FCC TEST REPORT (15.247)

REPORT NO.:	RF110701C24
MODEL NO.:	UTM9SWLSN
FCC ID:	PY311300172
RECEIVED:	Jul. 1, 2011
TESTED:	Sep. 15 ~ 19, 2011
ISSUED:	Sep. 26, 2011

APPLICANT:	Netgear Incorporated
ADDRESS:	350 East Plumeria Drive San Jose, CA 95134 U.S.A

ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
LAB LOCATION:	No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City 244, Taiwan

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF110701C24	Original release	Sep. 26, 2011

1. CERTIFICATION

PRODUCT: UTM Security Wireless Module
BRAND NAME: NETGEAR
MODEL NO.: UTM9SWLSN
APPLICANT: Netgear Incorporated
TEST ITEM: ENGINEERING SAMPLE
TESTED: Sep. 15 ~ 19, 2011
STANDARDS: FCC Part 15, Subpart C (Section 15.247)
ANSI C63.4-2003
ANSI C63.10-2009

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch,** and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Celia Chen , DATE: Sep. 26. 2011
(Celia Chen / Senior Specialist)

APPROVED BY : Ken Liu , DATE: Sep. 26. 2011
(Ken Liu / Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -1.40dB at 0.380MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5725.00MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is RSMA not a standard connector.

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz~30MHz	2.41 dB
Radiated emissions	30MHz ~ 1GHz	3.87 dB
	Above 1GHz	3.36 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	UTM Security Wireless Module
MODEL NO.	UTM9SWLSN
FCC ID	PY311300172
NOMINAL VOLTAGE	12Vdc, 3A
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b:11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300.0Mbps
OPERATING FREQUENCY	2.4GHz: 2412.0 ~ 2462.0MHz 5.0GHz: 5745.0 ~ 5825.0MHz
NUMBER OF CHANNEL	2.4GHz: 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) 5.0GHz: 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
OUTPUT POWER	577.0mW for 2412.0 ~ 2462.0MHz 276.4mW for 5745.0 ~ 5825.0MHz
ANTENNA TYPE	Dipole antenna with 1.8dBi gain
ANTENNA CONNECTER	RSMA connector
DATA CABLE	NA
I/O PORTS	Refer to User's manual
ACCESSORY DEVICES	NA

NOTE:

1. The EUT was limited in the host equipment as following:

Product Name	Brand	Model No.
DSL&Wireless N Capable UTM Security Appliance	NETGEAR	UTM9S

2. The functions of EUT listed as below:

FUNCTION	TEST STANDARD	REFERENCE REPORT
WLAN 802.11b/g/n	FCC Part 15, Subpart C (Section 15.247)	RF110701C24
WLAN 802.11a/n (5745~5825 MHz)		
WLAN 802.11a/n (5180~ 5240MHz)	FCC Part 15, Subpart E (Section 15.407)	RF110701C24-1

3. The frequency bands used in this EUT are listed as follows:

Frequency Band (MHz)	2412~2462	5180~5240	5745~5825
802.11b	√		
802.11g	√		
802.11a		√	√
802.11n (20MHz)	√	√	√
802.11n (40MHz)	√	√	√

4. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11a	1TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX

5. The EUT use following power supply:

BRAND	Leader
MODEL	SU36-71120-100S
OUTPUT POWER	12Vdc/3A

6. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 DESCRIPTION OF TEST MODES

FOR 2.4GHz:

11 channels are provided for 802.11b, 802.11g and 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

7 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2422MHz	5	2442MHz
2	2427MHz	6	2447MHz
3	2432MHz	7	2452MHz
4	2437MHz		

FOR 5.0GHz (5745 ~ 5825MHz):

5 channels are provided for 802.11a and 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

2 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

Power Setting for 802.11b, 802.11g, 802.11n (20MHz), 802.11n (40MHz):

CHANNEL	POWER SETTING		
	802.11b	802.11g	802.11n (20MHz)
1	17.0	14.0	12.0
6	17.0	17.0	16.0
11	17.0	10.0	9.0

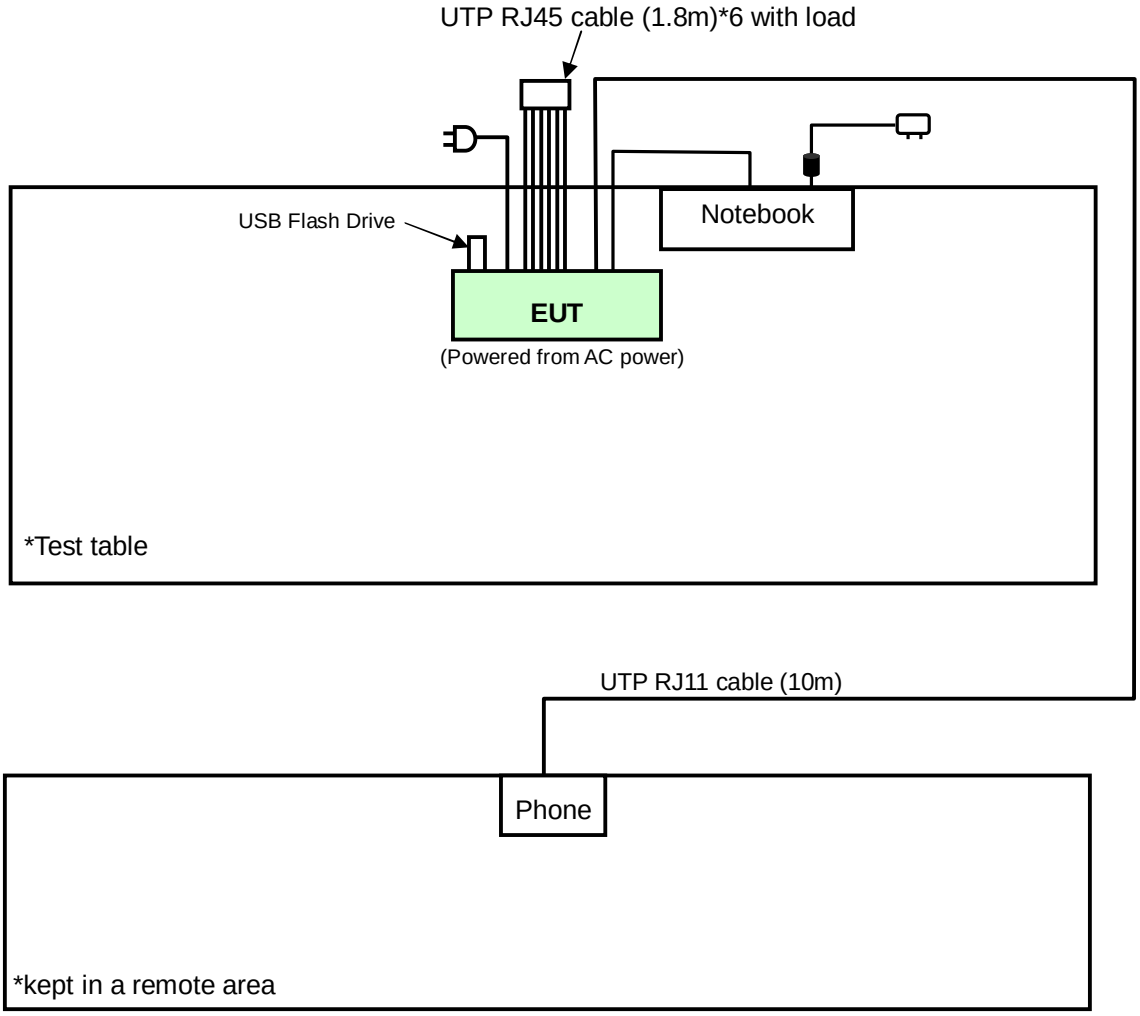
CHANNEL	POWER SETTING
	802.11n (40MHz)
1	10.0
4	16.0
7	10.0

Power Setting for 802.11a, 802.11n (20MHz), 802.11n (40MHz):

CHANNEL	POWER SETTING	
	802.11a	802.11n (20MHz)
149	24.0	24.0
157	25.0	25.0
165	24.0	24.0

CHANNEL	POWER SETTING
	802.11n (40MHz)
151	22.0
159	22.0

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

FOR 2.412 ~ 2.462GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

RADIATED EMISSION TEST (ABOVE 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	13.0
802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	27.0

RADIATED EMISSION TEST (BELOW 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	1	OFDM	BPSK	6.0

POWER LINE CONDUCTED EMISSION TEST:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	1	OFDM	BPSK	6.0

BANDEDGE MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	13.0
802.11n (40MHz)	1 to 7	1, 7	OFDM	BPSK	27.0

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	13.0
802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	27.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	25deg. C, 67% RH	120Vac, 60Hz	Nick Chen
RE≥1G	28deg. C, 64% RH	120Vac, 60Hz	Chad Lee
RE <1G	25deg. C, 70% RH	120Vac, 60Hz	Jun Wu
APCM	25deg. C, 78% RH	120Vac, 60Hz	Nick Chen

FOR 5.745 ~ 5.825GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

RADIATED EMISSION TEST (ABOVE 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	13.0
802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	27.0

RADIATED EMISSION TEST (BELOW 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149	OFDM	BPSK	6.0

POWER LINE CONDUCTED EMISSION TEST:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149	OFDM	BPSK	6.0

BANDEDGE MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149, 165	OFDM	BPSK	6.0
802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	13.0
802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	27.0

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	13.0
802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	27.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	25deg. C, 67% RH	120Vac, 60Hz	Nick Chen
RE[3]1G	28deg. C, 64% RH	120Vac, 60Hz	Chad Lee
RE <1G	25deg. C, 70% RH	120Vac, 60Hz	Jun Wu
APCM	25deg. C, 78% RH	120Vac, 60Hz	Nick Chen

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247)
ANSI C63.4-2003
ANSI C63.10-2009

All test items have been performed and recorded as per the above standards.

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP05L	19227741184	FCC DoC Approved
2	USB Flash Drive	SanDisk	Cruzer Micro Skin	NA	FCC DoC Approved
3	TELEPHONE	VICTORIA	T/PM-L	4325812	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.8m shielded RS232 cable
2	N/A
3	10m UTP RJ11 cable

NOTE: (1) All power cords of the above support units are non shielded (1.8m).

(2) Six UTP RJ45 cables (1.8m each) were connected from LAN port of EUT to form an open loop cable, which terminated with load.

4. TEST TYPES AND RESULTS (FOR 2.4GHz BAND)

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100276	Dec. 31, 2010	Dec. 30, 2011
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	100219	Nov. 24, 2010	Nov. 23, 2011
LISN With Adapter (for EUT)	AD10	C10Ada-001	Nov. 24, 2010	Nov. 23, 2011
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100218	Nov. 24, 2010	Nov. 23, 2011
Software	ADT_Cond_V7.3.7	NA	NA	NA
Software	ADT_ISN_V7.3.7	NA	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C10.01	Feb. 22, 2011	Feb. 21, 2012
SUHNER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010773	Feb. 26, 2011	Feb. 25, 2012

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in Shielded Room No. 10.

3. The VCCI Site Registration No. C-1852.

4.1.3 TEST PROCEDURES

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

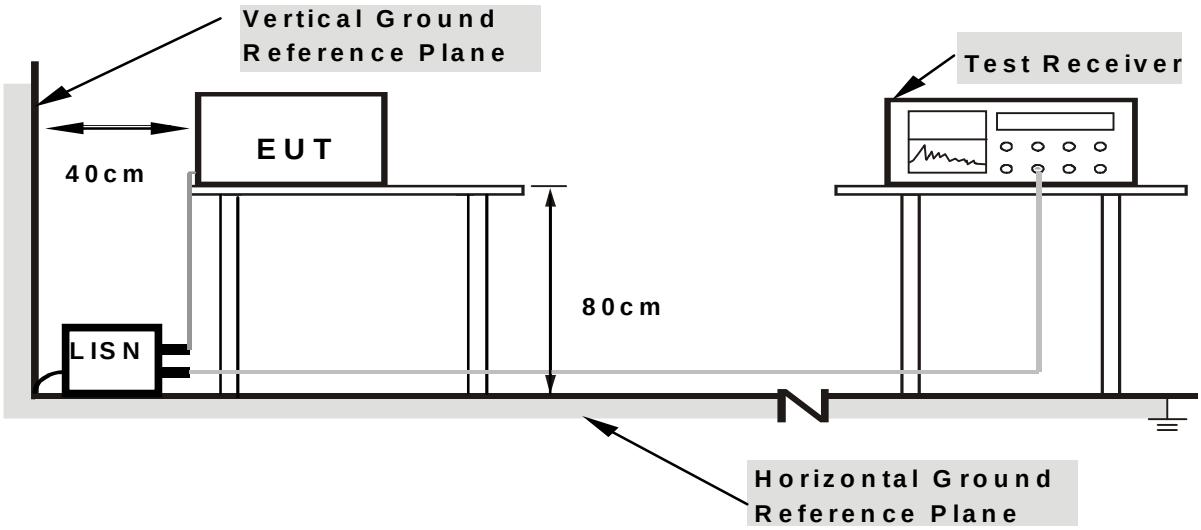
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT OPERATING CONDITIONS

a. Placed the EUT and Notebook on the testing table.
b. The Notebook connected with EUT via a RS232 and run a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.

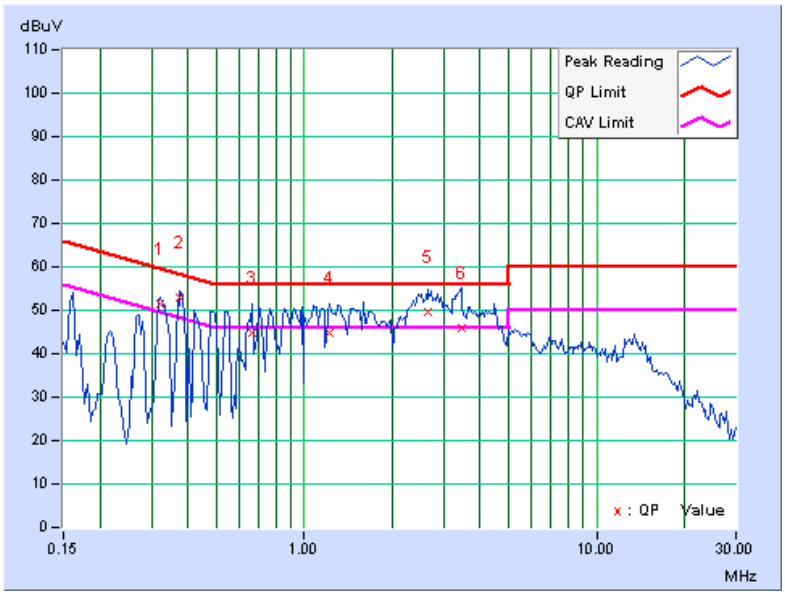
4.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA： 802.11g

6dB BANDWIDTH	9kHz	PHASE	Line 1
CHANNEL	Channel 1		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.323	0.21	51.17	46.72	51.38	46.93	59.63	49.63	-8.24	-2.69
2	0.377	0.23	52.58	46.41	52.81	46.64	58.35	48.35	-5.54	-1.71
3	0.666	0.25	44.42	-	44.67	-	56.00	46.00	-11.33	-
4	1.223	0.28	44.63	-	44.91	-	56.00	46.00	-11.09	-
5	2.633	0.38	49.11	36.36	49.49	36.74	56.00	46.00	-6.51	-9.26
6	3.445	0.45	45.65	32.14	46.10	32.59	56.00	46.00	-9.90	-13.41

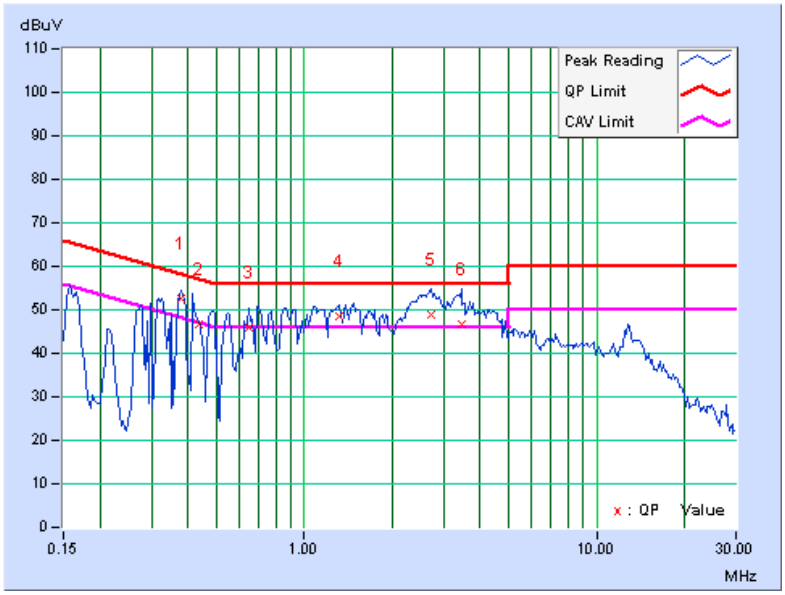
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



6dB BANDWIDTH	9kHz	PHASE	Line 2
CHANNEL	Channel 1		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.380**	**0.24**	**52.30**	**46.63**	**52.54**	**46.87**	**58.27**	**48.27**	**-5.73**	**-1.40**
2	0.433	0.25	46.53	-	46.78	-	57.19	47.19	-10.41	-
3	0.646	0.26	45.82	36.40	46.08	36.66	56.00	46.00	-9.92	-9.34
4	1.316	0.30	48.31	36.09	48.61	36.39	56.00	46.00	-7.39	-9.61
5	2.711	0.38	48.58	37.01	48.96	37.39	56.00	46.00	-7.04	-8.61
6	3.456	0.43	46.09	32.76	46.52	33.19	56.00	46.00	-9.48	-12.81

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Mar. 04, 2011	Mar. 03, 2012
HP Preamplifier	8449B	3008A01924	Mar. 04, 2011	Mar. 03, 2012
HP Preamplifier	8449B	3008A01292	Mar. 04, 2011	Mar. 03, 2012
Agilent Spectrum Analyzer	E4446A	MY46180403	Jun. 22, 2011	Jun. 21, 2012
ROHDE & SCHWARZ TEST RECEIVER	ESCS30	838251/021	Oct. 01, 2010	Sep. 30, 2011
Schwarzbeck Antenna	VULB 9168	137	Apr. 12, 2011	Apr. 11, 2012
Schwarzbeck Antenna	VHBA 9123	480	May 06, 2011	May 05, 2012
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	ADT_Radiated_V 7.6.15.9.2	NA	NA	NA
SUHNER RF cable	SF102	CABLE-CH6	Aug. 19, 2011	Aug. 18, 2012
EMCO Horn Antenna	3115	6714	Oct. 26, 2010	Oct. 25, 2011
EMCO Horn Antenna	3115	9312-4192	Apr. 22, 2011	Apr. 21, 2012
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA

NOTE: 1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Chamber No. 6.
4. The Industry Canada Reference No. IC 7450E-6.
5. The FCC Site Registration No. is 447212.

4.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

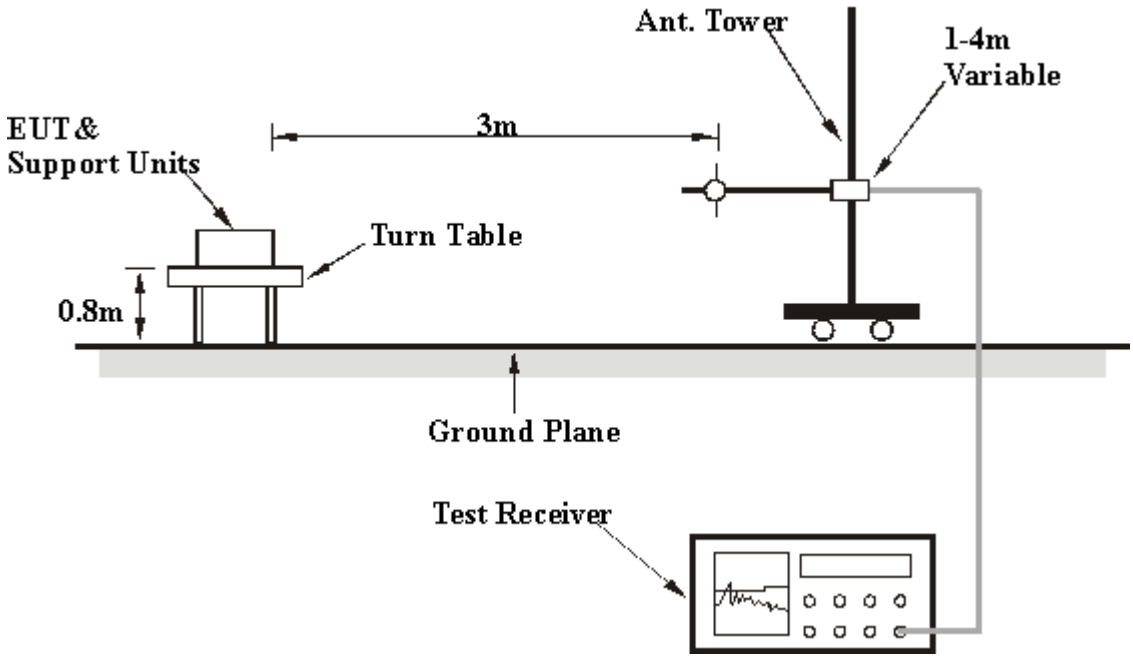
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT OPERATING CONDITIONS

Same as item 4.1.6.

4.2.7 TEST RESULTS

802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.3 PK	74.0	-14.7	1.00 H	283	27.17	32.15
2	2390.00	47.0 AV	54.0	-7.0	1.00 H	283	14.86	32.15
3	*2412.00	103.1 PK			1.00 H	283	70.89	32.24
4	*2412.00	99.8 AV			1.00 H	283	67.59	32.24
5	4824.00	50.8 PK	74.0	-23.2	1.00 H	261	12.12	38.66
6	4824.00	40.1 AV	54.0	-13.9	1.00 H	261	1.44	38.66
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.1 PK	74.0	-10.9	1.00 V	9	30.95	32.15
2	2390.00	51.7 AV	54.0	-2.3	1.00 V	9	19.59	32.15
3	*2412.00	114.4 PK			1.00 V	9	82.11	32.24
4	*2412.00	111.3 AV			1.00 V	9	79.03	32.24
5	4824.00	57.2 PK	74.0	-16.8	1.00 V	275	18.50	38.66
6	4824.00	52.9 AV	54.0	-1.1	1.00 V	275	14.26	38.66

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	104.2 PK			1.02 H	153	71.87	32.33
2	*2437.00	100.7 AV			1.02 H	153	68.41	32.33
3	4874.00	51.1 PK	74.0	-22.9	1.00 H	291	12.33	38.78
4	4874.00	41.5 AV	54.0	-12.5	1.00 H	291	2.70	38.78
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	115.8 PK			1.08 V	13	83.42	32.33
2	*2437.00	112.4 AV			1.08 V	13	80.03	32.33
3	4874.00	56.4 PK	74.0	-17.6	1.00 V	275	17.66	38.78
4	4874.00	52.4 AV	54.0	-1.6	1.00 V	275	13.59	38.78

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.1 PK			1.00 H	156	71.63	32.43
2	*2462.00	100.7 AV			1.00 H	156	68.25	32.43
3	2483.50	59.6 PK	74.0	-14.4	1.00 H	156	27.08	32.51
4	2483.50	49.5 AV	54.0	-4.6	1.00 H	156	16.94	32.51
5	4924.00	47.4 PK	74.0	-26.6	1.00 H	216	8.53	38.90
6	4924.00	37.3 AV	54.0	-16.7	1.00 H	216	-1.63	38.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	114.9 PK			1.00 V	358	82.45	32.43
2	*2462.00	111.8 AV			1.00 V	358	79.32	32.43
3	2483.50	63.6 PK	74.0	-10.4	1.00 V	358	31.10	32.51
4	2483.50	52.9 AV	54.0	-1.1	1.00 V	358	20.43	32.51
5	4924.00	54.0 PK	74.0	-20.0	1.08 V	303	15.08	38.90
6	4924.00	49.6 AV	54.0	-4.4	1.08 V	303	10.71	38.90

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.1 PK	74.0	-4.9	1.00 H	66	36.93	32.15
2	2390.00	51.4 AV	54.0	-2.6	1.00 H	66	19.25	32.15
3	*2412.00	105.7 PK			1.00 H	66	73.42	32.24
4	*2412.00	93.6 AV			1.00 H	66	61.32	32.24
5	4824.00	46.4 PK	74.0	-27.6	1.00 H	169	7.71	38.66
6	4824.00	32.8 AV	54.0	-21.3	1.00 H	169	-5.91	38.66
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.7 PK	74.0	-1.3	1.00 V	15	40.58	32.15
2	**2390.00**	**53.7 AV**	**54.0**	**-0.3**	**1.00 V**	**15**	**21.57**	**32.15**
3	*2412.00	110.6 PK			1.00 V	15	78.33	32.24
4	*2412.00	98.5 AV			1.00 V	15	66.25	32.24
5	4824.00	48.1 PK	74.0	-25.9	1.00 V	6	9.42	38.66
6	4824.00	38.1 AV	54.0	-15.9	1.00 V	6	-0.53	38.66

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	105.8 PK			1.00 H	157	73.42	32.33
2	*2437.00	93.6 AV			1.00 H	157	61.25	32.33
3	4874.00	48.1 PK	74.0	-25.9	1.00 H	142	9.34	38.78
4	4874.00	34.1 AV	54.0	-19.9	1.00 H	142	-4.69	38.78
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	113.7 PK			1.05 V	15	81.37	32.33
2	*2437.00	101.5 AV			1.05 V	15	69.12	32.33
3	4874.00	54.9 PK	74.0	-19.1	1.22 V	6	16.16	38.78
4	4874.00	41.5 AV	54.0	-12.5	1.22 V	6	2.71	38.78

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	99.9 PK			1.00 H	159	67.42	32.43
2	*2462.00	87.8 AV			1.00 H	159	55.32	32.43
3	2483.50	62.0 PK	74.0	-12.0	1.00 H	159	29.50	32.51
4	2483.50	48.1 AV	54.0	-5.9	1.00 H	159	15.62	32.51
5	4924.00	44.5 PK	74.0	-29.5	1.00 H	16	5.56	38.90
6	4924.00	34.5 AV	54.0	-19.5	1.00 H	16	-4.43	38.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.2 PK			1.06 V	14	74.73	32.43
2	*2462.00	94.2 AV			1.06 V	14	61.75	32.43
3	2483.50	67.5 PK	74.0	-6.5	1.06 V	14	34.96	32.51
4	2483.50	52.9 AV	54.0	-1.1	1.06 V	14	20.41	32.51
5	4924.00	48.3 PK	74.0	-25.7	1.00 V	16	9.37	38.90
6	4924.00	38.2 AV	54.0	-15.8	1.00 V	16	-0.67	38.90

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.0 PK	74.0	-7.0	1.00 H	65	34.82	32.15
2	2390.00	50.2 AV	54.0	-3.8	1.00 H	65	18.03	32.15
3	*2412.00	107.9 PK			1.00 H	65	75.63	32.24
4	*2412.00	95.5 AV			1.00 H	65	63.25	32.24
5	4824.00	45.8 PK	74.0	-28.3	1.00 H	16	7.09	38.66
6	4824.00	33.9 AV	54.0	-20.1	1.00 H	16	-4.80	38.66
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.7 PK	74.0	-2.3	1.05 V	351	39.56	32.15
2	2390.00	52.9 AV	54.0	-1.1	1.05 V	351	20.75	32.15
3	*2412.00	111.8 PK			1.05 V	351	79.54	32.24
4	*2412.00	99.6 AV			1.05 V	351	67.36	32.24
5	4824.00	47.9 PK	74.0	-26.1	1.00 V	125	9.20	38.66
6	4824.00	37.9 AV	54.0	-16.2	1.00 V	125	-0.81	38.66

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	110.7 PK			1.00 H	67	78.38	32.33
2	*2437.00	98.6 AV			1.00 H	67	66.25	32.33
3	4874.00	47.1 PK	74.0	-26.9	1.00 H	119	8.31	38.78
4	4874.00	34.0 AV	54.0	-20.0	1.00 H	119	-4.77	38.78
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	114.3 PK			1.05 V	10	81.92	32.33
2	*2437.00	101.7 AV			1.05 V	10	69.36	32.33
3	4874.00	48.3 PK	74.0	-25.7	1.00 V	15	9.54	38.78
4	4874.00	37.9 AV	54.0	-16.1	1.00 V	15	-0.91	38.78

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.3 PK			1.02 H	289	71.87	32.43
2	*2462.00	92.1 AV			1.02 H	289	59.63	32.43
3	2483.50	61.9 PK	74.0	-12.1	1.02 H	289	29.41	32.51
4	2483.50	49.4 AV	54.0	-4.6	1.02 H	289	16.89	32.51
5	4924.00	45.3 PK	74.0	-28.7	1.00 H	16	6.37	38.90
6	4924.00	33.5 AV	54.0	-20.5	1.00 H	16	-5.40	38.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.3 PK			1.00 V	6	75.86	32.43
2	*2462.00	95.6 AV			1.00 V	6	63.17	32.43
3	2483.50	68.3 PK	74.0	-5.7	1.00 V	6	35.81	32.51
4	2483.50	52.7 AV	54.0	-1.3	1.00 V	6	20.21	32.51
5	4924.00	47.2 PK	74.0	-26.8	1.00 V	143	8.26	38.90
6	4924.00	36.8 AV	54.0	-17.2	1.00 V	143	-2.10	38.90

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.7 PK	74.0	-10.3	1.08 H	111	31.59	32.15
2	2390.00	50.5 AV	54.0	-3.5	1.08 H	111	18.35	32.15
3	*2422.00	99.5 PK			1.08 H	111	67.23	32.27
4	*2422.00	86.9 AV			1.08 H	111	54.58	32.27
5	4844.00	47.0 PK	74.0	-27.1	1.00 H	159	8.24	38.71
6	4844.00	33.7 AV	54.0	-20.3	1.00 H	159	-5.04	38.71
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.0 PK	74.0	-2.0	1.07 V	348	39.85	32.15
2	2390.00	52.8 AV	54.0	-1.2	1.07 V	348	20.66	32.15
3	*2422.00	105.5 PK			1.07 V	348	73.18	32.27
4	*2422.00	92.3 AV			1.07 V	348	60.03	32.27
5	4844.00	49.0 PK	74.0	-25.1	1.00 V	56	10.24	38.71
6	4844.00	38.1 AV	54.0	-15.9	1.00 V	56	-0.65	38.71

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 4	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	106.3 PK			1.02 H	114	73.96	32.33
2	*2437.00	92.6 AV			1.02 H	114	60.25	32.33
3	4874.00	46.1 PK	74.0	-27.9	1.00 H	10	7.31	38.78
4	4874.00	33.8 AV	54.0	-20.2	1.00 H	10	-5.00	38.78
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.4 PK			1.08 V	25	79.09	32.33
2	*2437.00	98.6 AV			1.08 V	25	66.25	32.33
3	4874.00	50.0 PK	74.0	-24.0	1.00 V	257	11.20	38.78
4	4874.00	39.7 AV	54.0	-14.3	1.00 V	257	0.89	38.78

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	98.8 PK			1.00 H	114	66.43	32.39
2	*2452.00	85.8 AV			1.00 H	114	53.38	32.39
3	2483.50	64.4 PK	74.0	-9.6	1.00 H	114	31.85	32.51
4	2483.50	50.4 AV	54.0	-3.6	1.00 H	114	17.91	32.51
5	4904.00	46.1 PK	74.0	-27.9	1.00 H	63	7.28	38.86
6	4904.00	33.4 AV	54.0	-20.6	1.00 H	63	-5.42	38.86
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	106.4 PK			1.06 V	23	73.96	32.39
2	*2452.00	92.8 AV			1.06 V	23	60.36	32.39
3	2483.50	70.6 PK	74.0	-3.4	1.06 V	23	38.09	32.51
4	2483.50	52.9 AV	54.0	-1.1	1.06 V	23	20.35	32.51
5	4904.00	48.2 PK	74.0	-25.8	1.00 V	13	9.36	38.86
6	4904.00	38.2 AV	54.0	-15.8	1.00 V	13	-0.69	38.86

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

BELOW 1GHz WORST-CASE DATA：802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH	TESTED BY	Jun Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	138.14	30.3 QP	43.5	-13.2	1.34 H	268	16.75	13.53
2	249.50	32.6 QP	46.0	-13.5	1.27 H	325	19.02	13.53
3	343.11	34.0 QP	46.0	-12.0	1.15 H	139	16.96	17.00
4	373.78	39.9 QP	46.0	-6.1	1.07 H	88	21.99	17.90
5	499.67	32.2 QP	46.0	-13.8	1.03 H	91	11.02	21.18
6	795.02	38.0 QP	46.0	-8.0	1.00 H	166	11.52	26.49
7	874.11	35.0 QP	46.0	-11.0	1.00 H	178	7.49	27.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	31.61	30.6 QP	40.0	-9.4	1.04 V	214	18.36	12.28
2	89.72	30.7 QP	43.5	-12.8	1.00 V	172	22.08	8.59
3	136.52	30.2 QP	43.5	-13.3	1.00 V	145	16.82	13.42
4	346.34	30.6 QP	46.0	-15.4	1.00 V	157	13.51	17.10
5	373.78	36.6 QP	46.0	-9.4	1.08 V	214	18.67	17.90
6	499.67	32.3 QP	46.0	-13.7	1.14 V	217	11.16	21.18
7	795.02	35.9 QP	46.0	-10.1	1.21 V	184	9.39	26.49

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER	FSP 40	100036	Apr. 29, 2011	Apr. 28, 2012

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

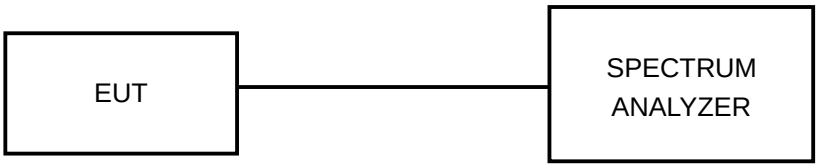
4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

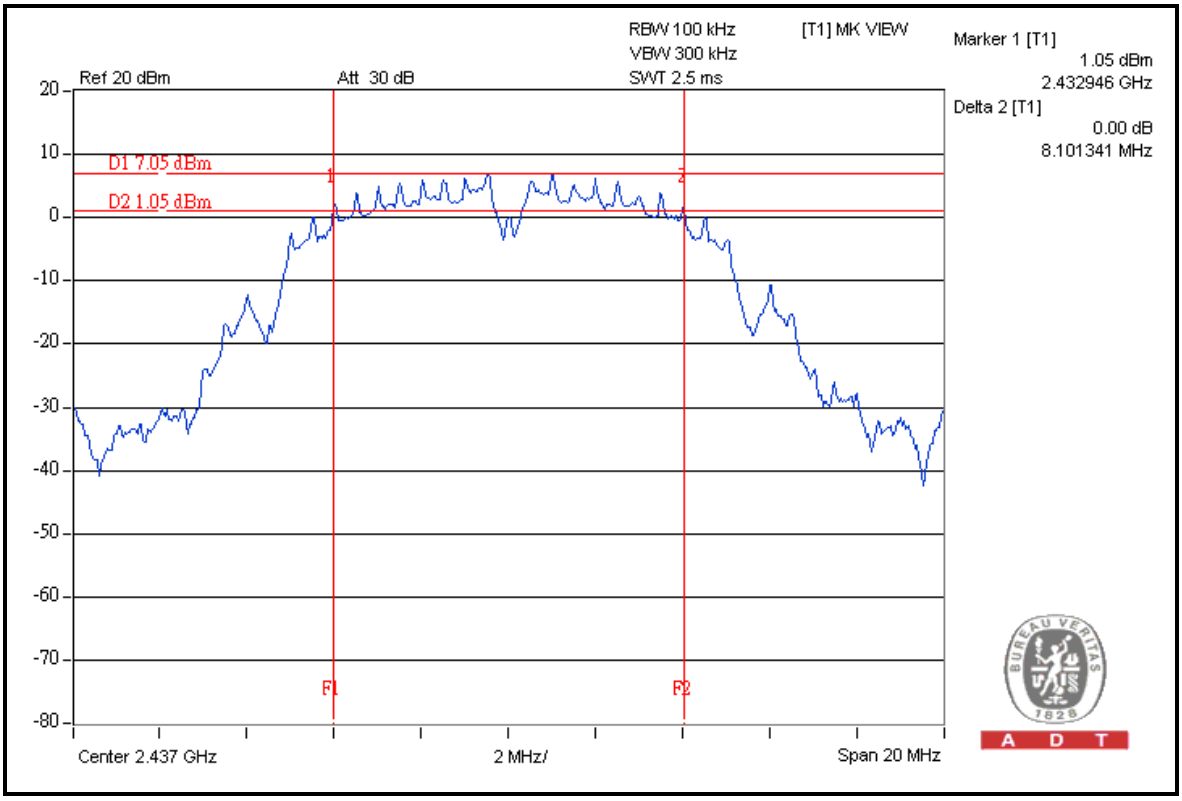
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	7.61	0.5	PASS
6	2437	8.10	0.5	PASS
11	2462	8.02	0.5	PASS

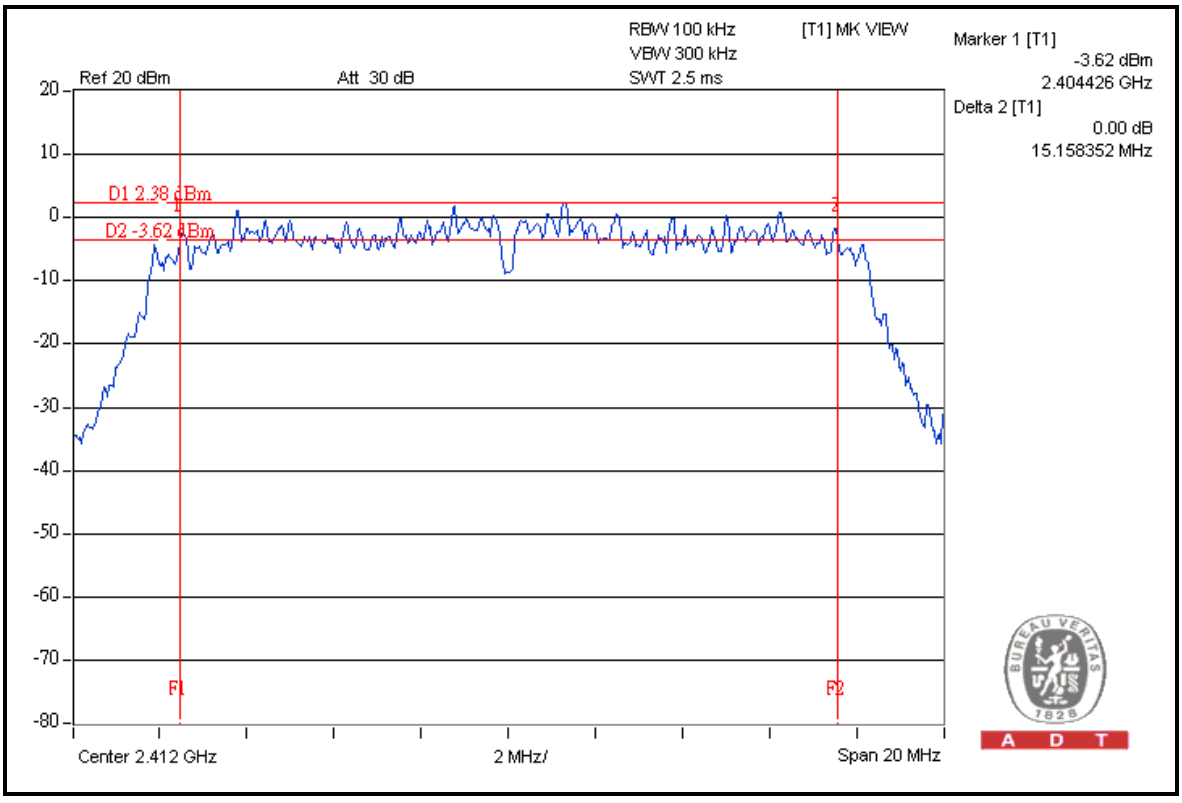
FOR CH 6



802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.15	0.5	PASS
6	2437	15.13	0.5	PASS
11	2462	15.14	0.5	PASS

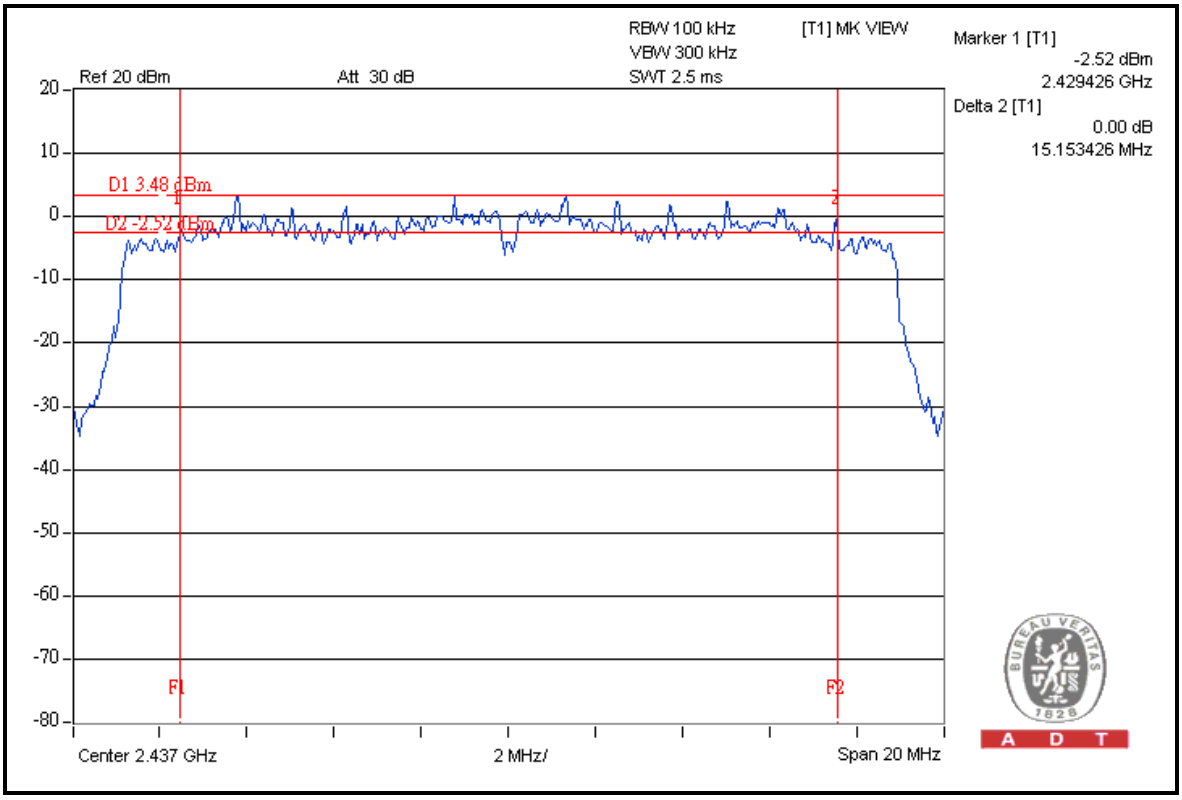
FOR CH 1



802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	14.44	14.50	0.5	PASS
6	2437	15.15	14.47	0.5	PASS
11	2462	15.11	14.47	0.5	PASS

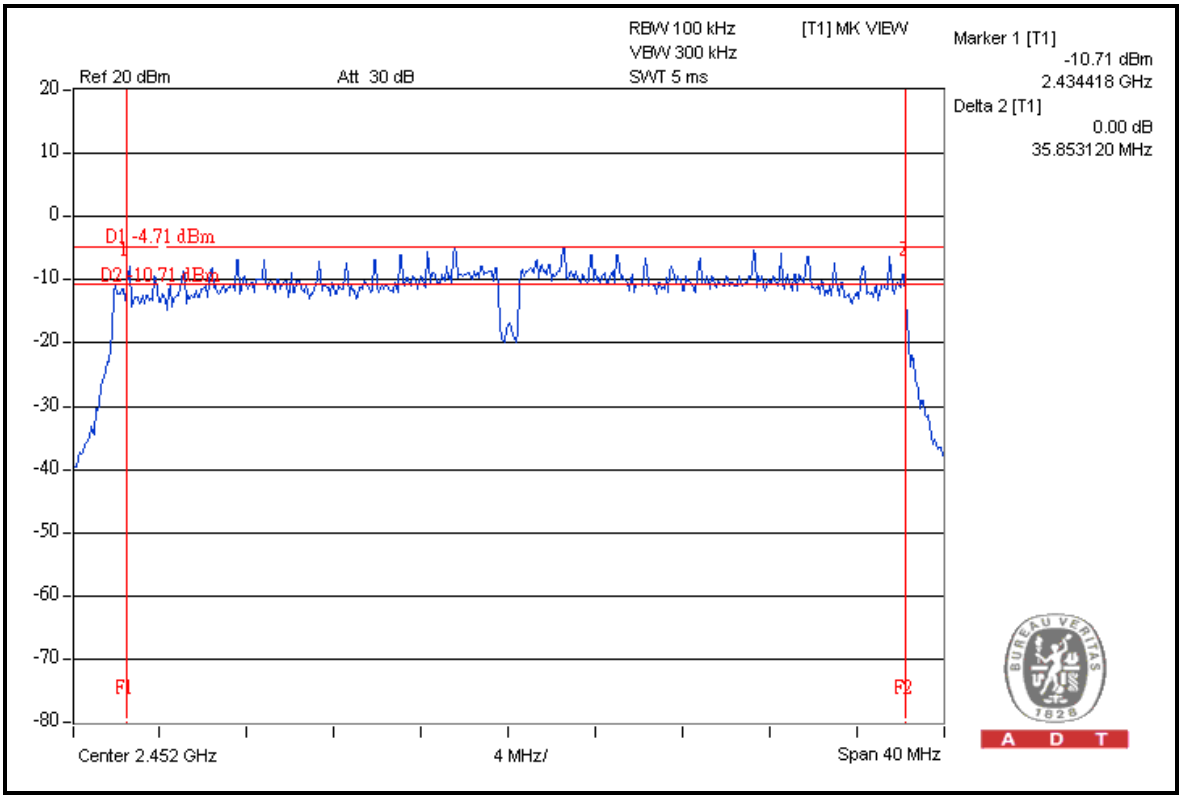
FOR CHAIN 0: CH 6



802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2422	35.81	35.83	0.5	PASS
4	2437	35.81	35.73	0.5	PASS
7	2452	35.75	35.85	0.5	PASS

FOR CHAIN 1: CH 7



4.4 MAXIMUM OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

The Maximum Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Anritsu Power Sensor	MA2411B	0738404	Apr. 26, 2011	Apr. 25, 2012
Anritsu Power Meter	ML2495A	0842014	Apr. 26, 2011	Apr. 25, 2012

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Measurement Bandwidth of ML2495A is 65MHz greater than 6dB bandwidth of emission.

