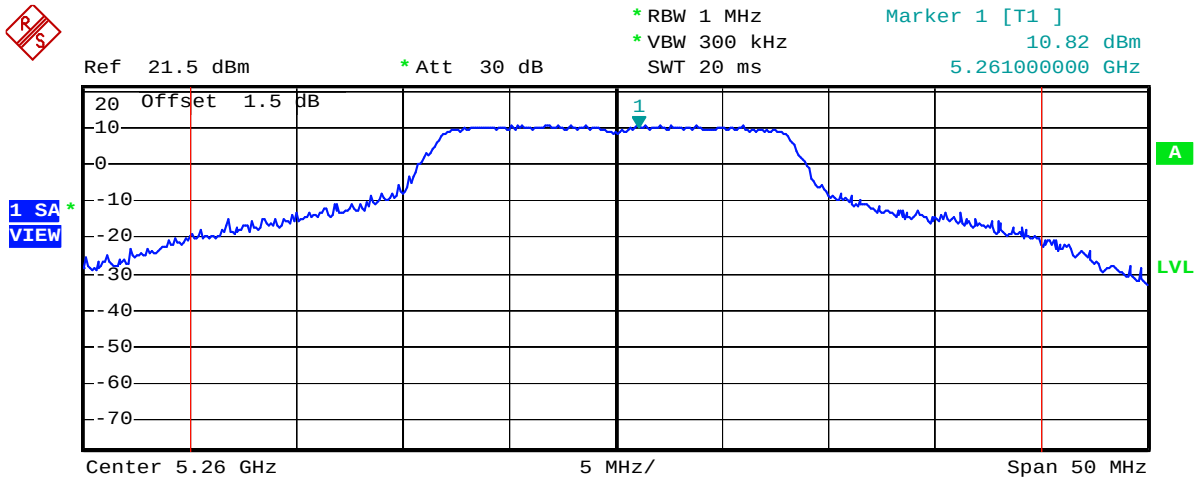
Tx Channel
Bandwidth 40 MHz **Power 16.85 dBm**

Channel: 48 / 5240 MHz



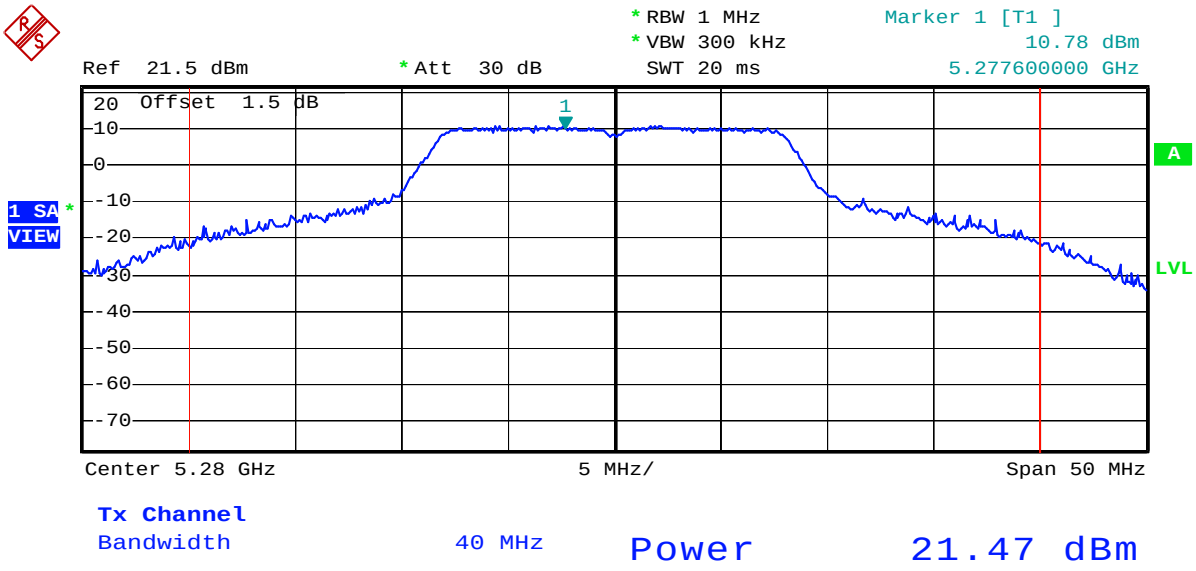
Tx Channel
Bandwidth 40 MHz Power 16.79 dBm

Channel: 52 / 5260 MHz



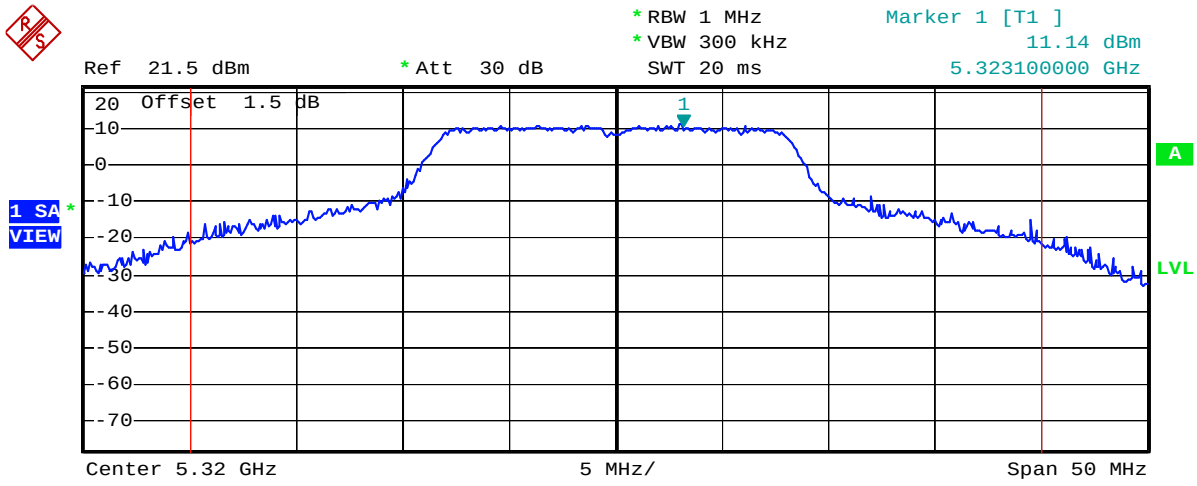
Tx Channel
Bandwidth 40 MHz Power 21.61 dBm

Channel: 56 / 5280 MHz



Tx Channel
Bandwidth 40 MHz Power 21.47 dBm

Channel: 64 / 5320 MHz



Tx Channel
Bandwidth 40 MHz Power 21.54 dBm

5.2.5. Test Result of EIRP Power (Mode 1)

- Temperature: 15°C
- Relative Humidity: 62%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Steven Lu

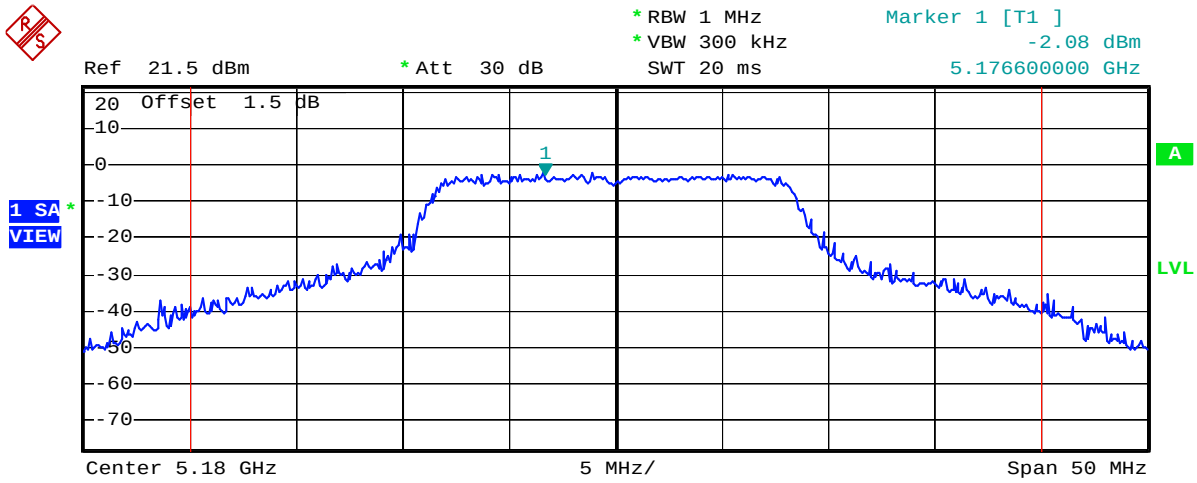
Antenna No.	Gain (dBi)	Channel	Frequency (MHz)	Output Power (dBm)	Limits (dBm)
1	4.00	36	5180 MHz	20.82	23
1	4.00	40	5200 MHz	20.85	23
1	4.00	48	5240 MHz	20.79	23
1	4.00	52	5260 MHz	25.61	30
1	4.00	56	5280 MHz	25.47	30
1	4.00	64	5320 MHz	25.54	30

5.2.6. Test Result of Conducted Power (Mode 2)

- Temperature: 15°C
- Relative Humidity: 62%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Steven Lu

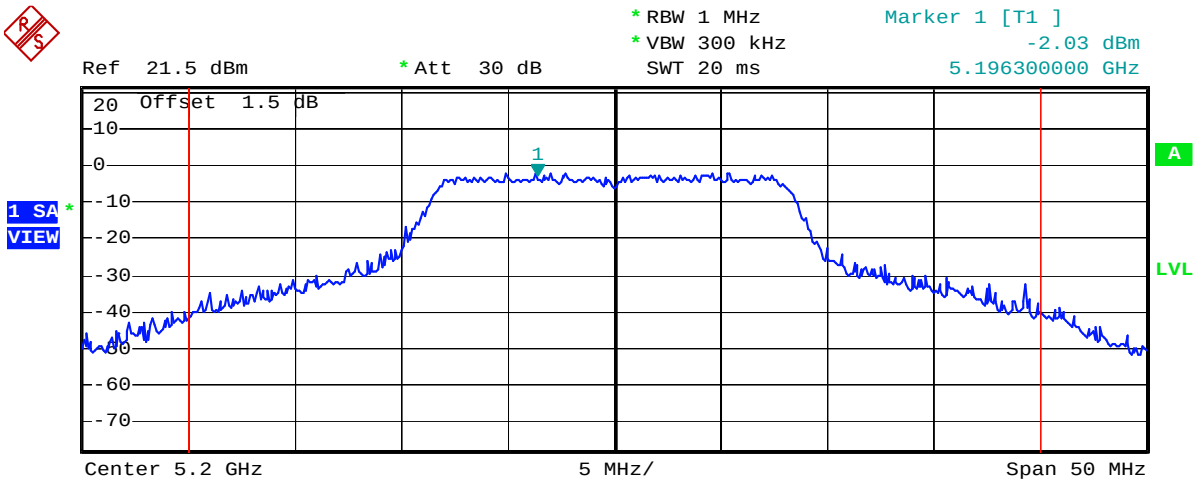
Channel	Frequency (MHz)	Output Power (dBm)	Limits (dBm)
36	5180 MHz	7.96	8.5
40	5200 MHz	7.99	8.5
48	5240 MHz	7.93	8.5
52	5260 MHz	14.77	15.5
56	5280 MHz	14.93	15.5
64	5320 MHz	14.83	15.5

Channel: 36 / 5180 MHz



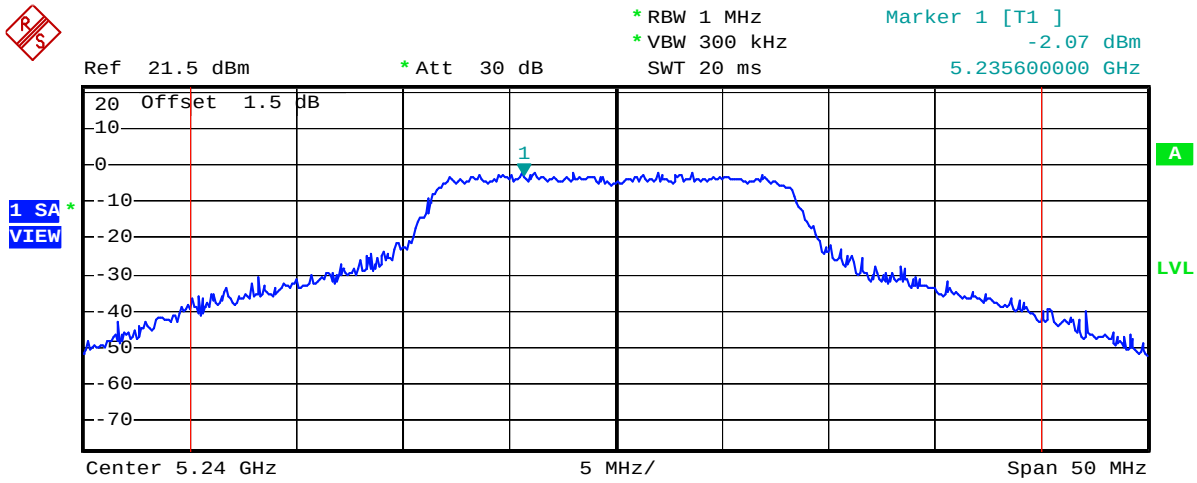
Tx Channel
Bandwidth 40 MHz **Power 7.96 dBm**