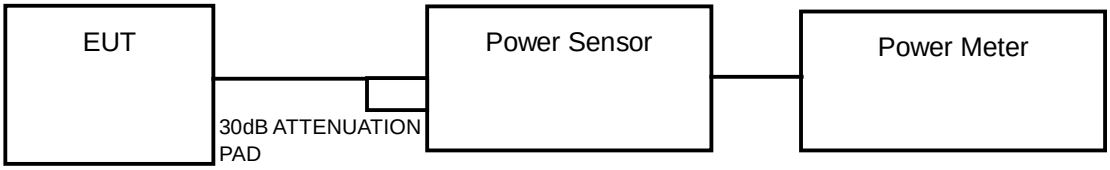
4.4.3 TEST PROCEDURES

A power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.7 TEST RESULTS

802.11b

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER OUTPUT (mW)	POWER LIMIT (dBm)	PASS / FAIL
1	2412	20.9	123.0	30	PASS
6	2437	22.4	173.8	30	PASS
11	2462	21.0	125.9	30	PASS

802.11g

CHAN.	CHAN. FREQ. (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER OUTPUT (mW)	POWER LIMIT (dBm)	PASS / FAIL
1	2412	23.7	234.4	30	PASS
6	2437	25.6	363.1	30	PASS
11	2462	19.3	85.1	30	PASS

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	21.3	21.2	266.7	24.3	30	PASS
6	2437	24.7	24.5	**577.0**	27.6	30	PASS
11	2462	18.7	18.5	144.9	21.6	30	PASS

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2422	20.60	19.70	208.1	23.2	30	PASS
4	2437	24.20	24.10	520.1	27.2	30	PASS
7	2452	19.80	19.60	186.7	22.7	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER	FSP 40	100036	Apr. 29, 2011	Apr. 28, 2012

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

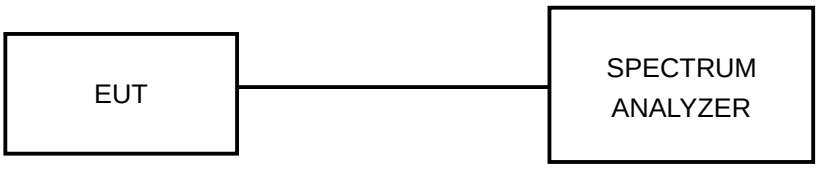
The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

Follow method 2 of KDB 662911 D01 Multiple Transmitter Output v01 to calculate total power density of 2 TX port.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

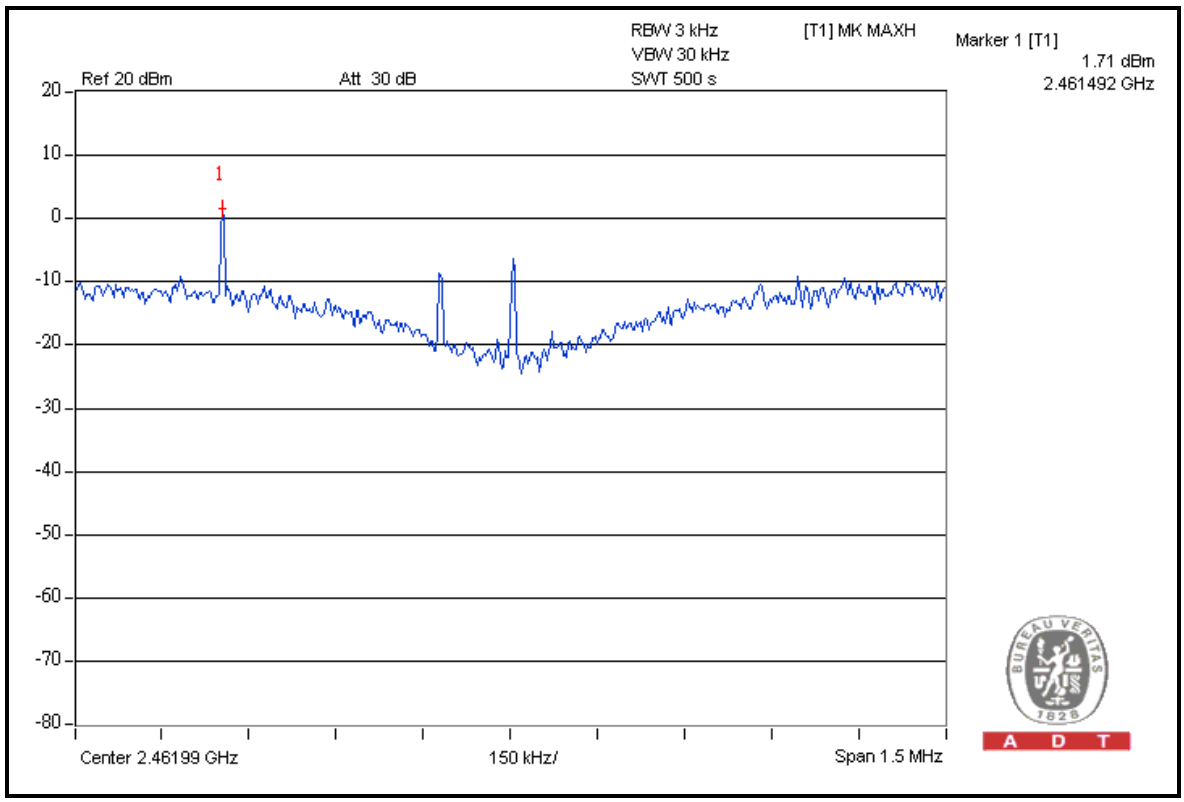
Same as Item 4.3.6

4.5.7 TEST RESULTS

802.11b

CHANNEL	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
1	2412	-1.0	8	PASS
6	2437	1.2	8	PASS
11	2462	1.7	8	PASS

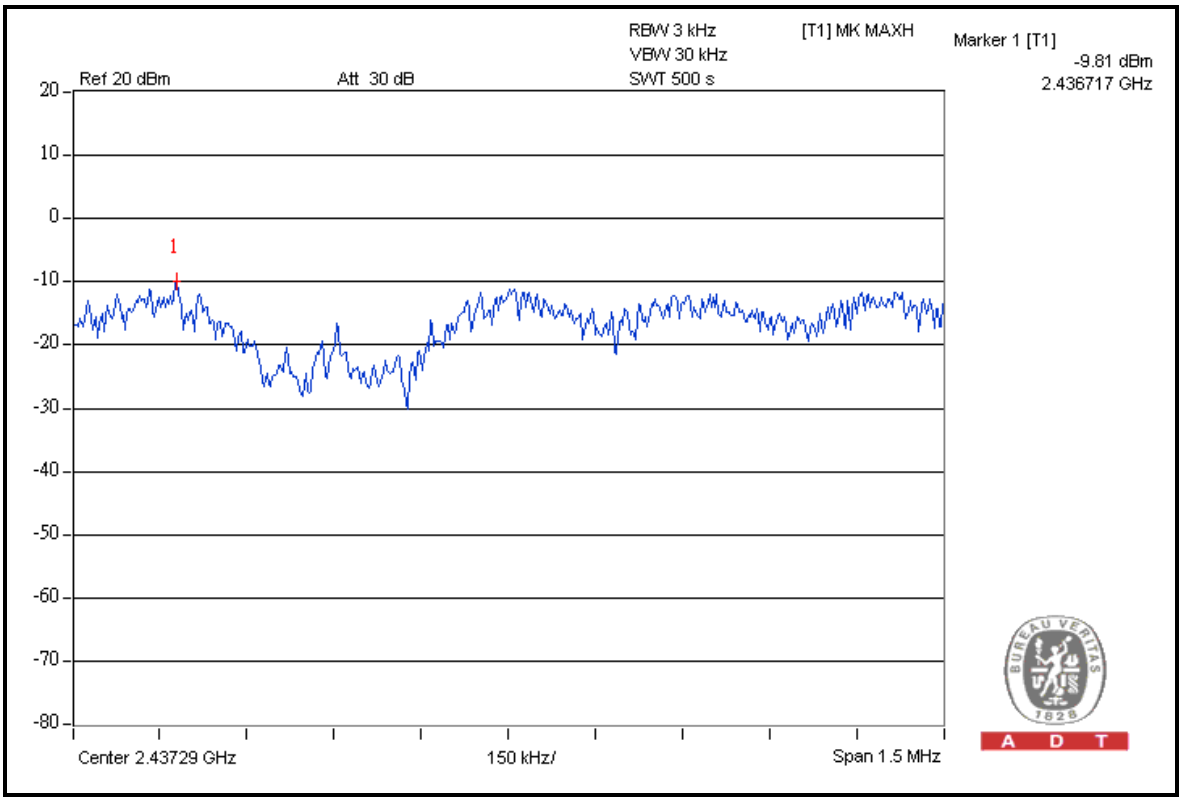
FOR CH 11



802.11g

CHANNEL	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
1	2412	-13.8	8	PASS
6	2437	-9.8	8	PASS
11	2462	-17.9	8	PASS

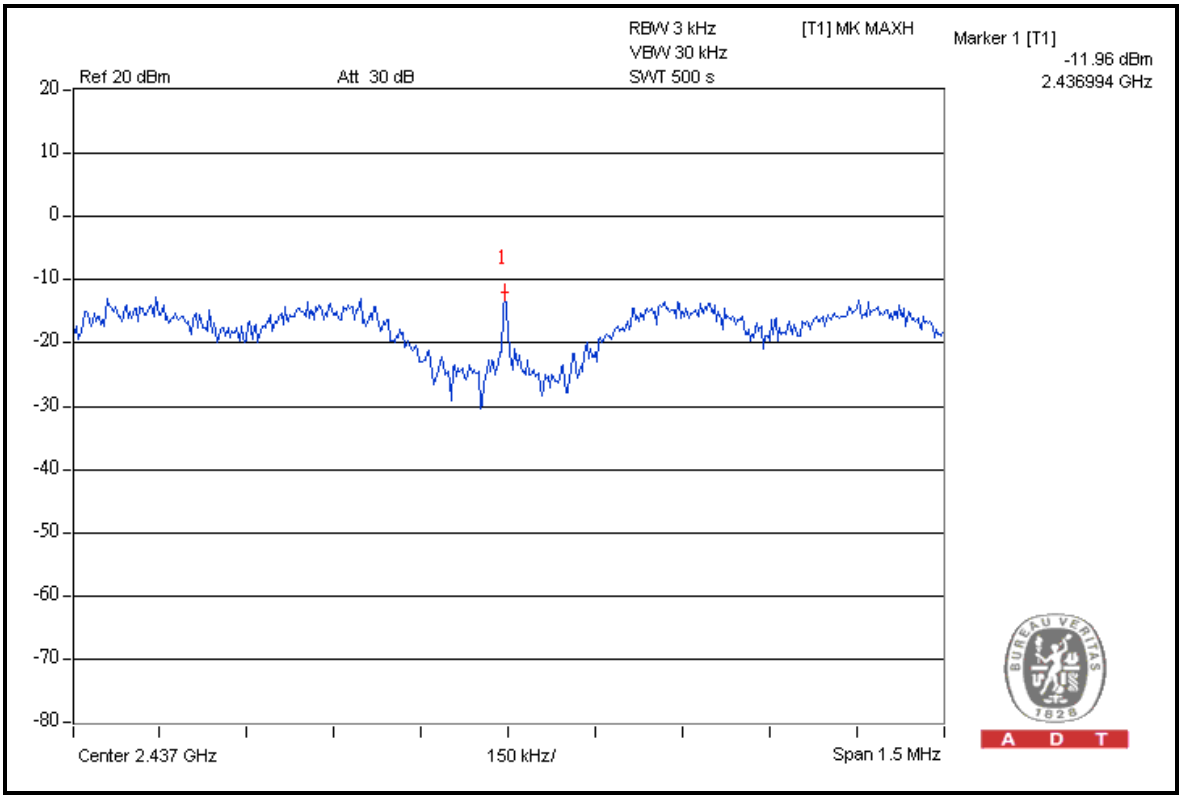
FOR CH 6



802.11n (20MHz)

CHAIN	CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
			MEASURED	10 log (N=2) dB			
0	1	2412	-16.4	3.01	-13.4	8	PASS
	6	2437	-12.0	3.01	-9.0	8	PASS
	11	2462	-19.8	3.01	-16.8	8	PASS
1	1	2412	-16.9	3.01	-13.9	8	PASS
	6	2437	-13.0	3.01	-10.0	8	PASS
	11	2462	-18.5	3.01	-15.5	8	PASS

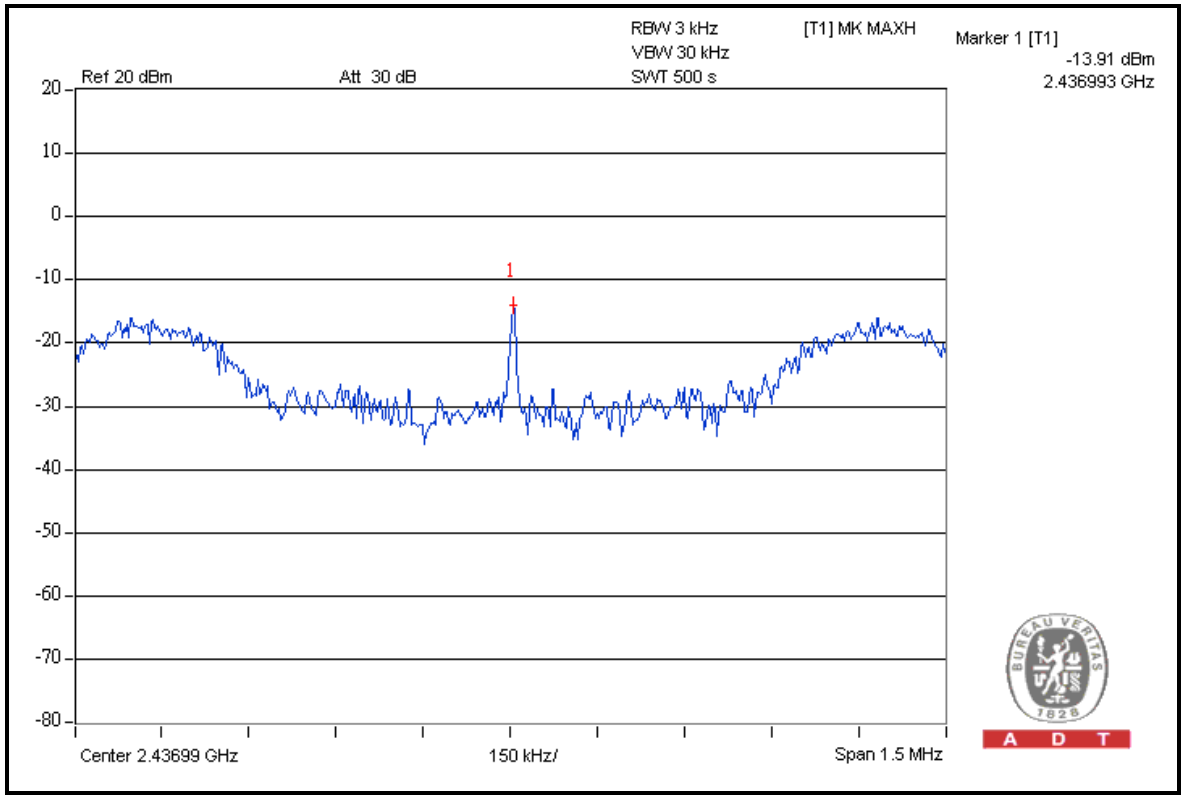
FOR CHAIN 0: CH 6



802.11n (40MHz)

CHAIN	CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
			MEASURED	10 log (N=2) dB			
0	1	2422	-20.4	3.01	-17.4	8	PASS
	4	2437	-15.6	3.01	-12.6	8	PASS
	7	2452	-18.6	3.01	-15.6	8	PASS
1	1	2422	-20.6	3.01	-17.6	8	PASS
	4	2437	-13.9	3.01	-10.9	8	PASS
	7	2452	-20.8	3.01	-17.8	8	PASS

FOR CHAIN 1: CH 4



4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	CALIBRATED UNTIL
FOR CONDUCTED MEASUREMENT:				
SPECTRUM ANALYZER	FSP 40	100036	Apr. 29, 2011	Apr. 28, 2012
FOR RADIATED MEASUREMENT:				
HP Preamplifier	8447D	2432A03504	Mar. 04, 2011	Mar. 03, 2012
HP Preamplifier	8449B	3008A01924	Mar. 04, 2011	Mar. 03, 2012
HP Preamplifier	8449B	3008A01292	Mar. 04, 2011	Mar. 03, 2012
Agilent Spectrum Analyzer	E4446A	MY46180403	Jun. 22, 2011	Jun. 21, 2012
ROHDE & SCHWARZ TEST RECEIVER	ESCS30	838251/021	Oct. 01, 2010	Sep. 30, 2011
Schwarzbeck Antenna	VULB 9168	137	Apr. 12, 2011	Apr. 11, 2012
Schwarzbeck Antenna	VHBA 9123	480	May 06, 2011	May 05, 2012
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
SUHNER RF cable	SF102	CABLE-CH6	Aug. 19, 2011	Aug. 18, 2012
EMCO Horn Antenna	3115	6714	Oct. 26, 2010	Oct. 25, 2011
EMCO Horn Antenna	3115	9312-4192	Apr. 22, 2011	Apr. 21, 2012
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA

NOTE: The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

4.6.3 TEST PROCEDURE

FOR CONDUCTED MEASUREMENT:

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz and 300kHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW =100kHz, VBW = 300kHz; Average RBW = 1MHz, VBW = 10Hz) are attached on the following pages.

FOR RADIATED MEASUREMENT:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. Set both RBW and VBW of spectrum analyzer to 100kHz and 300kHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW =100kHz, VBW = 300kHz; Average RBW = 1MHz, VBW = 10Hz) are attached on the following pages.

NOTE: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.6 TEST RESULTS

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

802.11b

RESTRICT BAND (2310 ~ 2390 MHz)

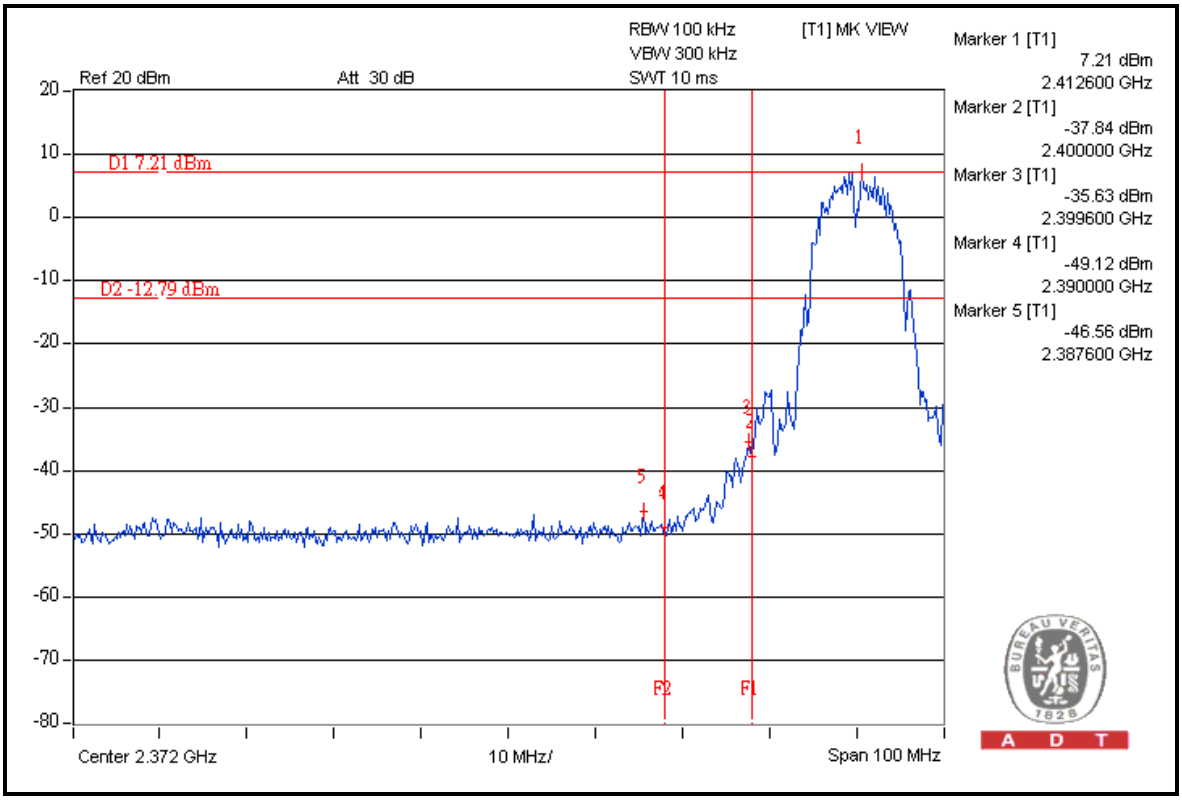
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	114.4	53.8	60.6	74.0
2412.00 (AV)	111.3	59.3	52.0	54.0

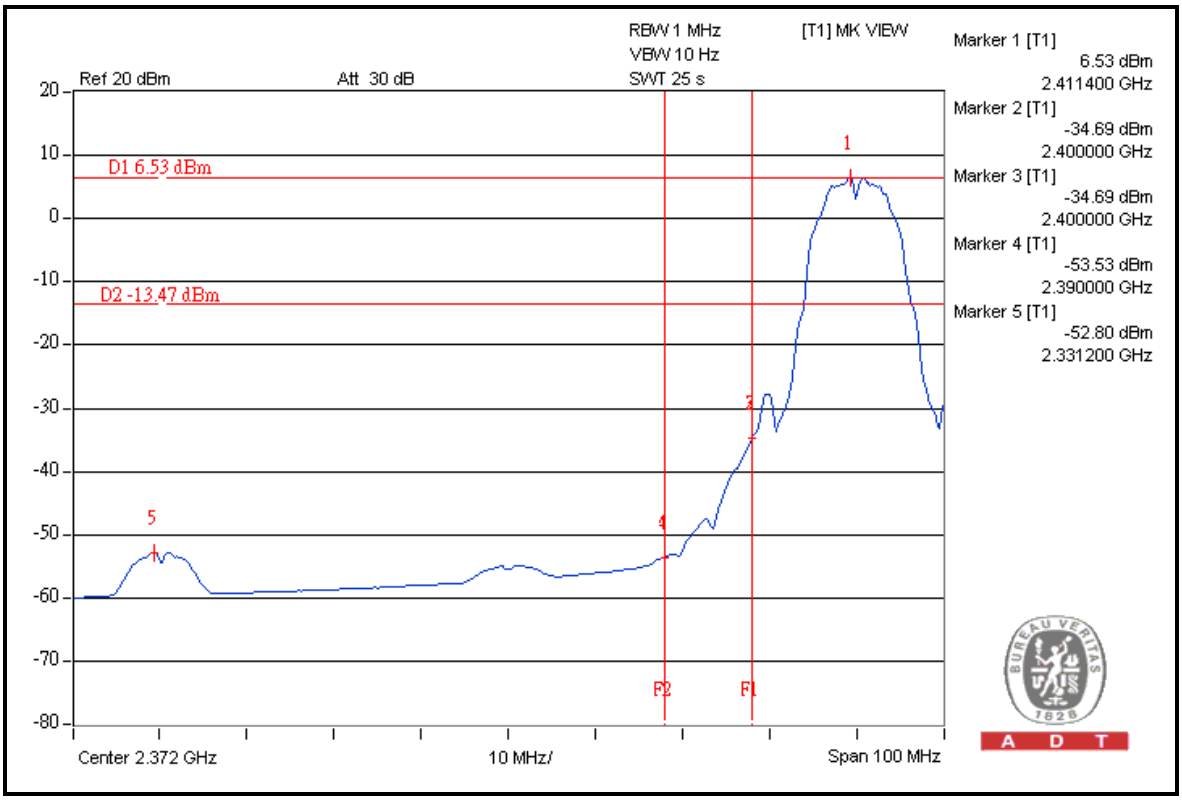
RESTRICT BAND (2483.5 ~ 2500 MHz)

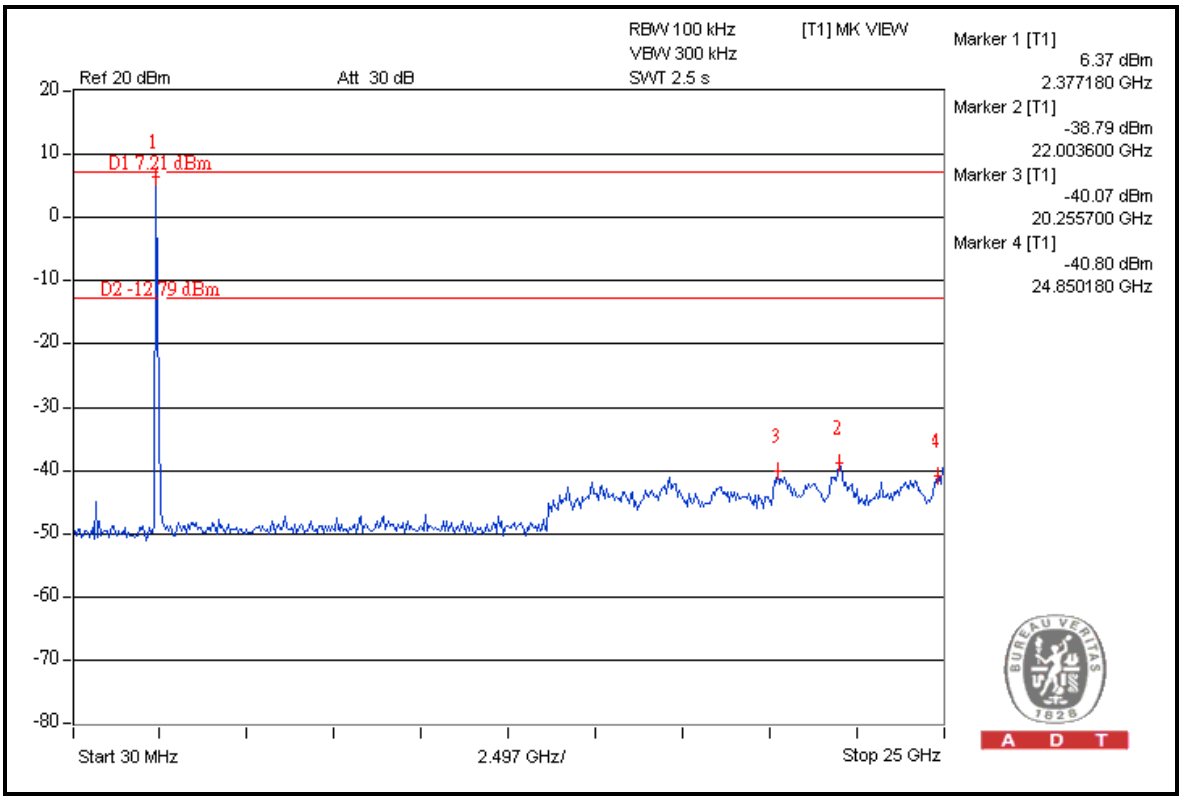
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	114.9	53.9	61.0	74.0
2462.00 (AV)	111.8	58.0	53.8	54.0

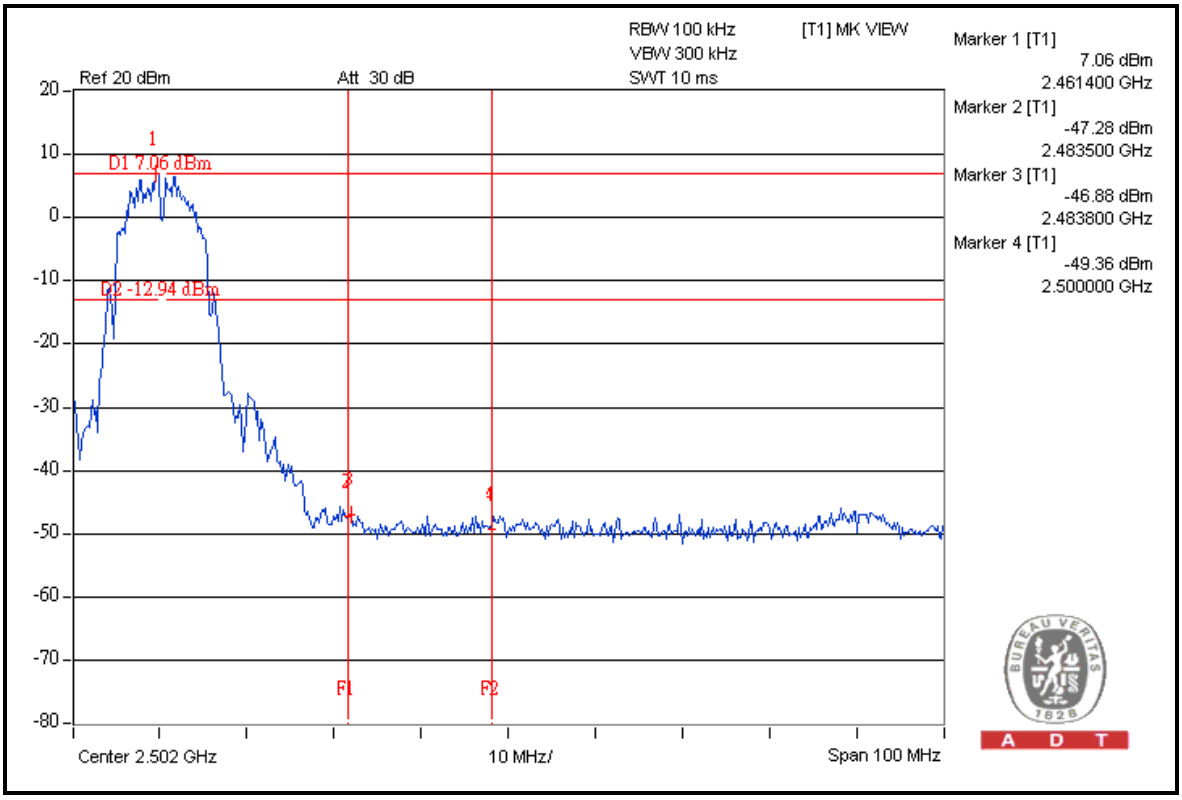
NOTE:

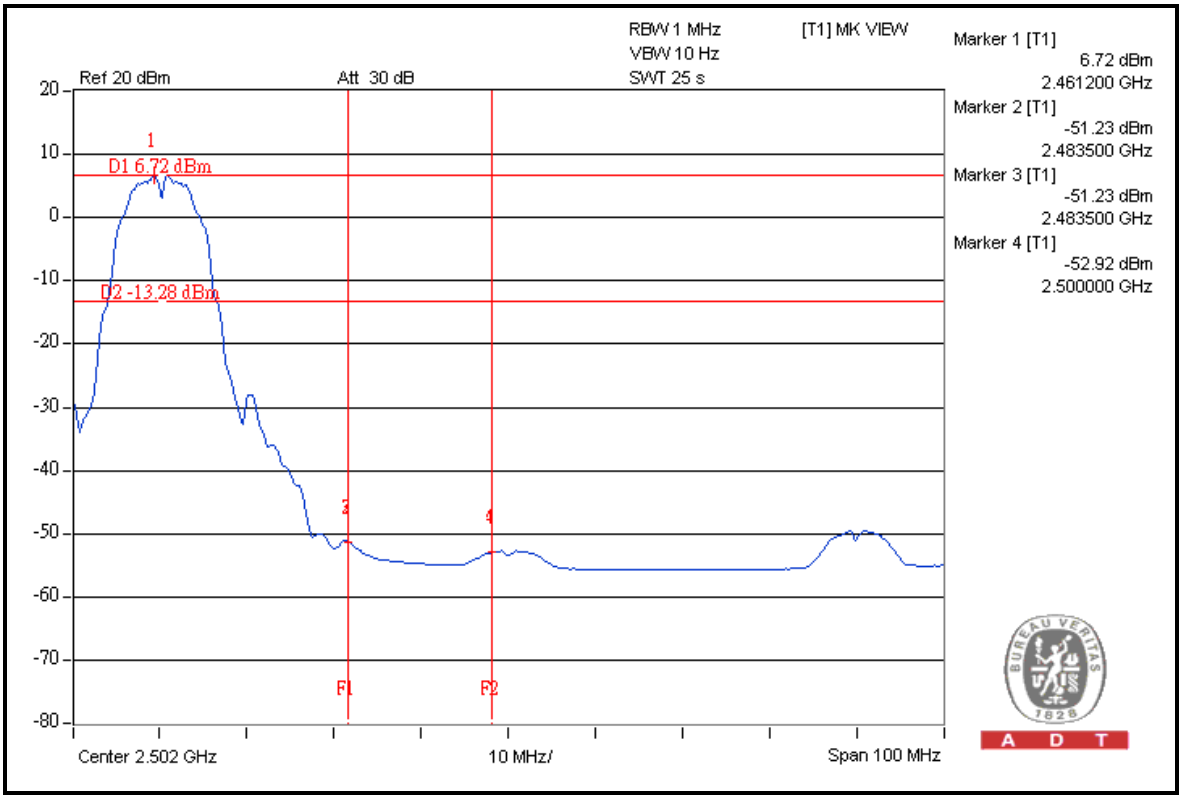
1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
2. Maximum field strength in restrict band = Fundamental emission – Delta.

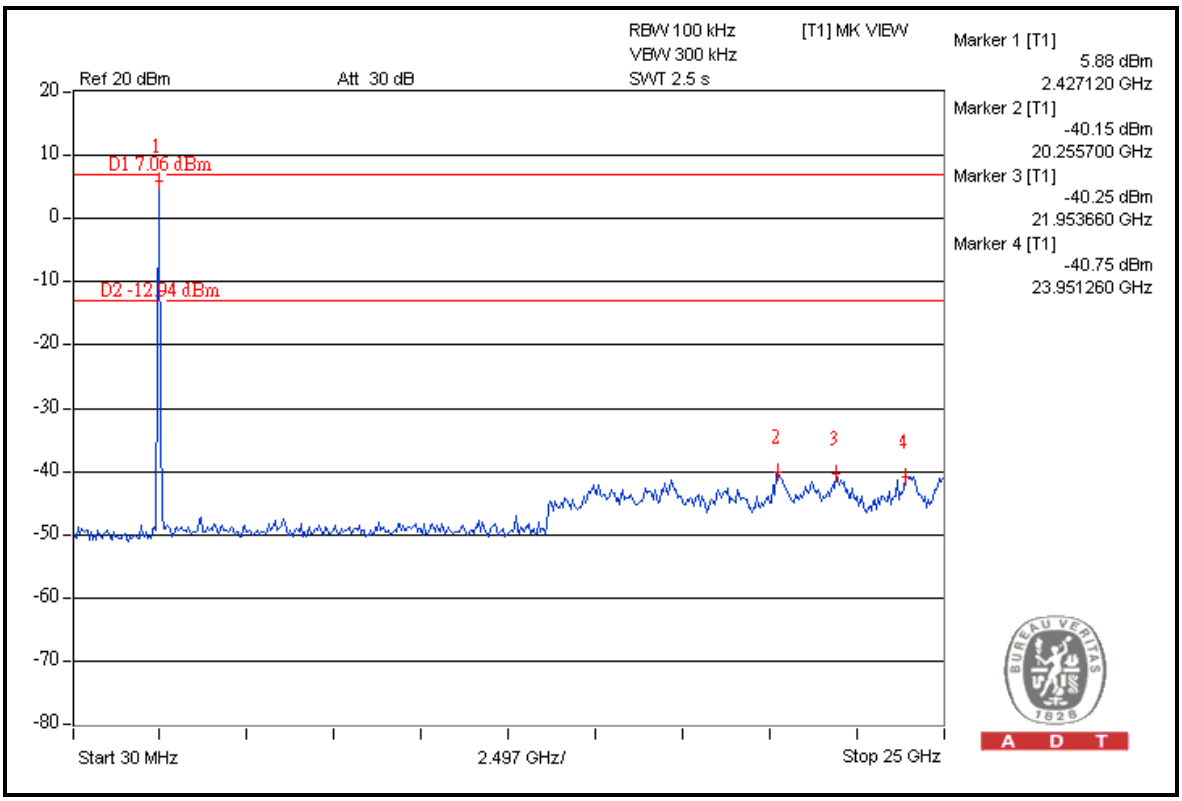

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 7.21 dBm
D2 -12.79 dBm
Marker 1 [T1]
7.21 dBm
2.412600 GHz
Marker 2 [T1]
-37.84 dBm
2.400000 GHz
Marker 3 [T1]
-35.63 dBm
2.399600 GHz
Marker 4 [T1]
-49.12 dBm
2.390000 GHz
Marker 5 [T1]
-46.56 dBm
2.387600 GHz
F2
F1
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 6.53 dBm
D2 -13.47 dBm
Marker 1 [T1]
6.53 dBm
2.411400 GHz
Marker 2 [T1]
-34.69 dBm
2.400000 GHz
Marker 3 [T1]
-34.69 dBm
2.400000 GHz
Marker 4 [T1]
-53.53 dBm
2.390000 GHz
Marker 5 [T1]
-52.80 dBm
2.331200 GHz
F2
F1
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 7.21 dBm
D2 -12.79 dBm
Marker 1 [T1]
6.37 dBm
2.377180 GHz
Marker 2 [T1]
-38.79 dBm
22.003600 GHz
Marker 3 [T1]
-40.07 dBm
20.255700 GHz
Marker 4 [T1]
-40.80 dBm
24.850180 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 7.06 dBm
D2 -12.94 dBm
Marker 1 [T1]
7.06 dBm
2.461400 GHz
Marker 2 [T1]
-47.28 dBm
2.483500 GHz
Marker 3 [T1]
-46.88 dBm
2.483800 GHz
Marker 4 [T1]
-49.36 dBm
2.500000 GHz
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 6.72 dBm
D2 -13.28 dBm
Marker 1 [T1]
6.72 dBm
2.461200 GHz
Marker 2 [T1]
-51.23 dBm
2.483500 GHz
Marker 3 [T1]
-51.23 dBm
2.483500 GHz
Marker 4 [T1]
-52.92 dBm
2.500000 GHz
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 7.06 dBm
D2 -12.94 dBm
Marker 1 [T1]
5.88 dBm
2.427120 GHz
Marker 2 [T1]
-40.15 dBm
20.255700 GHz
Marker 3 [T1]
-40.25 dBm
21.953660 GHz
Marker 4 [T1]
-40.75 dBm
23.951260 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11g

RESTRICT BAND (2310 ~ 2390 MHz)

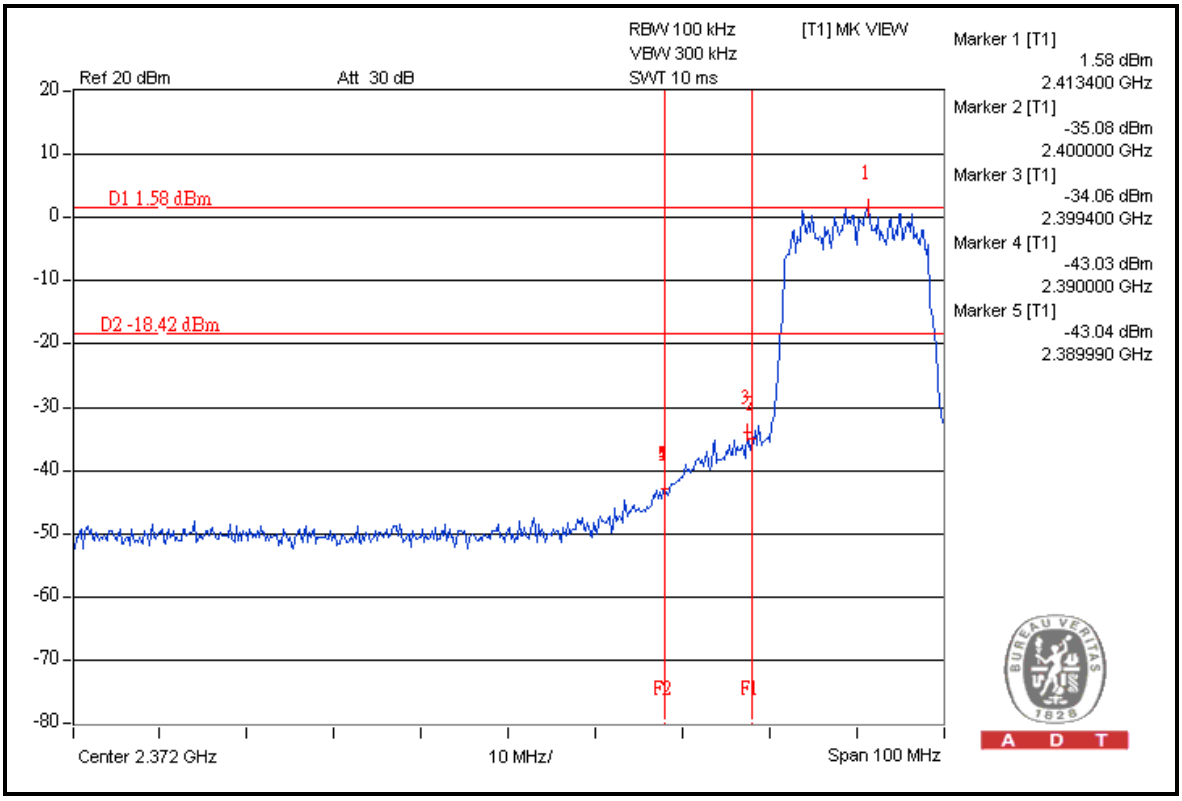
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	110.6	44.6	66.0	74.0
2412.00 (AV)	98.5	50.6	47.9	54.0

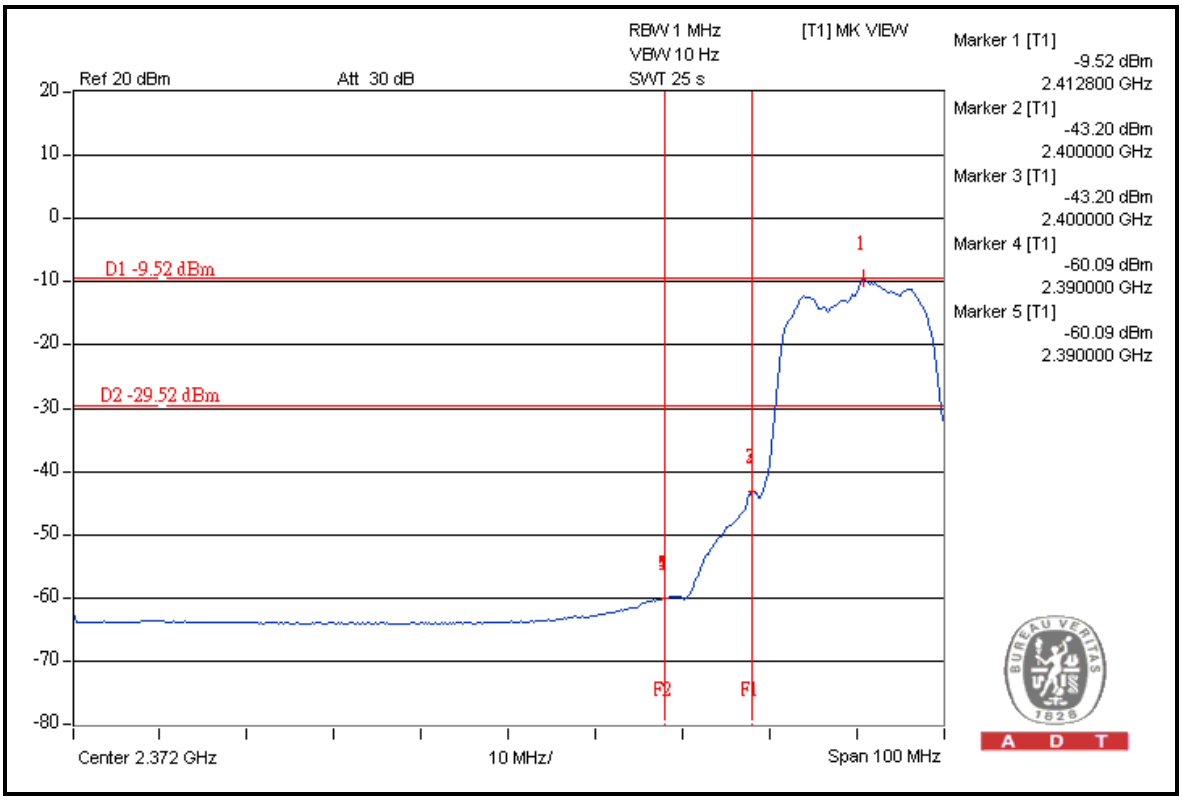
RESTRICT BAND (2483.5 ~ 2500 MHz)

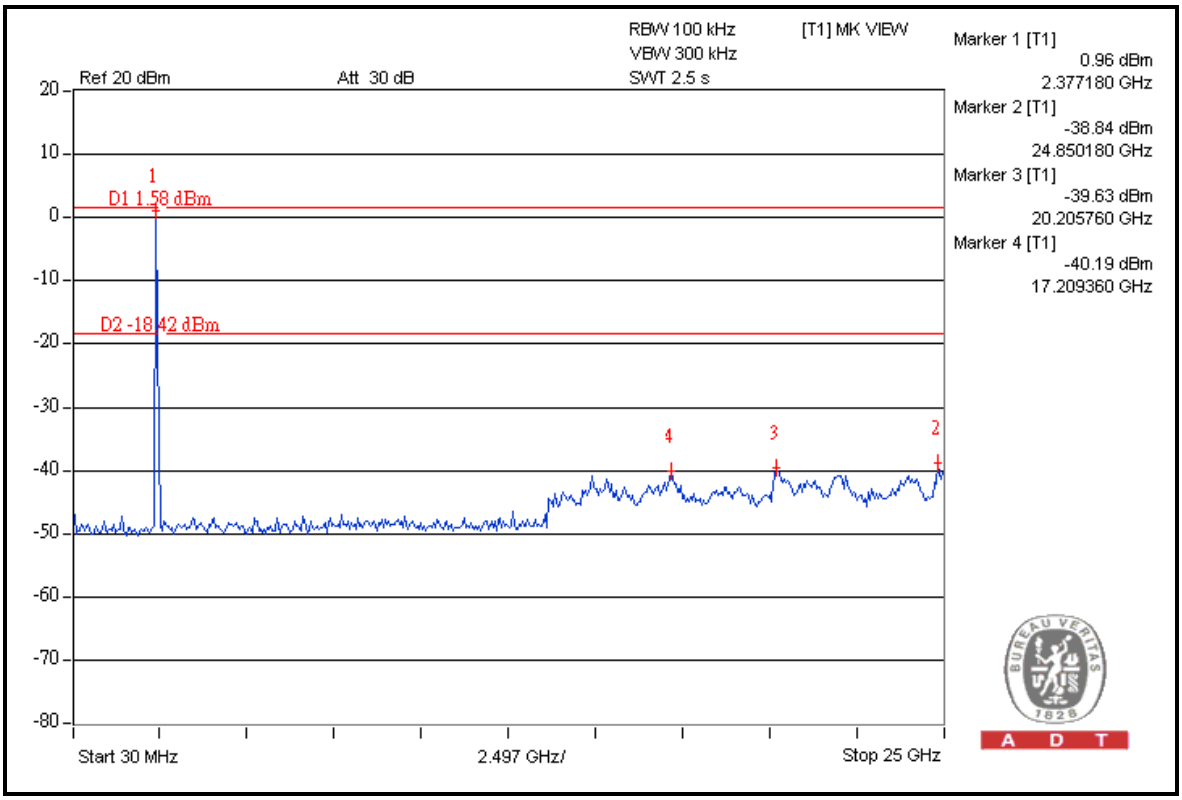
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	107.2	44.1	63.1	74.0
2462.00 (AV)	94.2	40.4	53.8	54.0

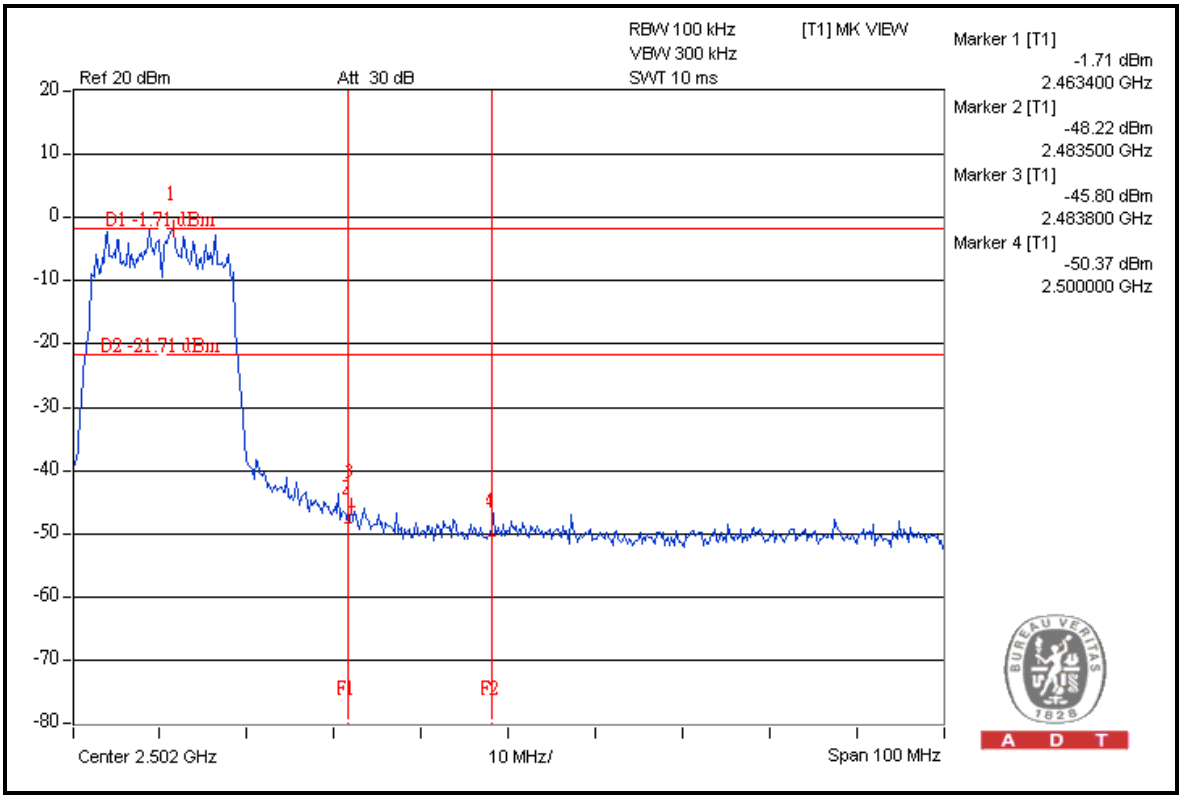
NOTE:

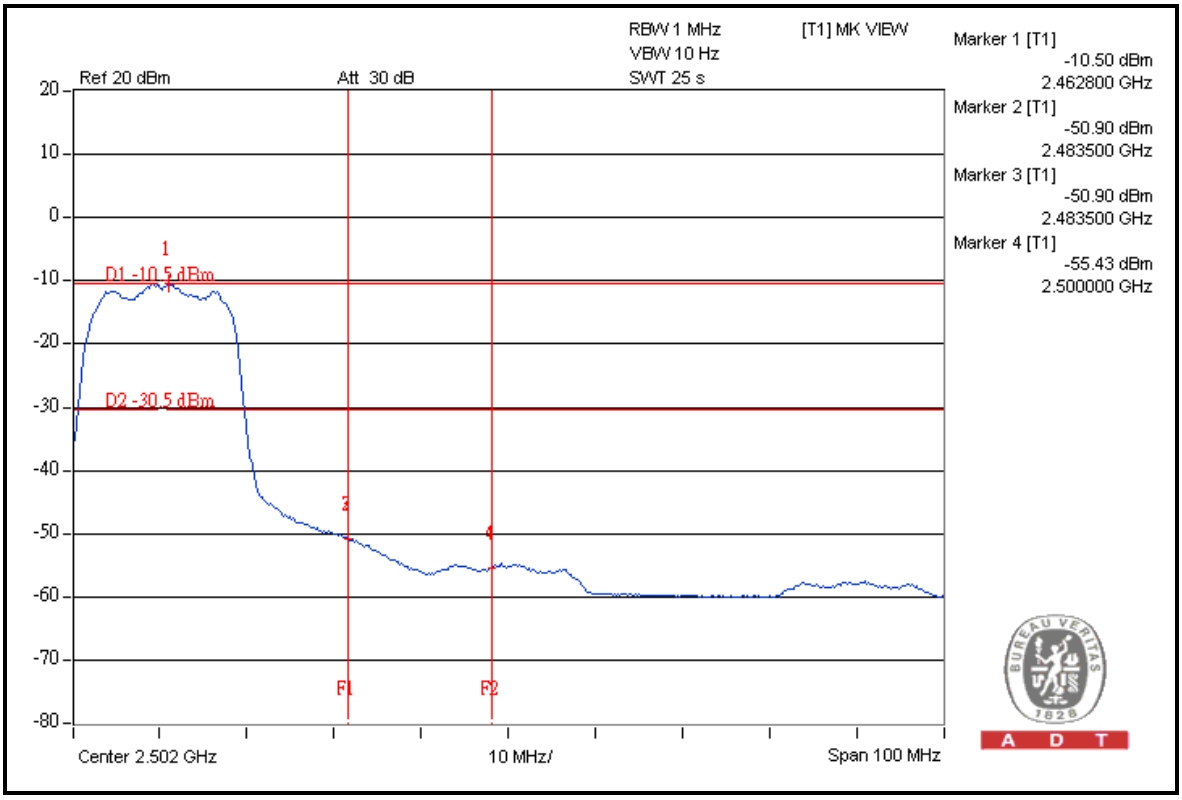
1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
2. Maximum field strength in restrict band = Fundamental emission – Delta.

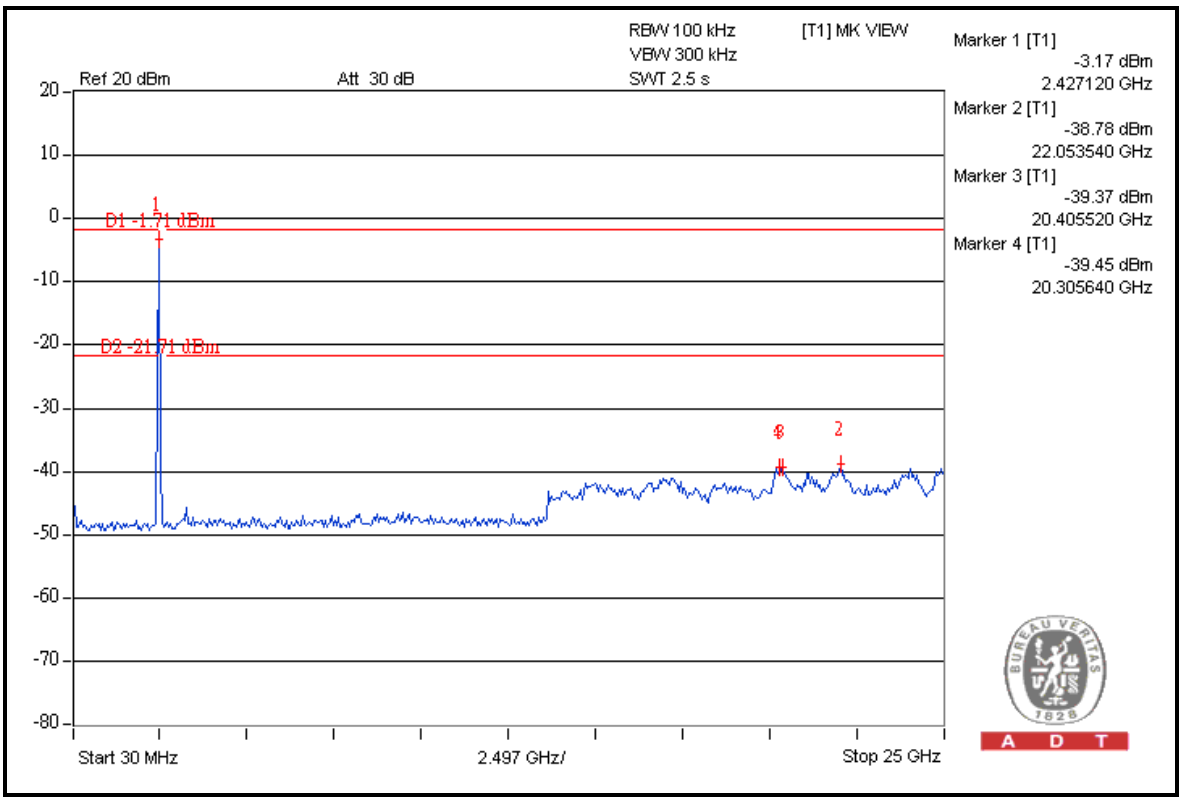

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 1.58 dBm
D2 -18.42 dBm
Marker 1 [T1]
1.58 dBm
2.413400 GHz
Marker 2 [T1]
-35.08 dBm
2.400000 GHz
Marker 3 [T1]
-34.06 dBm
2.399400 GHz
Marker 4 [T1]
-43.03 dBm
2.390000 GHz
Marker 5 [T1]
-43.04 dBm
2.389990 GHz
F2
F1
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -9.52 dBm
D2 -29.52 dBm
Marker 1 [T1]
-9.52 dBm
2.412800 GHz
Marker 2 [T1]
-43.20 dBm
2.400000 GHz
Marker 3 [T1]
-43.20 dBm
2.400000 GHz
Marker 4 [T1]
-60.09 dBm
2.390000 GHz
Marker 5 [T1]
-60.09 dBm
2.390000 GHz
F2
F1
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 1.58 dBm
D2 -18.42 dBm
Marker 1 [T1]
0.96 dBm
2.377180 GHz
Marker 2 [T1]
-38.84 dBm
24.850180 GHz
Marker 3 [T1]
-39.63 dBm
20.205760 GHz
Marker 4 [T1]
-40.19 dBm
17.209360 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -1.71 dBm
D2 -21.71 dBm
Marker 1 [T1]
-1.71 dBm
2.463400 GHz
Marker 2 [T1]
-48.22 dBm
2.483500 GHz
Marker 3 [T1]
-45.80 dBm
2.483800 GHz
Marker 4 [T1]
-50.37 dBm
2.500000 GHz
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-10.50 dBm
2.462800 GHz
Marker 2 [T1]
-50.90 dBm
2.483500 GHz
Marker 3 [T1]
-50.90 dBm
2.483500 GHz
Marker 4 [T1]
-55.43 dBm
2.500000 GHz
D1 -10.5 dBm
D2 -30.5 dBm
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-3.17 dBm
2.427120 GHz
Marker 2 [T1]
-38.78 dBm
22.053540 GHz
Marker 3 [T1]
-39.37 dBm
20.405520 GHz
Marker 4 [T1]
-39.45 dBm
20.305640 GHz
D1 -1.71 dBm
D2 -21.71 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11n (20MHz)

RESTRICT BAND (2310 ~ 2390 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	111.8	44.2	67.6	74.0
2412.00 (AV)	99.6	50.7	48.9	54.0

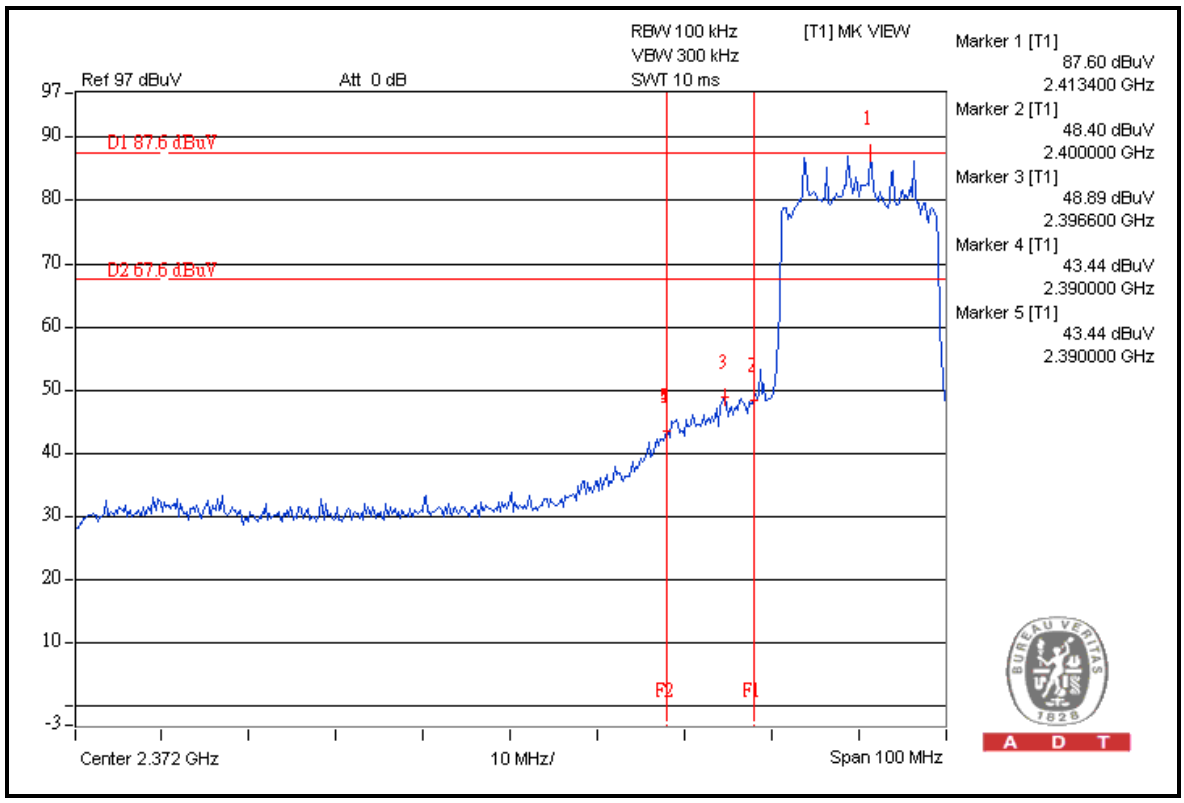
RESTRICT BAND (2483.5 ~ 2500 MHz)

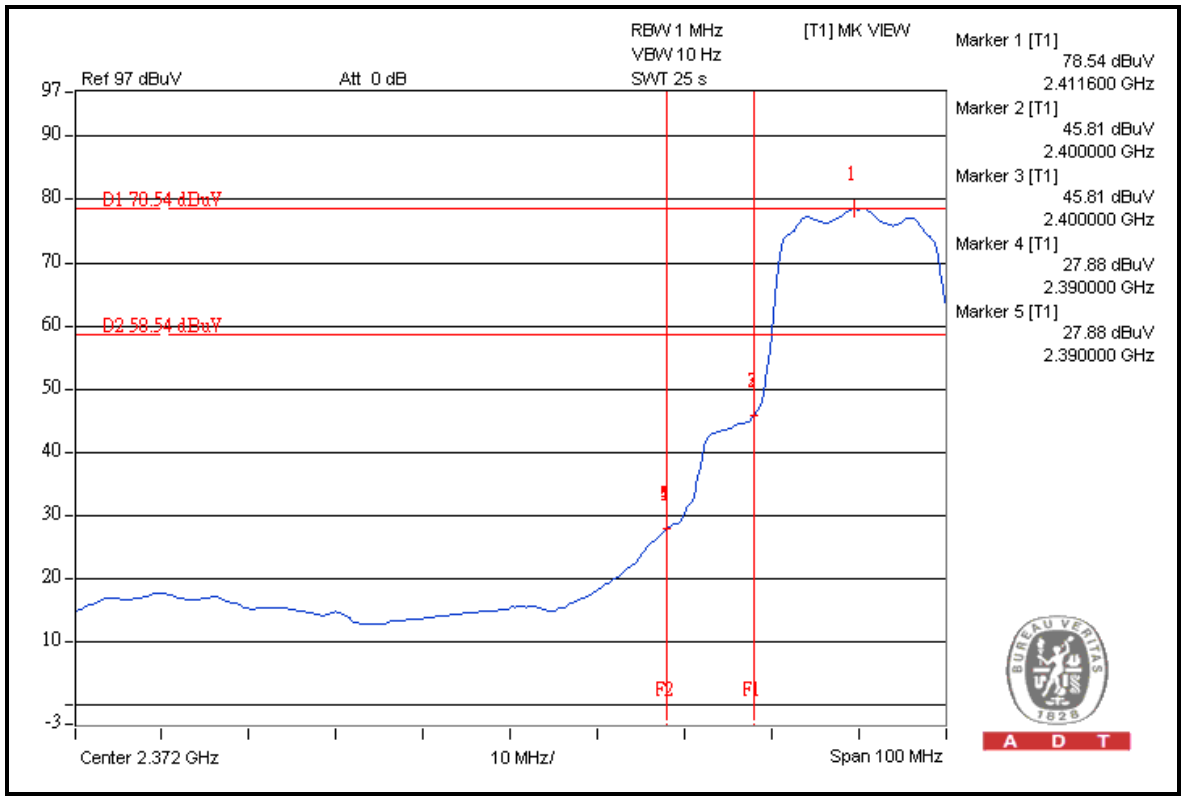
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	108.3	43.9	64.4	74.0
2462.00 (AV)	95.6	44.1	51.5	54.0

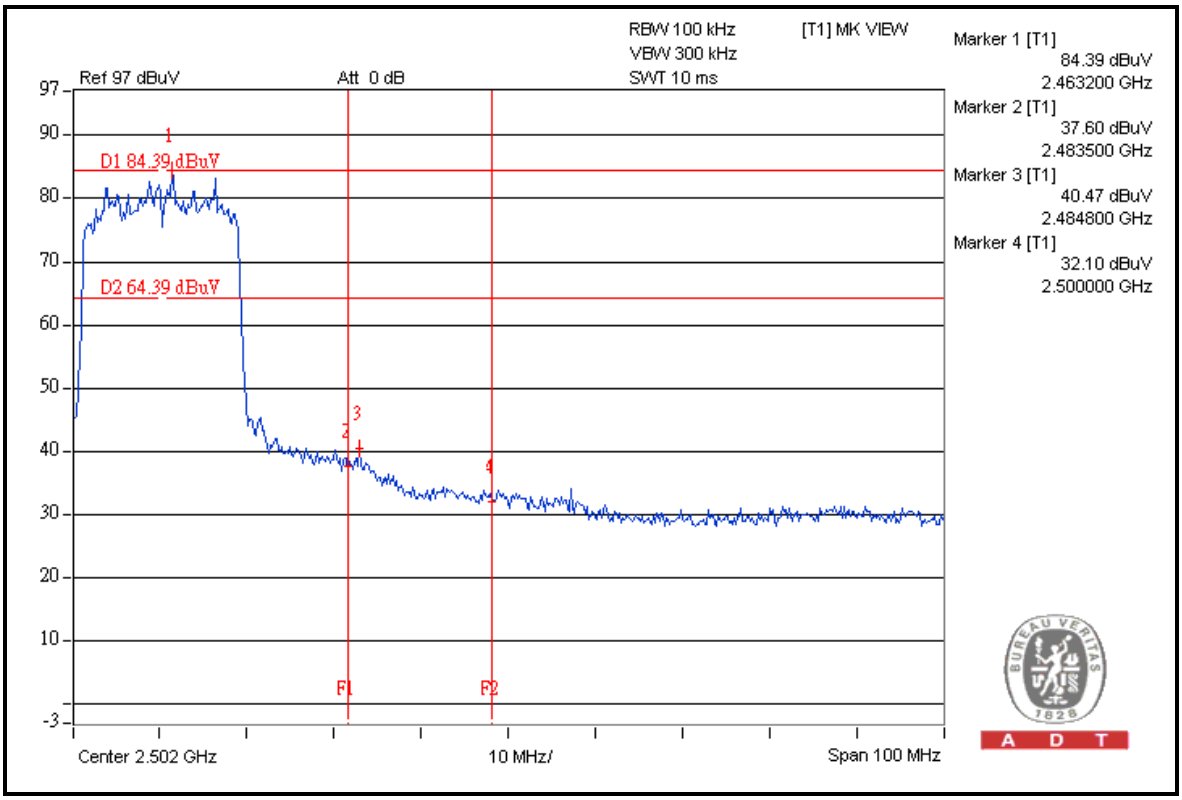
NOTE:

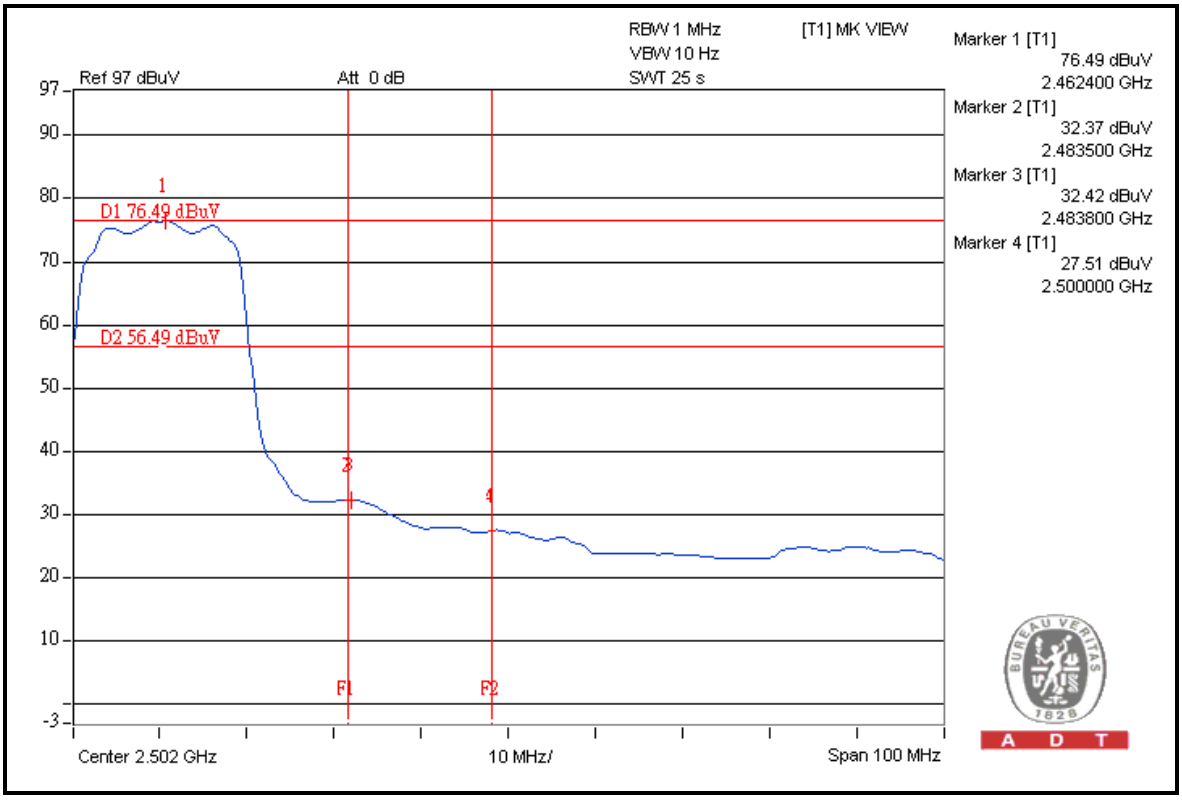
1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 2 pages.
2. Maximum field strength in restrict band = Fundamental emission – Delta.

FOR RADIATED MEASURED (TWO CHAINS ON)



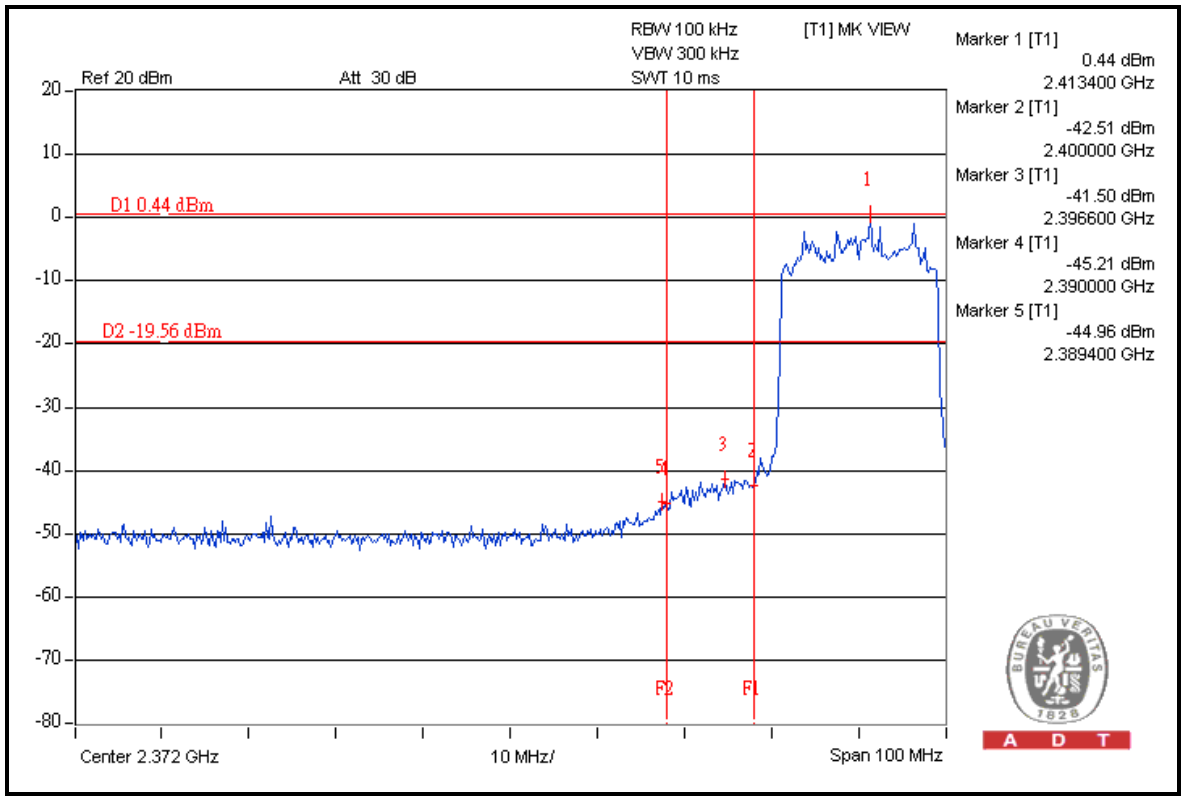


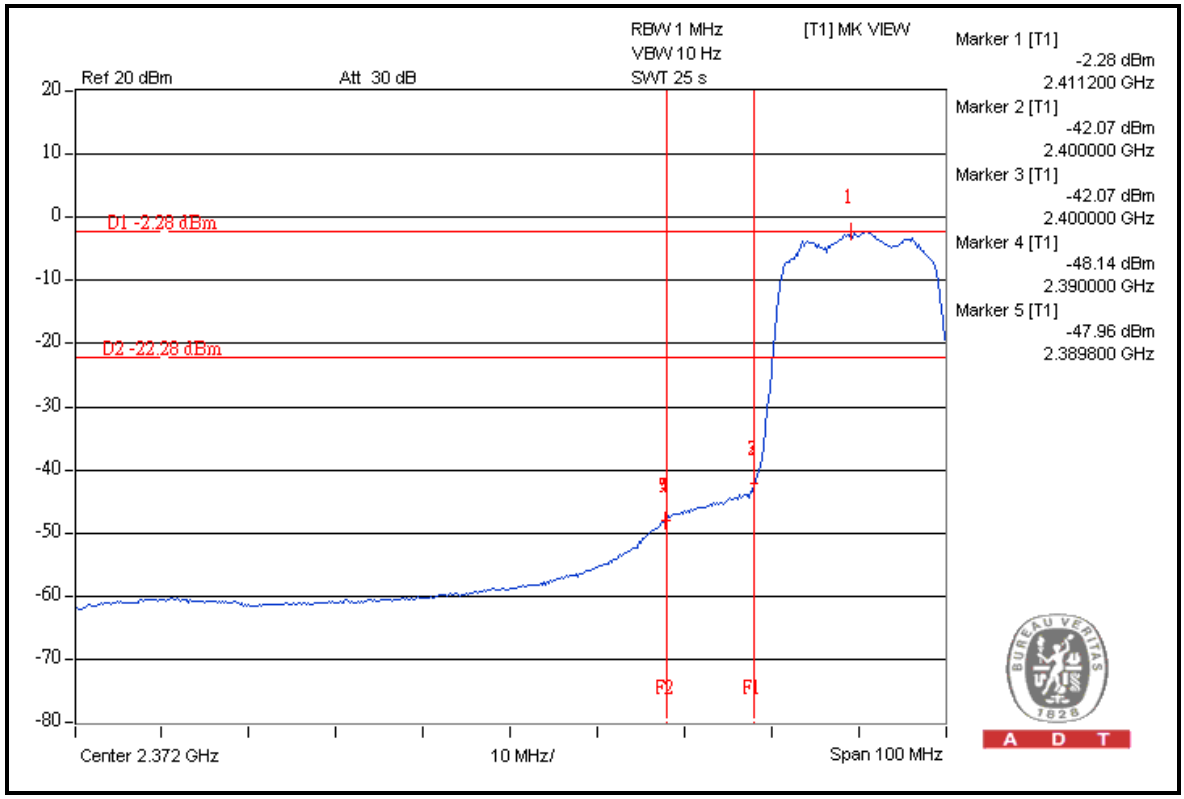

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 84.39 dBuV
D2 64.39 dBuV
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
84.39 dBuV
2.463200 GHz
Marker 2 [T1]
37.60 dBuV
2.483500 GHz
Marker 3 [T1]
40.47 dBuV
2.484800 GHz
Marker 4 [T1]
32.10 dBuV
2.500000 GHz

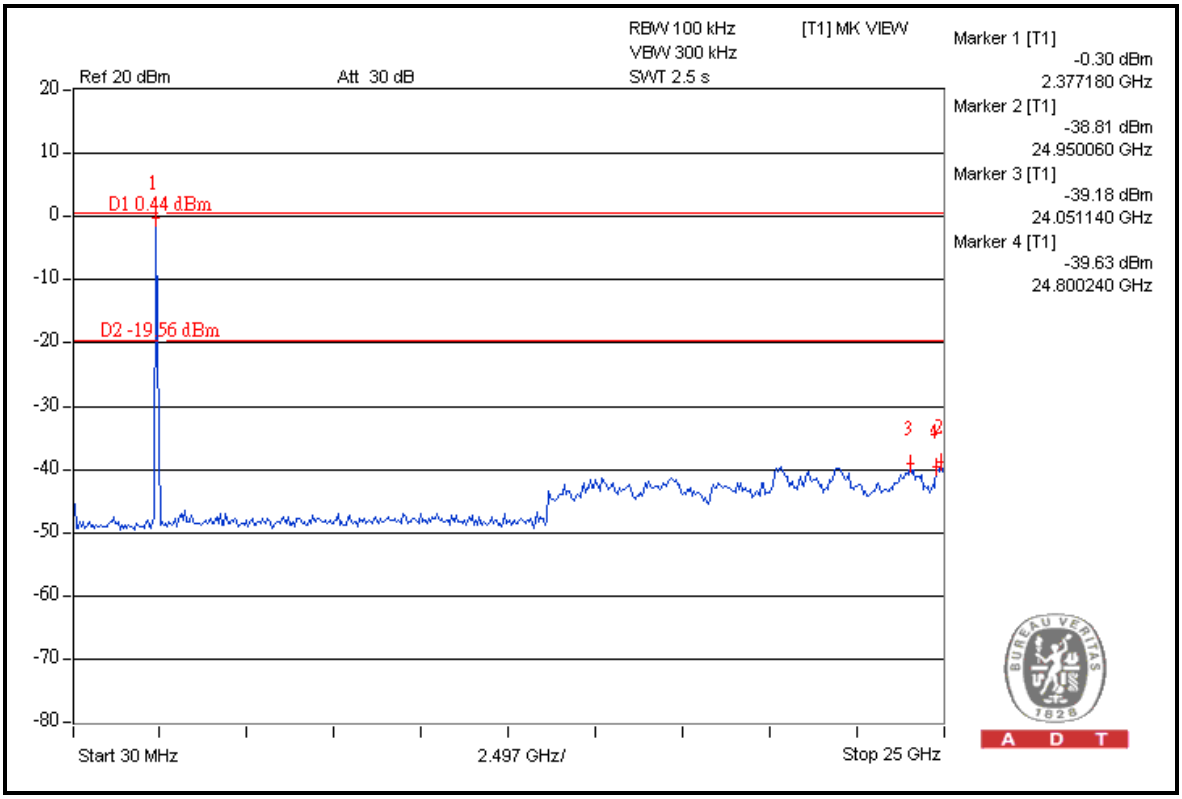

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 76.49 dBuV
D2 56.49 dBuV
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
76.49 dBuV
2.462400 GHz
Marker 2 [T1]
32.37 dBuV
2.483500 GHz
Marker 3 [T1]
32.42 dBuV
2.483800 GHz
Marker 4 [T1]
27.51 dBuV
2.500000 GHz