Channel: 40 / 5200 MHz



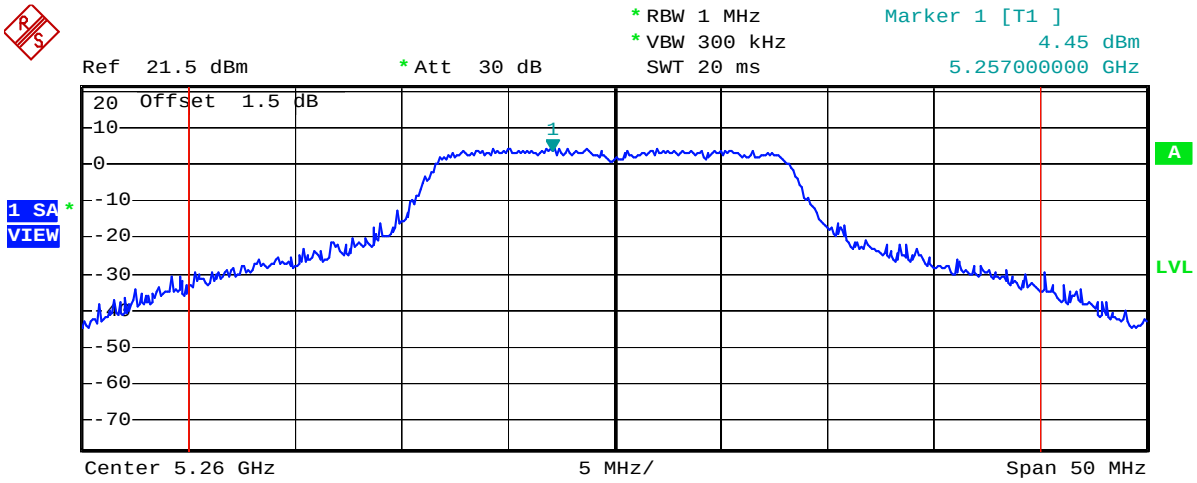
Tx Channel
Bandwidth 40 MHz **Power 7.99 dBm**

Channel: 48 / 5240 MHz



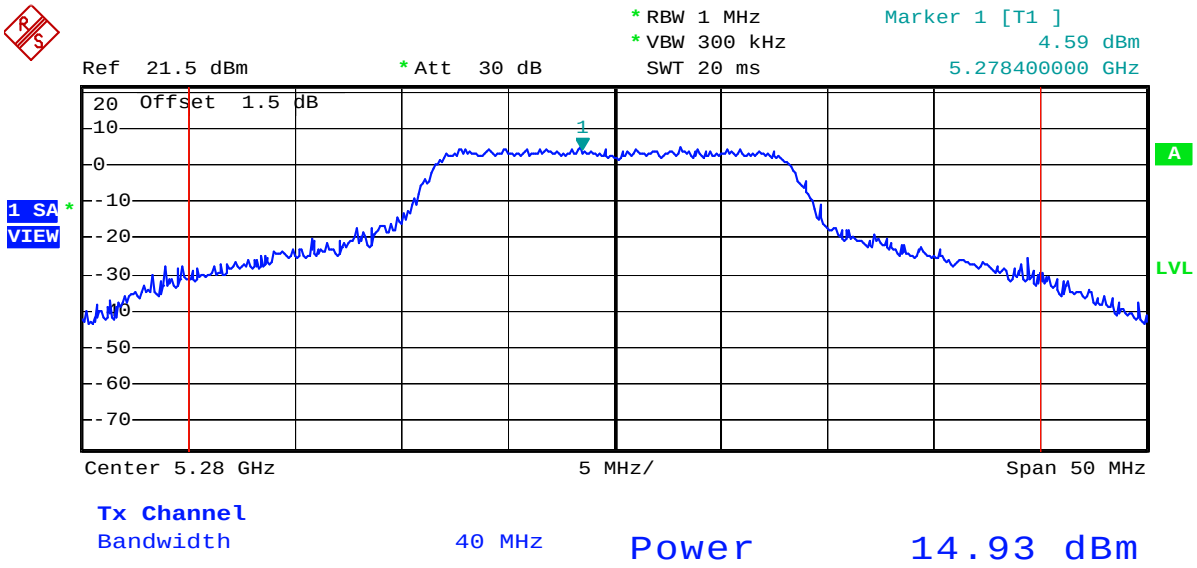
Tx Channel
Bandwidth 40 MHz Power 7.93 dBm

Channel: 52 / 5260 MHz



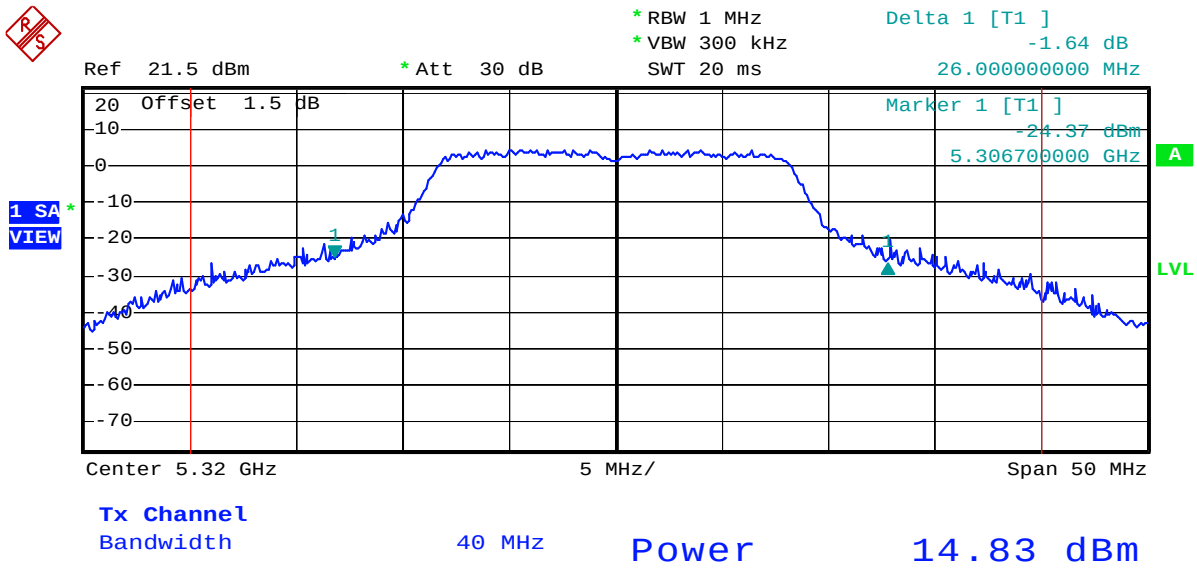
Tx Channel
Bandwidth 40 MHz Power 14.77 dBm

Channel: 56 / 5280 MHz



Tx Channel
Bandwidth 40 MHz **Power 14.93 dBm**

Channel: 64 / 5320 MHz



Tx Channel
Bandwidth 40 MHz **Power 14.83 dBm**

5.2.7 Test Result of EIRP Power (Mode 2)

- Temperature: 15°C
- Relative Humidity: 62%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Steven Lu

Antenna No.	Gain (dBi)	Channel	Frequency (MHz)	Output Power (dBm)	Limits (dBm)
4	14.50	36	5180 MHz	22.46	23
4	14.50	40	5200 MHz	22.49	23
4	14.50	48	5240 MHz	22.43	23
4	14.50	52	5260 MHz	29.27	30
4	14.50	56	5280 MHz	29.43	30
4	14.50	64	5320 MHz	29.33	30

5.3. Test of Peak Power Spectral Density

5.3.1. Measuring Instruments

Item 18 of the table is on section 6.

5.3.2. Test Procedures

1. According to FCC DA 02-2138 test procedure, EUT connected to spectrum analyzer, then used the same setup as power measurement of spectrum analyzer.
2. Repeated the 1 for the middle and highest channel of the EUT.

5.3.3. Test Setup Layout

Spectrum Analyzer **EUT**

5.3.4. Test Result of conducted peak power spectral density (Mode 1)

-
- Temperature: 15°C
- Relative Humidity: 62%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Steven Lu

Channel	Frequency (MHz)	Power Density (dBm)	Limits (dBm)
36	5180 MHz	-2.07	4
40	5200 MHz	-2.66	4
48	5240 MHz	-1.40	4
52	5260 MHz	2.79	11
56	5280 MHz	2.53	11
64	5320 MHz	3.11	11

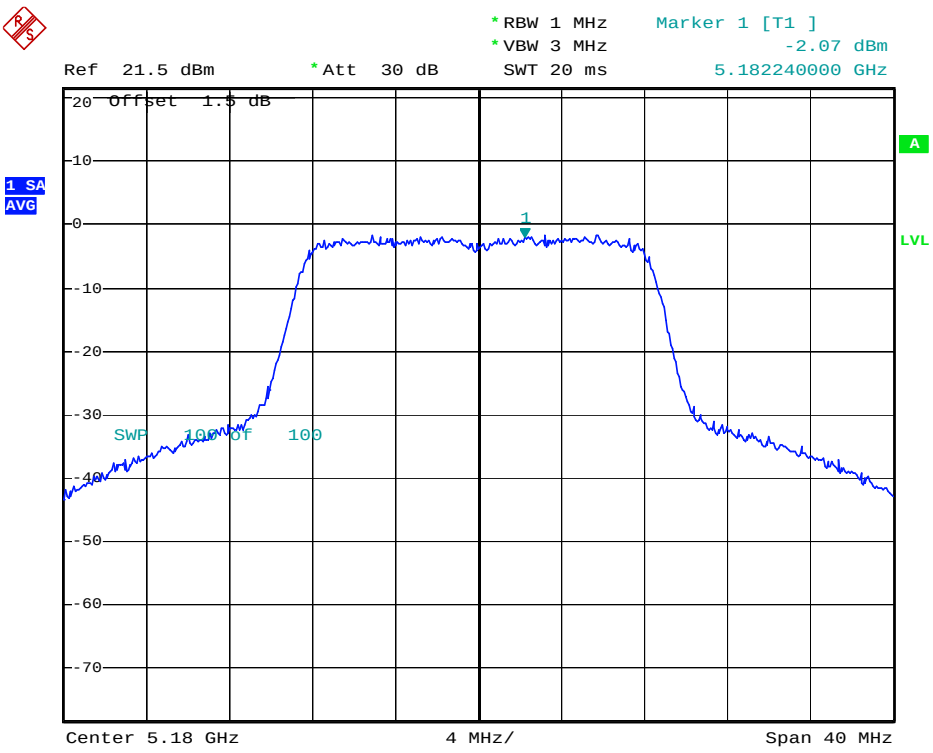
5.3.5. Test Result of EIRP peak power spectral density (Mode 1)

- Temperature: 15°C
- Relative Humidity: 62%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Steven Lu

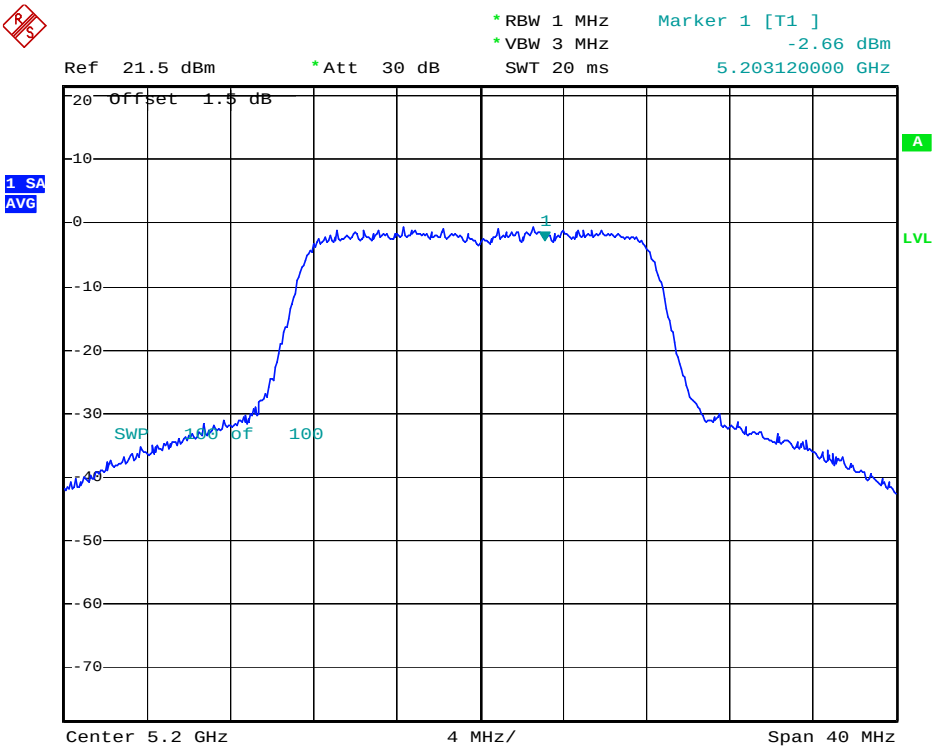
Antenna No.	Gain (dBi)	Channel	Frequency (MHz)	Power Density (dBm)	Limits (dBm)
1	4.00	36	5180 MHz	1.93	10
1	4.00	40	5200 MHz	1.34	10
1	4.00	48	5240 MHz	2.60	10
1	4.00	52	5260 MHz	6.79	17
1	4.00	56	5280 MHz	6.53	17
1	4.00	64	5320 MHz	7.11	17

Mode 1

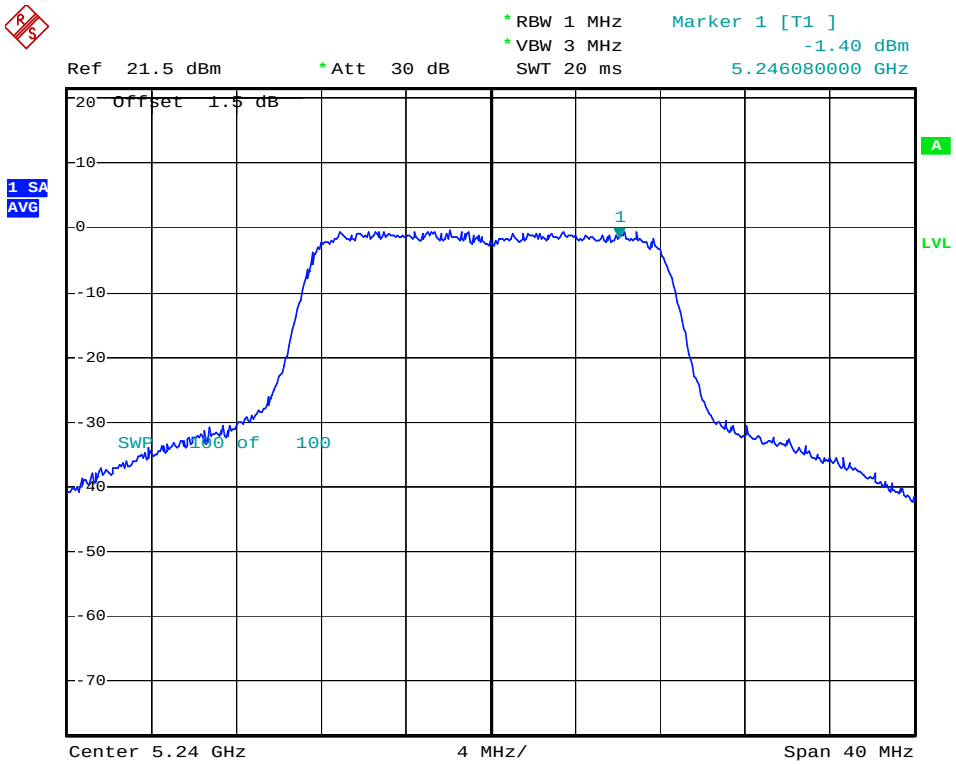
Channel: 36 / 5180 MHz



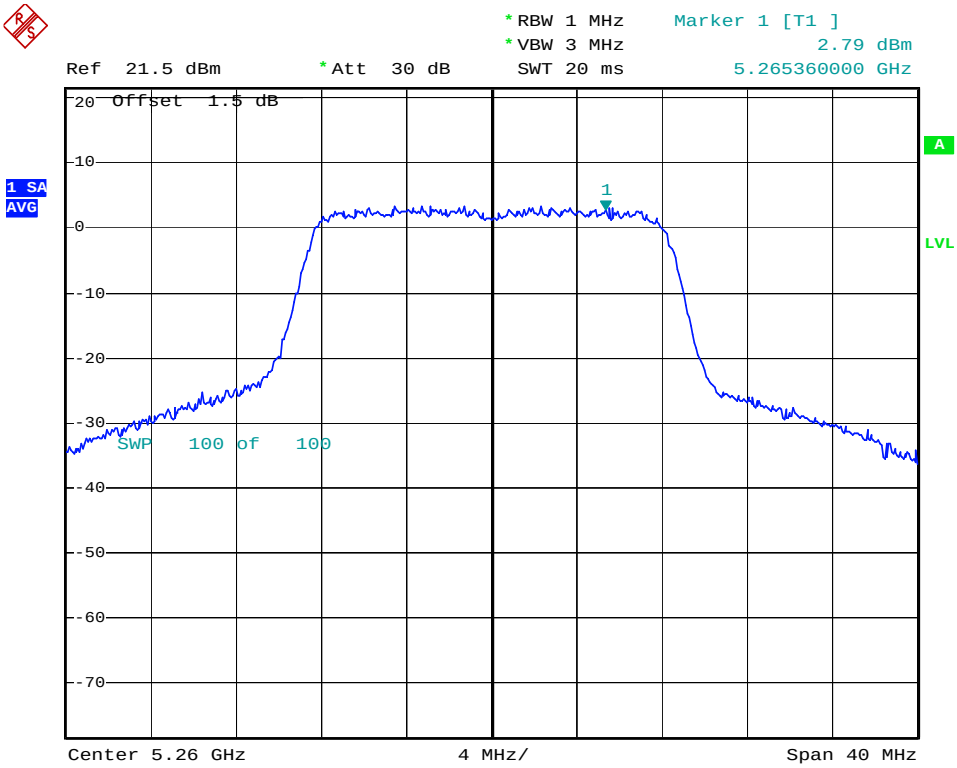
Channel: 40 / 5200 MHz



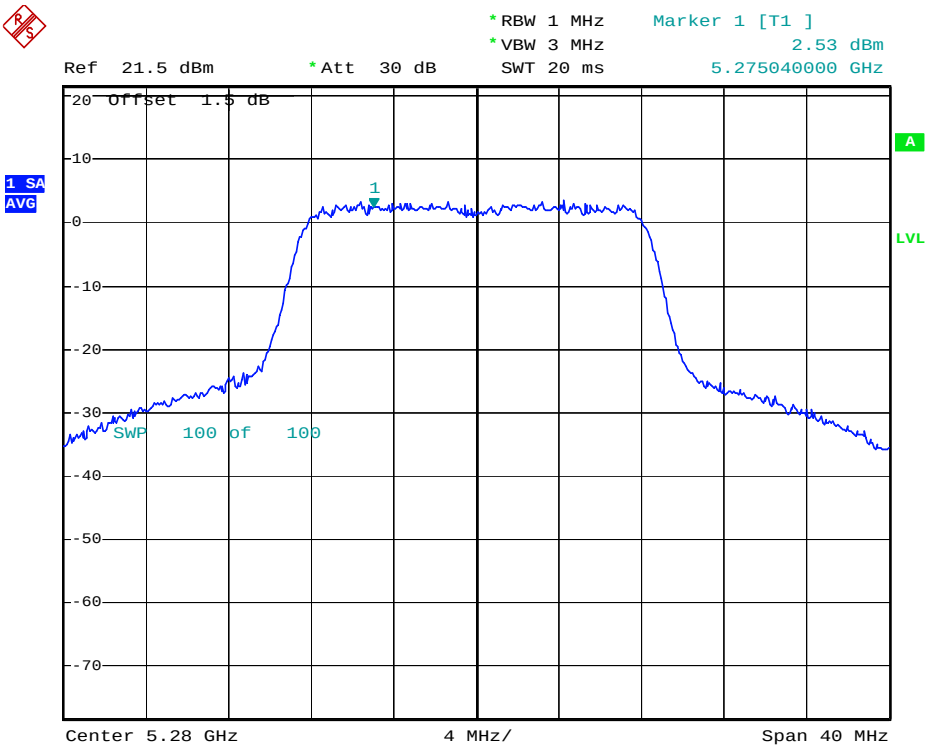
Channel: 48 / 5240 MHz



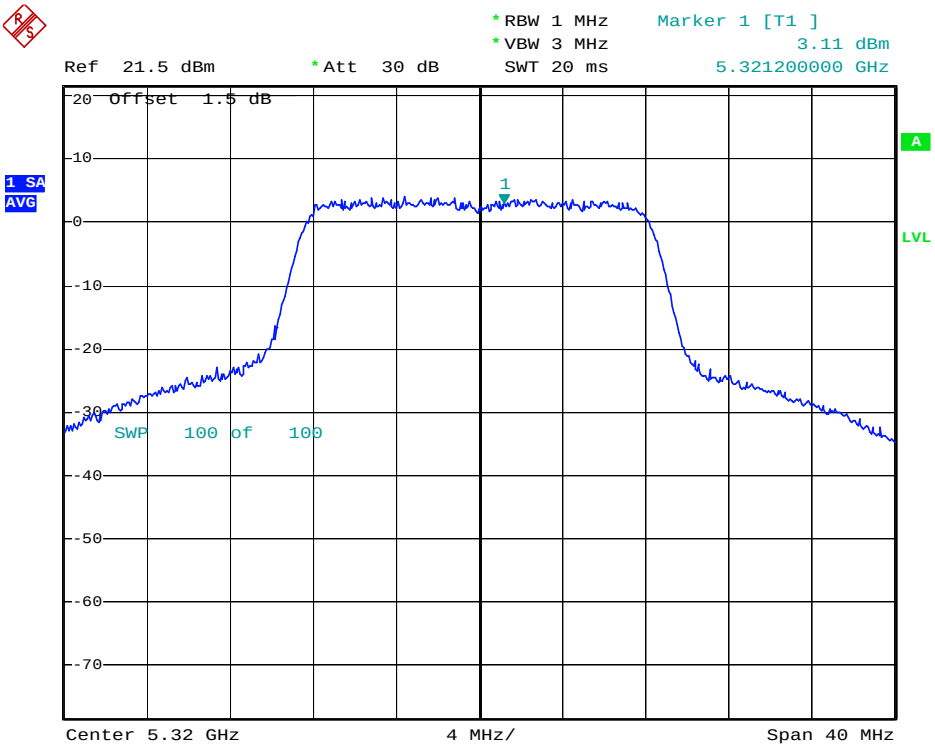
Channel: 52 / 5260 MHz



Channel: 56 / 5280 MHz



Channel: 64 / 5320 MHz



5.3.6. Test Result of conducted peak power spectral density (Mode 2)

- Temperature: 15°C
- Relative Humidity: 62%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Steven Lu

Channel	Frequency (MHz)	Power Density (dBm)	Limits (dBm)
36	5180 MHz	-8.63	-4.5
40	5200 MHz	-8.48	-4.5
48	5240 MHz	-9.13	-4.5
52	5260 MHz	-2.01	2.5
56	5280 MHz	-2.05	2.5
64	5320 MHz	-1.33	2.5

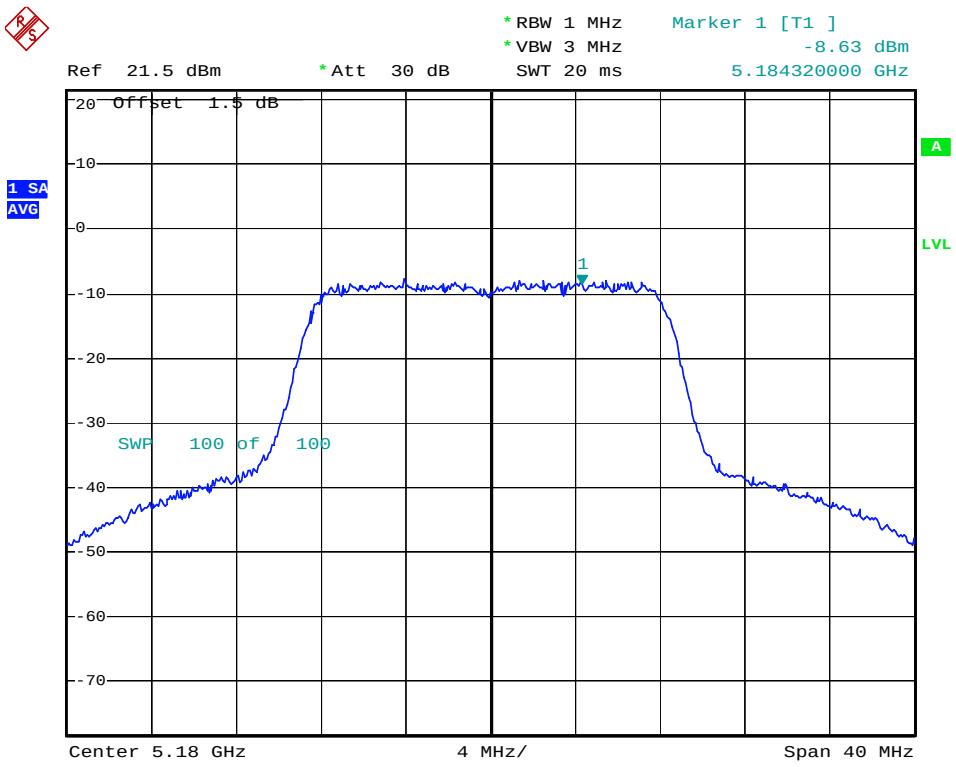
5.3.7. Test Result of EIRP peak power spectral density (Mode 2)

- Temperature: 15°C
- Relative Humidity: 62%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Steven Lu

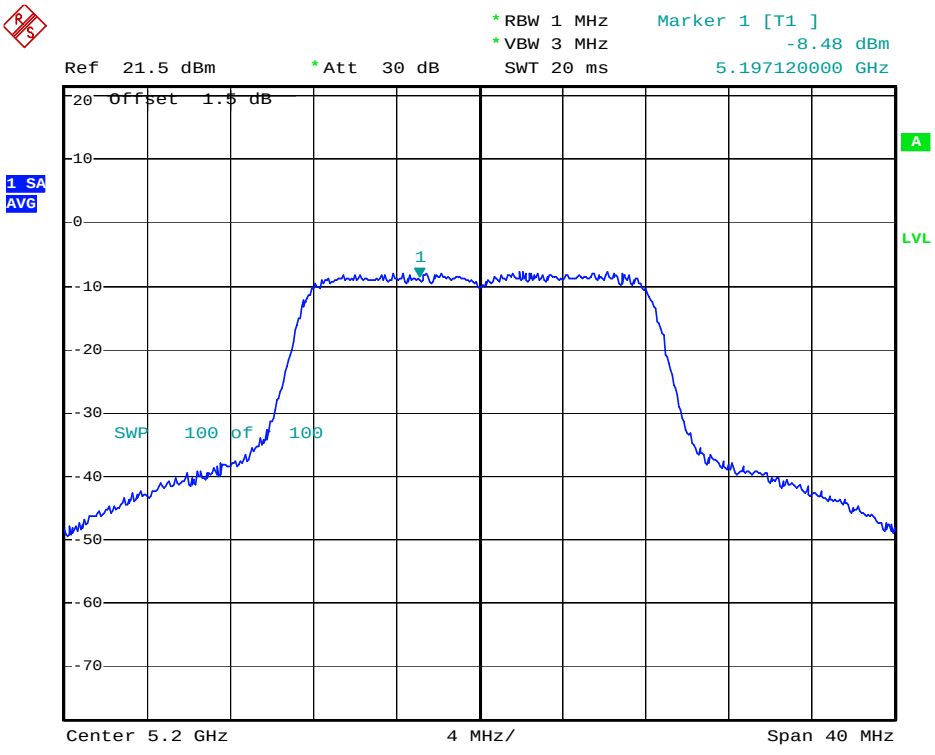
Antenna No.	Gain (dBi)	Channel	Frequency (MHz)	Power Density (dBm)	Limits (dBm)
4	14.50	36	5180 MHz	5.87	10
4	14.50	40	5200 MHz	6.02	10
4	14.50	48	5240 MHz	5.37	10
4	14.50	52	5260 MHz	12.49	17
4	14.50	56	5280 MHz	12.45	17
4	14.50	64	5320 MHz	13.17	17