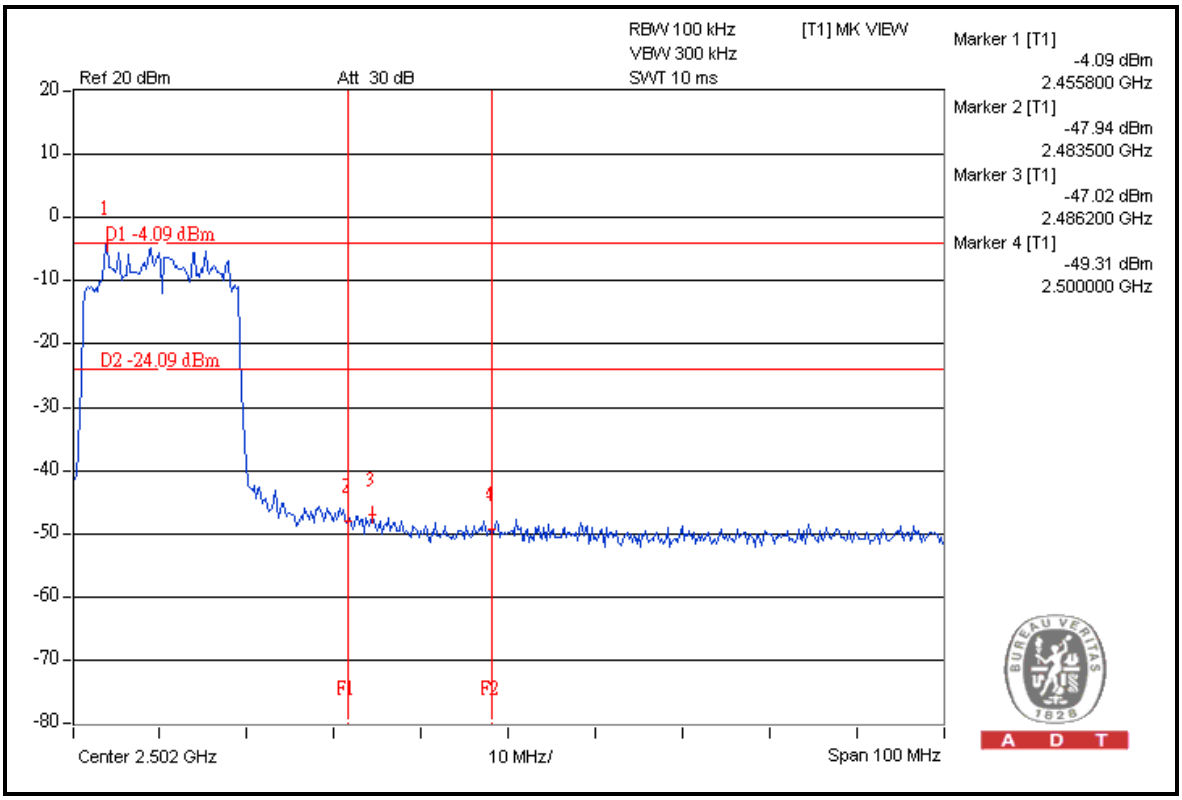
FOR CONDUCTED MEASURED

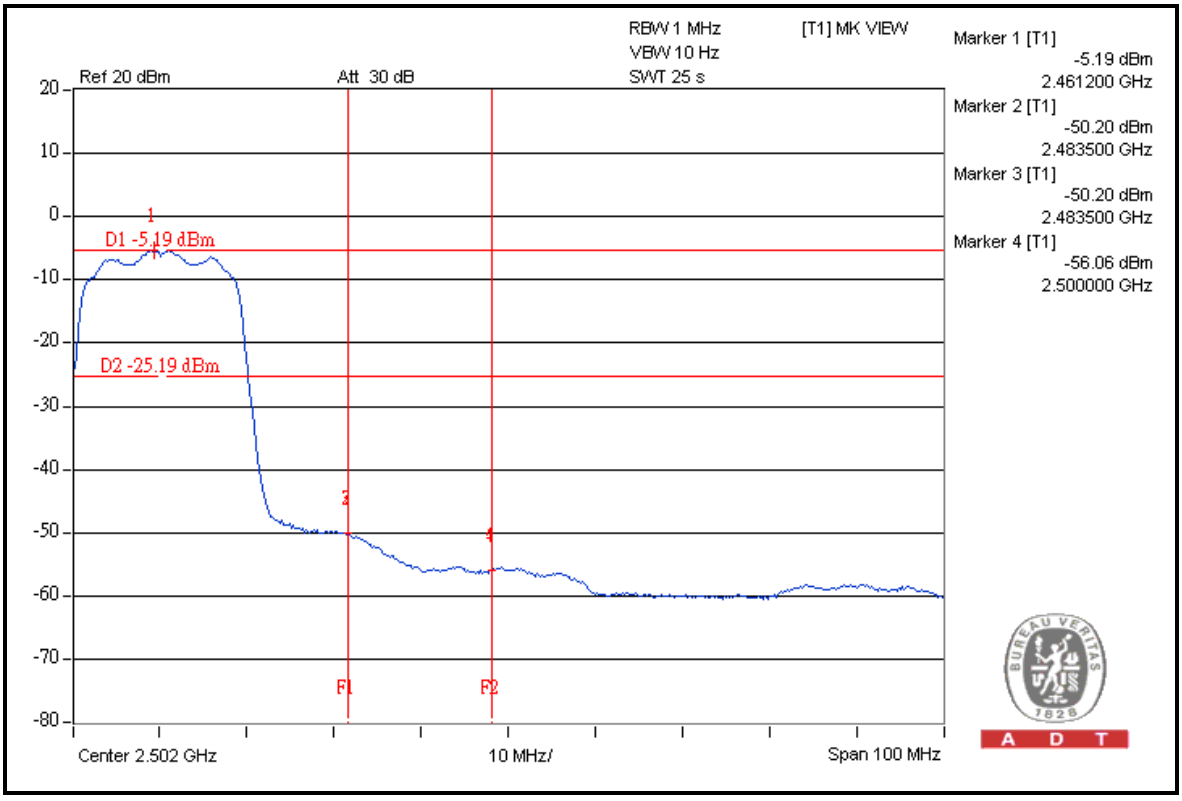
CHAIN 0

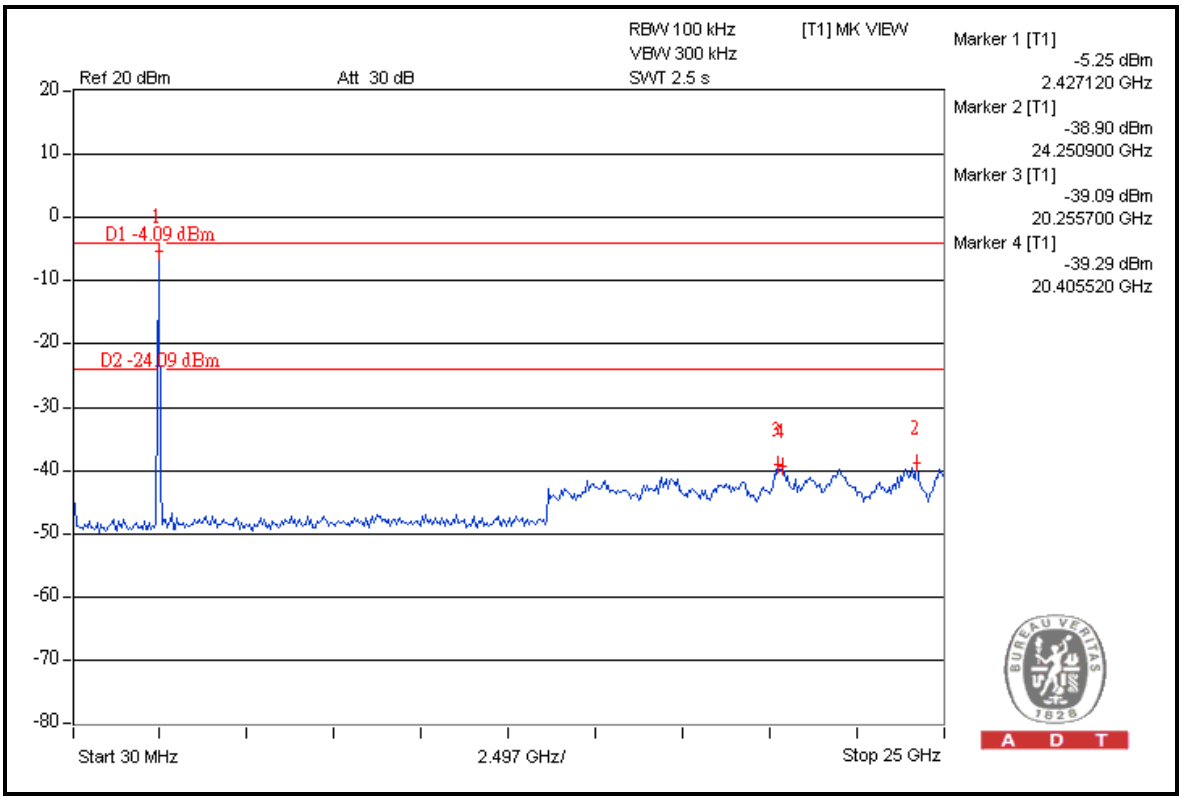




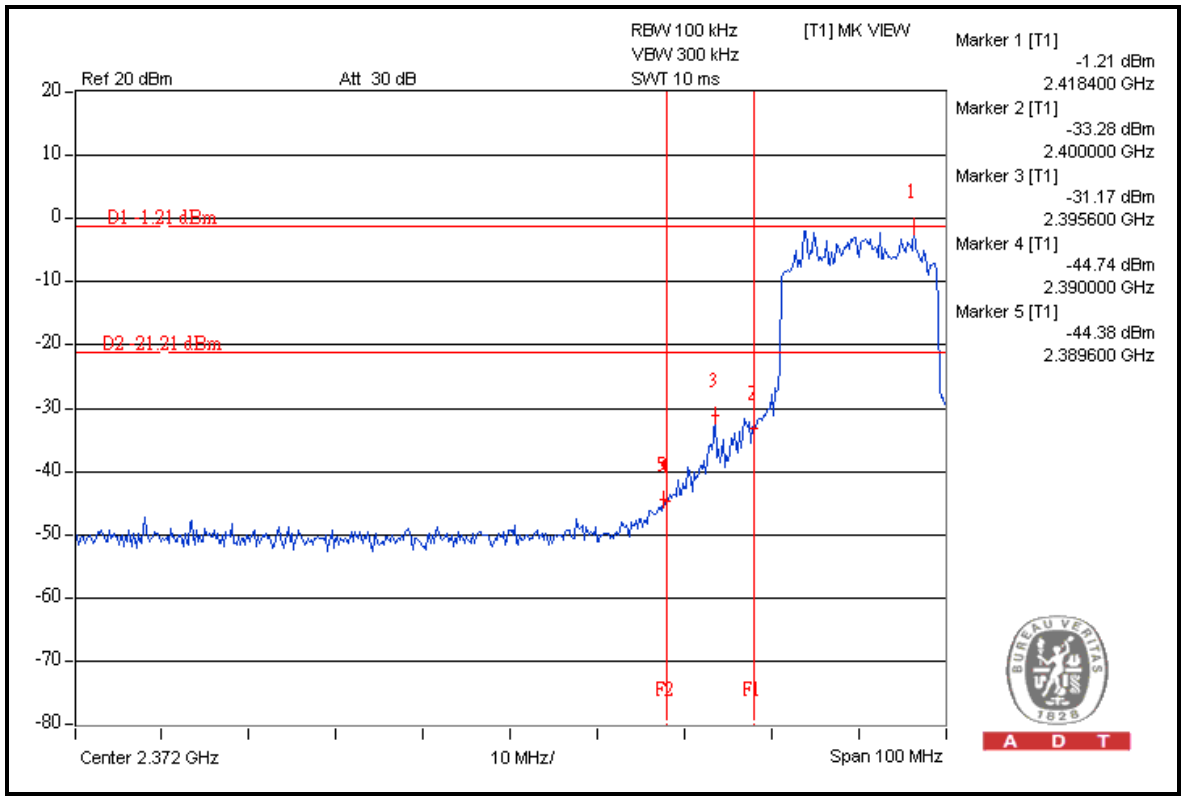

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 0.44 dBm
D2 -19.56 dBm
Marker 1 [T1]
-0.30 dBm
2.377180 GHz
Marker 2 [T1]
-38.81 dBm
24.950060 GHz
Marker 3 [T1]
-39.18 dBm
24.051140 GHz
Marker 4 [T1]
-39.63 dBm
24.800240 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz

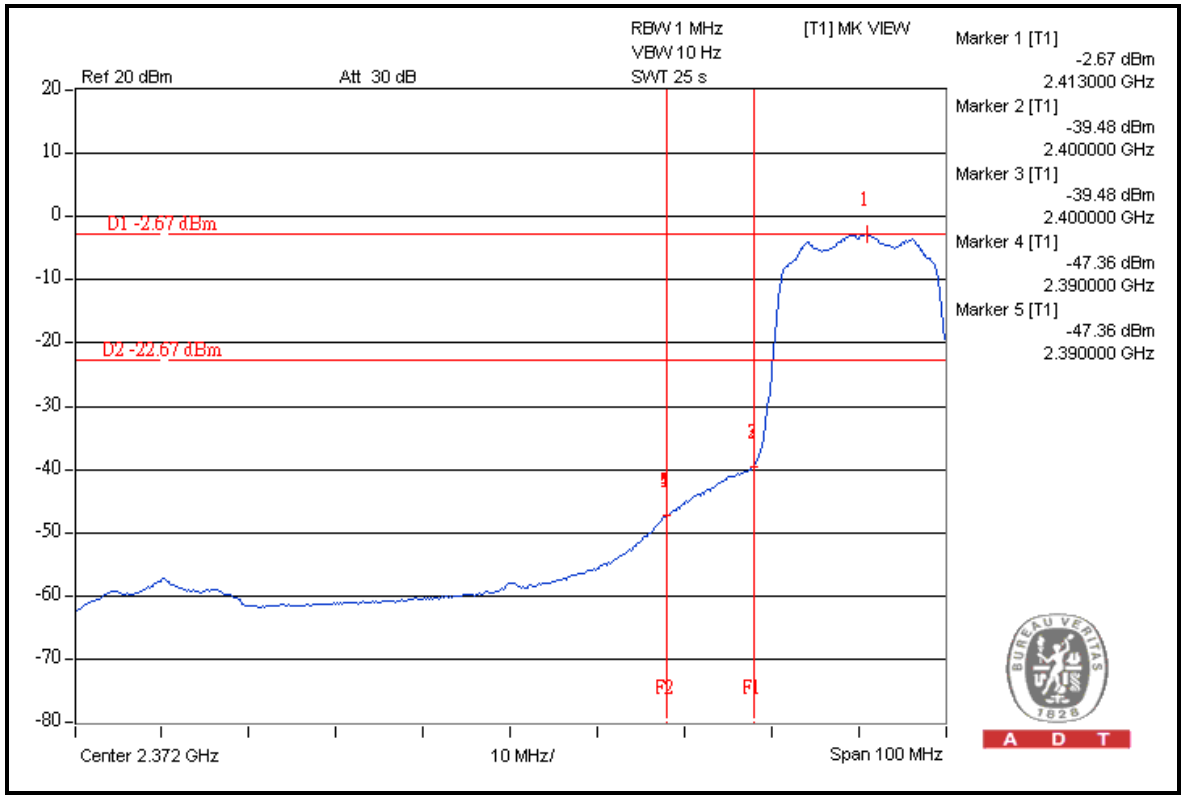

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -4.09 dBm
D2 -24.09 dBm
Marker 1 [T1]
-4.09 dBm
2.455800 GHz
Marker 2 [T1]
-47.94 dBm
2.483500 GHz
Marker 3 [T1]
-47.02 dBm
2.486200 GHz
Marker 4 [T1]
-49.31 dBm
2.500000 GHz
Center 2.502 GHz
10 MHz/
Span 100 MHz

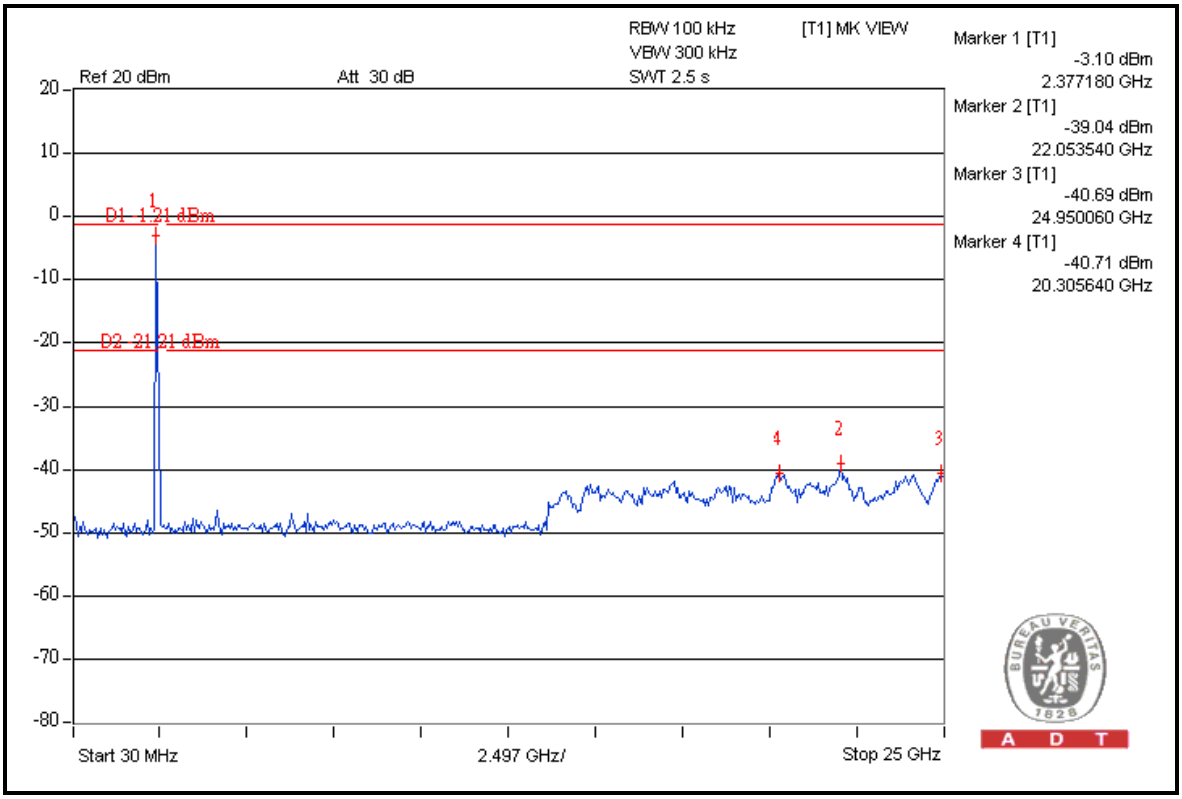

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-5.19 dBm
2.461200 GHz
Marker 2 [T1]
-50.20 dBm
2.483500 GHz
Marker 3 [T1]
-50.20 dBm
2.483500 GHz
Marker 4 [T1]
-56.06 dBm
2.500000 GHz
D1 -5.19 dBm
D2 -25.19 dBm
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz

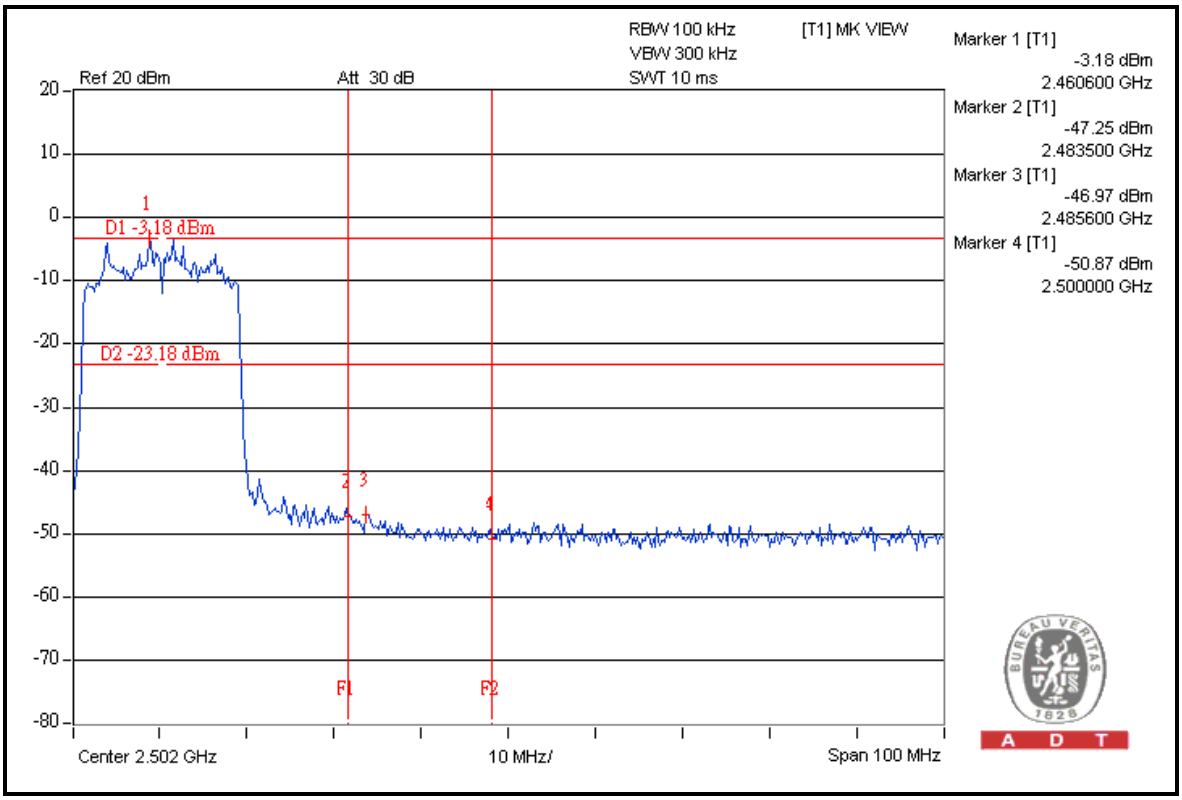

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-5.25 dBm
2.427120 GHz
Marker 2 [T1]
-38.90 dBm
24.250900 GHz
Marker 3 [T1]
-39.09 dBm
20.255700 GHz
Marker 4 [T1]
-39.29 dBm
20.405520 GHz
D1 -4.09 dBm
D2 -24.09 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

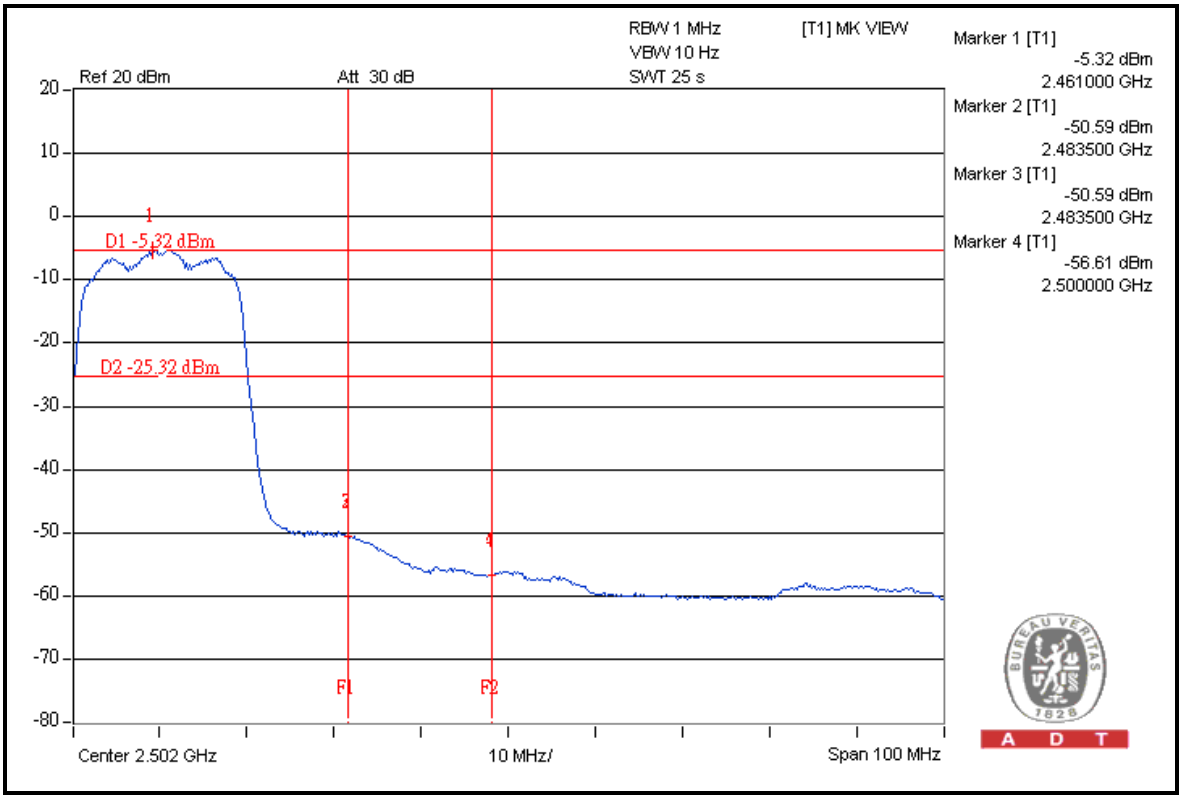
CHAIN 1

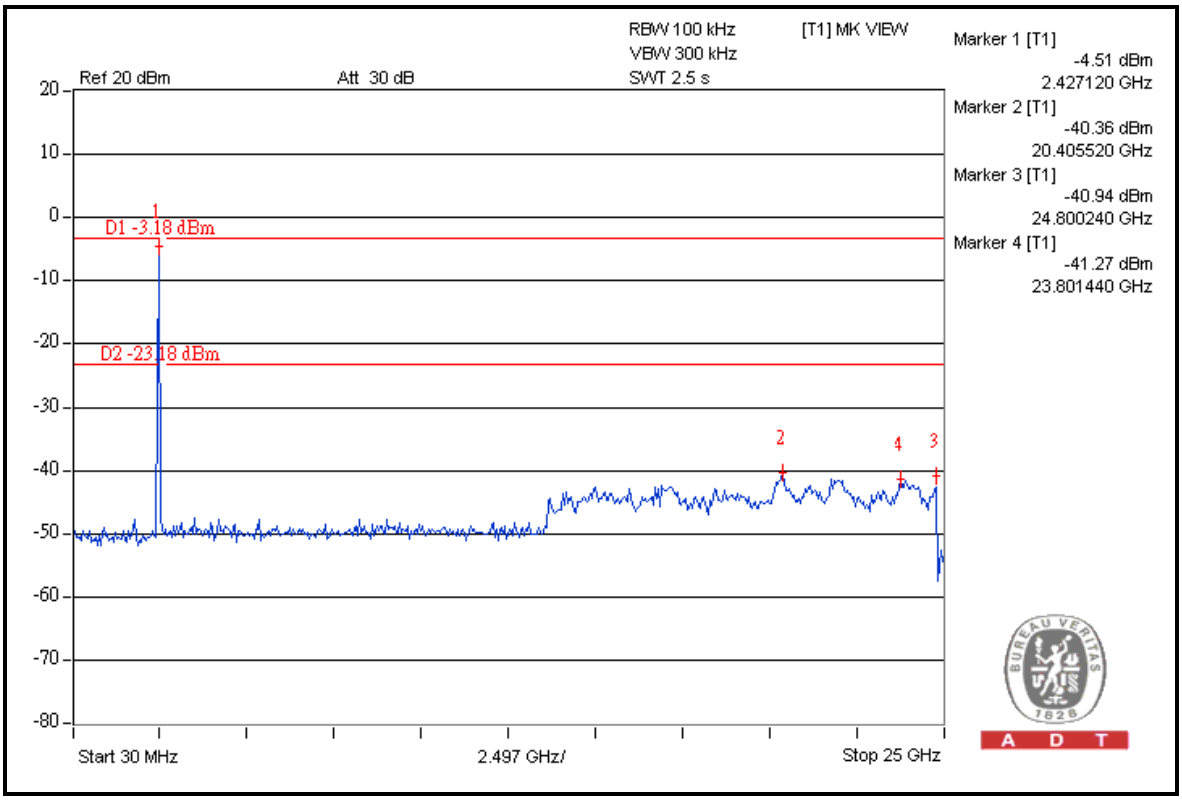

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -1.21 dBm
D2 -21.21 dBm
Marker 1 [T1]
-1.21 dBm
2.418400 GHz
Marker 2 [T1]
-33.28 dBm
2.400000 GHz
Marker 3 [T1]
-31.17 dBm
2.395600 GHz
Marker 4 [T1]
-44.74 dBm
2.390000 GHz
Marker 5 [T1]
-44.38 dBm
2.389600 GHz
F2
F1
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -2.67 dBm
D2 -22.67 dBm
Marker 1 [T1]
-2.67 dBm
2.413000 GHz
Marker 2 [T1]
-39.48 dBm
2.400000 GHz
Marker 3 [T1]
-39.48 dBm
2.400000 GHz
Marker 4 [T1]
-47.36 dBm
2.390000 GHz
Marker 5 [T1]
-47.36 dBm
2.390000 GHz
F2
F1
Center 2.372 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-3.10 dBm
2.377180 GHz
Marker 2 [T1]
-39.04 dBm
22.053540 GHz
Marker 3 [T1]
-40.69 dBm
24.950060 GHz
Marker 4 [T1]
-40.71 dBm
20.305640 GHz
D1 1.21 dBm
D2 -21.21 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-3.18 dBm
2.460600 GHz
Marker 2 [T1]
-47.25 dBm
2.483500 GHz
Marker 3 [T1]
-46.97 dBm
2.485600 GHz
Marker 4 [T1]
-50.87 dBm
2.500000 GHz
D1 -3.18 dBm
D2 -23.18 dBm
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-5.32 dBm
2.461000 GHz
Marker 2 [T1]
-50.59 dBm
2.483500 GHz
Marker 3 [T1]
-50.59 dBm
2.483500 GHz
Marker 4 [T1]
-56.61 dBm
2.500000 GHz
D1 -5.32 dBm
D2 -25.32 dBm
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-4.51 dBm
2.427120 GHz
Marker 2 [T1]
-40.36 dBm
20.405520 GHz
Marker 3 [T1]
-40.94 dBm
24.800240 GHz
Marker 4 [T1]
-41.27 dBm
23.801440 GHz
D1 -3.18 dBm
D2 -23.18 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11n (40MHz)

RESTRICT BAND (2310 ~ 2390 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2422.00 (PK)	105.5	33.5	72.0	74.0
2422.00 (AV)	92.3	40.5	51.8	54.0

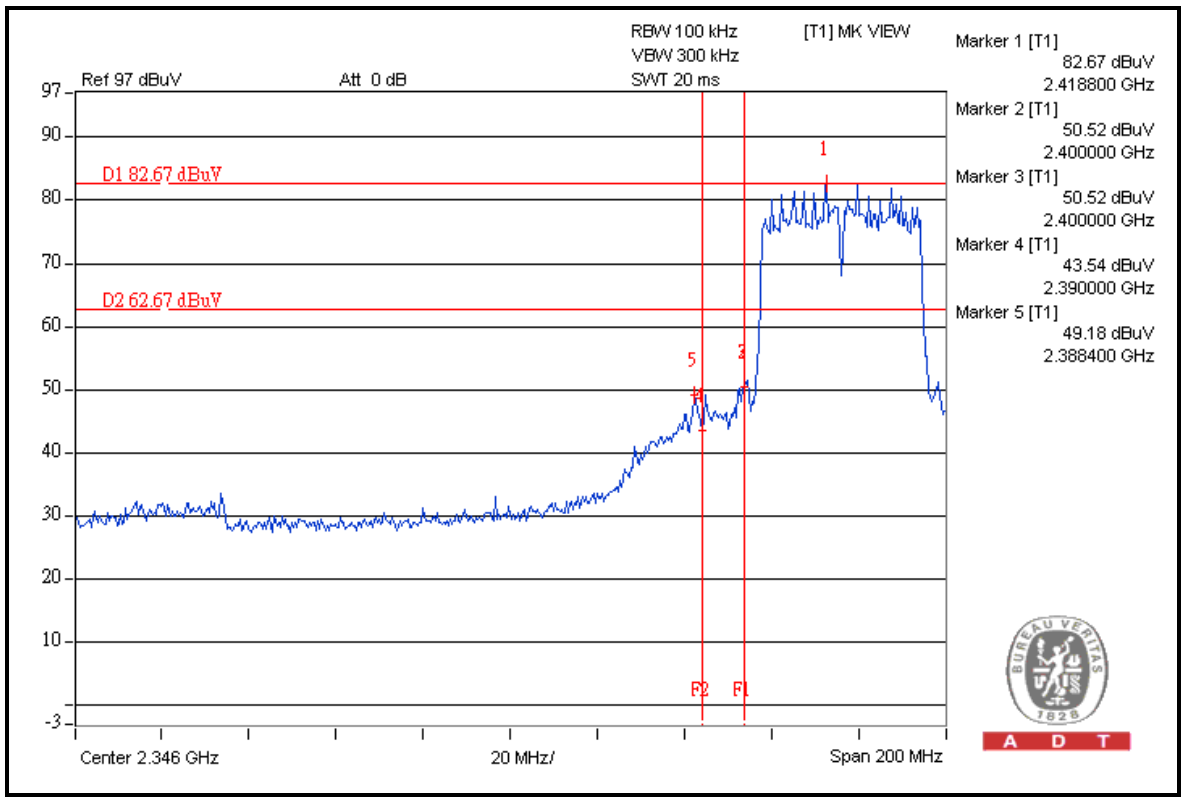
RESTRICT BAND (2483.5 ~ 2500 MHz)

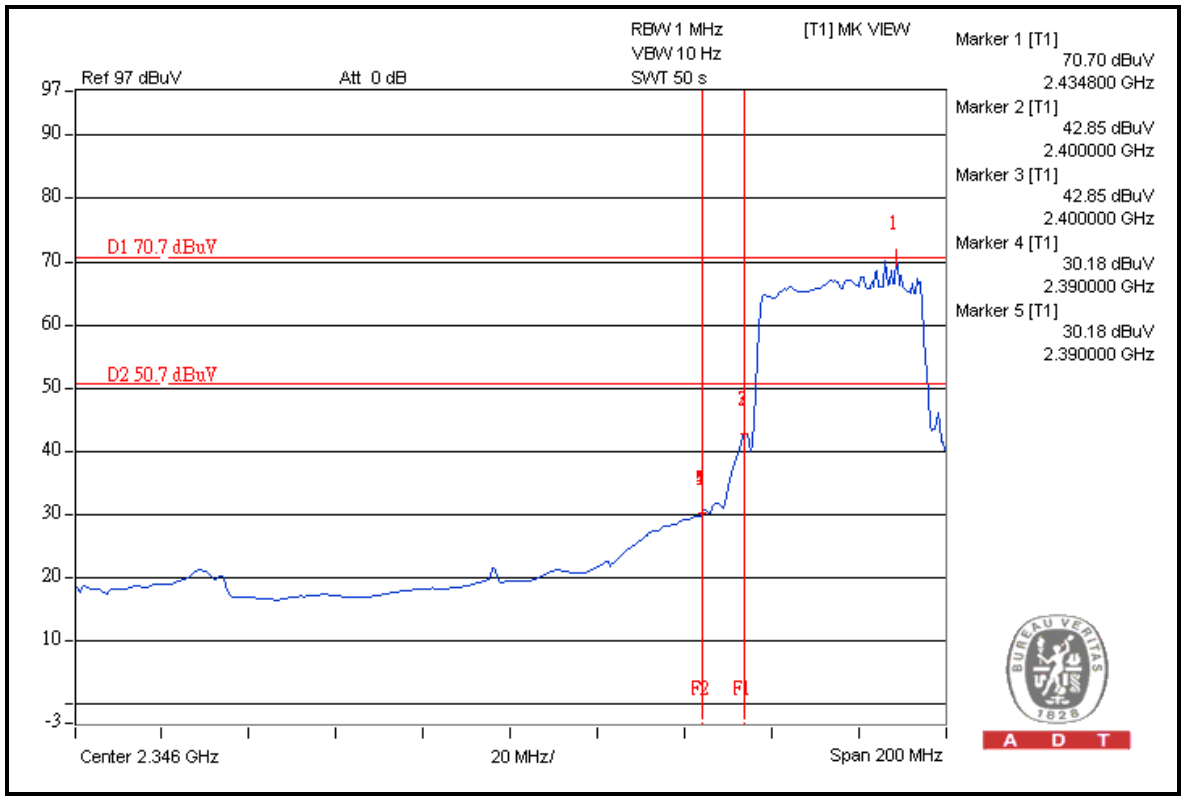
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2452.00 (PK)	106.4	35.6	70.8	74.0
2452.00 (AV)	92.8	44.1	48.7	54.0

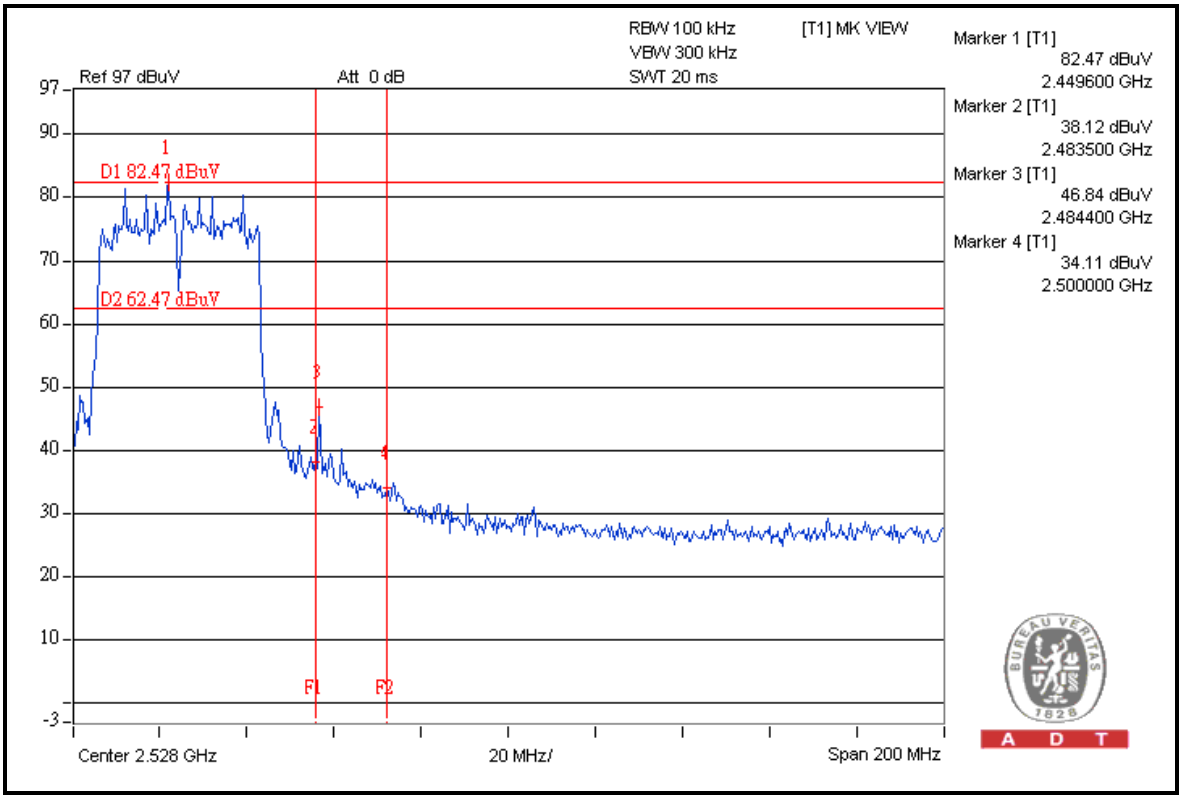
NOTE:

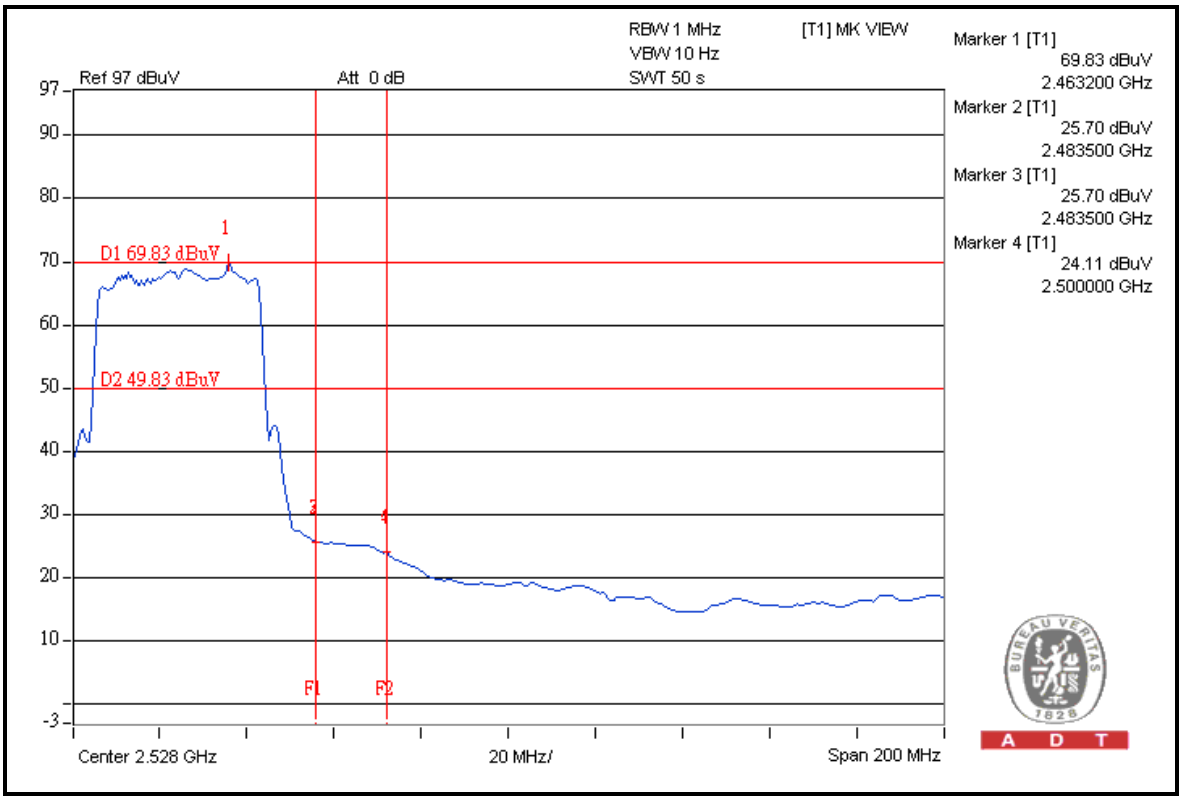
1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 2 pages.
2. Maximum field strength in restrict band = Fundamental emission – Delta.