Mode 2

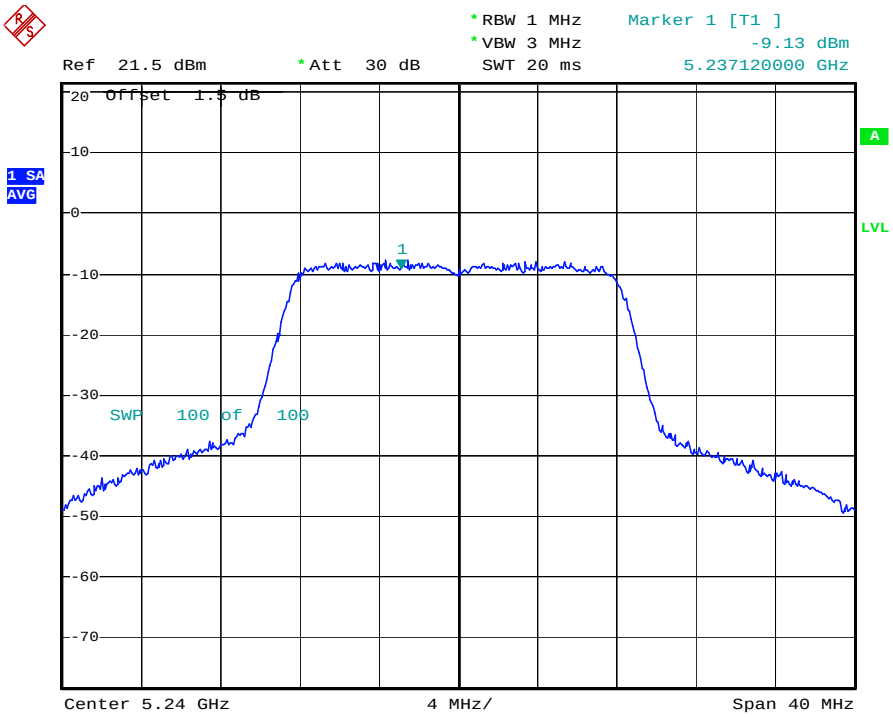
Channel: 36 / 5180 MHz



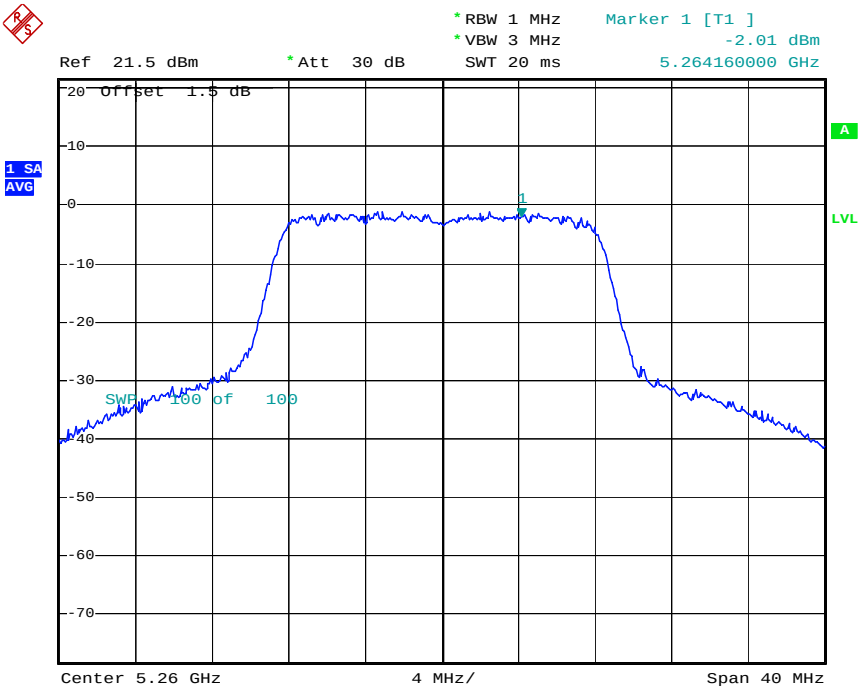
Channel: 40 / 5200 MHz



Channel: 48 / 5240 MHz

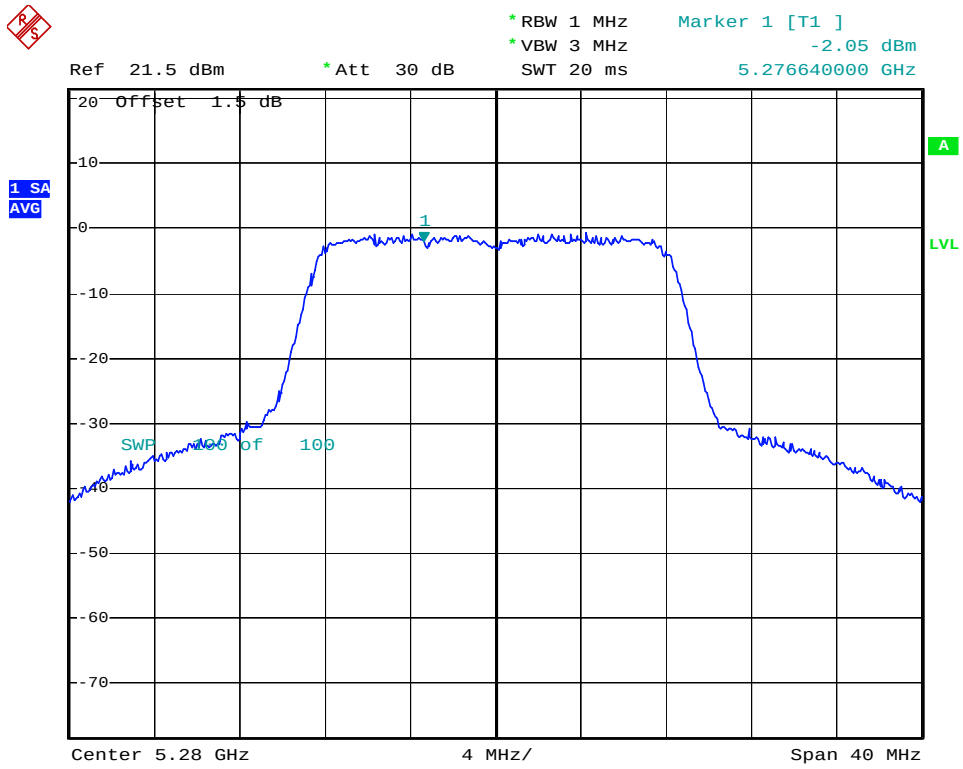


Channel: 52 / 5260 MHz

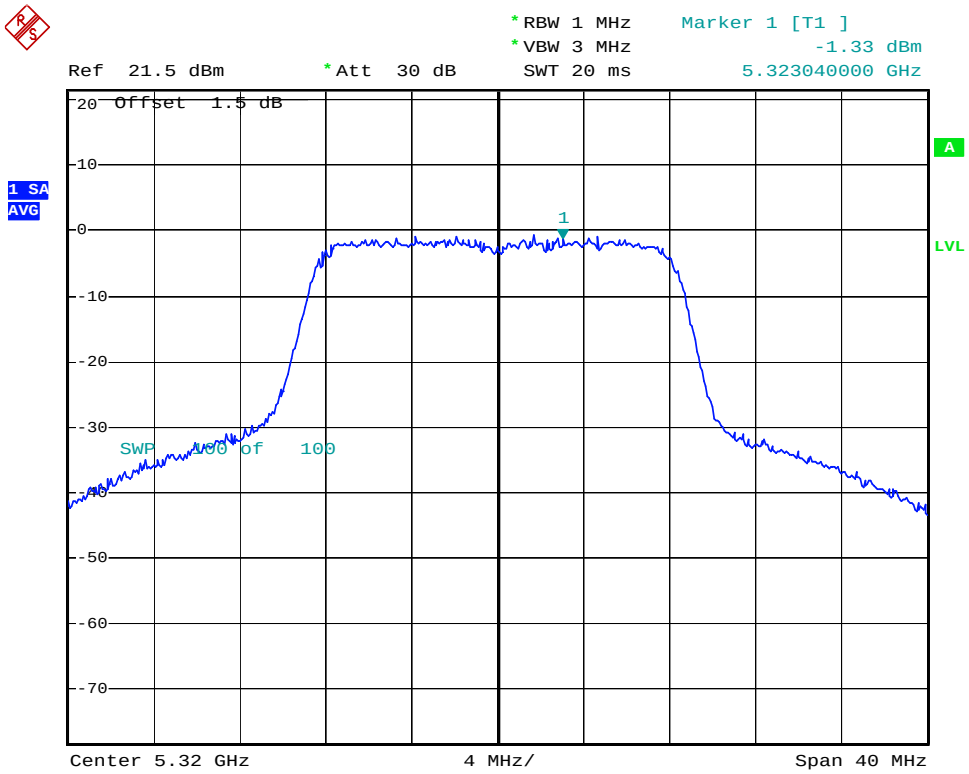


Date: 6.MAR.2005 08:40:26

Channel: 56 / 5280 MHz



Channel: 64 / 5320 MHz



5.4. Ratio of the Peak Excursion

5.4.1. Measuring Instruments

Item 18 of the table is on section 6.

5.4.2. Test Procedures

1. The transmitter output is connected to the spectrum analyzer through an attenuator.
2. Trace 1:Set RBW of spectrum analyzer to 1000kHz and VBW to 3000kHz.
3. Use peak detector mode, Max-hold and search the peak of trace 1.
4. Trace 2:Set RBW of spectrum analyzer to 1000kHz and VBW to 300kHz.
5. Use sample detector mode, trace max-hold and search the peak of trace 2
6. The delta limits is 13dB between trace 1 and trace 2 of the peak value.

5.4.3. Test Setup Layout

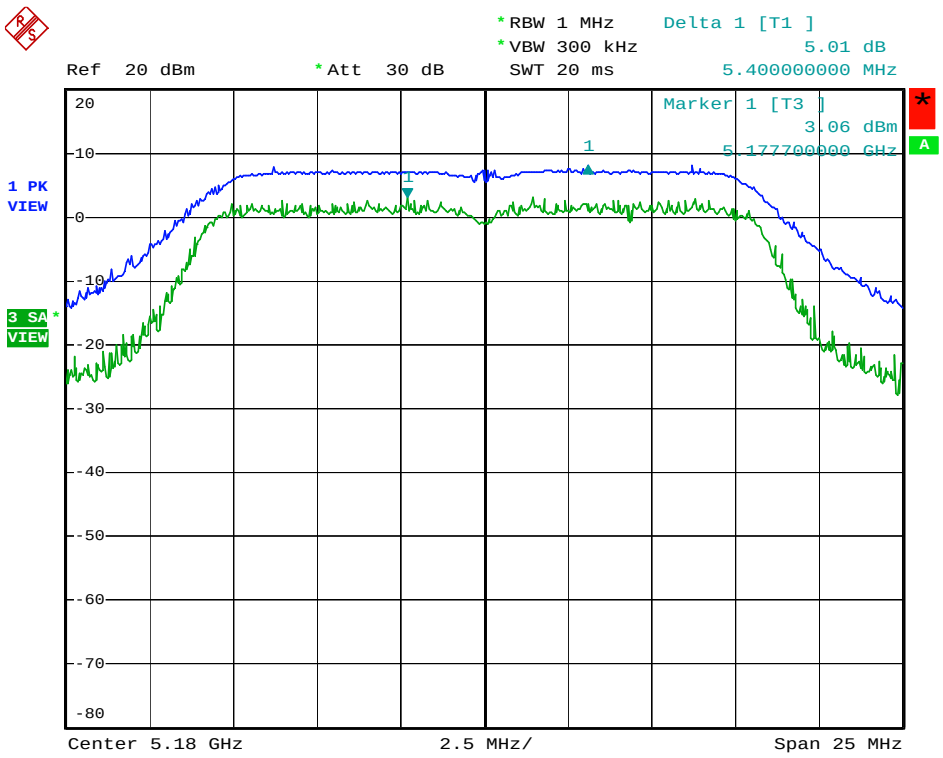
Spectrum Analyzer **EUT**

5.4.4. Test Result of conducted peak power spectral density

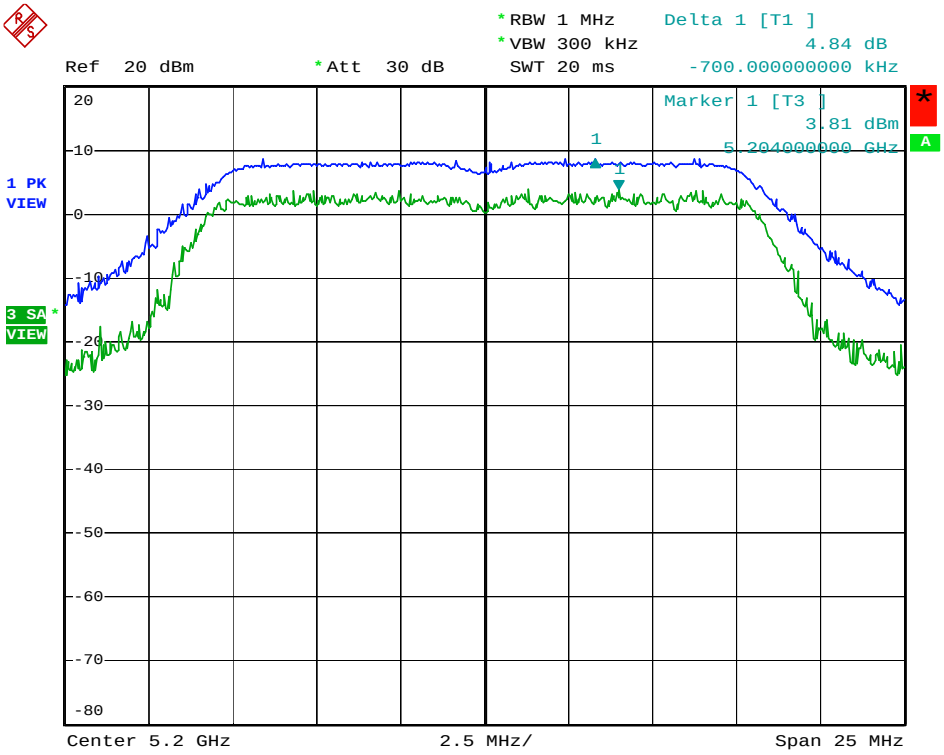
- Temperature: 15°C
- Relative Humidity: 62%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Steven Lu

Channel	Frequency (MHz)	Peak Excursion (dB)	Max. Limits (dB)
36	5180 MHz	5.01	13
40	5200 MHz	4.84	13
48	5240 MHz	4.77	13
52	5260 MHz	5.85	13
56	5280 MHz	5.02	13
64	5320 MHz	4.67	13

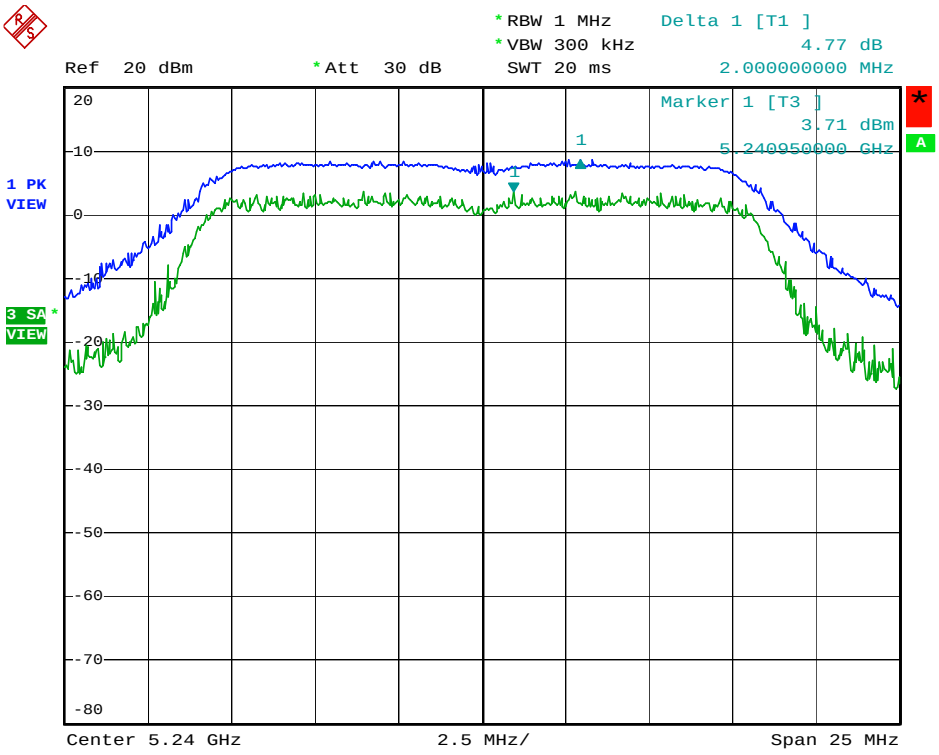
Channel: 36 / 5180 MHz



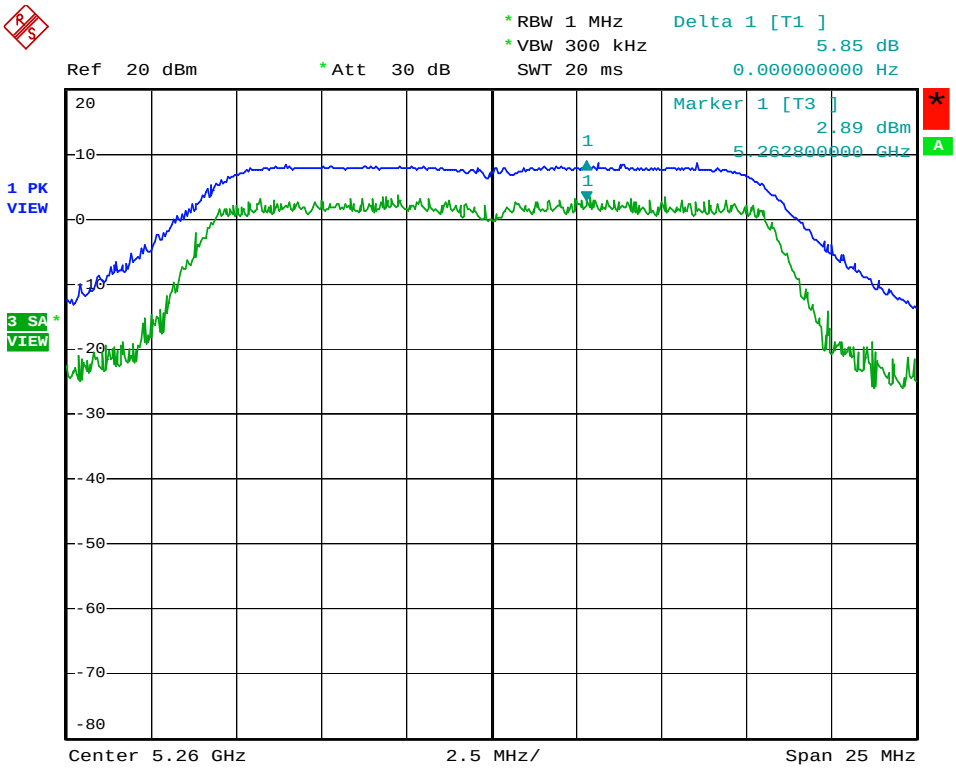
Channel: 40 / 5200 MHz



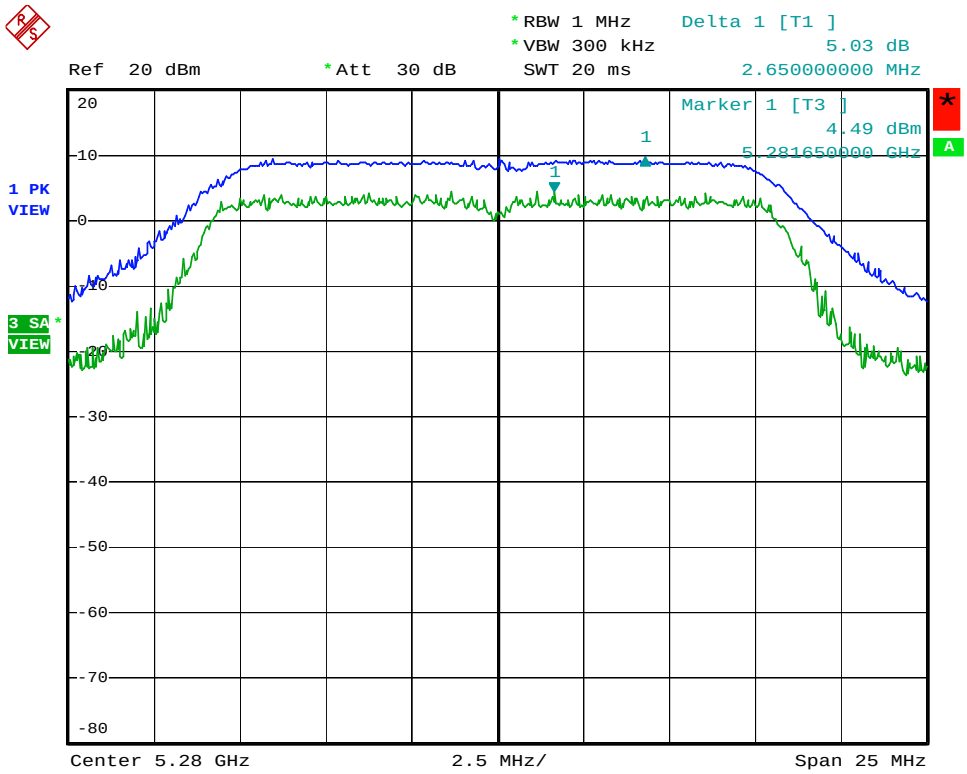
Channel: 48 / 5240 MHz



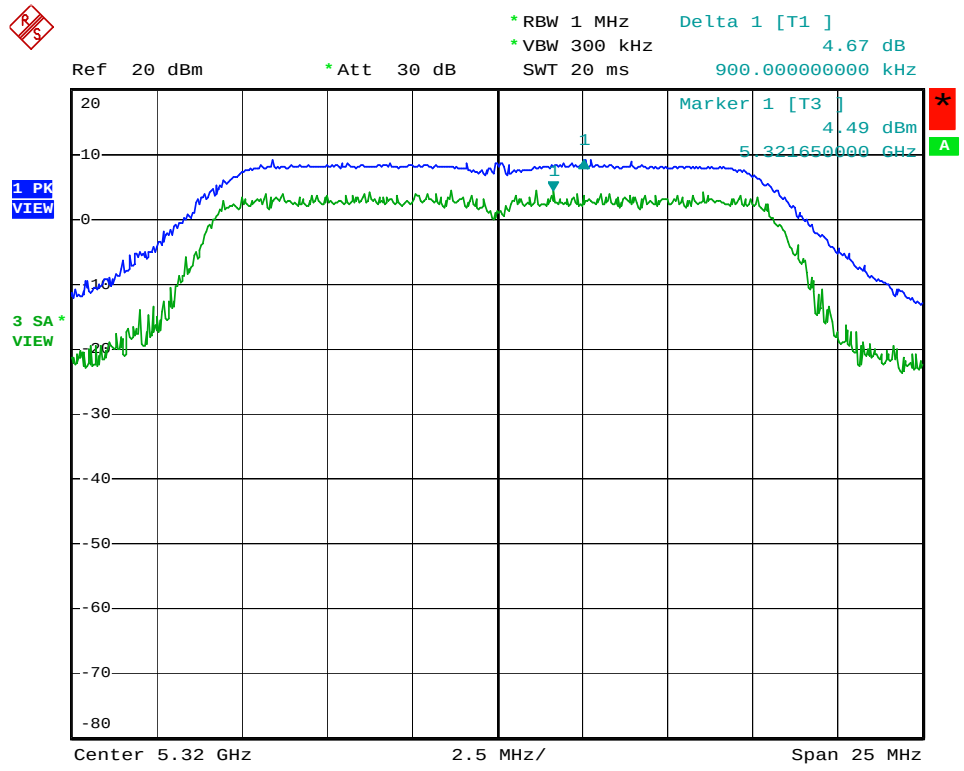
Channel: 52 / 5260 MHz



Channel: 56 / 5280 MHz



Channel: 64 / 5320 MHz



5.5. Test of Band Edges Emission

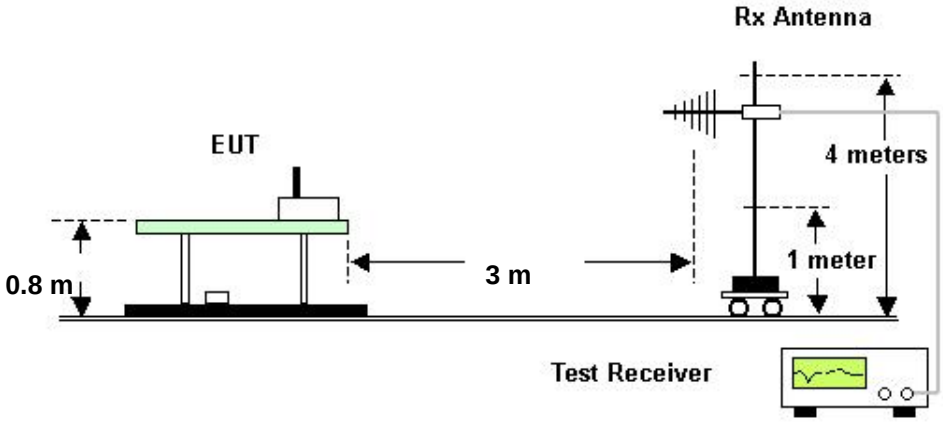
5.5.1. Measuring Instruments

Please reference item 6~17 in chapter 6 for the instruments used for testing.

5.5.2. Test Procedures

1. Configure the EUT according to ANSI C63.4.
2. The EUT was placed on the top of the turntable 0.8 meter above ground.
3. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
4. The transmitter is set to the lowest channel of each band.
5. The turntable was rotated 360 degrees to determine the position of the highest radiation.
6. Set both RBW and VBW of spectrum analyzer to 1MHz with convenient frequency span including 1MHz bandwidth from lower band edge.
7. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization. Record the maximum value of band-edge.
8. Remove the transmitter and replace it with a broadband substitution antenna.
9. With the substitution antennas at maximum polarized and with the signal generator tuned to a particular fundamental frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading (item 6). This should be done carefully repeating the adjustment of the test antenna and generator output.
10. Pd(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi). Pd is the dipole equivalent power and Pg is the generator output power into the substitution antenna.
11. The lowest and highest channels of band edges of each band emission was measured and recorded.