FOR RADIATED MEASURED (TWO CHAINS ON)



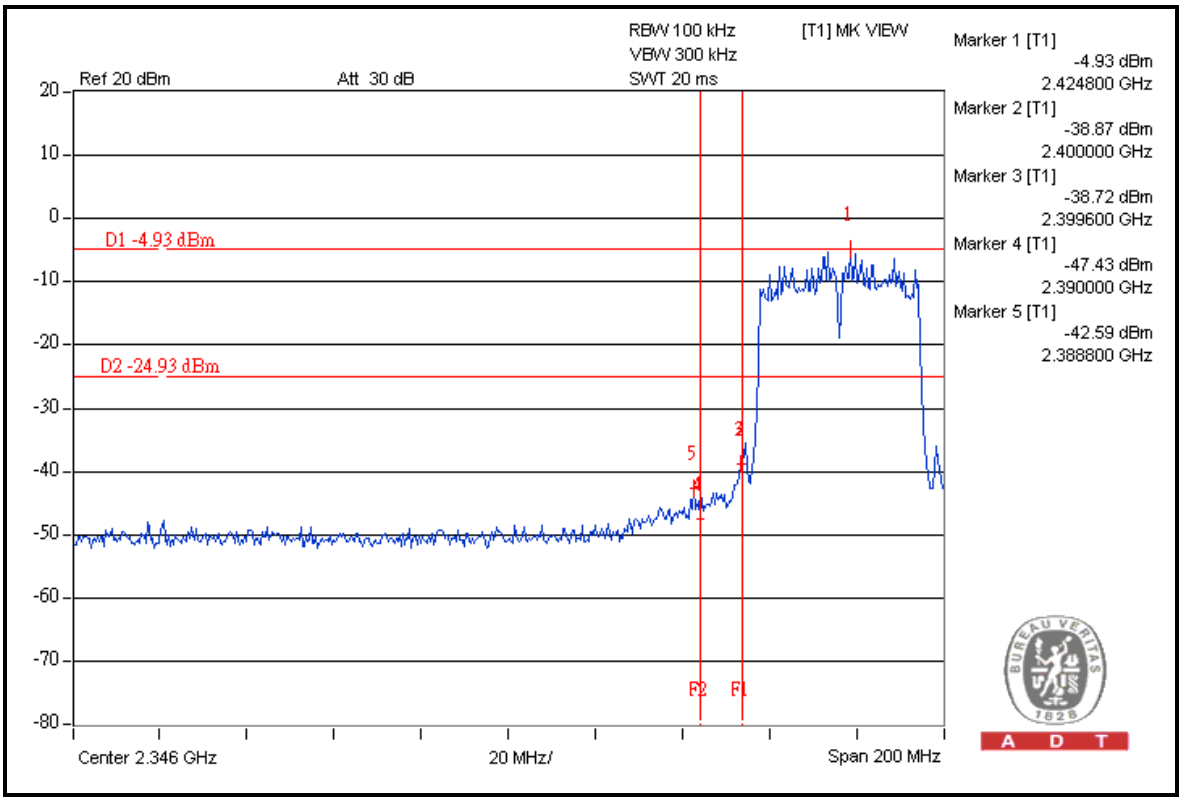


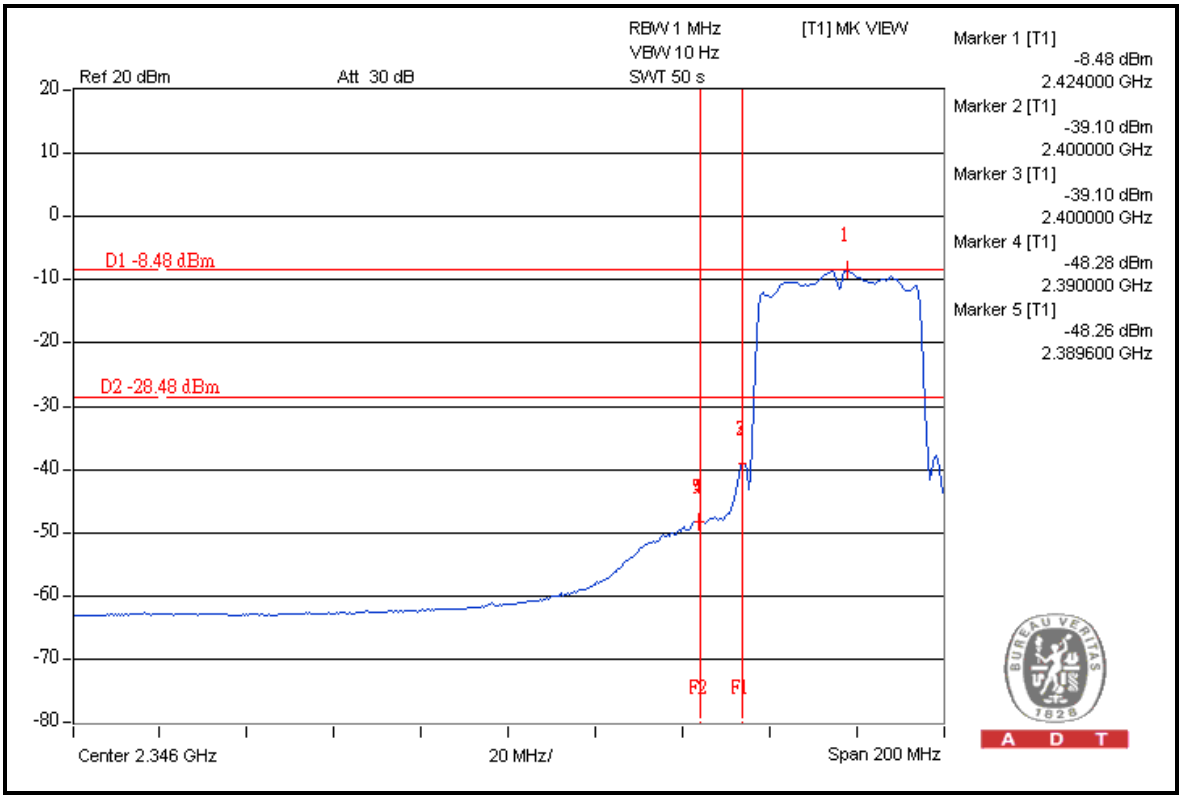

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 82.47 dBuV
D2 62.47 dBuV
Marker 1 [T1]
82.47 dBuV
2.449600 GHz
Marker 2 [T1]
38.12 dBuV
2.483500 GHz
Marker 3 [T1]
46.84 dBuV
2.484400 GHz
Marker 4 [T1]
34.11 dBuV
2.500000 GHz
Center 2.528 GHz
20 MHz/
Span 200 MHz

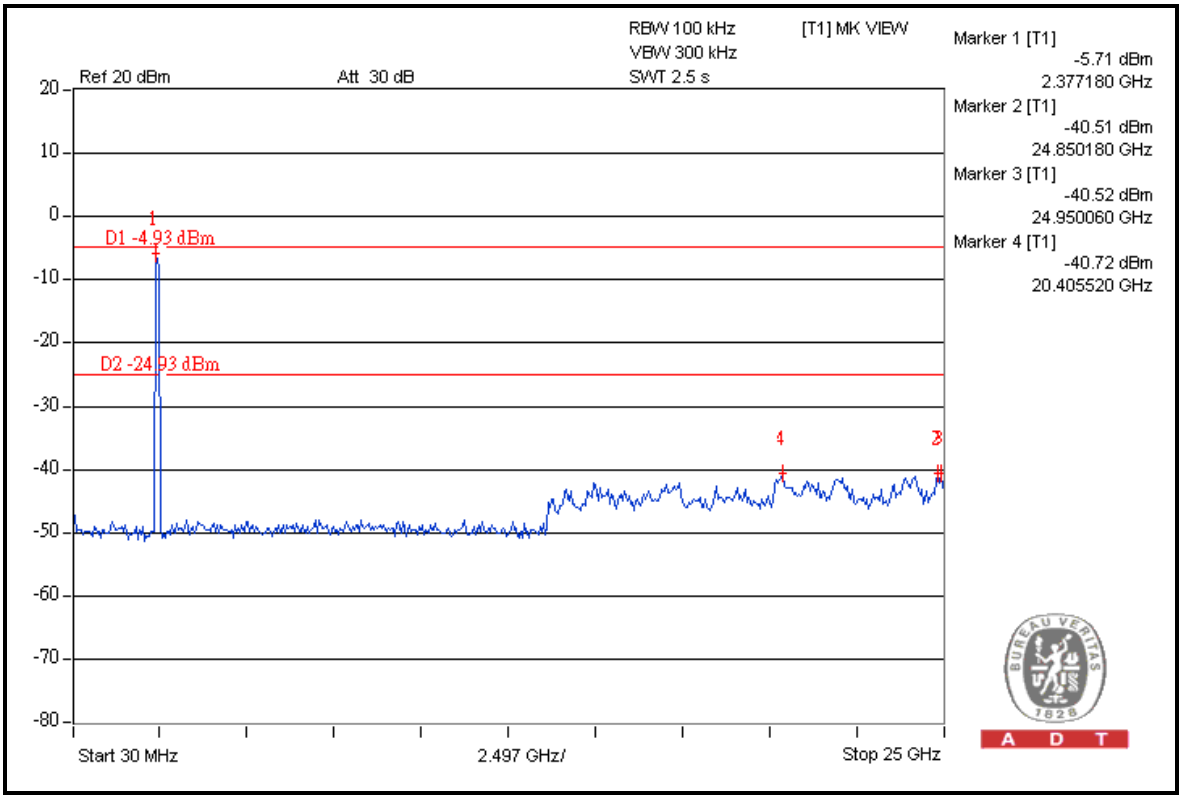

RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 69.83 dBuV
D2 49.83 dBuV
Marker 1 [T1]
69.83 dBuV
2.463200 GHz
Marker 2 [T1]
25.70 dBuV
2.483500 GHz
Marker 3 [T1]
25.70 dBuV
2.483500 GHz
Marker 4 [T1]
24.11 dBuV
2.500000 GHz
Center 2.528 GHz
20 MHz/
Span 200 MHz

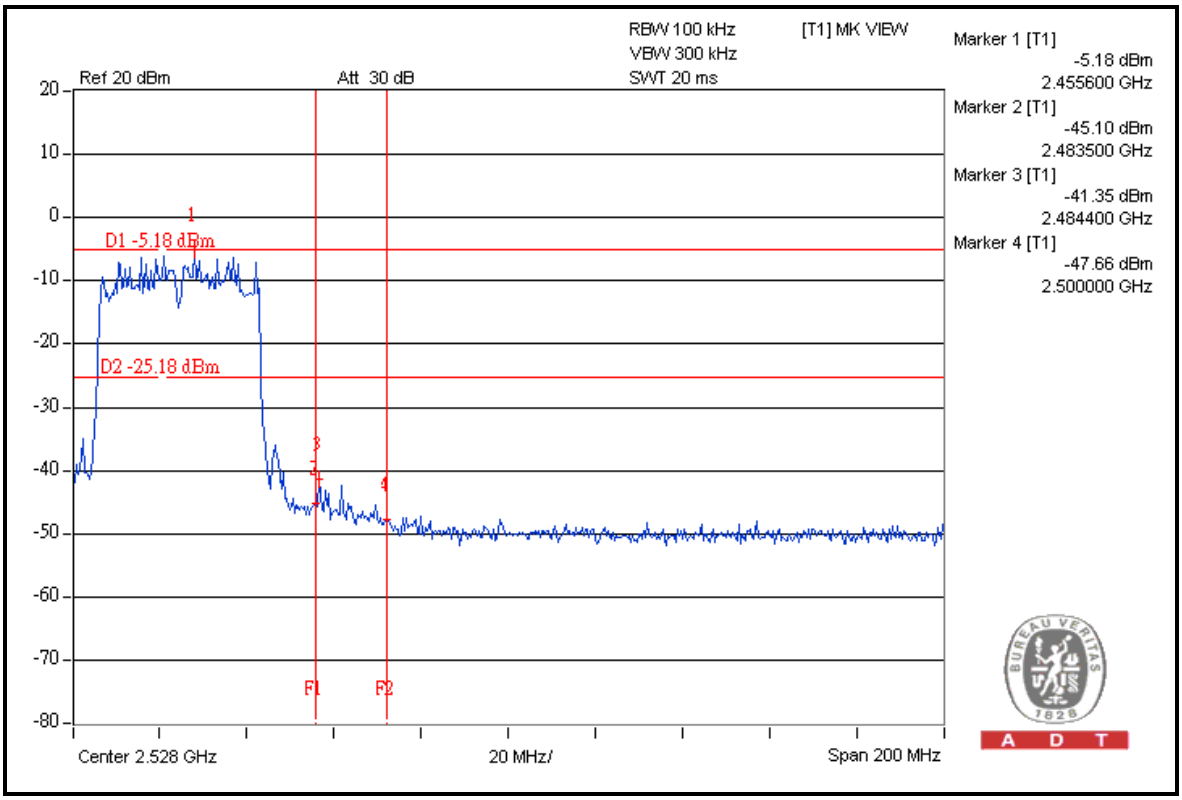
FOR CONDUCTED MEASURED

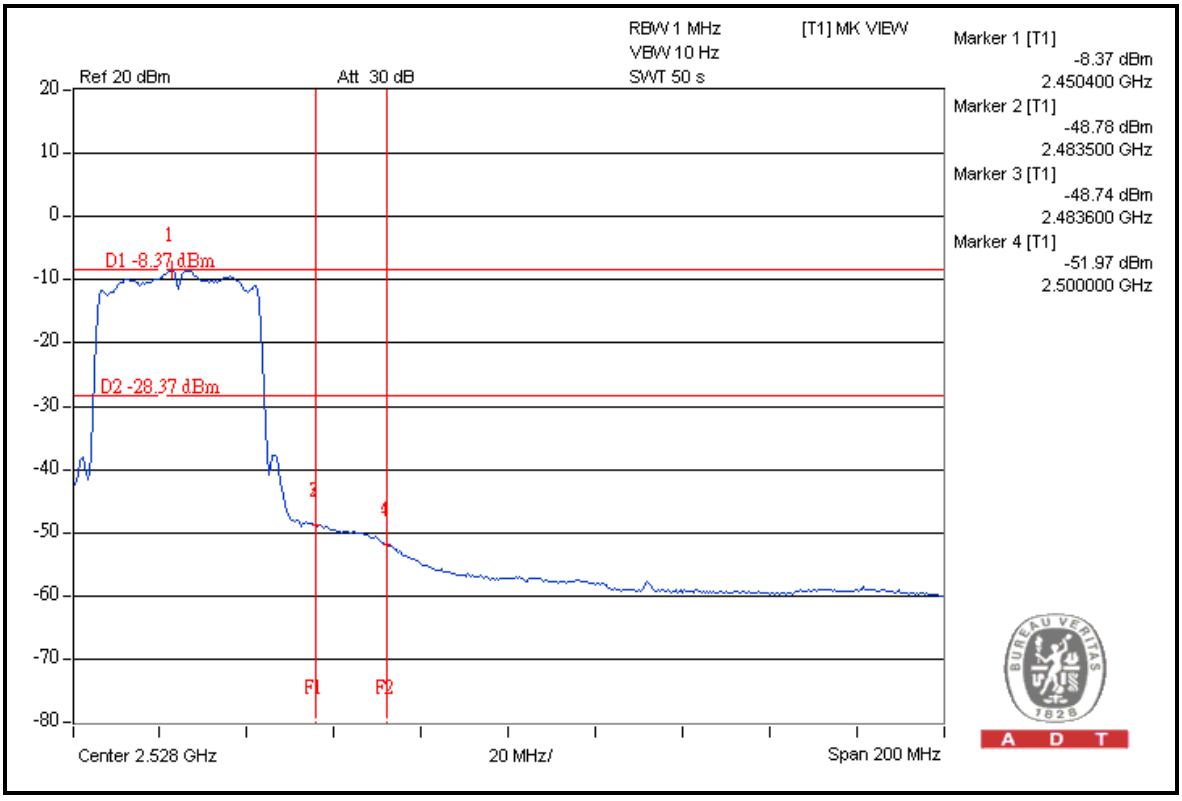
CHAIN 0

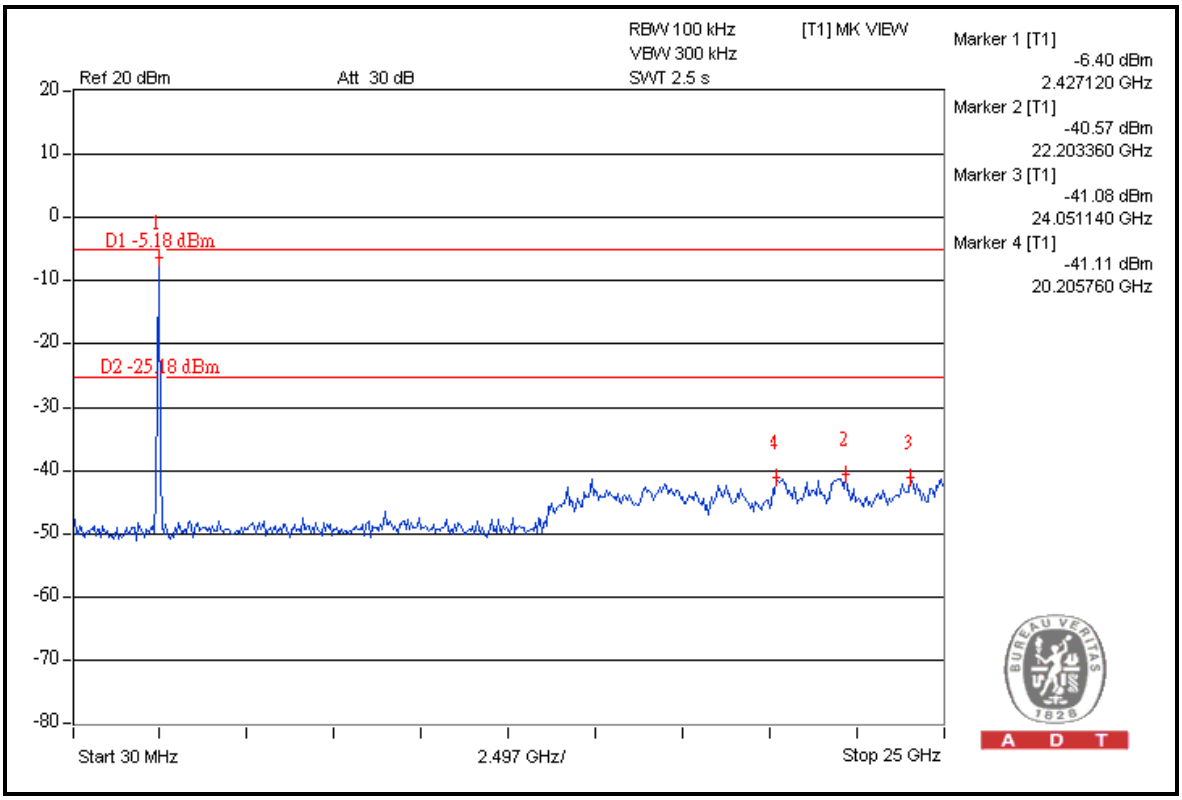




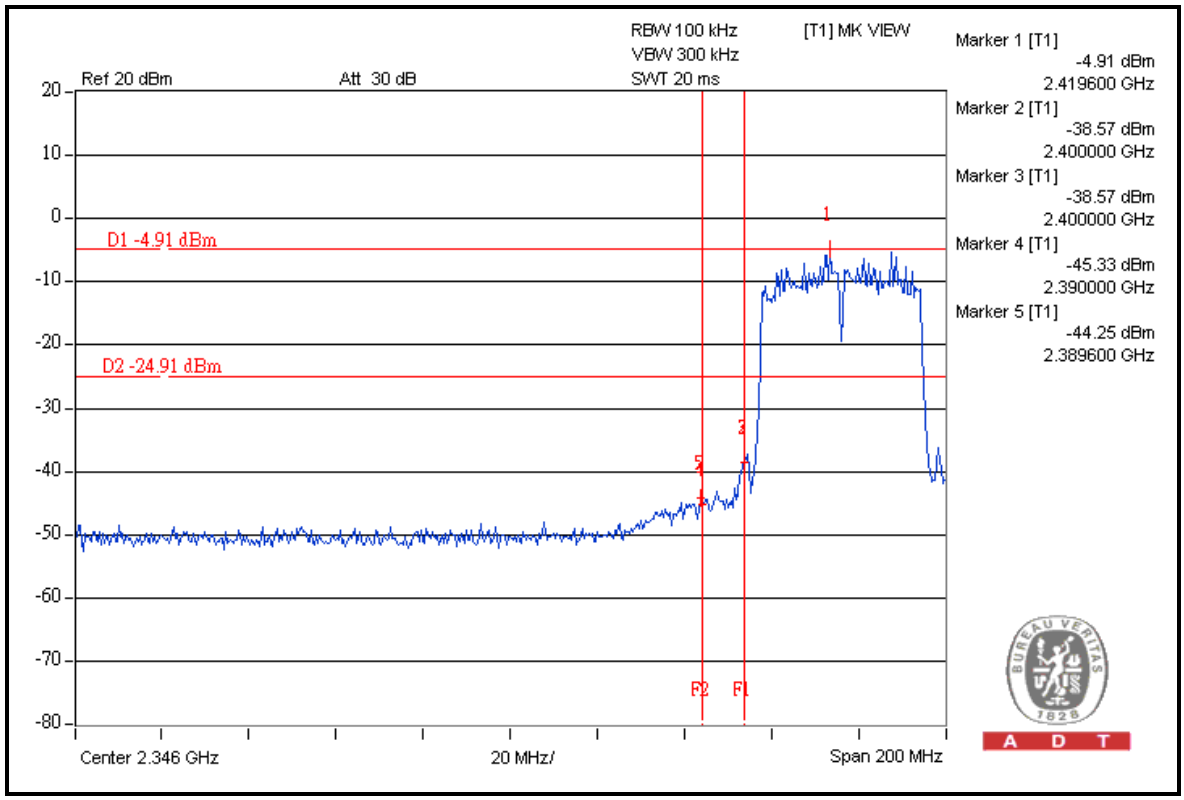

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-5.71 dBm
2.377180 GHz
Marker 2 [T1]
-40.51 dBm
24.850180 GHz
Marker 3 [T1]
-40.52 dBm
24.950060 GHz
Marker 4 [T1]
-40.72 dBm
20.405520 GHz
D1 -4.93 dBm
D2 -24.93 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

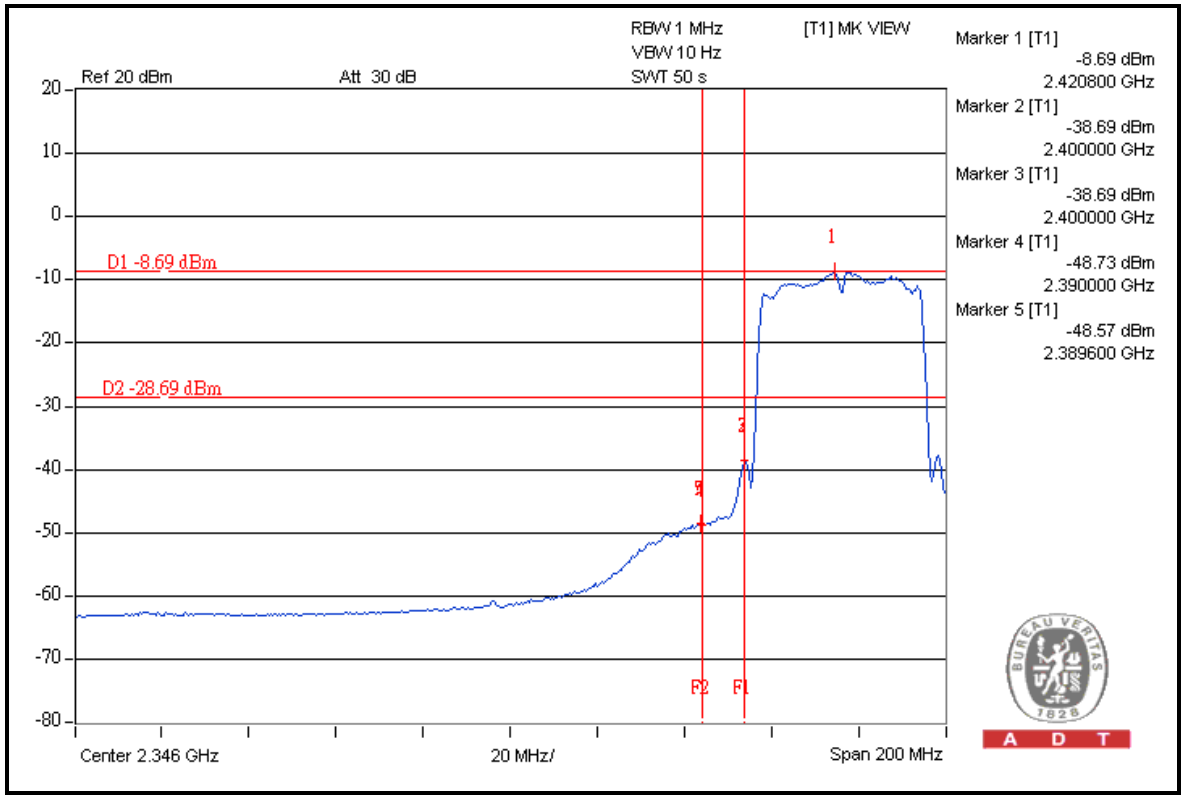

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-5.18 dBm
2.455600 GHz
Marker 2 [T1]
-45.10 dBm
2.483500 GHz
Marker 3 [T1]
-41.35 dBm
2.484400 GHz
Marker 4 [T1]
-47.66 dBm
2.500000 GHz
D1 -5.18 dBm
D2 -25.18 dBm
F1
F2
Center 2.528 GHz
20 MHz/
Span 200 MHz

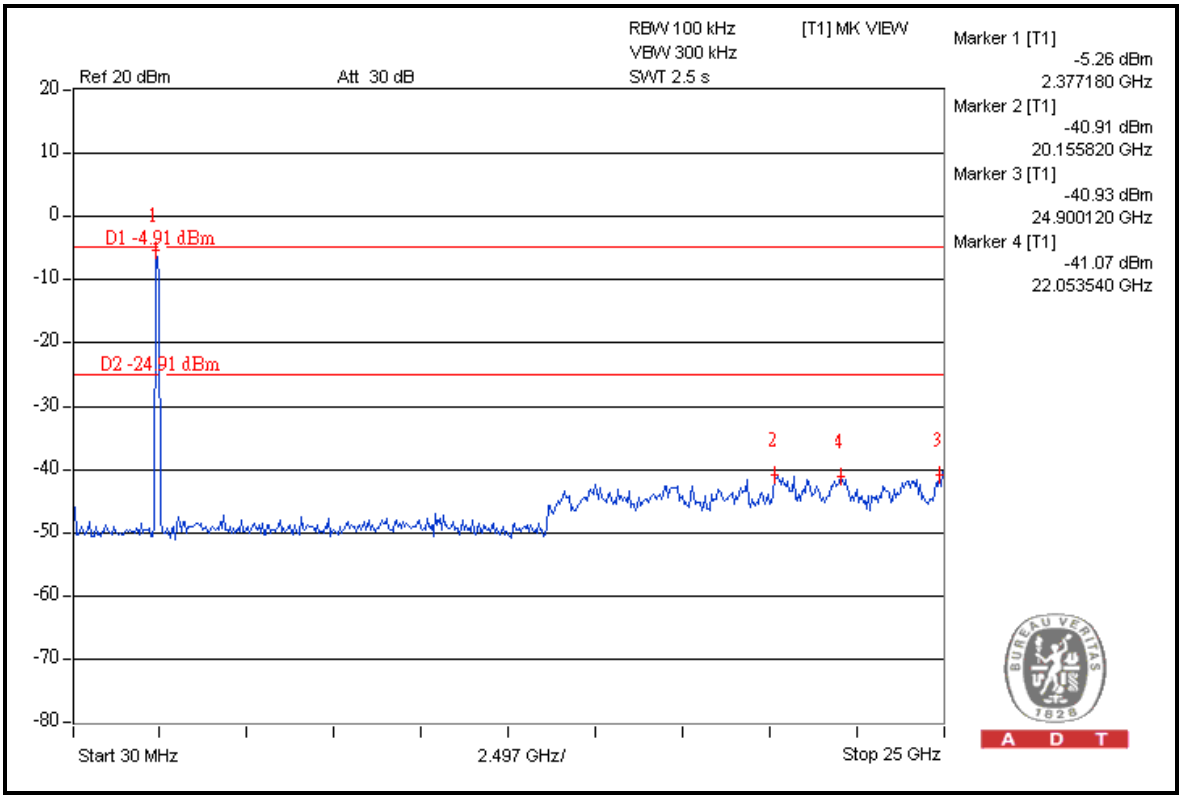

RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-8.37 dBm
2.450400 GHz
Marker 2 [T1]
-48.78 dBm
2.483500 GHz
Marker 3 [T1]
-48.74 dBm
2.483600 GHz
Marker 4 [T1]
-51.97 dBm
2.500000 GHz
D1 -8.37 dBm
D2 -28.37 dBm
F1
F2
Center 2.528 GHz
20 MHz/
Span 200 MHz

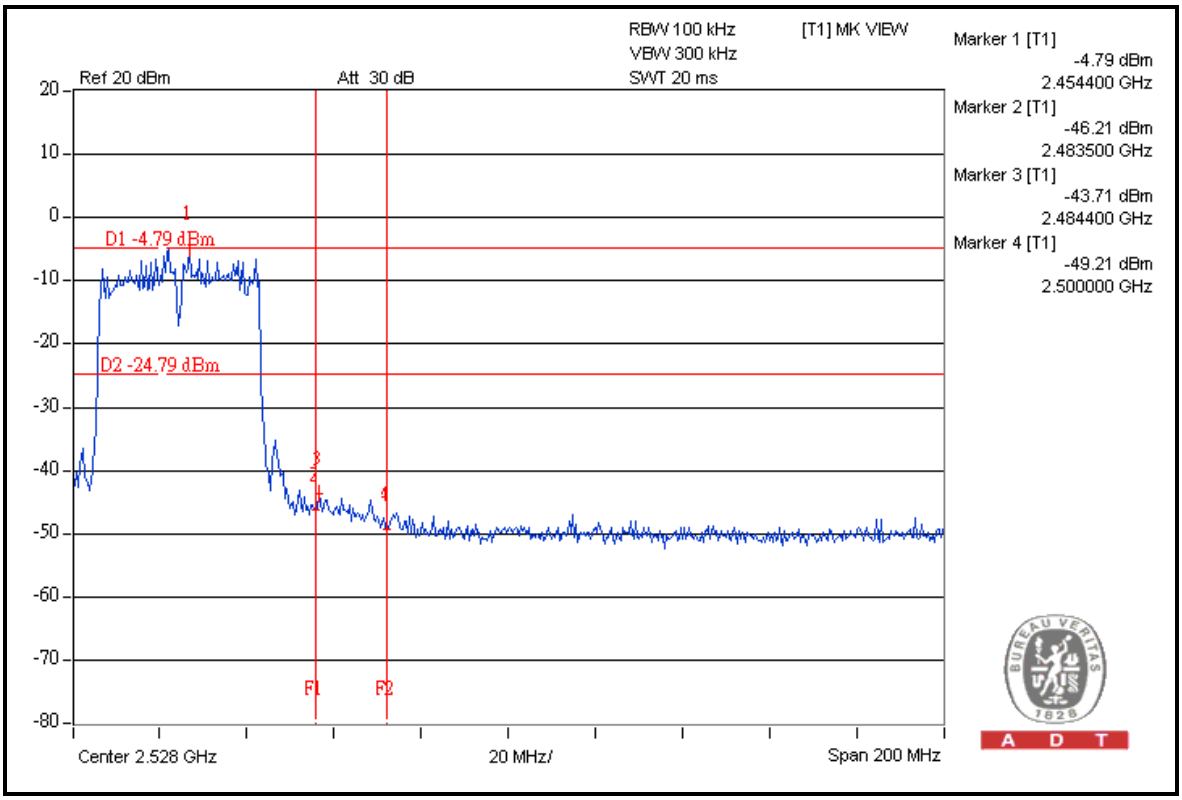

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-6.40 dBm
2.427120 GHz
Marker 2 [T1]
-40.57 dBm
22.203360 GHz
Marker 3 [T1]
-41.08 dBm
24.051140 GHz
Marker 4 [T1]
-41.11 dBm
20.205760 GHz
D1 -5.18 dBm
D2 -25.18 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

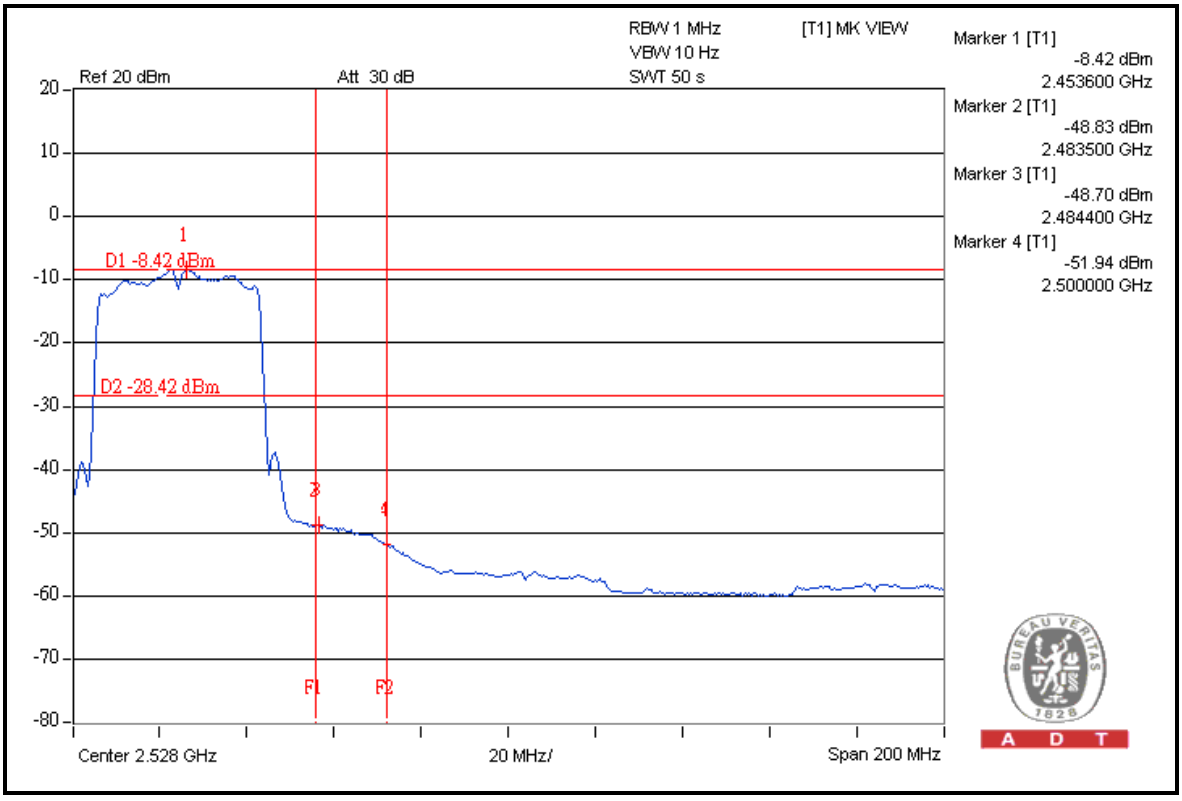
CHAIN 1

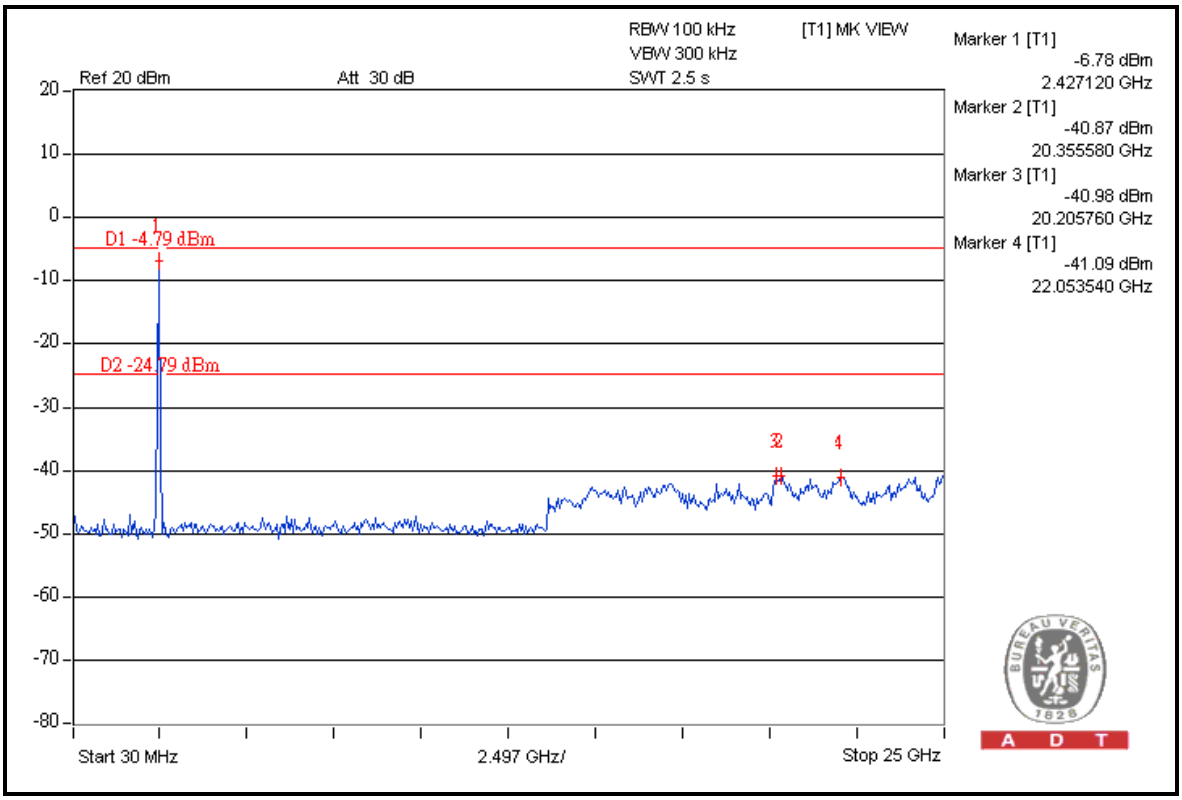

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-4.91 dBm
2.419600 GHz
Marker 2 [T1]
-38.57 dBm
2.400000 GHz
Marker 3 [T1]
-38.57 dBm
2.400000 GHz
Marker 4 [T1]
-45.33 dBm
2.390000 GHz
Marker 5 [T1]
-44.25 dBm
2.389600 GHz
D1 -4.91 dBm
D2 -24.91 dBm
Center 2.346 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-8.69 dBm
2.420800 GHz
Marker 2 [T1]
-38.69 dBm
2.400000 GHz
Marker 3 [T1]
-38.69 dBm
2.400000 GHz
Marker 4 [T1]
-48.73 dBm
2.390000 GHz
Marker 5 [T1]
-48.57 dBm
2.389600 GHz
D1 -8.69 dBm
D2 -28.69 dBm
Center 2.346 GHz
20 MHz/
Span 200 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-5.26 dBm
2.377180 GHz
Marker 2 [T1]
-40.91 dBm
20.155820 GHz
Marker 3 [T1]
-40.93 dBm
24.900120 GHz
Marker 4 [T1]
-41.07 dBm
22.053540 GHz
D1 -4.91 dBm
D2 -24.91 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-4.79 dBm
2.454400 GHz
Marker 2 [T1]
-46.21 dBm
2.483500 GHz
Marker 3 [T1]
-43.71 dBm
2.484400 GHz
Marker 4 [T1]
-49.21 dBm
2.500000 GHz
D1 -4.79 dBm
D2 -24.79 dBm
F1
F2
Center 2.528 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-8.42 dBm
2.453600 GHz
Marker 2 [T1]
-48.83 dBm
2.483500 GHz
Marker 3 [T1]
-48.70 dBm
2.484400 GHz
Marker 4 [T1]
-51.94 dBm
2.500000 GHz
D1 -8.42 dBm
D2 -28.42 dBm
F1
F2
Center 2.528 GHz
20 MHz/
Span 200 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-6.78 dBm
2.427120 GHz
Marker 2 [T1]
-40.87 dBm
20.355580 GHz
Marker 3 [T1]
-40.98 dBm
20.205760 GHz
Marker 4 [T1]
-41.09 dBm
22.053540 GHz
D1 -4.79 dBm
D2 -24.79 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

5. TEST TYPES AND RESULTS (FOR 5.0GHz BAND)

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100276	Dec. 31, 2010	Dec. 30, 2011
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	100219	Nov. 24, 2010	Nov. 23, 2011
LISN With Adapter (for EUT)	AD10	C10Ada-001	Nov. 24, 2010	Nov. 23, 2011
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100218	Nov. 24, 2010	Nov. 23, 2011
Software	ADT_Cond_V7.3.7	NA	NA	NA
Software	ADT_ISN_V7.3.7	NA	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C10.01	Feb. 22, 2011	Feb. 21, 2012
SUHNER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010773	Feb. 26, 2011	Feb. 25, 2012

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in Shielded Room No. 10.