5.5.3. Test Setup Layout



5.5.4. Test Result

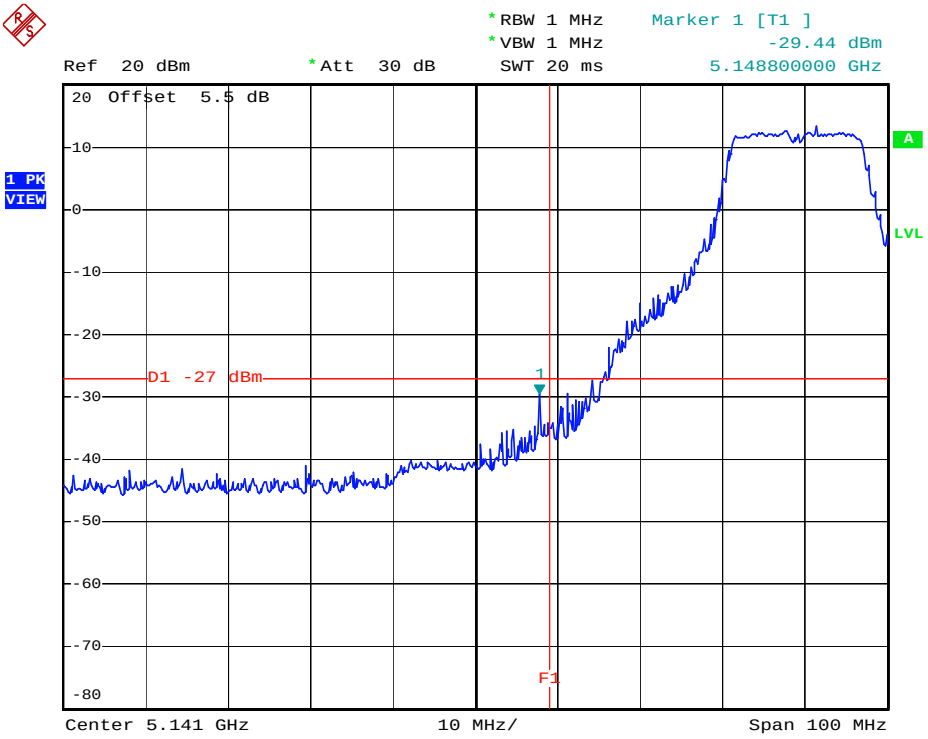
- Temperature: 15°C
- Relative Humidity: 62%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Steven Lu

Ant. No.	Gain (dBi)	Freq. Band (MHz)	Freq. (MHz)	Level* (dBm/MHz)	Margin (dB)	Limit (dBm/MHz)
1	4.00	5150~5250	5150.0	-29.44	-2.44	-27
1	4.00	5250~5350	5350.0	-28.58	-1.58	-27
4	14.50	5150~5250	5150.0	-30.31	-3.31	-27
4	14.50	5250~5350	5350.0	-27.93	-0.93	-27

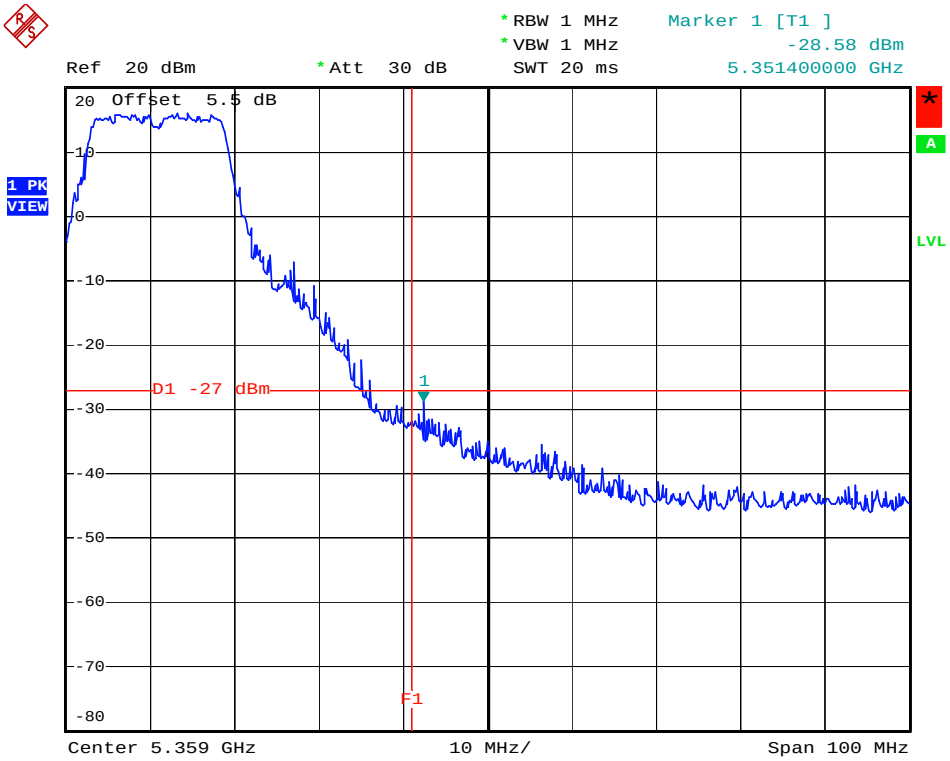
Level*: The max EIRP emission in the band-edge.

Mode 1

Channel: 36 / 5180 MHz

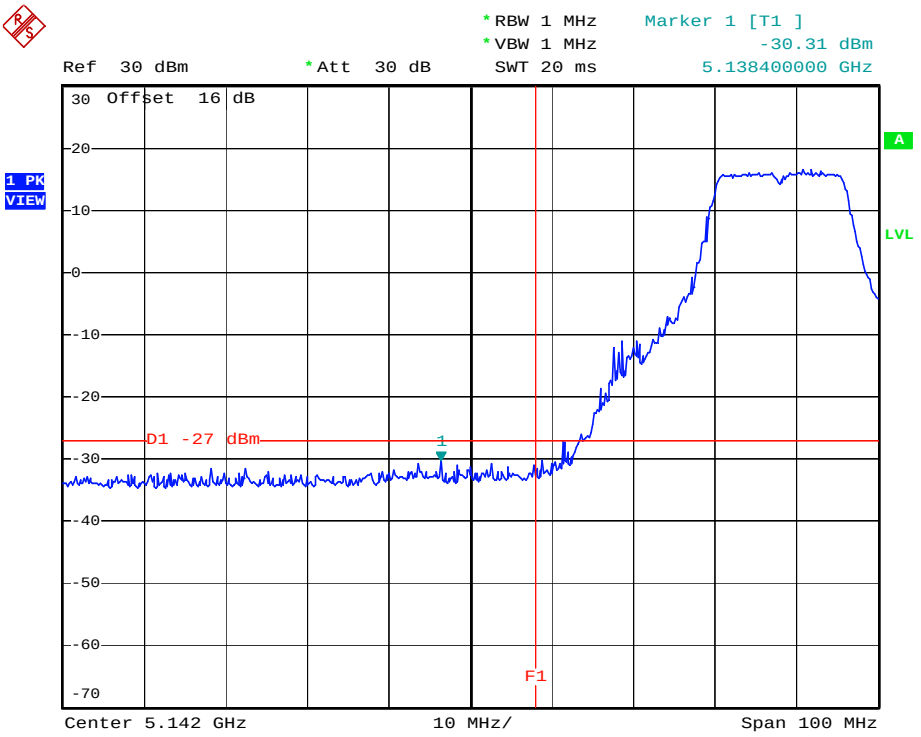


Channel: 64 / 5320 MHz

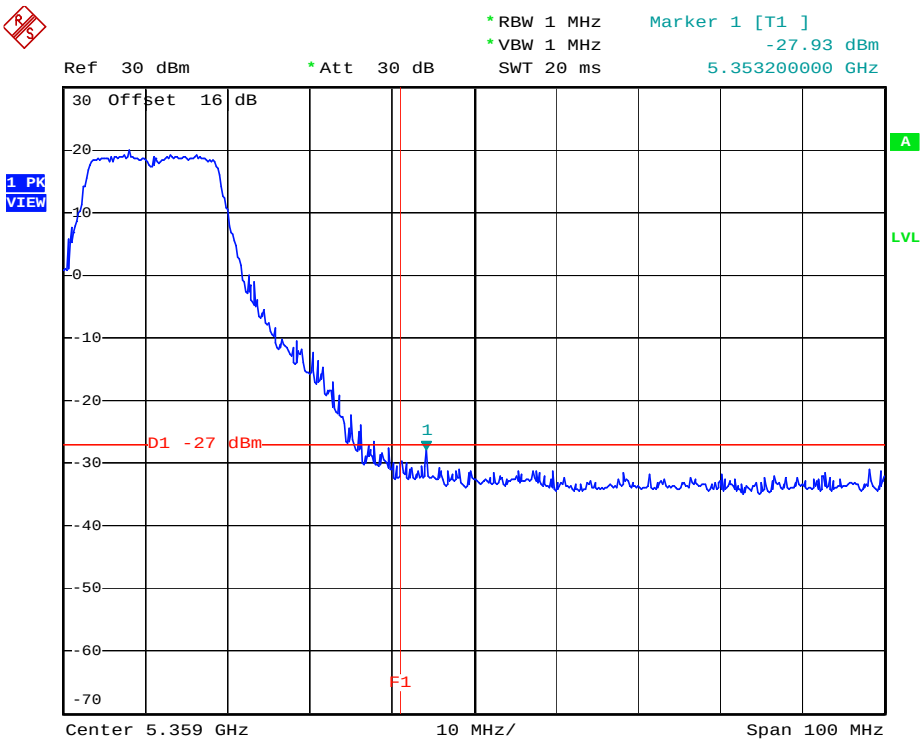


Mode 2

Channel: 36 / 5180 MHz



Channel: 64 / 5320 MHz



5.6. Test of Frequency Stability

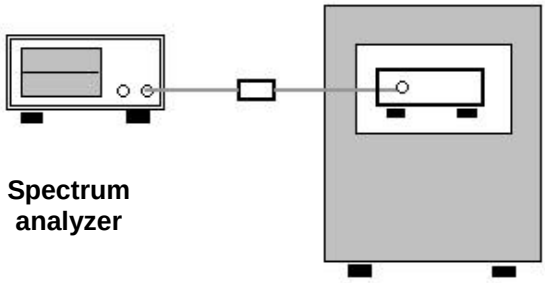
5.6.1. Measuring Instruments

Item 18 of the table is on section 6.

5.6.2. Test Procedures

1. The transmitter output is connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 10kHz and VBW to 10kHz.
3. Use mark counter function to counter the peak un-modulation carrier frequency.
4. The test extreme voltage is, according to 2.1055(d)(1), is to change the primary supply voltage from 85 to 115 percent of the nominal value
5. Extreme temperature rule is, according to 2.1055(a)(1), -30˚C~50˚C.

5.6.3. Test Setup Layout



5.6.4. Test Result

- Modulation Type: Un-Modulated Carrier
- Temperature: 25°C
- Relative Humidity: 62 %
- Duty cycle of the equipment during the test: 100%

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
(V)	5260.0000
126.50	5260.0130
110.00	5260.0130
93.50	5260.0025
Max. Deviation (MHz)	0.0130
Max. Deviation (ppm)	2.47

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
(° C)	5260.0000
-30	5260.0130
-20	5260.0130
-10	5260.0025
0	5260.0130
10	5260.0258
20	5260.0025
30	5260.0130
40	5260.0130
50	5260.0025
Max. Deviation (MHz)	0.0258
Max. Deviation (ppm)	4.90

5.7. Test of AC Power Line Conducted Emission

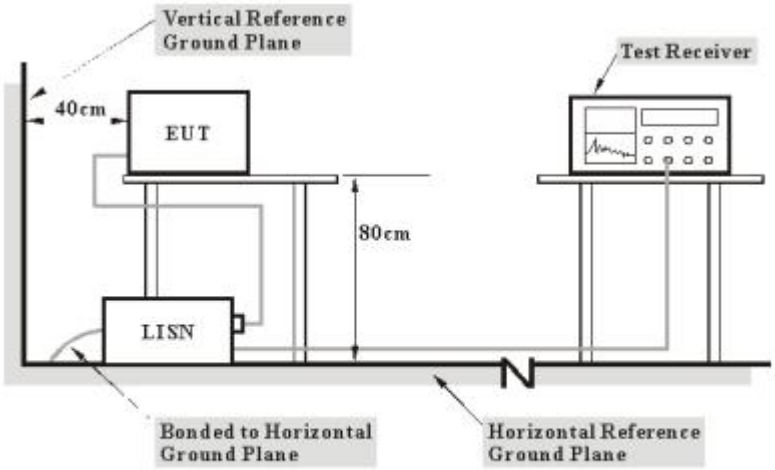
5.7.1. Measuring Instruments

Please reference item 1~5 in chapter 6 for the instruments used for testing.

5.7.2. Test Procedures

1. Configure the EUT according to ANSI C63.4.
2. The EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN)
4. All the support units are connected to the other LISNs. The LISN should provides 50uH/50ohms coupling impedance.
5. The frequency range from 150 KHz to 30 MHz was searched.
6. Use the Channel & Power Controlling software to make the EUT working on selected channel and expected output power, then use the “H” Patter Generator software to make the supporting equipments stay on working condition.
7. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
8. The measurement has to be done between each power line and ground at the power terminal for each RF channel. Only one RF channel has to be investigated since this test is independent with the RF channel selection.

5.7.3. Test Setup Layout

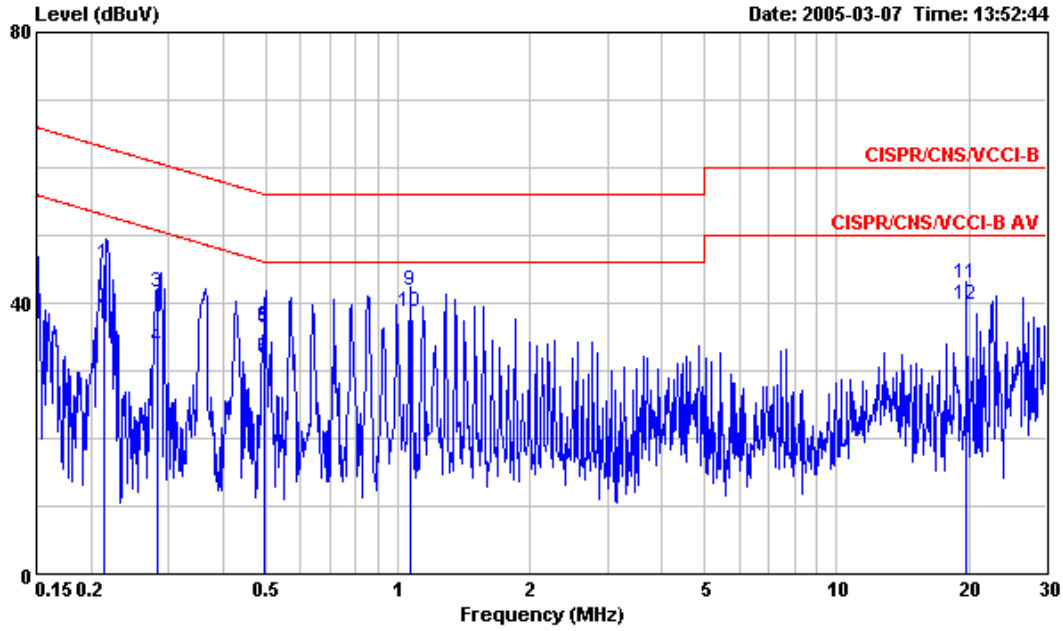


Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

5.7.4. Test Result of Conducted Emission

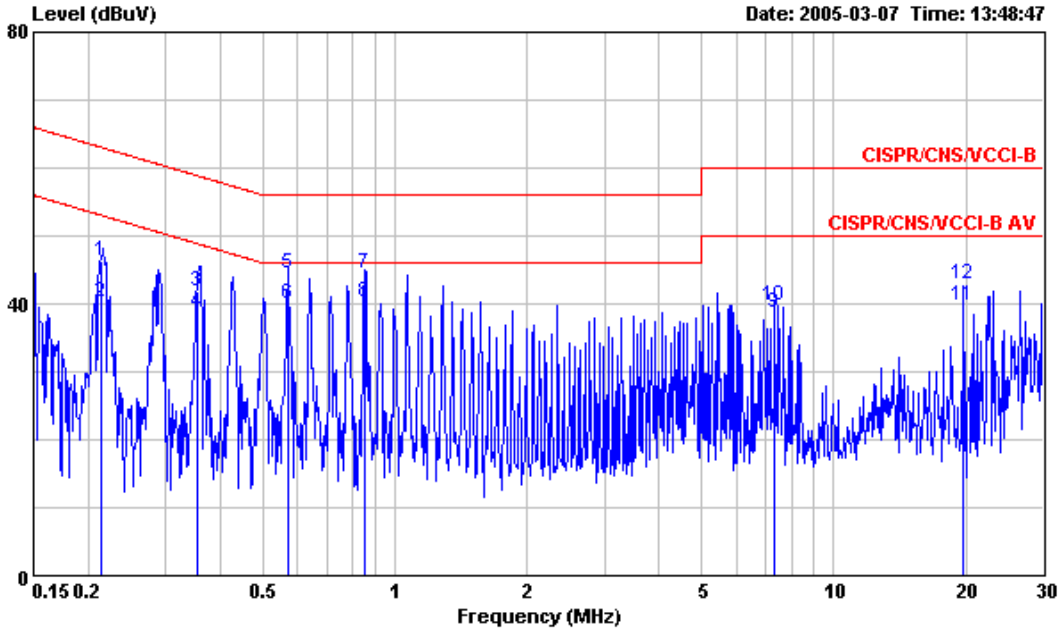
- Mode 1
- Temperature: 15°C
- Relative Humidity: 62%
- Test Engineer: Sky Wu

Line to Ground



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.2149230	45.77	-17.24	63.01	45.49	0.06	0.22	QP
2	0.2149230	39.25	-13.76	53.01	38.97	0.06	0.22	Average
3	0.2843170	41.54	-19.15	60.69	41.18	0.06	0.30	QP
4	0.2843170	33.32	-17.37	50.69	32.96	0.06	0.30	Average
5	0.4968230	36.43	-19.62	56.05	36.17	0.06	0.20	QP
6	0.4968230	31.96	-14.09	46.05	31.70	0.06	0.20	Average
7	0.4980930	31.96	-14.07	46.03	31.70	0.06	0.20	Average
8	0.4980930	36.45	-19.58	56.03	36.19	0.06	0.20	QP
9	1.067	41.85	-14.15	56.00	41.14	0.11	0.60	QP
10	1.067	38.74	-7.26	46.00	38.03	0.11	0.60	Average
11	19.708	42.94	-17.06	60.00	42.22	0.31	0.41	QP
12	19.708	39.73	-10.27	50.00	39.01	0.31	0.41	Average

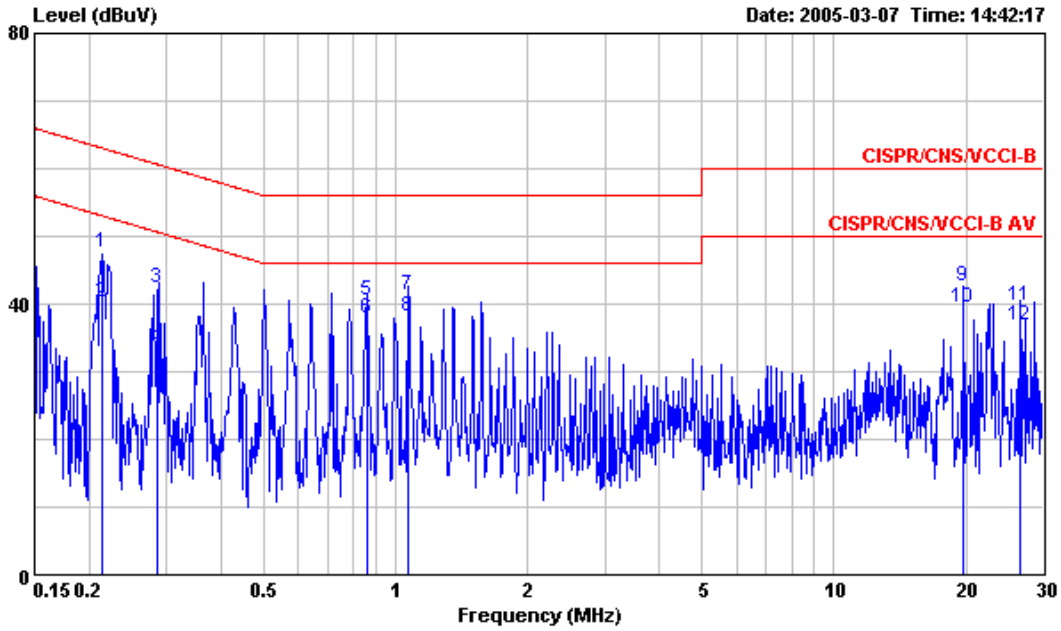
Neutral to Ground



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.2136430	46.30	-16.76	63.06	45.97	0.11	0.22	QP
2	0.2136430	40.32	-12.74	53.06	39.99	0.11	0.22	Average
3	0.3558420	41.93	-16.89	58.82	41.52	0.11	0.30	QP
4	0.3558420	38.79	-10.03	48.82	38.38	0.11	0.30	Average
5	0.5688200	44.42	-11.58	56.00	43.78	0.23	0.41	QP
6	@0.5688200	39.97	-6.03	46.00	39.33	0.23	0.41	Average
7	0.8527650	44.57	-11.43	56.00	43.66	0.23	0.68	QP
8	@0.8527650	40.18	-5.82	46.00	39.27	0.23	0.68	Average
9	7.327	38.67	-11.33	50.00	38.12	0.30	0.25	Average
10	7.327	39.68	-20.32	60.00	39.13	0.30	0.25	QP
11	19.709	39.75	-10.25	50.00	38.91	0.43	0.41	Average
12	19.709	42.90	-17.10	60.00	42.06	0.43	0.41	QP

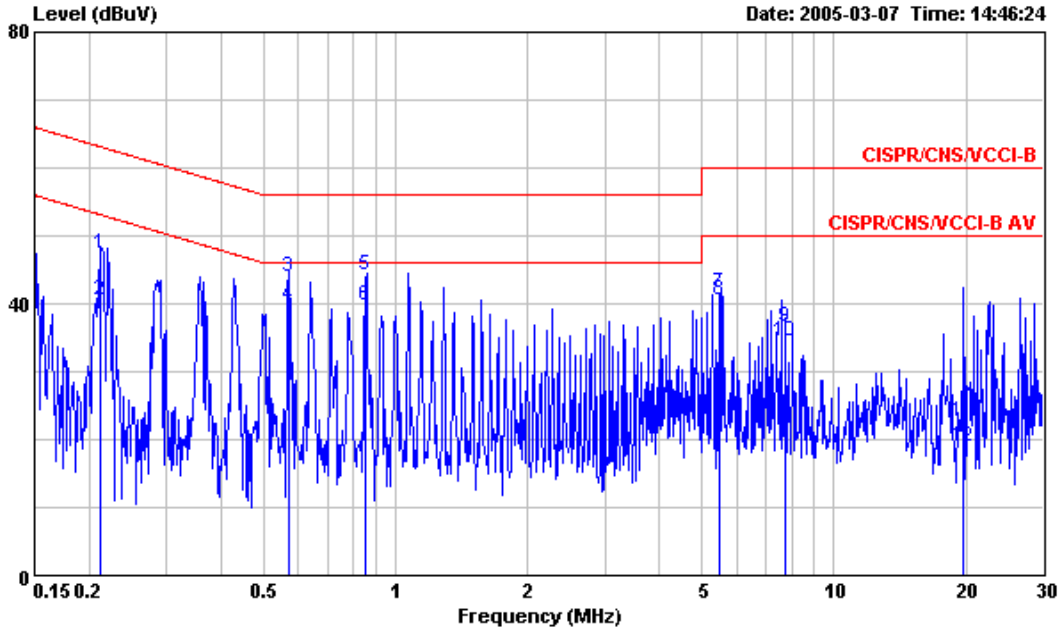
- Mode 2
- Temperature: 15°C
- Relative Humidity: 62%
- Test Engineer: Sky Wu

Line to Ground



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.2139240	47.56	-15.49	63.05	47.28	0.06	0.22	QP
2	0.2139240	40.16	-12.89	53.05	39.88	0.06	0.22	Average
3	0.2855170	42.44	-18.21	60.65	42.08	0.06	0.30	QP
4	0.2855170	33.47	-17.18	50.65	33.11	0.06	0.30	Average
5	0.8572950	40.60	-15.40	56.00	39.81	0.11	0.68	QP
6	0.8572950	37.91	-8.09	46.00	37.12	0.11	0.68	Average
7	1.070	41.43	-14.57	56.00	40.72	0.11	0.60	QP
8	1.070	38.29	-7.71	46.00	37.58	0.11	0.60	Average
9	19.708	42.54	-17.46	60.00	41.82	0.31	0.41	QP
10	19.708	39.42	-10.58	50.00	38.70	0.31	0.41	Average
11	26.548	39.76	-20.24	60.00	38.94	0.38	0.44	QP
12	26.548	36.87	-13.13	50.00	36.05	0.38	0.44	Average

Neutral to Ground

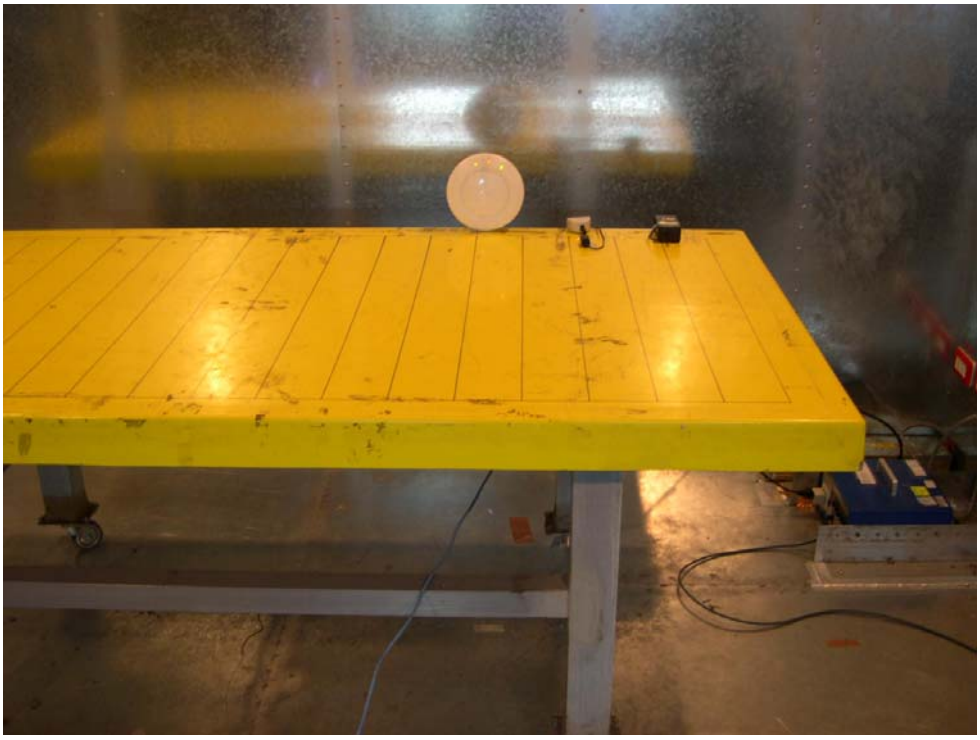


	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.2127940	47.34	-15.76	63.10	47.01	0.11	0.22	QP
2	0.2127940	40.46	-12.64	53.10	40.13	0.11	0.22	Average
3	0.5701000	44.07	-11.93	56.00	43.43	0.23	0.41	QP
4	0.5701000	39.63	-6.37	46.00	38.99	0.23	0.41	Average
5	0.8560150	44.12	-11.88	56.00	43.21	0.23	0.68	QP
6	0.8560150	39.83	-6.17	46.00	38.92	0.23	0.68	Average
7	5.491	41.71	-18.29	60.00	41.20	0.26	0.25	QP
8	5.491	40.48	-9.52	50.00	39.97	0.26	0.25	Average
9	7.774	36.46	-23.54	60.00	35.90	0.30	0.26	QP
10	7.774	34.53	-15.47	50.00	33.97	0.30	0.26	Average
11	19.752	22.70	-37.30	60.00	21.86	0.43	0.41	QP
12	19.752	18.84	-31.16	50.00	18.00	0.43	0.41	Average

5.7.5. Photographs of Conducted Emission Test Configuration

Mode 1

FRONT VIEW



REAR VIEW

Mode 2

FRONT VIEW

REAR VIEW

5.8. Test of Spurious Radiated Emission

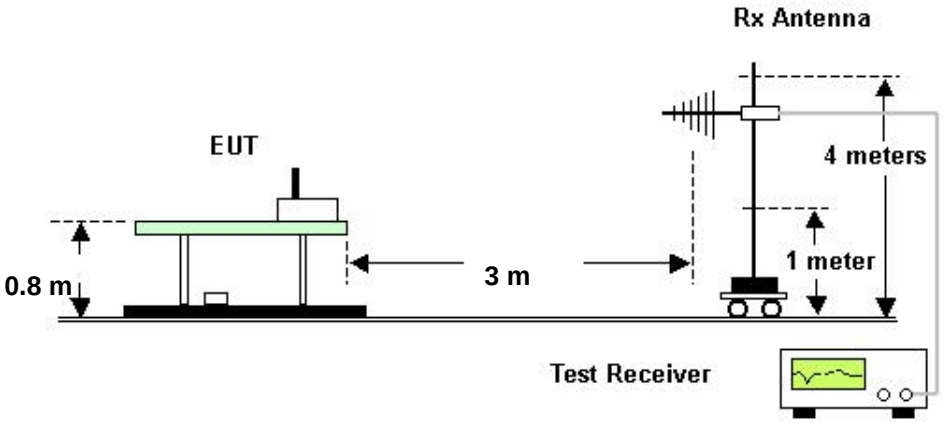
5.8.1. Measuring Instruments

Please reference item 6~17 in chapter 6 for the instruments used for testing.