3. The VCCI Site Registration No. C-1852.

5.1.3 TEST PROCEDURES

d. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

e. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

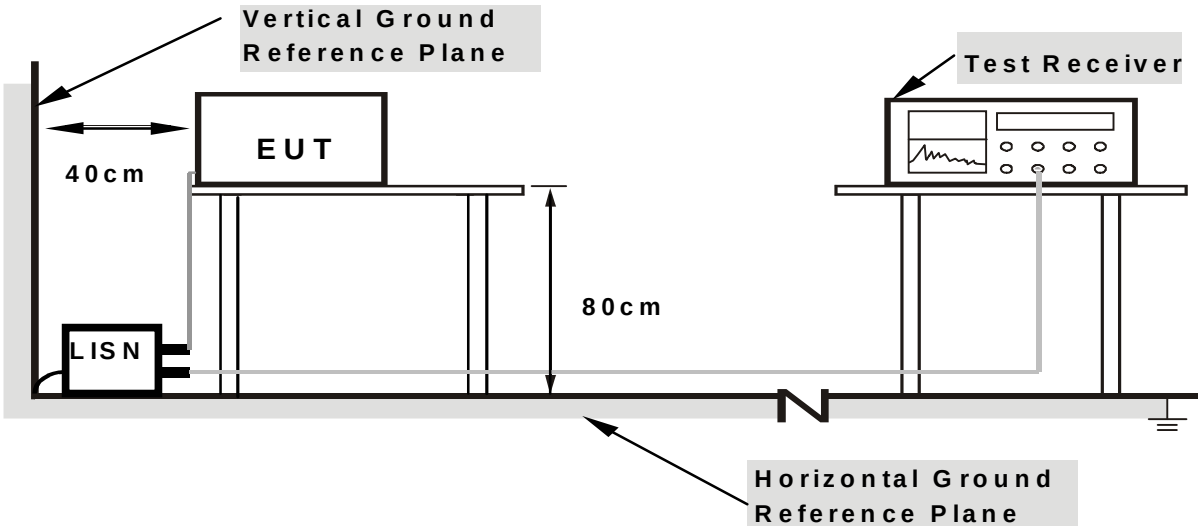
f. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 TEST SETUP



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

For the actual test configuration, please refer to the attached file (Test Setup Photo).

5.1.6 EUT OPERATING CONDITIONS

Same as item 4.1.6.

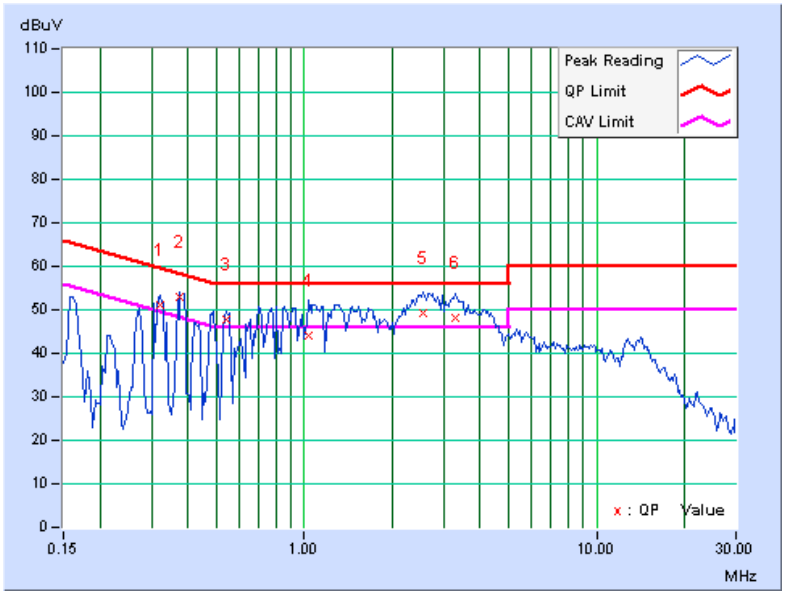
5.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA： 802.11a

6dB BANDWIDTH	9kHz	PHASE	Line 1
CHANNEL	Channel 149		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.322	0.21	51.00	44.63	51.21	44.84	59.66	49.66	-8.45	-4.82
2	0.377	0.23	52.59	46.39	52.82	46.62	58.35	48.35	-5.53	-1.73
3	0.541	0.25	47.62	40.69	47.87	40.94	56.00	46.00	-8.13	-5.06
4	1.039	0.27	43.85	-	44.12	-	56.00	46.00	-11.88	-
5	2.563	0.37	48.88	36.56	49.25	36.93	56.00	46.00	-6.75	-9.07
6	3.297	0.43	47.55	34.94	47.98	35.37	56.00	46.00	-8.02	-10.63

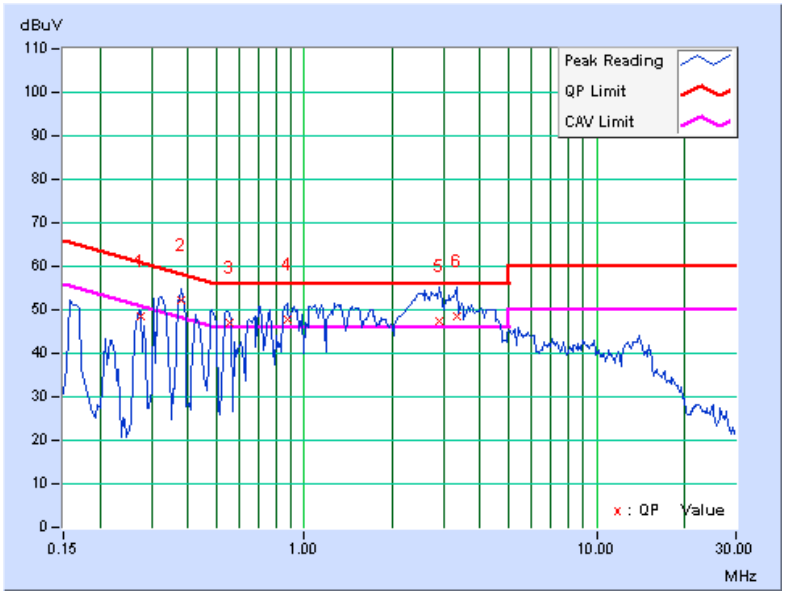
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



6dB BANDWIDTH	9kHz	PHASE	Line 2
CHANNEL	Channel 149		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.276	0.21	48.30	-	48.51	-	60.95	50.95	-12.44	-
2	0.380	0.24	51.94	46.35	52.18	46.59	58.27	48.27	-6.09	-1.68
3	0.552	0.26	46.80	34.85	47.06	35.11	56.00	46.00	-8.94	-10.89
4	0.873	0.27	47.37	37.48	47.64	37.75	56.00	46.00	-8.36	-8.25
5	2.895	0.39	47.12	35.51	47.51	35.90	56.00	46.00	-8.49	-10.10
6	3.348	0.42	48.16	34.84	48.58	35.26	56.00	46.00	-7.42	-10.74

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



5.2 RADIATED EMISSION MEASUREMENT

5.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

5.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Mar. 04, 2011	Mar. 03, 2012
HP Preamplifier	8449B	3008A01924	Mar. 04, 2011	Mar. 03, 2012
HP Preamplifier	8449B	3008A01292	Mar. 04, 2011	Mar. 03, 2012
Agilent Spectrum Analyzer	E4446A	MY46180403	Jun. 22, 2011	Jun. 21, 2012
ROHDE & SCHWARZ TEST RECEIVER	ESCS30	838251/021	Oct. 01, 2010	Sep. 30, 2011
Schwarzbeck Antenna	VULB 9168	137	Apr. 12, 2011	Apr. 11, 2012
Schwarzbeck Antenna	VHBA 9123	480	May 06, 2011	May 05, 2012
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	ADT_Radiated_V 7.6.15.9.2	NA	NA	NA
SUHNER RF cable	SF102	CABLE-CH6	Aug. 19, 2011	Aug. 18, 2012
EMCO Horn Antenna	3115	6714	Oct. 26, 2010	Oct. 25, 2011
EMCO Horn Antenna	3115	9312-4192	Apr. 22, 2011	Apr. 21, 2012
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA

NOTE: 1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Chamber No. 6.
4. The Industry Canada Reference No. IC 7450E-6.
5. The FCC Site Registration No. is 447212.

5.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

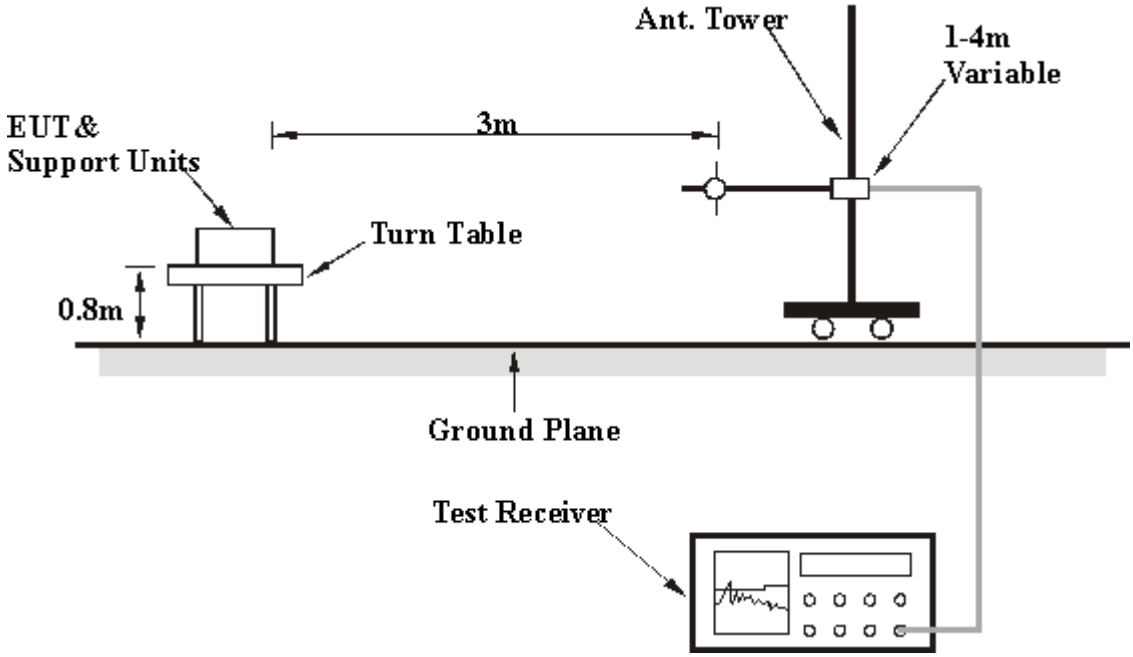
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 100kHz and video bandwidth is 300kHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

5.2.4 DEVIATION FROM TEST STANDARD

No deviation

5.2.5 TEST SETUP



For the actual test configuration, please refer to the attached file (Test Setup Photo).

5.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

5.2.7 TEST RESULTS

802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	76.3 PK	84.7	-8.3	1.00 H	78	36.10	40.21
2	#5725.00	61.9 AV	70.6	-8.7	1.00 H	78	21.70	40.21
3	*5745.00	104.7 PK			1.00 H	78	64.42	40.23
4	*5745.00	90.6 AV			1.00 H	78	50.36	40.23
5	11490.00	59.0 PK	74.0	-15.0	1.00 H	6	8.79	50.24
6	11490.00	44.1 AV	54.0	-9.9	1.00 H	6	-6.10	50.24
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	92.9 PK	96.7	-3.8	1.10 V	41	52.68	40.21
2	#5725.00	72.0 AV	82.6	-10.6	1.10 V	41	31.77	40.21
3	*5745.00	116.7 PK			1.10 V	41	76.51	40.23
4	*5745.00	102.6 AV			1.10 V	41	62.36	40.23
5	11490.00	62.1 PK	74.0	-11.9	1.00 V	13	11.90	50.24
6	11490.00	52.7 AV	54.0	-1.3	1.00 V	13	2.43	50.24

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	106.6 PK			1.00 H	85	66.29	40.29
2	*5785.00	92.7 AV			1.00 H	85	52.36	40.29
3	11570.00	59.2 PK	74.0	-14.8	1.00 H	5	8.96	50.20
4	11570.00	44.2 AV	54.0	-9.9	1.00 H	5	-6.05	50.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	117.8 PK			1.00 V	318	77.50	40.29
2	*5785.00	103.7 AV			1.00 V	318	63.36	40.29
3	11570.00	63.2 PK	74.0	-10.8	1.00 V	32	12.96	50.20
4	11570.00	52.9 AV	54.0	-1.1	1.00 V	32	2.68	50.20

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	104.1 PK			1.00 H	84	63.80	40.34
2	*5825.00	90.7 AV			1.00 H	84	50.36	40.34
3	#5850.00	74.9 PK	84.1	-9.2	1.00 H	84	34.52	40.38
4	#5850.00	64.6 AV	70.7	-6.1	1.00 H	84	24.24	40.38
5	11650.00	57.1 PK	74.0	-16.9	1.00 H	16	7.00	50.13
6	11650.00	44.2 AV	54.0	-9.8	1.00 H	16	-5.93	50.13
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	116.8 PK			1.00 V	99	76.46	40.34
2	*5825.00	102.7 AV			1.00 V	99	62.36	40.34
3	#5850.00	93.0 PK	96.8	-3.8	1.00 V	99	52.59	40.38
4	#5850.00	71.7 AV	82.7	-11.0	1.00 V	99	31.34	40.38
5	11650.00	62.9 PK	74.0	-11.1	1.00 V	68	12.80	50.13
6	11650.00	52.7 AV	54.0	-1.3	1.00 V	68	2.56	50.13

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	78.2 PK	84.6	-6.4	1.00 H	61	38.00	40.21
2	#5725.00	61.8 AV	70.4	-8.5	1.00 H	61	21.62	40.21
3	*5745.00	104.6 PK			1.00 H	61	64.36	40.23
4	*5745.00	90.4 AV			1.00 H	61	50.14	40.23
5	11490.00	57.1 PK	74.0	-16.9	1.00 H	101	6.90	50.24
6	11490.00	45.4 AV	54.0	-8.6	1.00 H	101	-4.87	50.24
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	93.1 PK	98.4	-5.4	1.09 V	319	52.87	40.21
2	#5725.00	77.1 AV	84.6	-7.4	1.09 V	319	36.90	40.21
3	*5745.00	118.4 PK			1.09 V	319	78.20	40.23
4	*5745.00	104.6 AV			1.09 V	319	64.32	40.23
5	11490.00	60.1 PK	74.0	-13.9	1.00 V	18	9.90	50.24
6	11490.00	48.9 AV	54.0	-5.1	1.00 V	18	-1.33	50.24

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	107.2 PK			1.00 H	75	66.87	40.29
2	*5785.00	93.7 AV			1.00 H	75	53.36	40.29
3	11570.00	59.2 PK	74.0	-14.8	1.00 H	7	8.96	50.20
4	11570.00	44.1 AV	54.0	-9.9	1.00 H	7	-6.07	50.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	119.2 PK			1.12 V	276	78.87	40.29
2	*5785.00	105.7 AV			1.12 V	276	65.36	40.29
3	11570.00	62.1 PK	74.0	-12.0	1.00 V	108	11.85	50.20
4	11570.00	52.7 AV	54.0	-1.3	1.00 V	108	2.54	50.20

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	104.2 PK			1.20 H	85	63.82	40.34
2	*5825.00	90.0 AV			1.20 H	85	49.63	40.34
3	#5850.00	74.1 PK	84.2	-10.1	1.20 H	85	33.72	40.38
4	#5850.00	61.3 AV	70.0	-8.7	1.20 H	85	20.89	40.38
5	11650.00	56.9 PK	74.0	-17.1	1.00 H	22	6.80	50.13
6	11650.00	43.9 AV	54.0	-10.1	1.00 H	22	-6.21	50.13
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	118.4 PK			1.08 V	281	78.05	40.34
2	*5825.00	104.5 AV			1.08 V	281	64.14	40.34
3	#5850.00	92.5 PK	98.4	-5.9	1.08 V	281	52.11	40.38
4	#5850.00	72.8 AV	84.5	-11.7	1.08 V	281	32.41	40.38
5	11650.00	62.9 PK	74.0	-11.1	1.00 V	14	12.80	50.13
6	11650.00	52.8 AV	54.0	-1.2	1.00 V	14	2.69	50.13

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	**#5725.00**	**81.8 PK**	**81.9**	**-0.1**	**1.00 H**	**160**	**41.56**	**40.21**
2	**#5725.00**	**67.4 AV**	**67.5**	**-0.1**	**1.00 H**	**160**	**27.22**	**40.21**
3	*5755.00	101.9 PK			1.00 H	160	61.66	40.25
4	*5755.00	87.5 AV			1.00 H	160	47.28	40.25
5	11510.00	58.6 PK	74.0	-15.4	1.00 H	160	8.34	50.23
6	11510.00	45.1 AV	54.0	-9.0	1.00 H	160	-5.18	50.23
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	97.0 PK	97.3	-0.3	1.21 V	76	56.76	40.21
2	#5725.00	81.8 AV	83.6	-1.8	1.21 V	76	41.57	40.21
3	*5755.00	117.3 PK			1.21 V	76	77.06	40.25
4	*5755.00	103.6 AV			1.21 V	76	63.32	40.25
5	11510.00	60.4 PK	74.0	-13.6	1.00 V	240	10.13	50.23
6	11510.00	49.5 AV	54.0	-4.5	1.00 V	240	-0.72	50.23

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 64%RH	TESTED BY	Chad Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	101.0 PK			1.00 H	140	60.73	40.30
2	*5795.00	86.6 AV			1.00 H	140	46.28	40.30
3	#5850.00	68.7 PK	81.0	-12.3	1.00 H	140	28.33	40.38
4	#5850.00	53.7 AV	66.6	-12.9	1.00 H	140	13.29	40.38
5	11590.00	57.1 PK	74.0	-16.9	1.00 H	138	6.88	50.19
6	11590.00	43.8 AV	54.0	-10.2	1.00 H	138	-6.36	50.19
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	116.4 PK			1.00 V	280	76.06	40.30
2	*5795.00	101.3 AV			1.00 V	280	61.01	40.30
3	#5850.00	84.3 PK	96.4	-12.1	1.12 V	280	43.92	40.38
4	#5850.00	67.8 AV	81.3	-13.5	1.12 V	280	27.41	40.38
5	11590.00	61.1 PK	74.0	-12.9	1.00 V	78	10.88	50.19
6	11590.00	50.5 AV	54.0	-3.5	1.00 V	78	0.34	50.19

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.

BELOW 1GHz WORST-CASE DATA：802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH	TESTED BY	Jun Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	139.75	30.3 QP	43.5	-13.3	1.30 H	97	16.61	13.64
2	249.50	32.2 QP	46.0	-13.8	1.22 H	172	18.64	13.53
3	343.11	33.2 QP	46.0	-12.8	1.16 H	145	16.24	17.00
4	373.78	39.5 QP	46.0	-6.5	1.11 H	112	21.58	17.90
5	795.02	37.9 QP	46.0	-8.1	1.02 H	169	11.45	26.49
6	874.11	34.8 QP	46.0	-11.2	1.00 H	181	7.27	27.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	34.84	28.4 QP	40.0	-11.6	1.00 V	10	15.66	12.70
2	89.72	30.7 QP	43.5	-12.8	1.00 V	133	22.09	8.59
3	136.52	31.1 QP	43.5	-12.4	1.00 V	142	17.67	13.42
4	373.78	36.0 QP	46.0	-10.0	1.03 V	229	18.11	17.90
5	795.02	35.8 QP	46.0	-10.2	1.08 V	10	9.29	26.49
6	874.11	33.7 QP	46.0	-12.3	1.15 V	151	6.22	27.50
7	958.04	33.0 QP	46.0	-13.0	1.23 V	172	4.45	28.53

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

5.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER	FSP 40	100036	Apr. 29, 2011	Apr. 28, 2012

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

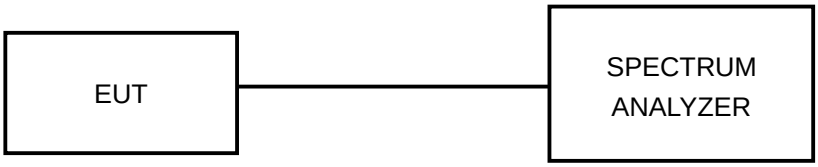
5.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITIONS

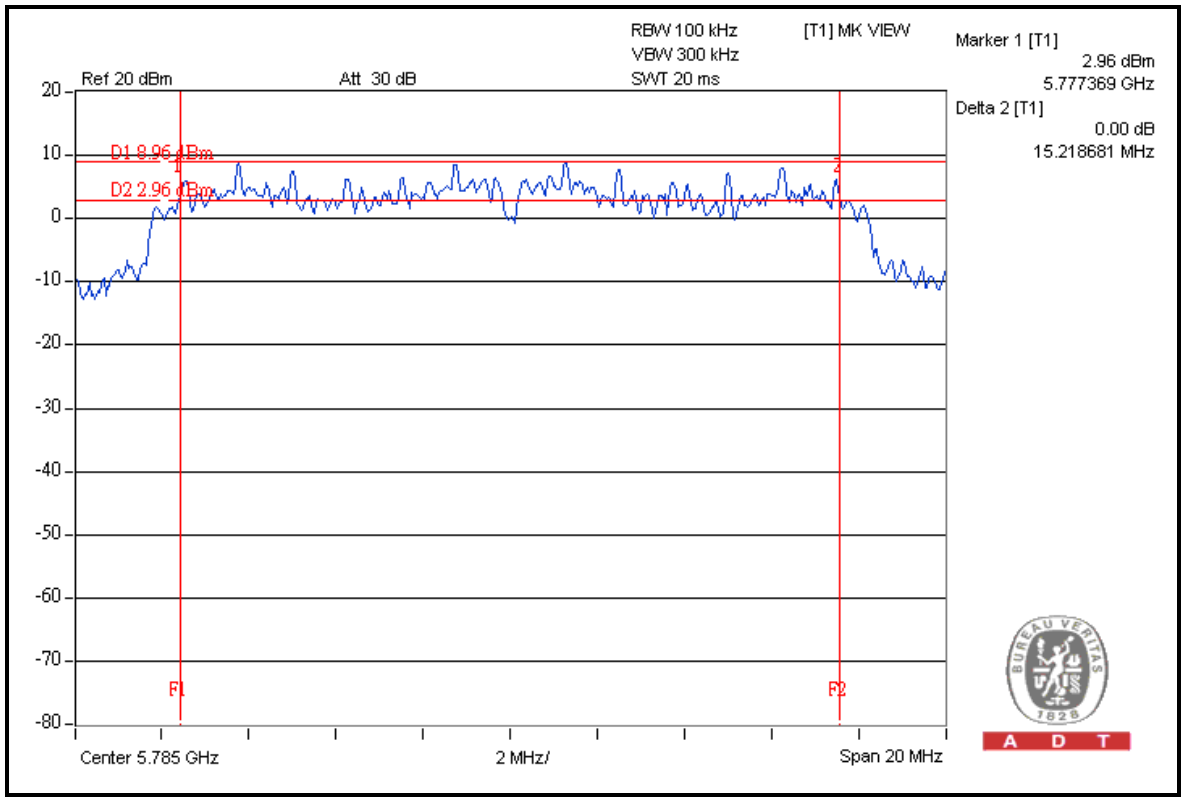
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

5.3.7 TEST RESULTS

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	15.20	0.5	PASS
157	5785	15.21	0.5	PASS
165	5825	15.18	0.5	PASS

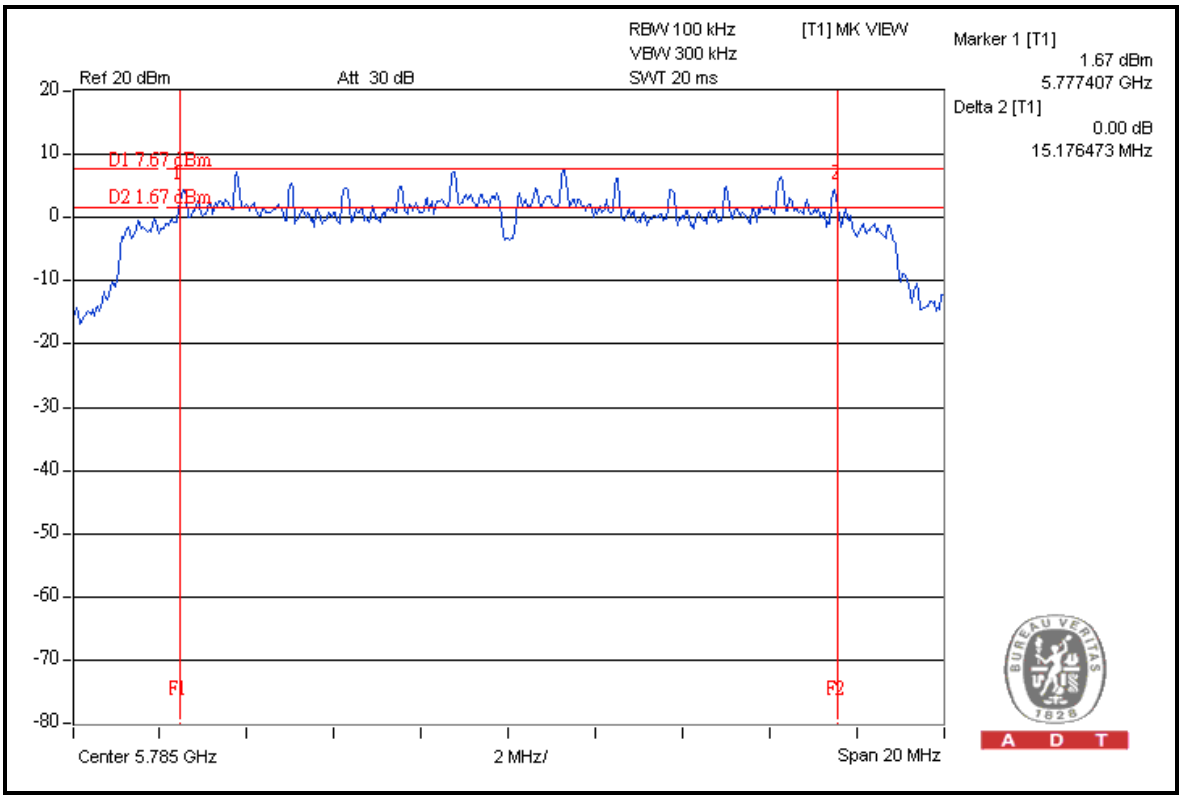
FOR CH 157



802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	15.15	15.14	0.5	PASS
157	5785	15.16	15.17	0.5	PASS
165	5825	15.16	15.17	0.5	PASS

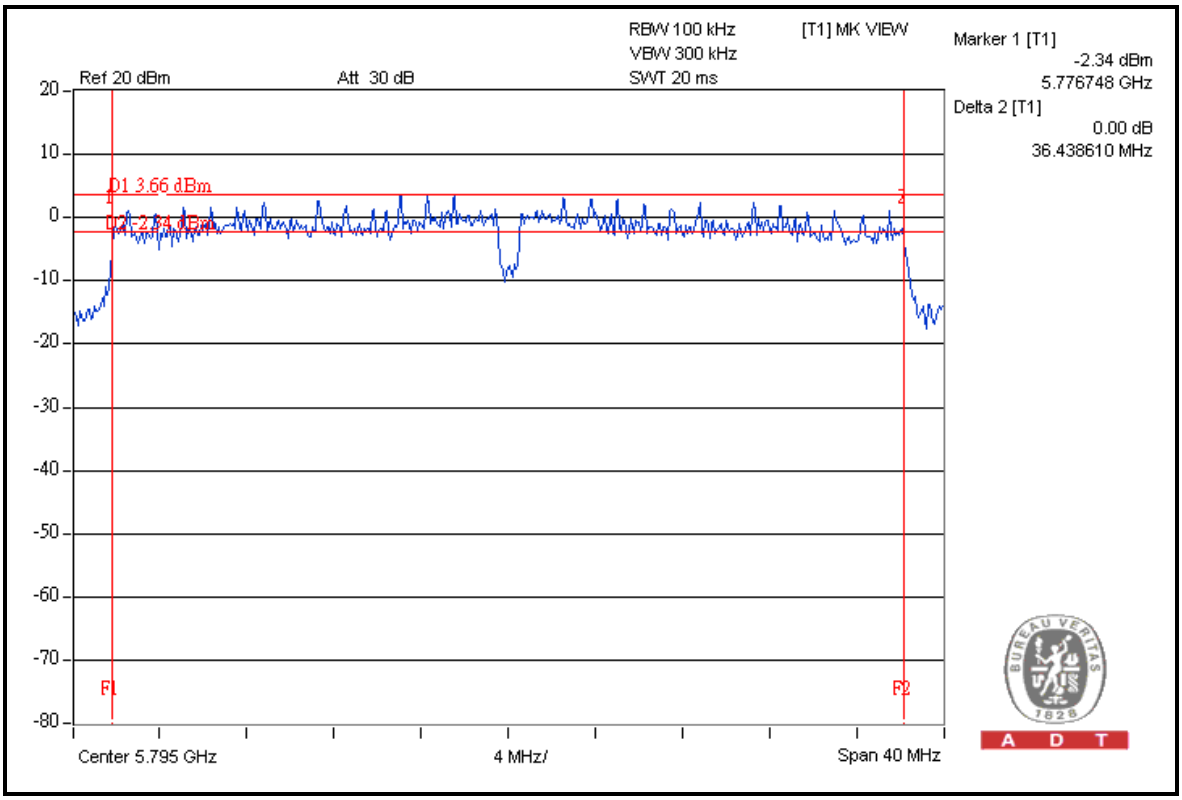
FOR CHAIN 1: CH 157



802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.34	36.33	0.5	PASS
159	5795	35.74	36.43	0.5	PASS

FOR CHAIN 1: CH 159



5.4 MAXIMUM OUTPUT POWER

5.4.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

5.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Anritsu Power Sensor	MA2411B	0738404	Apr. 26, 2011	Apr. 25, 2012
Anritsu Power Meter	ML2495A	0842014	Apr. 26, 2011	Apr. 25, 2012

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Measurement Bandwidth of ML2495A is 65MHz greater than 6dB bandwidth of emission.

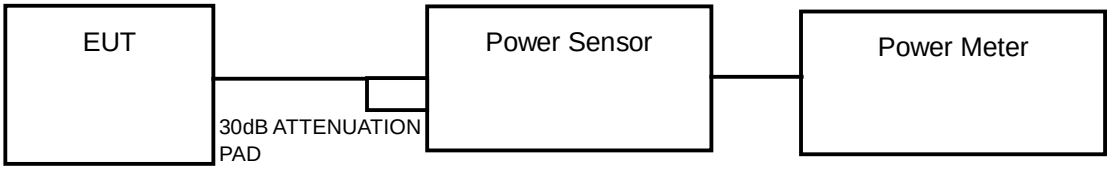
5.4.3 TEST PROCEDURES

A power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

5.4.4 DEVIATION FROM TEST STANDARD

No deviation

5.4.5 TEST SETUP



5.4.6 EUT OPERATING CONDITIONS

Same as Item 5.3.6

5.4.7 TEST RESULTS

802.11a

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)	POWER OUTPUT (mW)	POWER LIMIT (dBm)	PASS / FAIL
149	5745	21.8	151.4	30	PASS
157	5785	21.7	147.9	30	PASS
165	5825	21.7	147.9	30	PASS

802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	21.2	21.1	260.7	24.2	30	PASS
157	5785	21.2	21.6	**276.4**	24.4	30	PASS
165	5825	21.2	21.0	257.7	24.1	30	PASS

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	POWER OUTPUT (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	21.3	21.3	269.8	24.3	30	PASS
159	5795	21.1	21.6	273.4	24.4	30	PASS

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER	FSP 40	100036	Apr. 29, 2011	Apr. 28, 2012

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

5.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

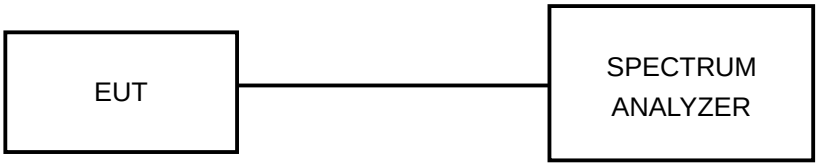
The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

Follow method 2 of KDB 662911 D01 Multiple Transmitter Output v01 to calculate total power density of 2 TX port.

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP



5.5.6 EUT OPERATING CONDITION

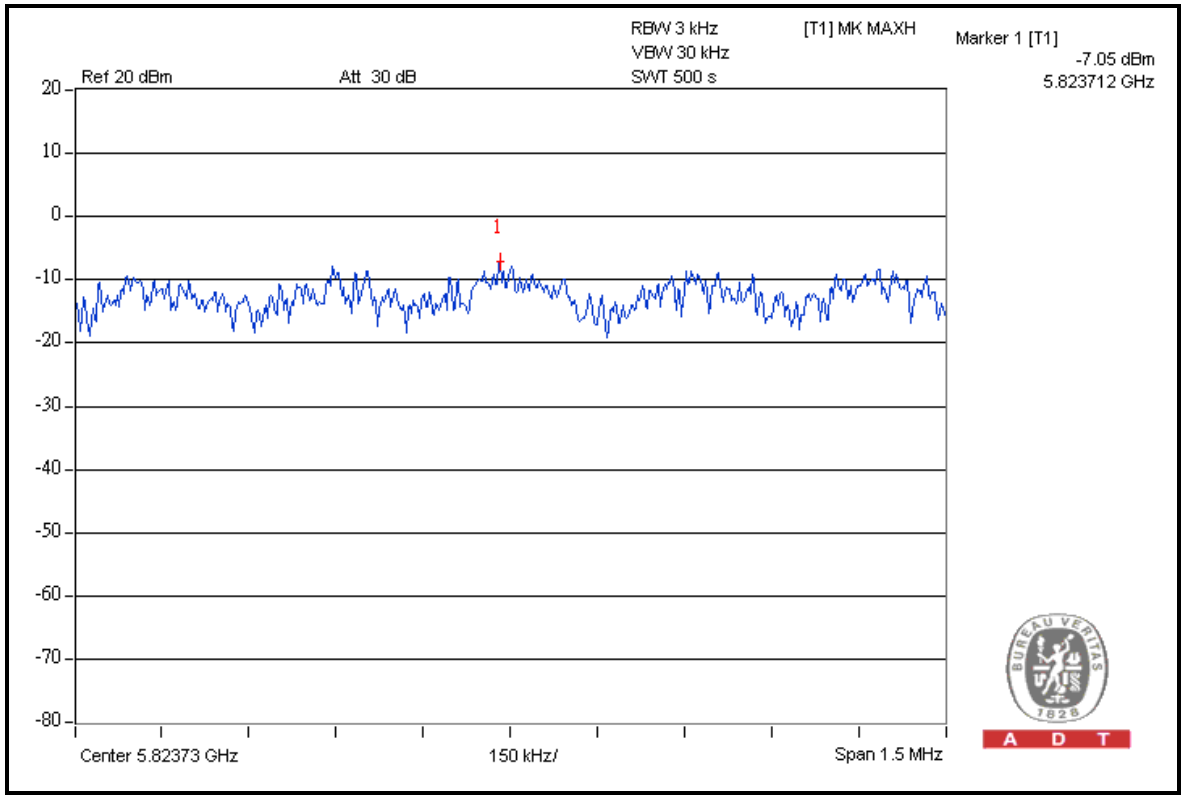
Same as Item 5.3.6

5.5.7 TEST RESULTS

802.11a

CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
149	5745	-7.2	8	PASS
157	5785	-7.4	8	PASS
165	5825	-7.1	8	PASS

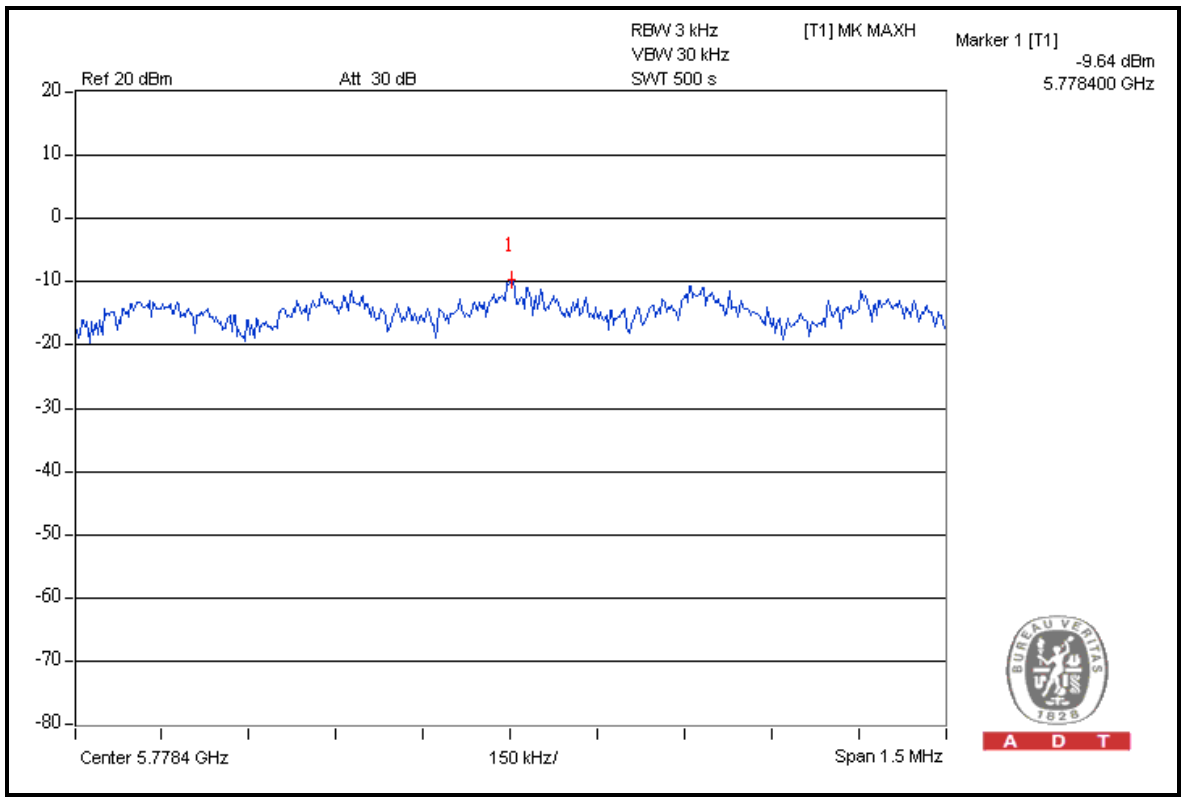
FOR CH 165



802.11n (20MHz)

CHAIN	CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
			MEASURED	10 log (N=2) dB			
0	149	5745	-9.9	3.01	-6.9	8	PASS
	157	5785	-10.2	3.01	-7.2	8	PASS
	165	5825	-9.9	3.01	-6.9	8	PASS
1	149	5745	-10.0	3.01	-7.0	8	PASS
	157	5785	-9.6	3.01	-6.6	8	PASS
	165	5825	-10.2	3.01	-7.2	8	PASS

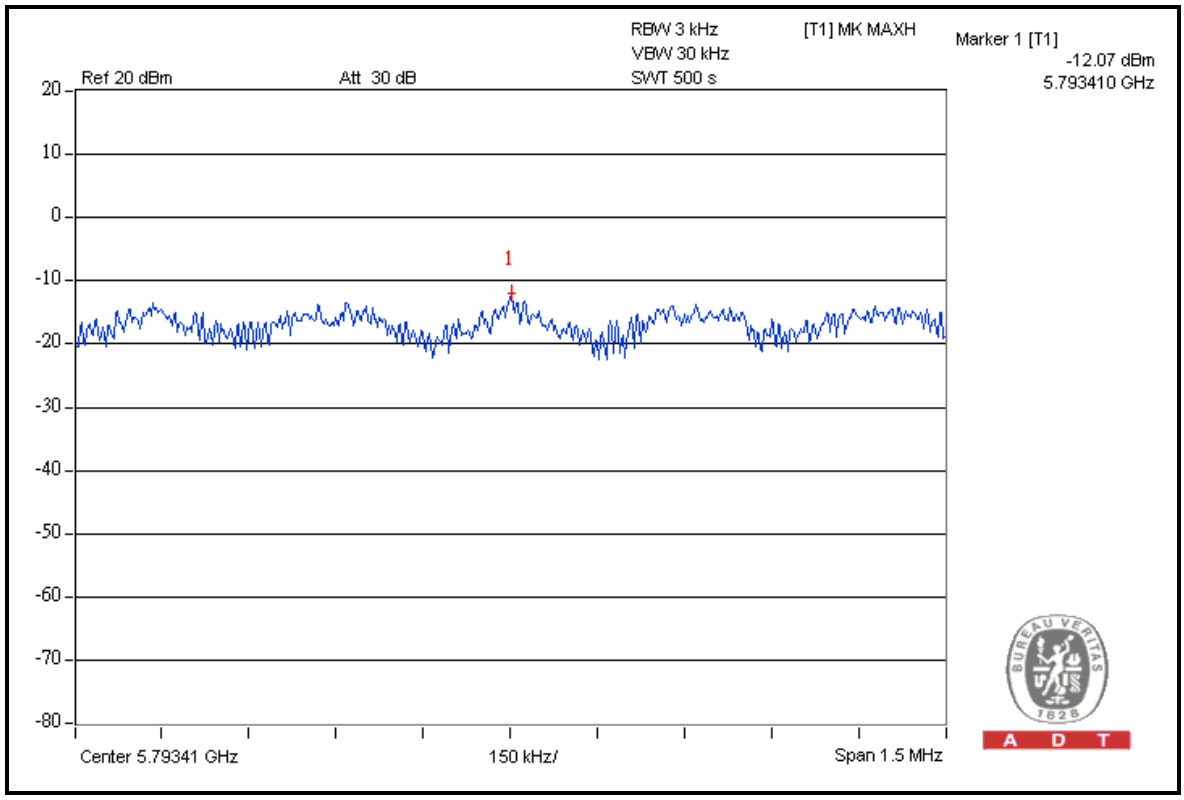
FOR CHAIN 1: CH 157



802.11n (40MHz)

CHAIN	CHAN.	CHAN. FREQ. (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
			MEASURED	10 log (N=2) dB			
0	151	5755	-14.5	3.01	-11.5	8	PASS
	159	5795	-13.0	3.01	-10.0	8	PASS
1	151	5755	-13.6	3.01	-10.6	8	PASS
	159	5795	-12.1	3.01	-9.1	8	PASS

FOR CHAIN 1: CH 159



5.6 BAND EDGES MEASUREMENT

5.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

5.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	CALIBRATED UNTIL
FOR CONDUCTED MEASUREMENT:				
SPECTRUM ANALYZER	FSP 40	100036	Apr. 29, 2011	Apr. 28, 2012
FOR RADIATED MEASUREMENT:				
HP Preamplifier	8447D	2432A03504	Mar. 04, 2011	Mar. 03, 2012
HP Preamplifier	8449B	3008A01924	Mar. 04, 2011	Mar. 03, 2012
HP Preamplifier	8449B	3008A01292	Mar. 04, 2011	Mar. 03, 2012
Agilent Spectrum Analyzer	E4446A	MY46180403	Jun. 22, 2011	Jun. 21, 2012
ROHDE & SCHWARZ TEST RECEIVER	ESCS30	838251/021	Oct. 01, 2010	Sep. 30, 2011
Schwarzbeck Antenna	VULB 9168	137	Apr. 12, 2011	Apr. 11, 2012
Schwarzbeck Antenna	VHBA 9123	480	May 06, 2011	May 05, 2012
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
SUHNER RF cable	SF102	CABLE-CH6	Aug. 19, 2011	Aug. 18, 2012
EMCO Horn Antenna	3115	6714	Oct. 26, 2010	Oct. 25, 2011
EMCO Horn Antenna	3115	9312-4192	Apr. 22, 2011	Apr. 21, 2012
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA

NOTE: The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

5.6.3 TEST PROCEDURE

FOR CONDUCTED MEASUREMENT:

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz and 300kHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW =100kHz, VBW = 300kHz; Average RBW = 1MHz, VBW = 10Hz) are attached on the following pages.