5.8.2. Test Procedures

1. Configure the EUT according to ANSI C63.4.
2. The EUT was placed on the top of the turn table 0.8 meter above ground.
3. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turn table.
4. Power on the EUT and all the supporting units.
5. The turn table was rotated by 360 degrees to determine the position of the highest radiation.
6. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization.
7. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turn table was rotated (from 0 degree to 360 degrees) to find the maximum reading.
8. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
9. For emission above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
10. If the emission level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz and average method for above the 1GHz. the reported.
11. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB higher than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

5.8.3. Test Setup Layout

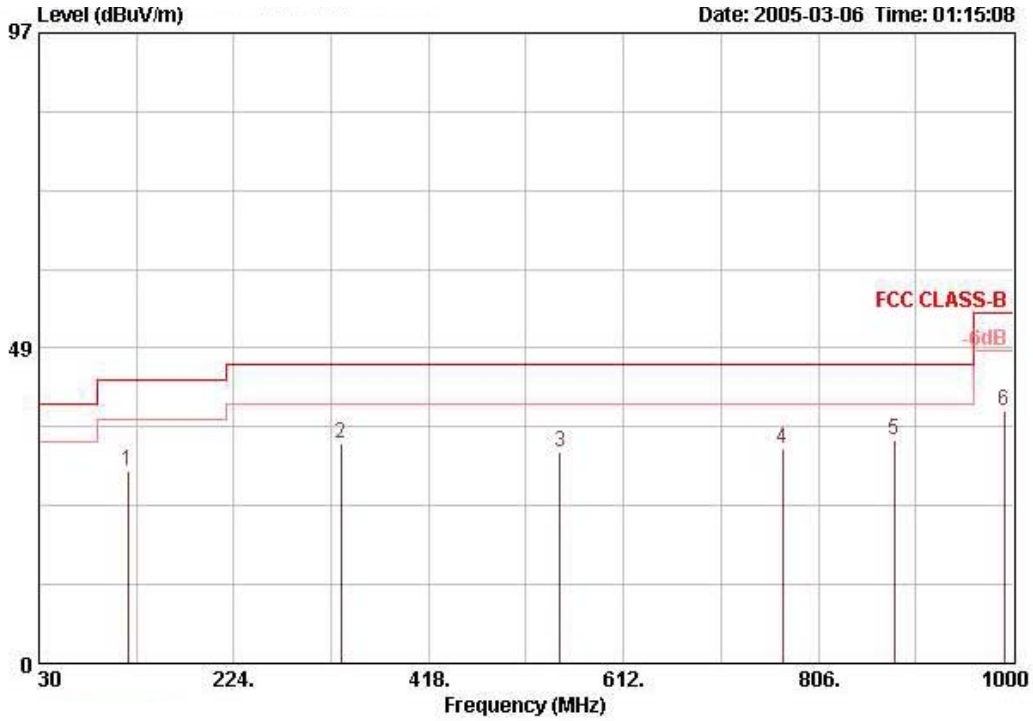


5.8.4. Test Results for CH 64 / 5320MHz (for emission below 1GHz)

- Modulation Type: OFDM
- Temperature: 15°C
- Relative Humidity: 62%
- Duty Cycle of the Equipment During the Test: 100.00%
- Test Engineer: Ted Chiu

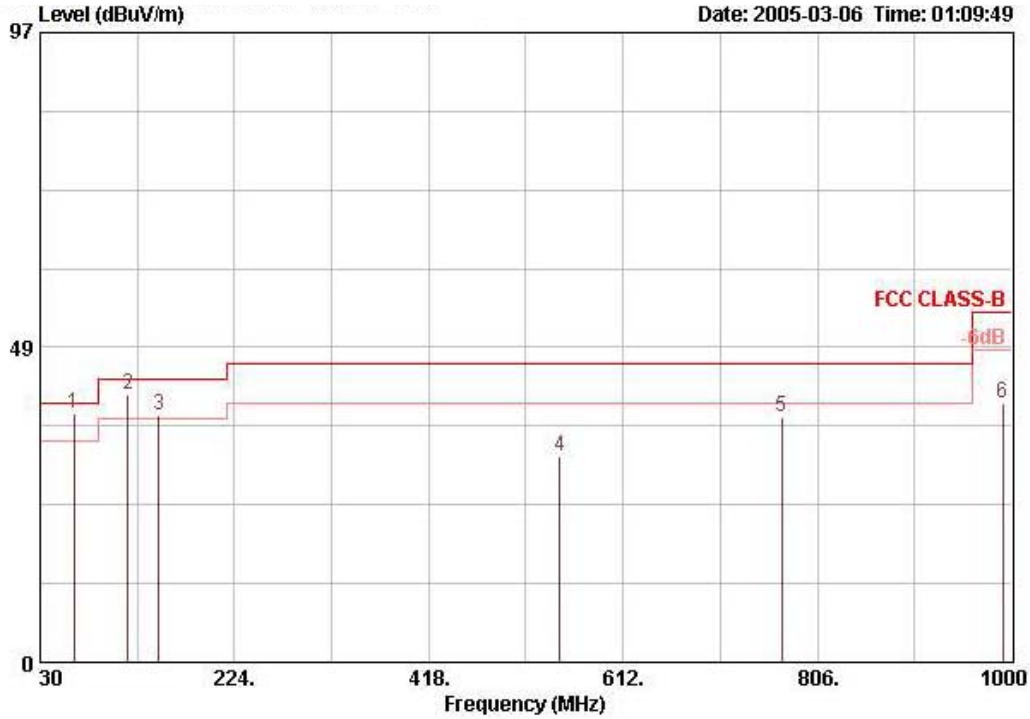
Mode 1

(A) Polarization: Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Pol/Phase	Remark
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		
1	118.270	29.53	-13.97	43.50	11.62	0.88	30.04	47.06	Peak	
2	330.700	33.95	-12.05	46.00	13.87	1.43	30.50	49.14	Peak	
3	548.950	32.61	-13.39	46.00	18.28	1.87	30.63	43.08	Peak	
4	770.110	33.03	-12.97	46.00	19.92	2.19	30.09	41.00	Peak	
5	881.660	34.43	-11.57	46.00	20.32	2.39	29.18	40.89	Peak	
6	991.270	38.76	-15.24	54.00	20.90	2.52	28.65	43.98	Peak	

(B) Polarization: Vertical

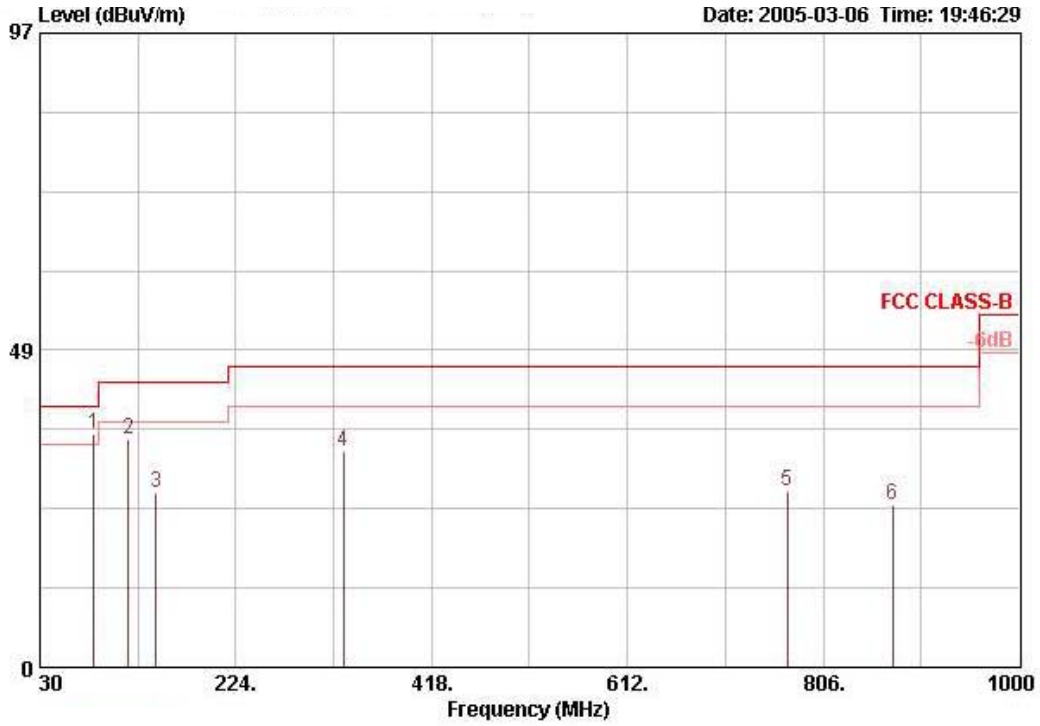


	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Pol/Phase	Remark
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		
1 @	63.950	38.26	-1.74	40.00	5.10	0.67	29.89	62.37	Peak	
2 @	117.300	41.19	-2.31	43.50	11.58	0.88	30.04	58.78	Peak	
3 !	148.340	38.14	-5.36	43.50	10.28	0.96	30.09	56.98	Peak	
4	548.950	31.67	-14.33	46.00	18.28	1.87	30.63	42.14	Peak	
5	770.110	37.90	-8.10	46.00	19.92	2.19	30.09	45.87	Peak	
6	991.270	39.99	-14.01	54.00	20.90	2.52	28.65	45.22	Peak	

Note:
Emission level (dBuV/m) = 20 log Emission level (uV/m)
Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

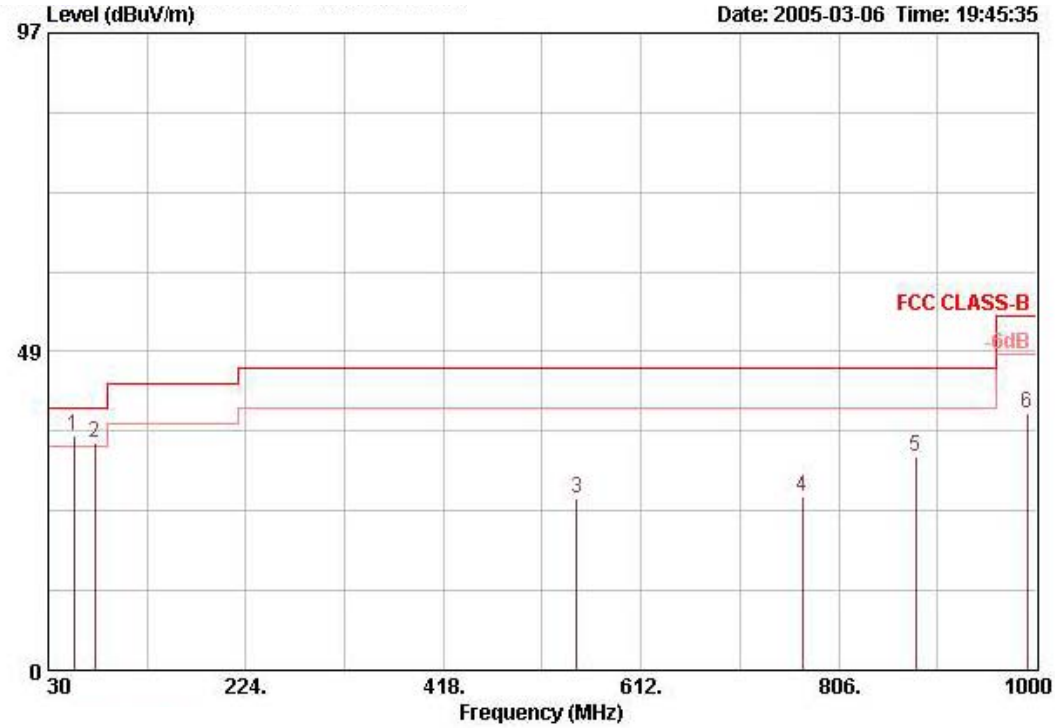
Mode 2

(A) Polarization: Horizontal



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Pol/Phase	Remark
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		
1 !	83.350	35.79	-4.21	40.00	7.40	0.73	29.97	57.62	Peak	
2	117.300	34.91	-8.59	43.50	11.58	0.88	30.04	52.50	Peak	
3	145.430	26.69	-16.81	43.50	10.55	0.95	30.07	45.25	Peak	
4	330.700	33.00	-13.00	46.00	13.87	1.43	30.50	48.20	Peak	
5	770.110	26.96	-19.04	46.00	19.92	2.19	30.09	34.93	Peak	
6	874.870	24.94	-21.06	46.00	20.30	2.39	29.34	31.60	Peak	

(B) Polarization: Vertical



	Freq	Level	Over Limit	Limit Line	Antenna Factor	Cable Loss	Preamp Factor	Read Level	Pol/Phase	Remark
	MHz	dBuV/m	dB	dBuV/m	dB/m	dB	dB	dBuV		
1 !	55.220	35.76	-4.24	40.00	6.25	0.63	29.81	58.69	Peak	
2 !	75.590	34.61	-5.39	40.00	6.20	0.70	29.97	57.67	Peak	
3	548.950	26.22	-19.78	46.00	18.28	1.87	30.63	36.70	Peak	
4	770.110	26.33	-19.67	46.00	19.92	2.19	30.09	34.30	Peak	
5	881.660	32.60	-13.40	46.00	20.32	2.39	29.18	39.07	Peak	
6	991.270	39.20	-14.80	54.00	20.90	2.52	28.65	44.42	Peak	

Note:
Emission level (dBuV/m) = 20 log Emission level (uV/m)
Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level