FOR RADIATED MEASUREMENT:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. Set both RBW and VBW of spectrum analyzer to 100kHz and 300kHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW =100kHz, VBW = 300kHz; Average RBW = 1MHz, VBW = 10Hz) are attached on the following pages.

NOTE: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

5.6.4 DEVIATION FROM TEST STANDARD

No deviation

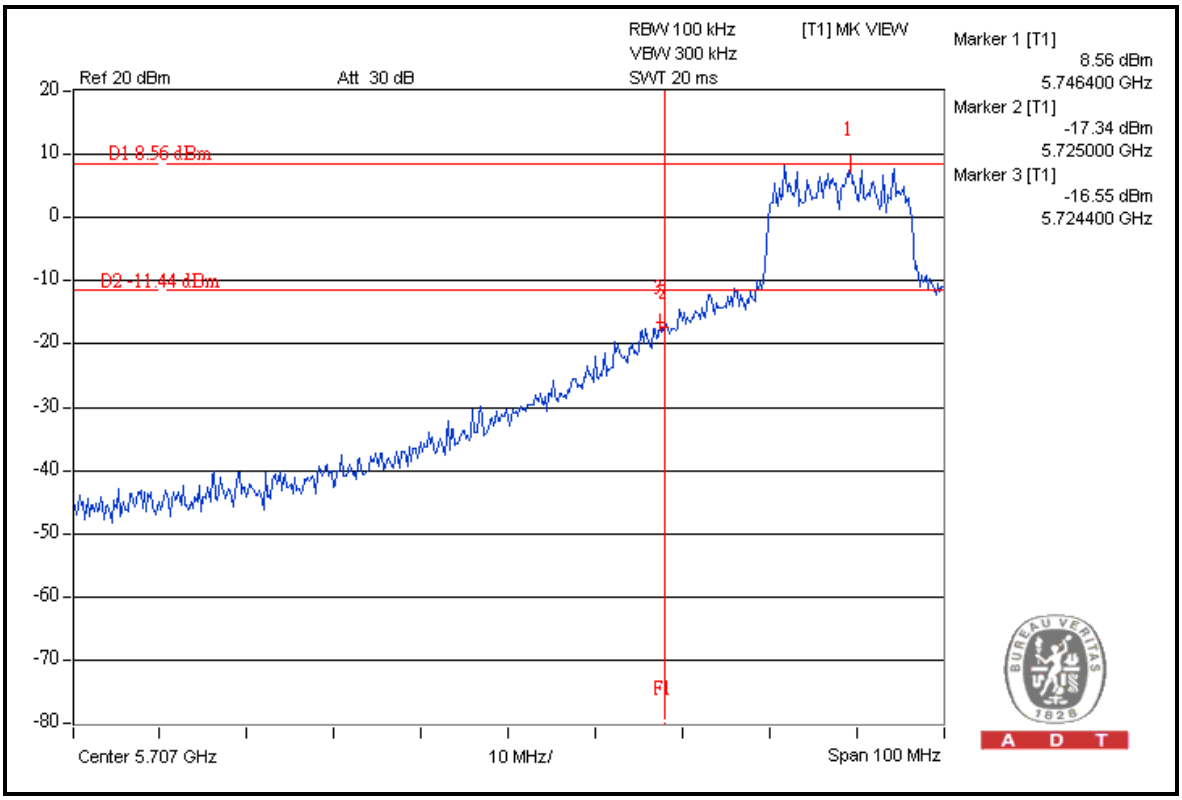
5.6.5 EUT OPERATING CONDITION

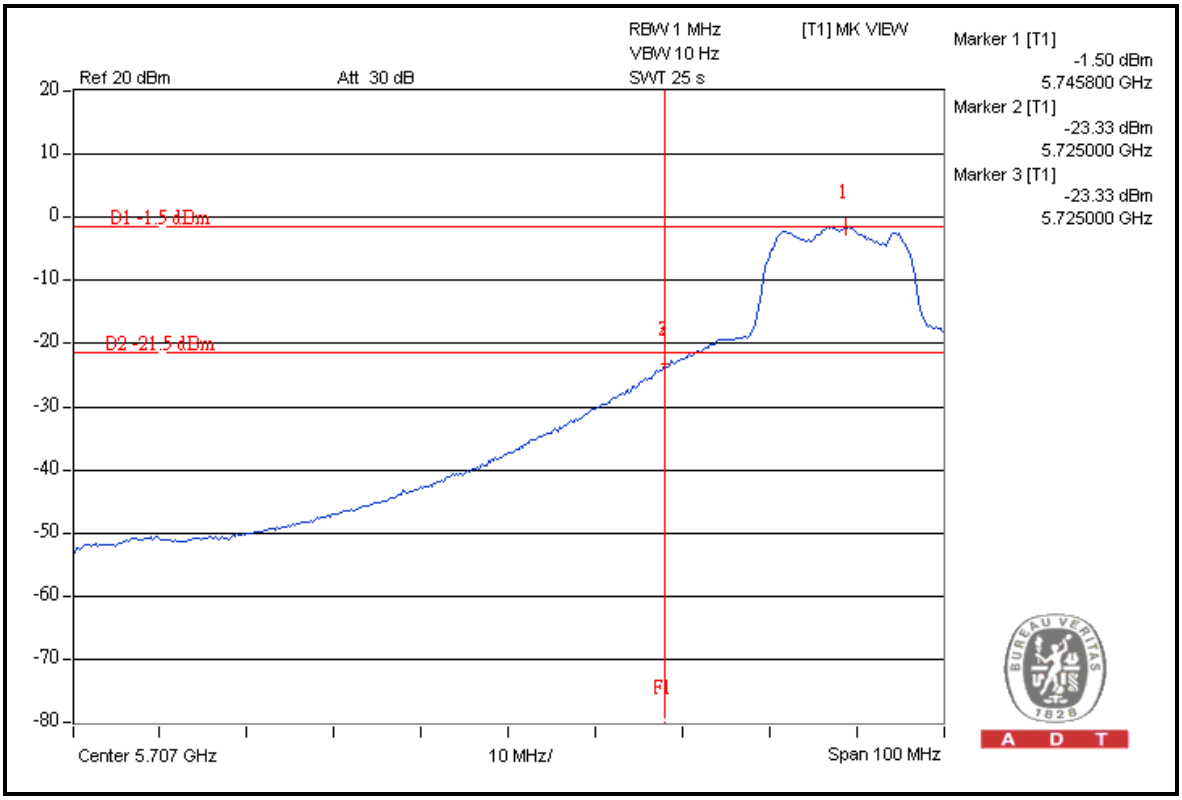
Same as Item 5.3.6

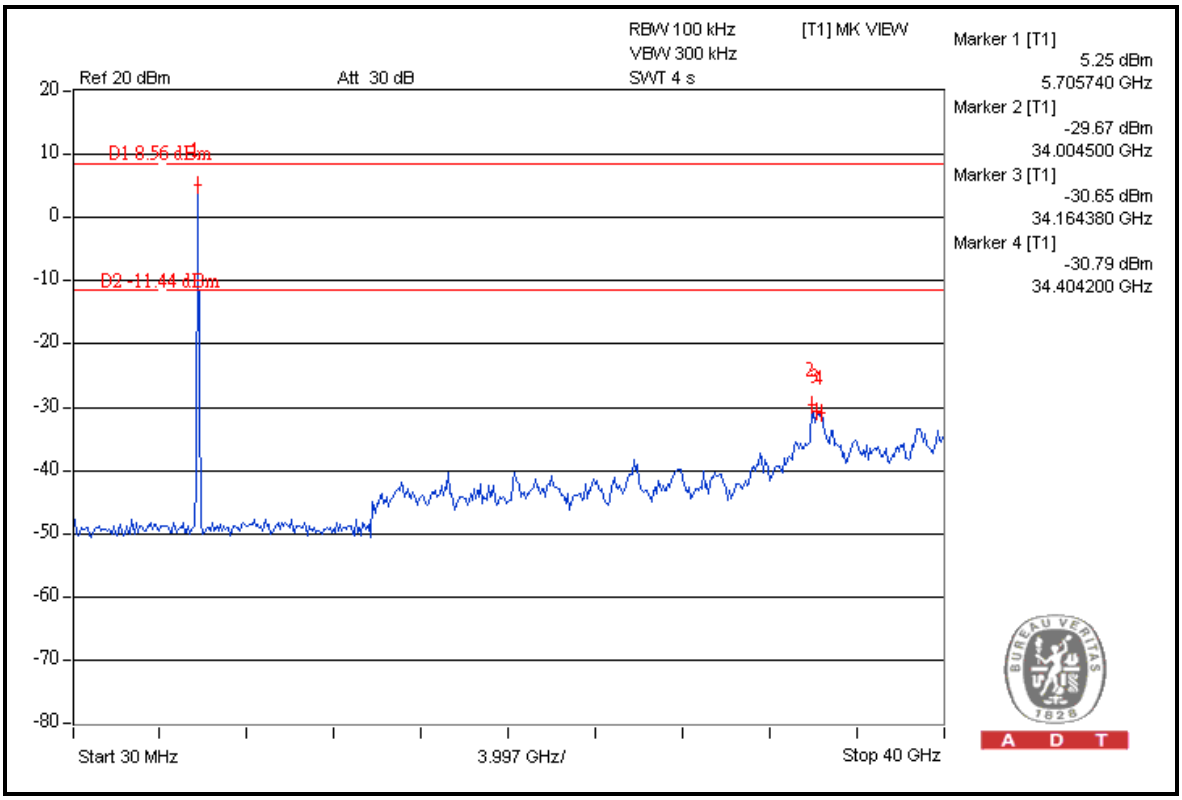
5.6.6 TEST RESULTS

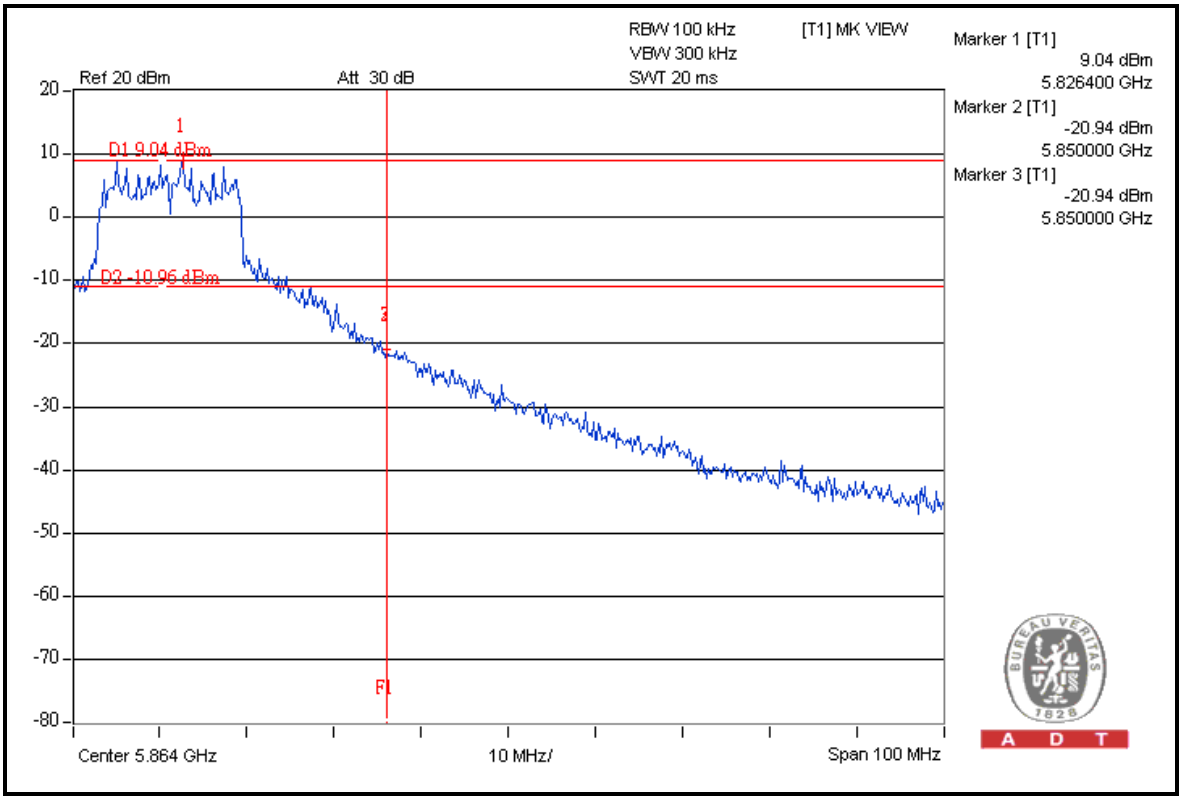
The spectrum plots are attached on the following pages. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

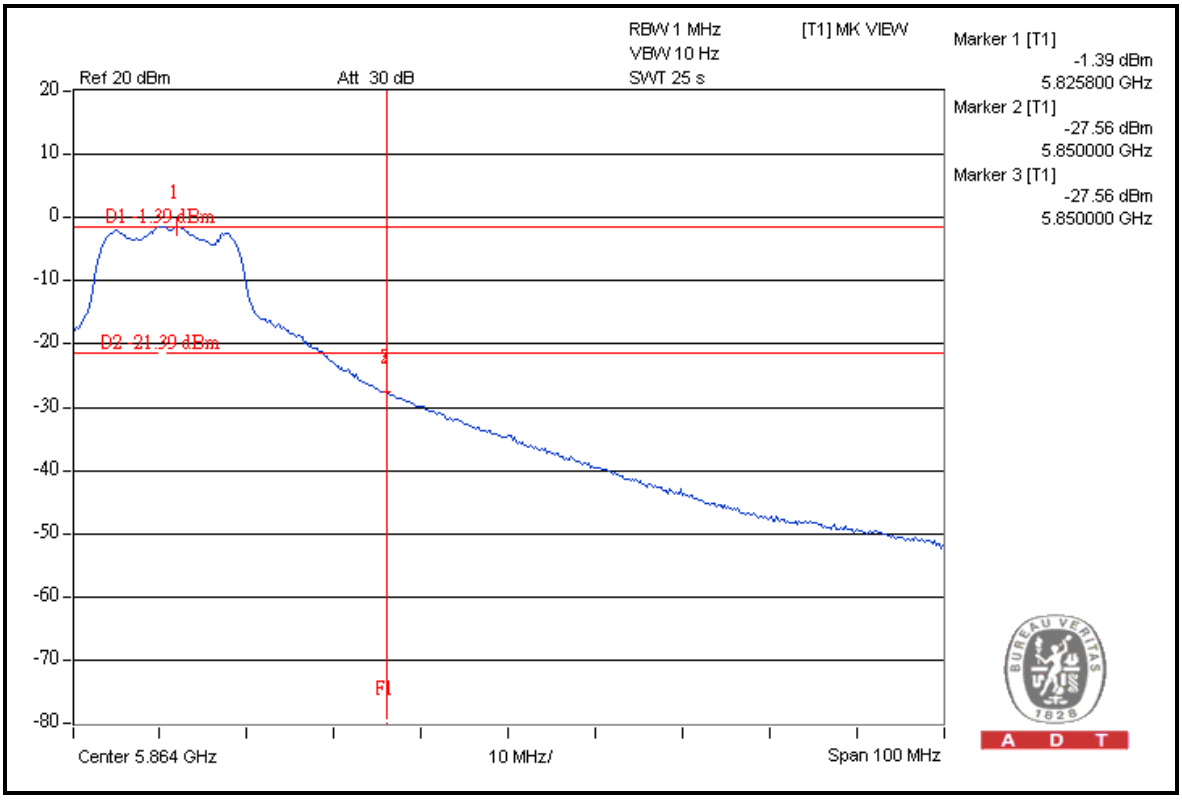
802.11a

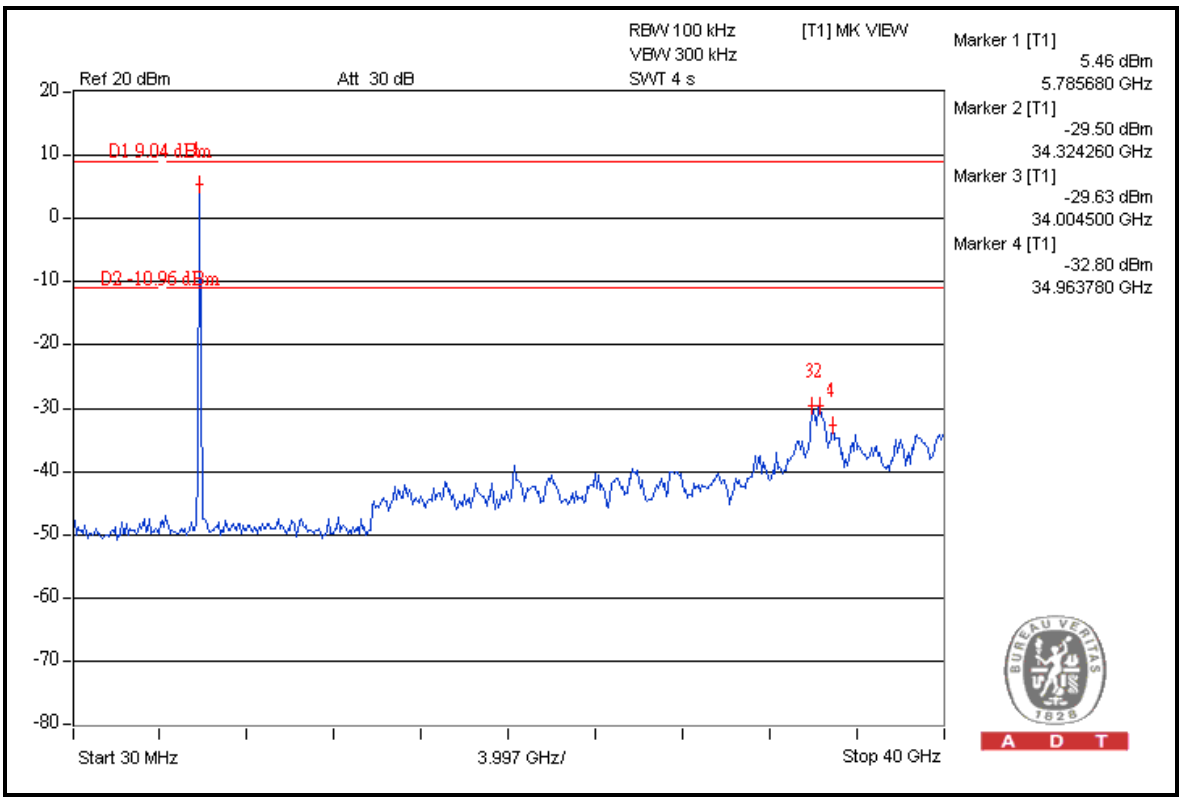

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 8.56 dBm
D2 -11.44 dBm
Marker 1 [T1]
8.56 dBm
5.746400 GHz
Marker 2 [T1]
-17.34 dBm
5.725000 GHz
Marker 3 [T1]
-16.55 dBm
5.724400 GHz
Center 5.707 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -1.5 dBm
D2 -21.5 dBm
Marker 1 [T1]
-1.50 dBm
5.745800 GHz
Marker 2 [T1]
-23.33 dBm
5.725000 GHz
Marker 3 [T1]
-23.33 dBm
5.725000 GHz
Center 5.707 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 8.56 dBm
D2 -11.44 dBm
Marker 1 [T1]
5.25 dBm
5.705740 GHz
Marker 2 [T1]
-29.67 dBm
34.004500 GHz
Marker 3 [T1]
-30.65 dBm
34.164380 GHz
Marker 4 [T1]
-30.79 dBm
34.404200 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz

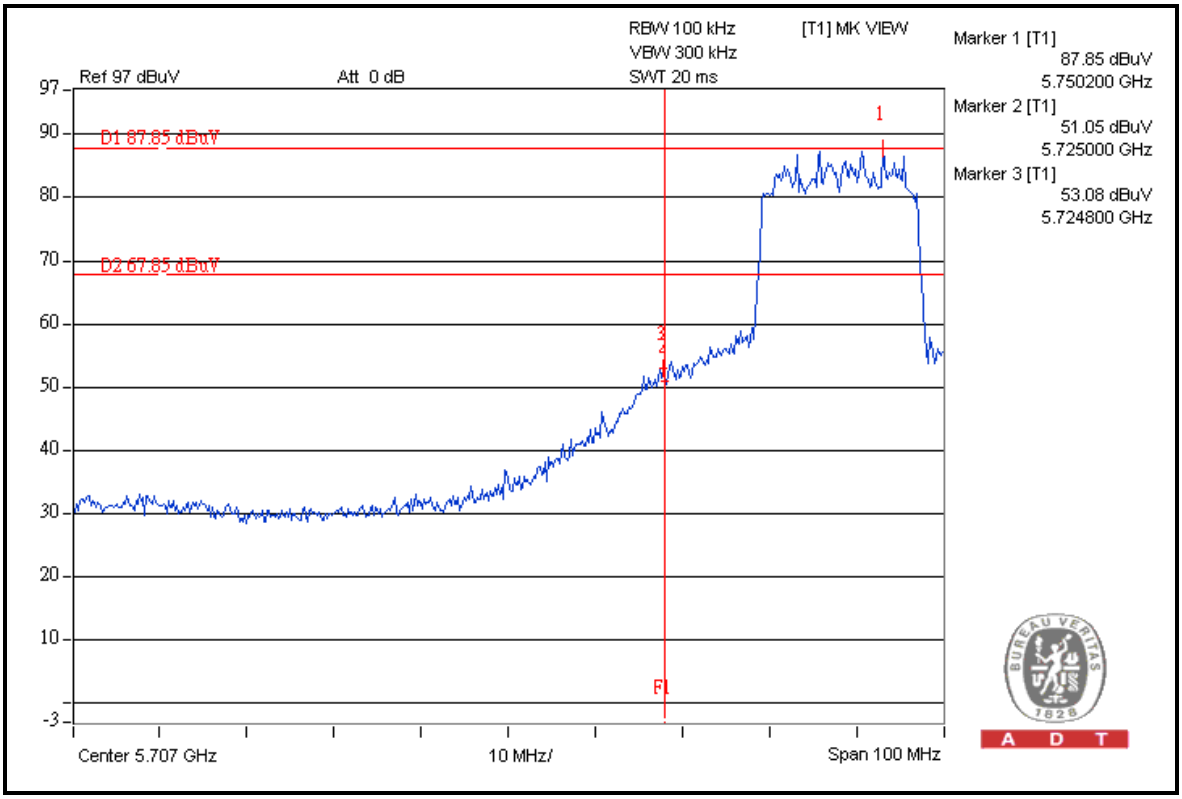

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 9.04 dBm
D2 -10.96 dBm
Marker 1 [T1]
9.04 dBm
5.826400 GHz
Marker 2 [T1]
-20.94 dBm
5.850000 GHz
Marker 3 [T1]
-20.94 dBm
5.850000 GHz
Center 5.864 GHz
10 MHz/
Span 100 MHz

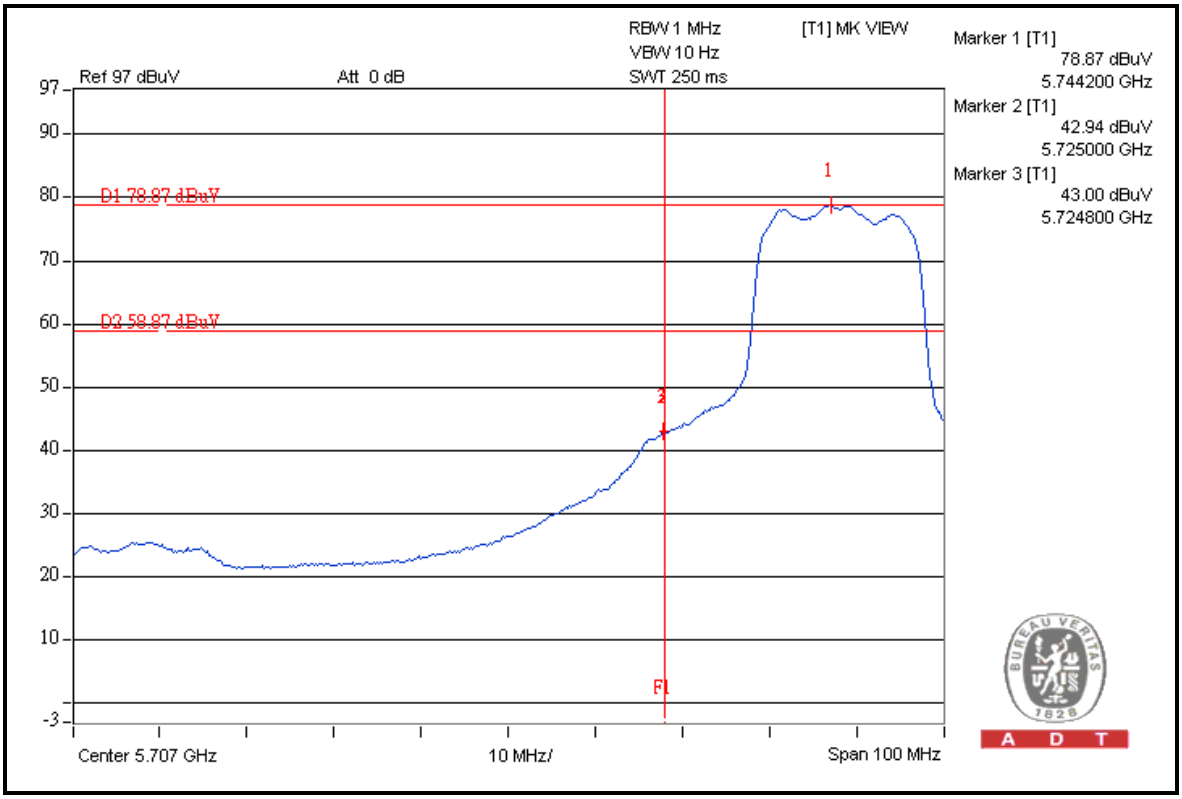

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-1.39 dBm
5.825800 GHz
Marker 2 [T1]
-27.56 dBm
5.850000 GHz
Marker 3 [T1]
-27.56 dBm
5.850000 GHz
D1 -1.39 dBm
D2 -21.39 dBm
Center 5.864 GHz
10 MHz/
Span 100 MHz

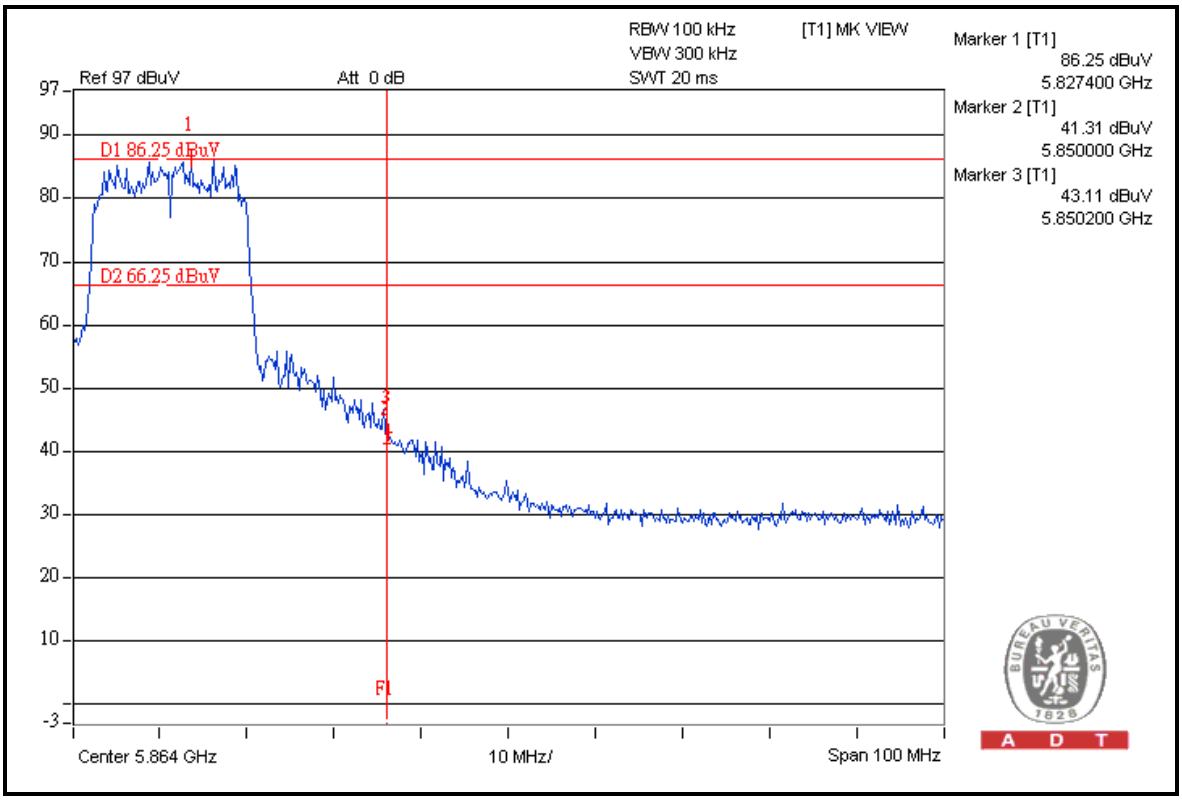

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
5.46 dBm
5.785680 GHz
Marker 2 [T1]
-29.50 dBm
34.324260 GHz
Marker 3 [T1]
-29.63 dBm
34.004500 GHz
Marker 4 [T1]
-32.80 dBm
34.963780 GHz
D1 9.04 dBm
D2 -10.96 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz

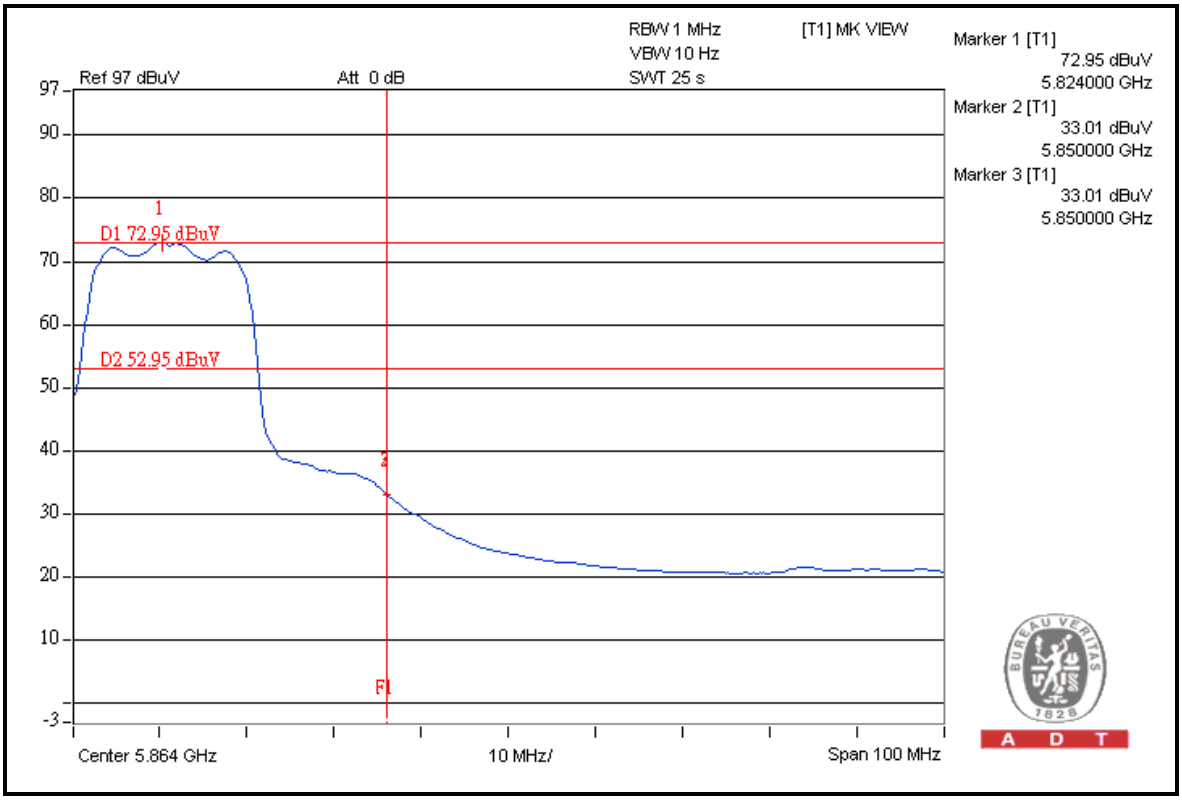
802.11n (20MHz)

FOR RADIATED MEASURED (TWO CHAINS ON)



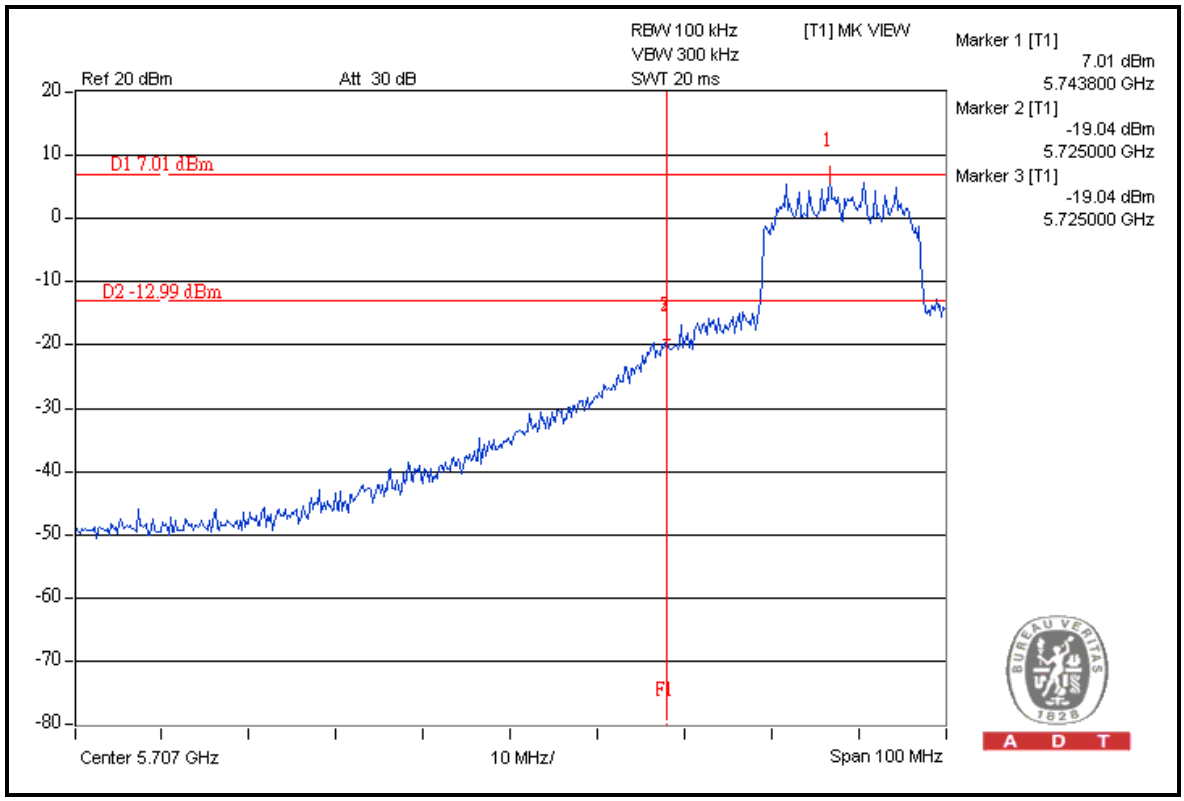


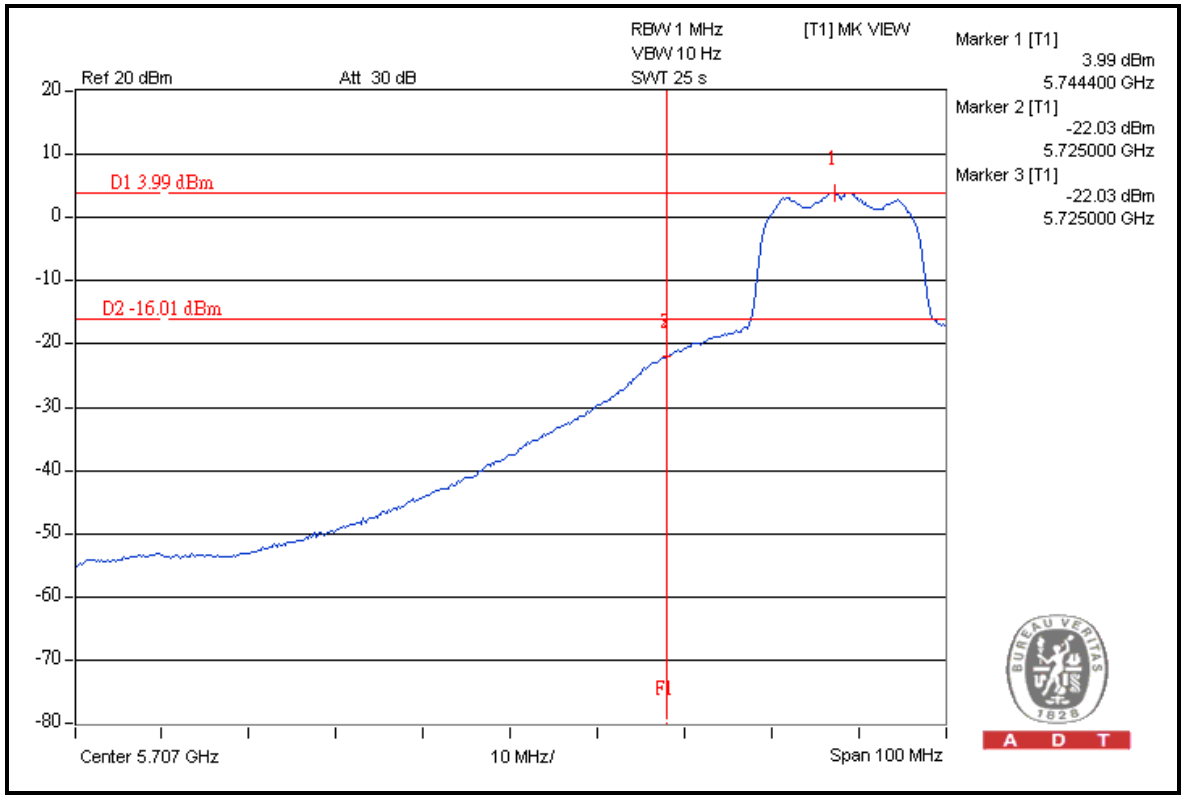

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
86.25 dBuV
5.827400 GHz
Marker 2 [T1]
41.31 dBuV
5.850000 GHz
Marker 3 [T1]
43.11 dBuV
5.850200 GHz
Ref 97 dBuV
Att 0 dB
D1 86.25 dBuV
D2 66.25 dBuV
97
90
80
70
60
50
40
30
20
10
-3
Center 5.864 GHz
10 MHz/
Span 100 MHz

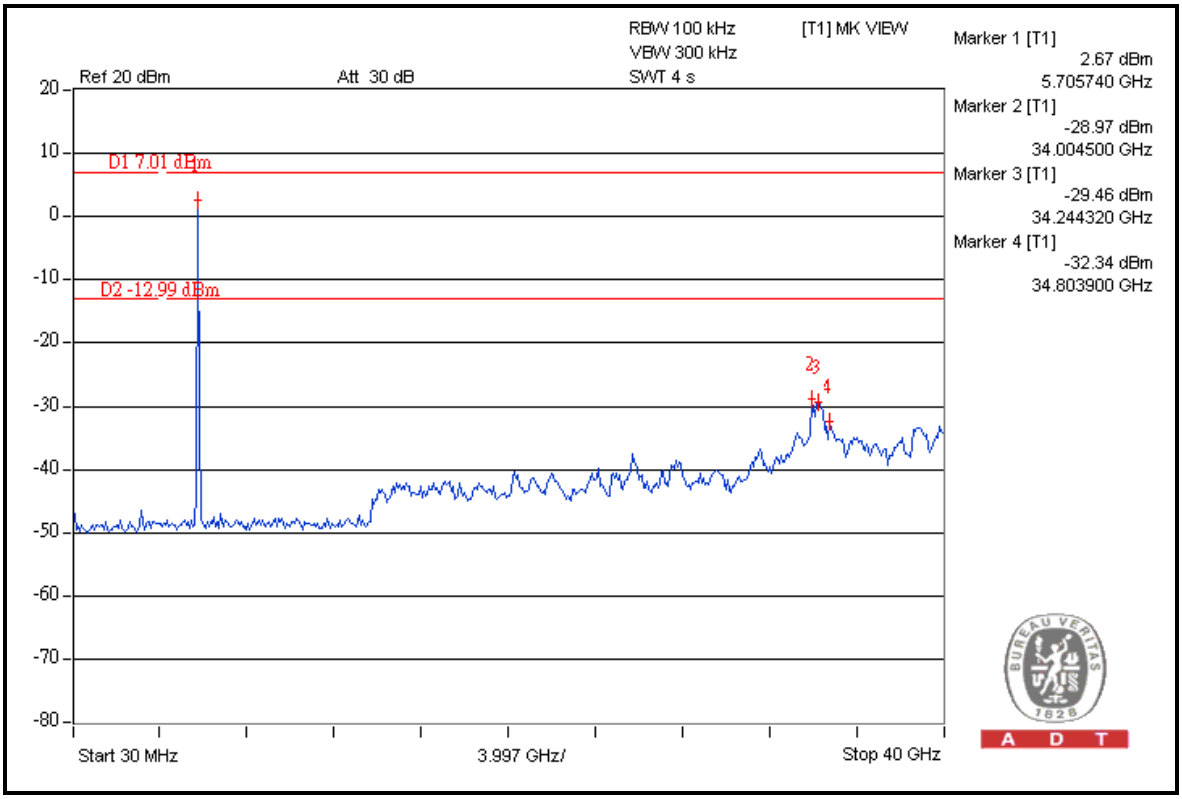

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Marker 1 [T1]
72.95 dBuV
5.824000 GHz
Marker 2 [T1]
33.01 dBuV
5.850000 GHz
Marker 3 [T1]
33.01 dBuV
5.850000 GHz
Ref 97 dBuV
Att 0 dB
D1 72.95 dBuV
D2 52.95 dBuV
97
90
80
70
60
50
40
30
20
10
-3
Center 5.864 GHz
10 MHz/
Span 100 MHz

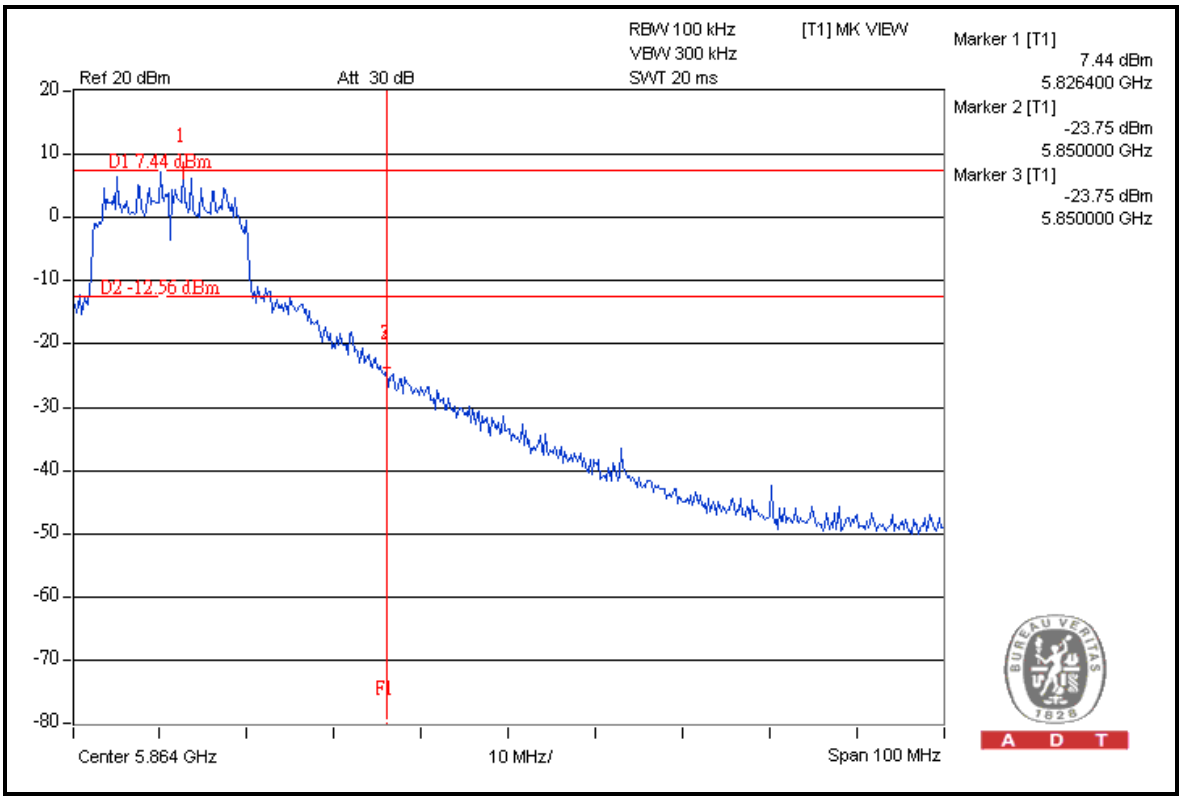
FOR CONDUCTED MEASURED

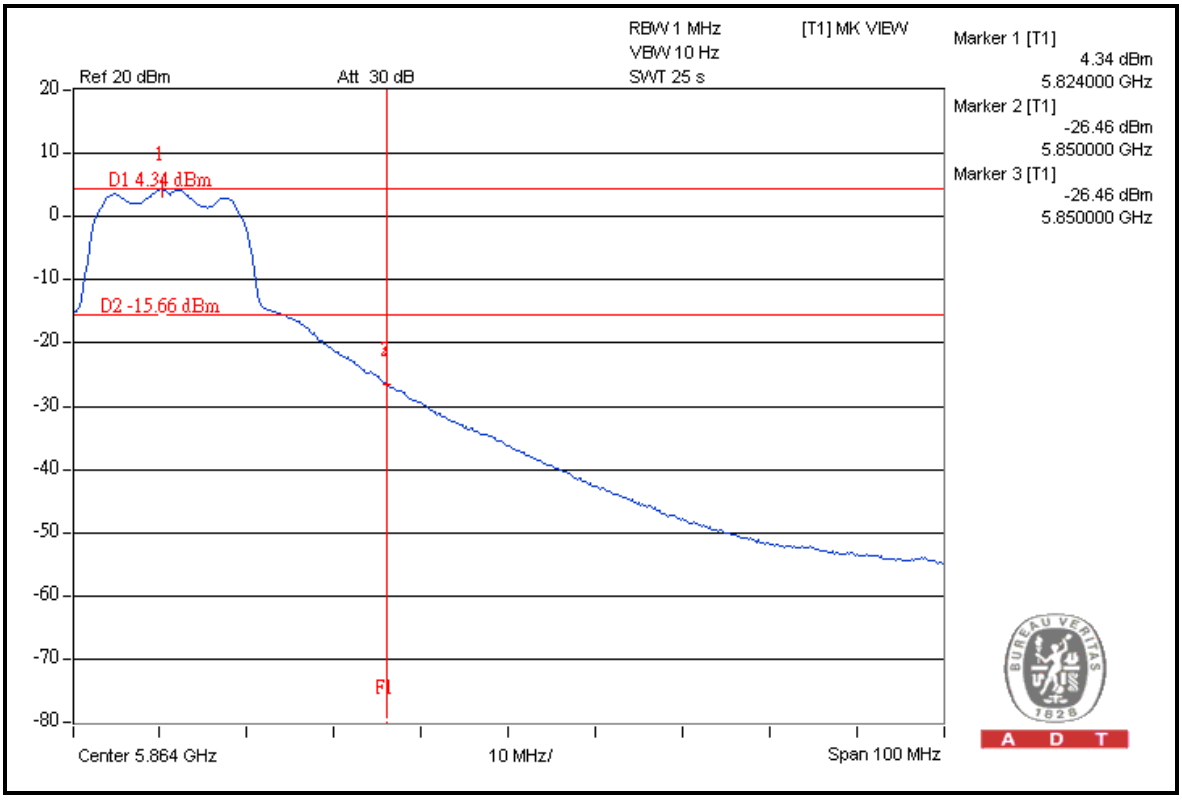
CHAIN 0

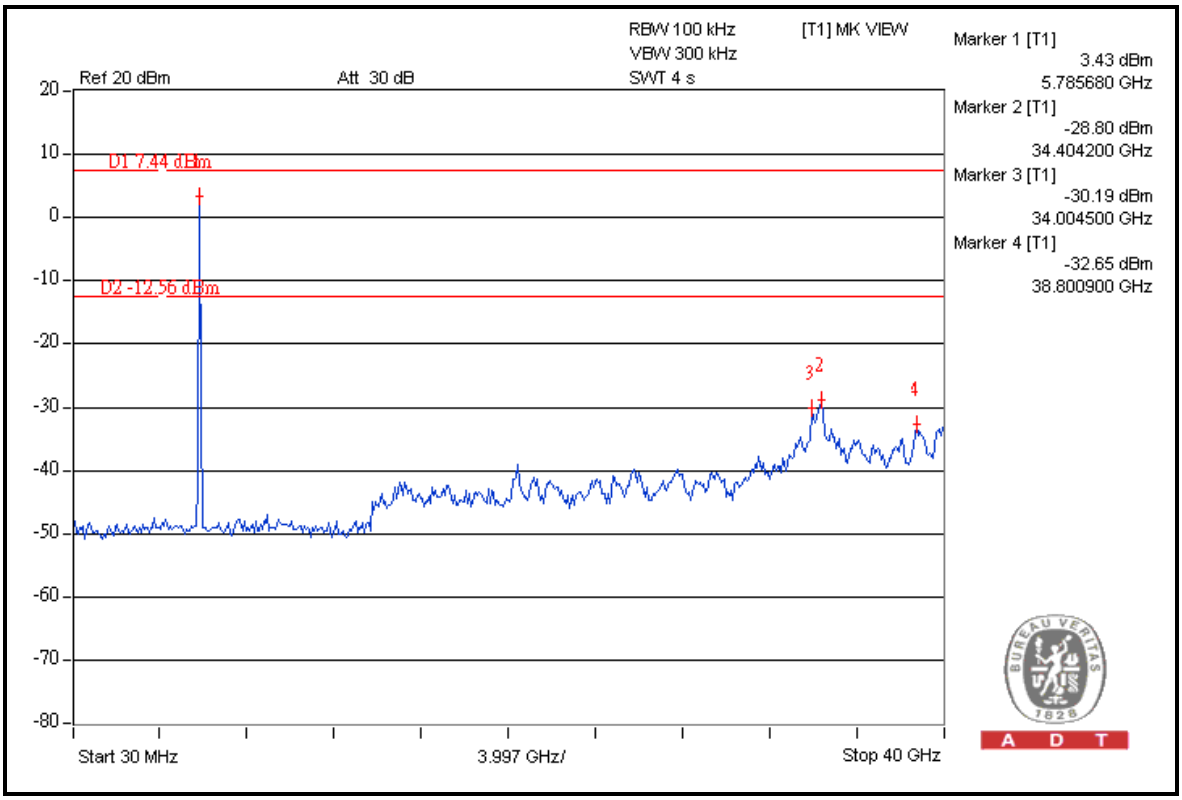




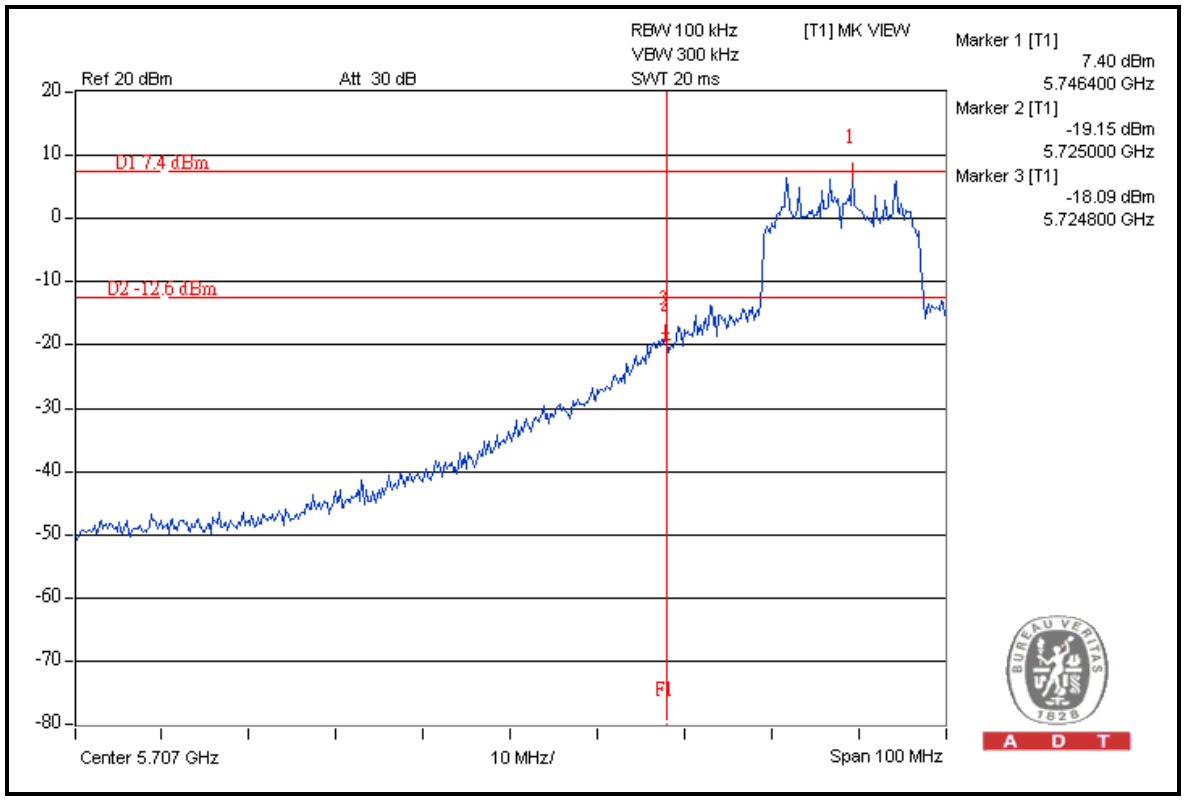

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 7.01 dBm
D2 -12.99 dBm
Marker 1 [T1]
2.67 dBm
5.705740 GHz
Marker 2 [T1]
-28.97 dBm
34.004500 GHz
Marker 3 [T1]
-29.46 dBm
34.244320 GHz
Marker 4 [T1]
-32.34 dBm
34.803900 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz

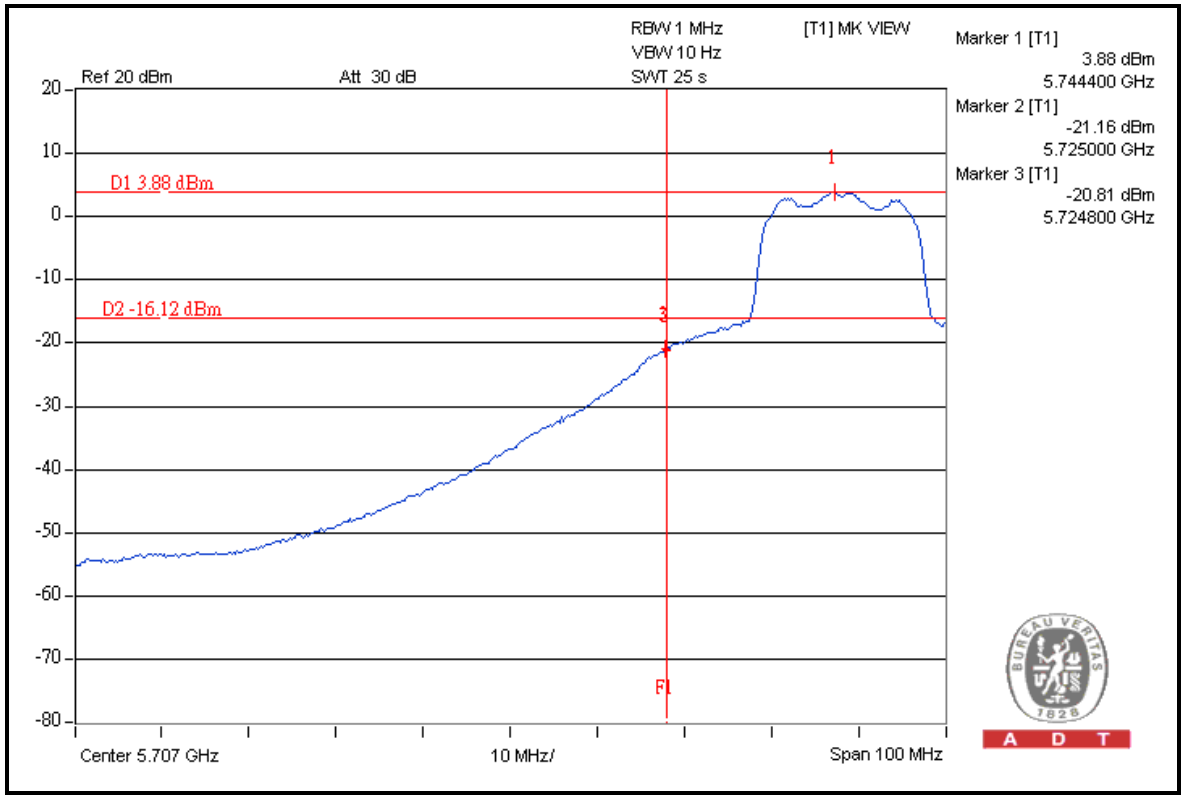

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 7.44 dBm
D2 -12.56 dBm
Marker 1 [T1]
7.44 dBm
5.826400 GHz
Marker 2 [T1]
-23.75 dBm
5.850000 GHz
Marker 3 [T1]
-23.75 dBm
5.850000 GHz
Center 5.864 GHz
10 MHz/
Span 100 MHz

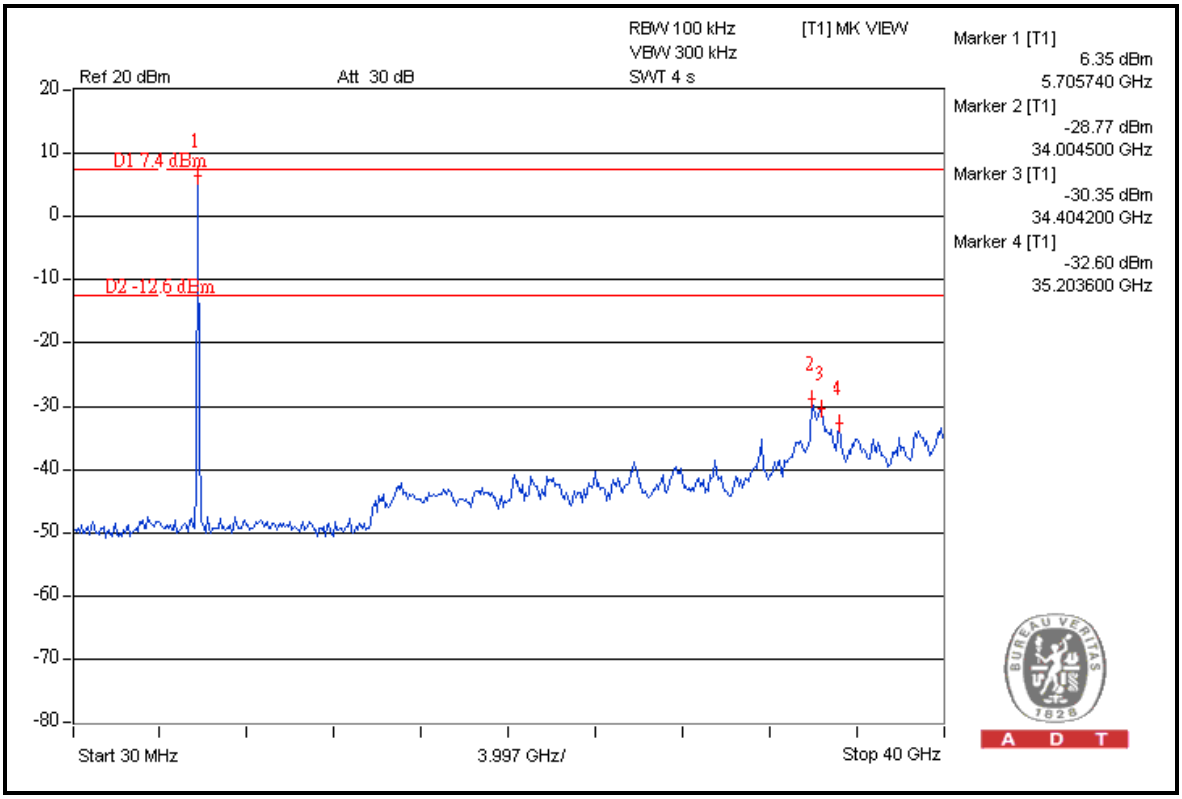

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
4.34 dBm
5.824000 GHz
Marker 2 [T1]
-26.46 dBm
5.850000 GHz
Marker 3 [T1]
-26.46 dBm
5.850000 GHz
D1 4.34 dBm
D2 -15.66 dBm
Center 5.864 GHz
10 MHz/
Span 100 MHz

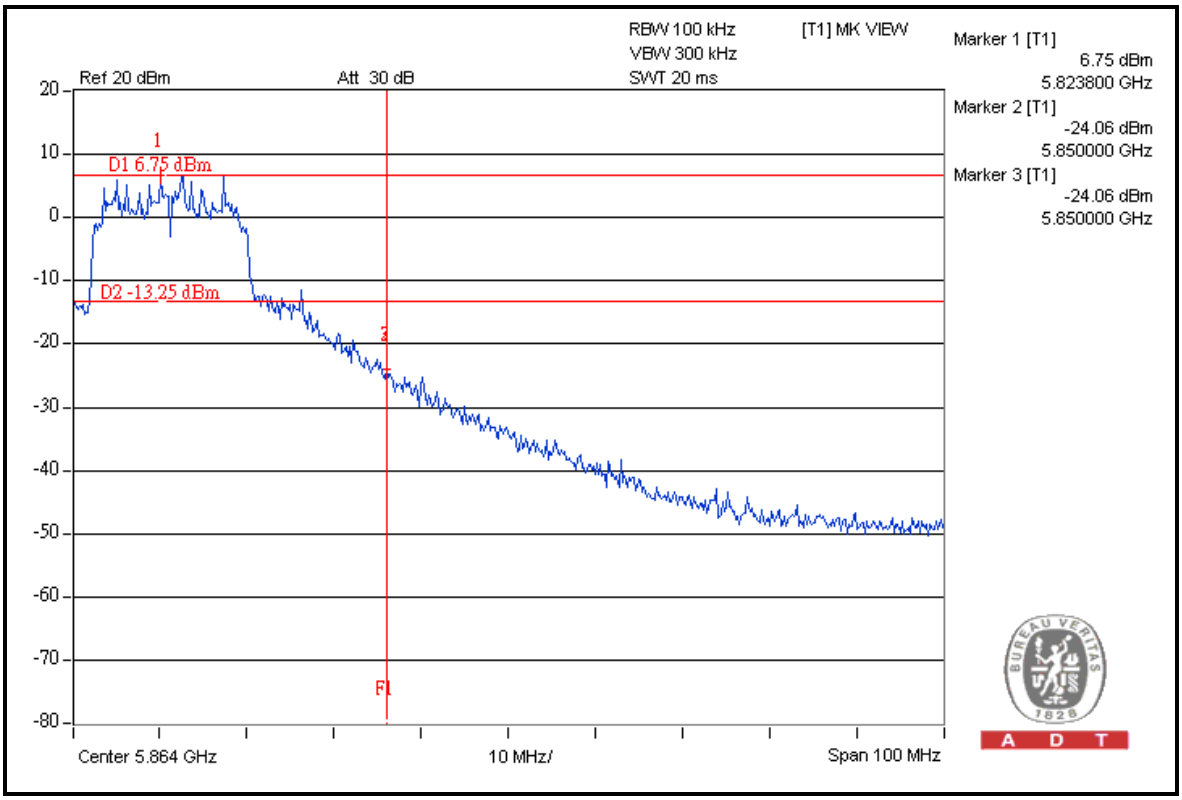

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
3.43 dBm
5.785680 GHz
Marker 2 [T1]
-28.80 dBm
34.404200 GHz
Marker 3 [T1]
-30.19 dBm
34.004500 GHz
Marker 4 [T1]
-32.65 dBm
38.800900 GHz
D1 7.44 dBm
D2 -12.56 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz

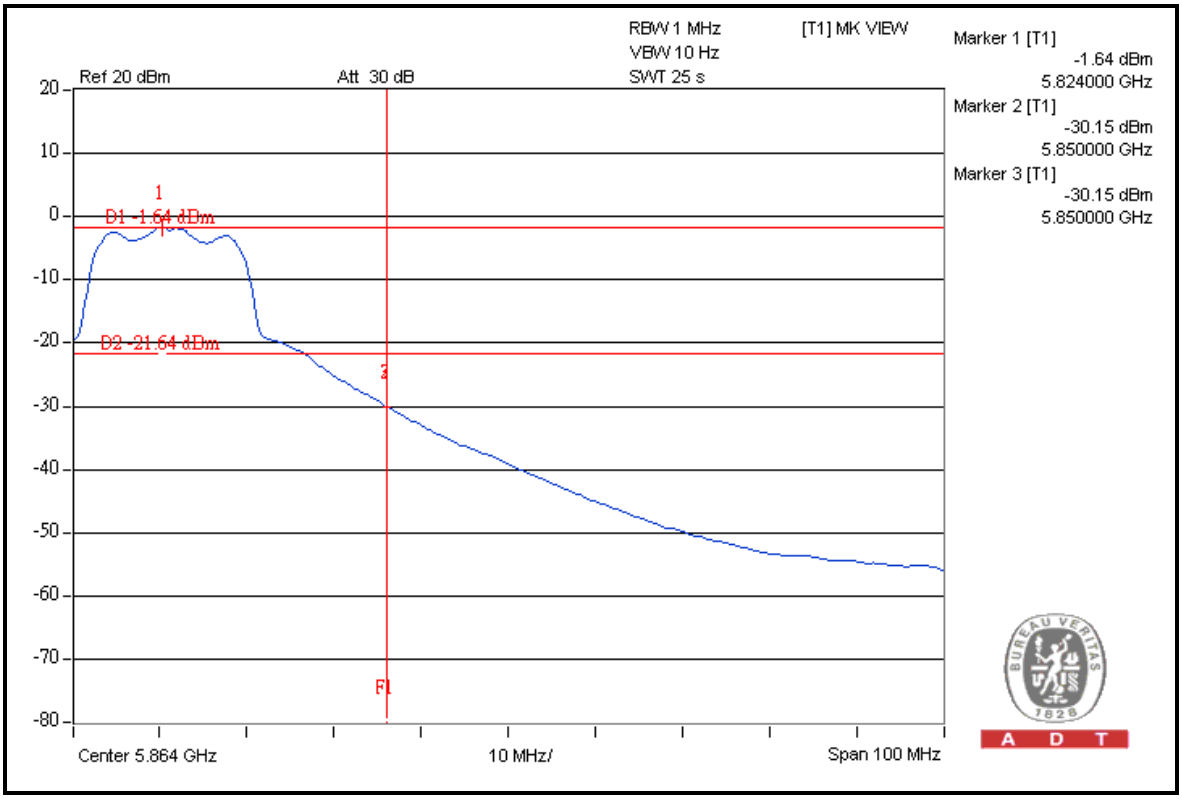
CHAIN 1

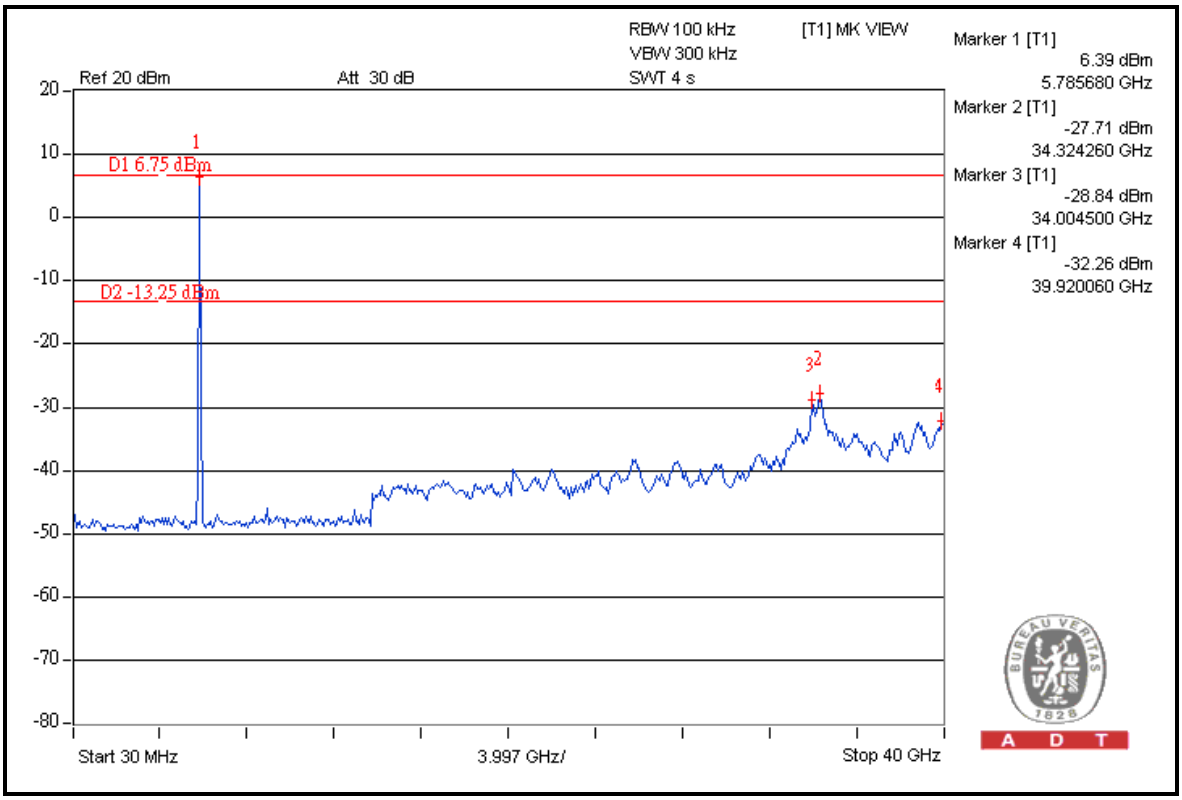

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
7.40 dBm
5.746400 GHz
Marker 2 [T1]
-19.15 dBm
5.725000 GHz
Marker 3 [T1]
-18.09 dBm
5.724800 GHz
D1 7.4 dBm
D2 -12.6 dBm
Center 5.707 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
3.88 dBm
5.744400 GHz
Marker 2 [T1]
-21.16 dBm
5.725000 GHz
Marker 3 [T1]
-20.81 dBm
5.724800 GHz
D1 3.88 dBm
D2 -16.12 dBm
Center 5.707 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 7.4 dBm
D2 -12.6 dBm
Marker 1 [T1]
6.35 dBm
5.705740 GHz
Marker 2 [T1]
-28.77 dBm
34.004500 GHz
Marker 3 [T1]
-30.35 dBm
34.404200 GHz
Marker 4 [T1]
-32.60 dBm
35.203600 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz

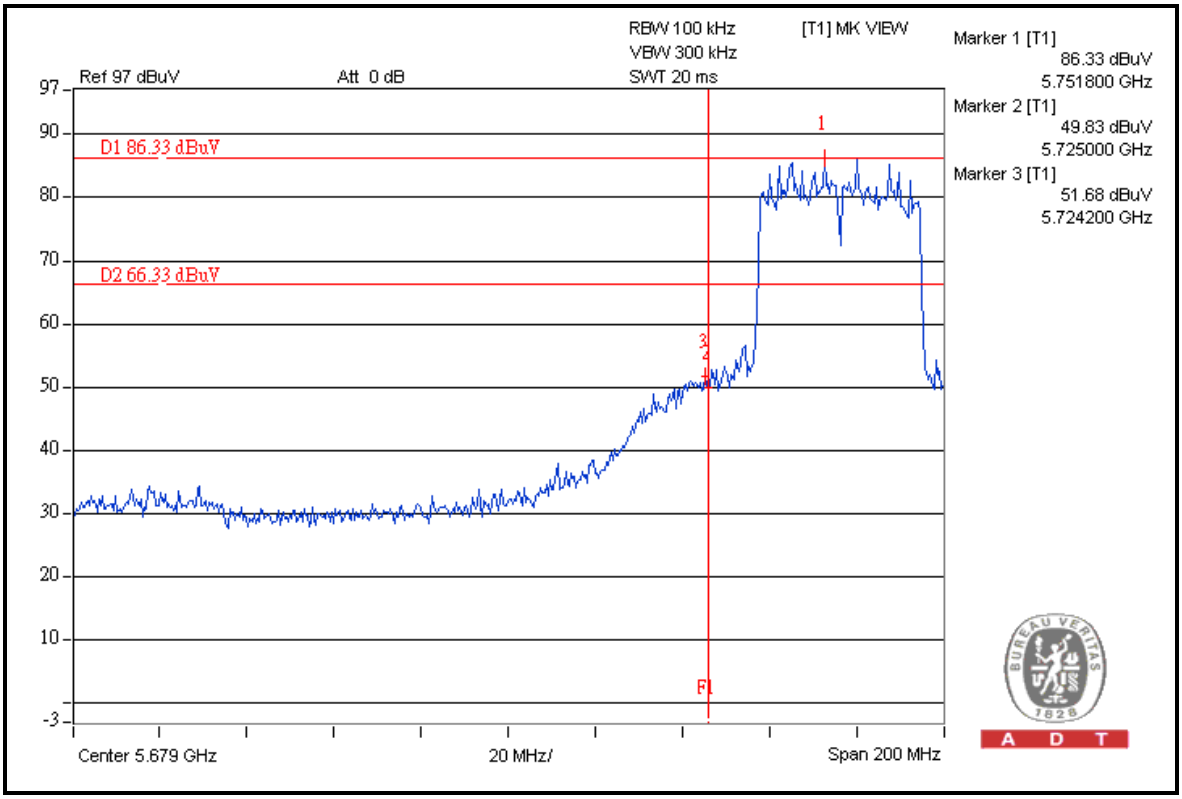

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 6.75 dBm
D2 -13.25 dBm
Marker 1 [T1]
6.75 dBm
5.823800 GHz
Marker 2 [T1]
-24.06 dBm
5.850000 GHz
Marker 3 [T1]
-24.06 dBm
5.850000 GHz
Center 5.864 GHz
10 MHz/
Span 100 MHz

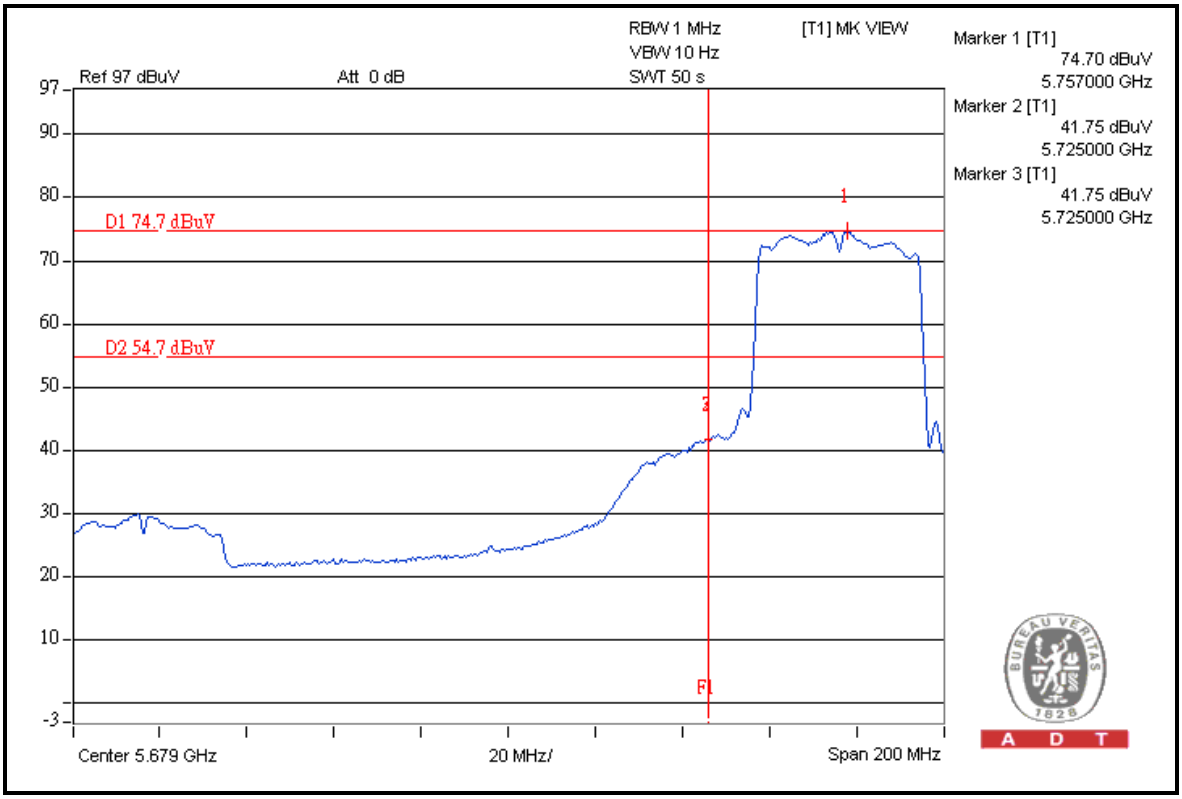

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-1.64 dBm
5.824000 GHz
Marker 2 [T1]
-30.15 dBm
5.850000 GHz
Marker 3 [T1]
-30.15 dBm
5.850000 GHz
D1 -1.64 dBm
D2 -21.64 dBm
Center 5.864 GHz
10 MHz/
Span 100 MHz

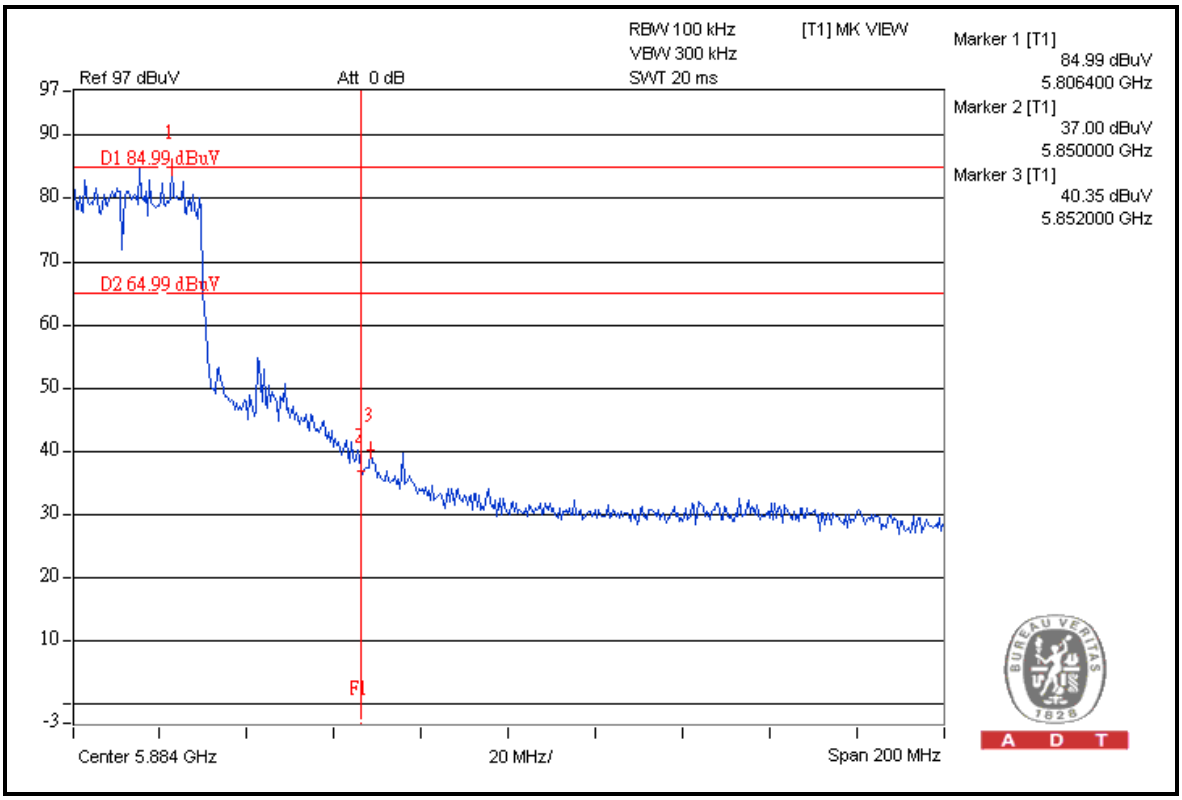

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
6.39 dBm
5.785680 GHz
Marker 2 [T1]
-27.71 dBm
34.324260 GHz
Marker 3 [T1]
-28.84 dBm
34.004500 GHz
Marker 4 [T1]
-32.26 dBm
39.920060 GHz
D1 6.75 dBm
D2 -13.25 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz

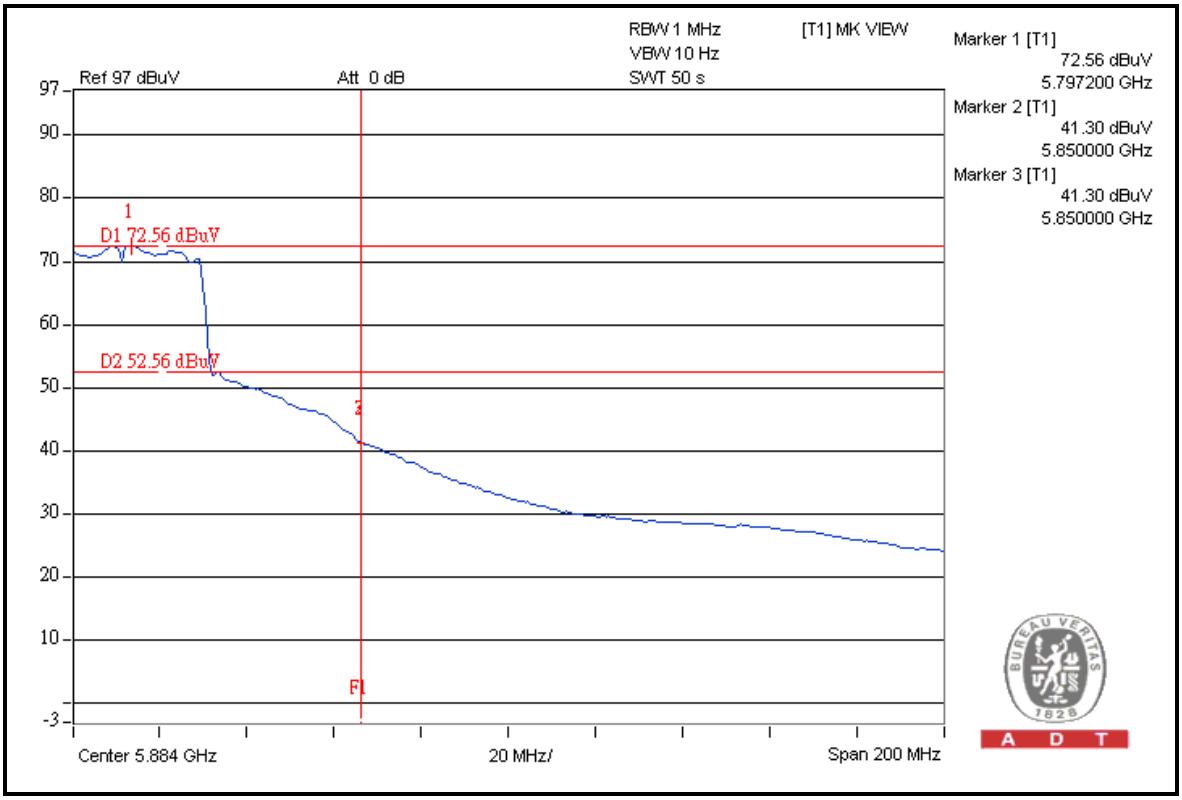
802.11n (40MHz)

FOR RADIATED MEASURED (TWO CHAINS ON)



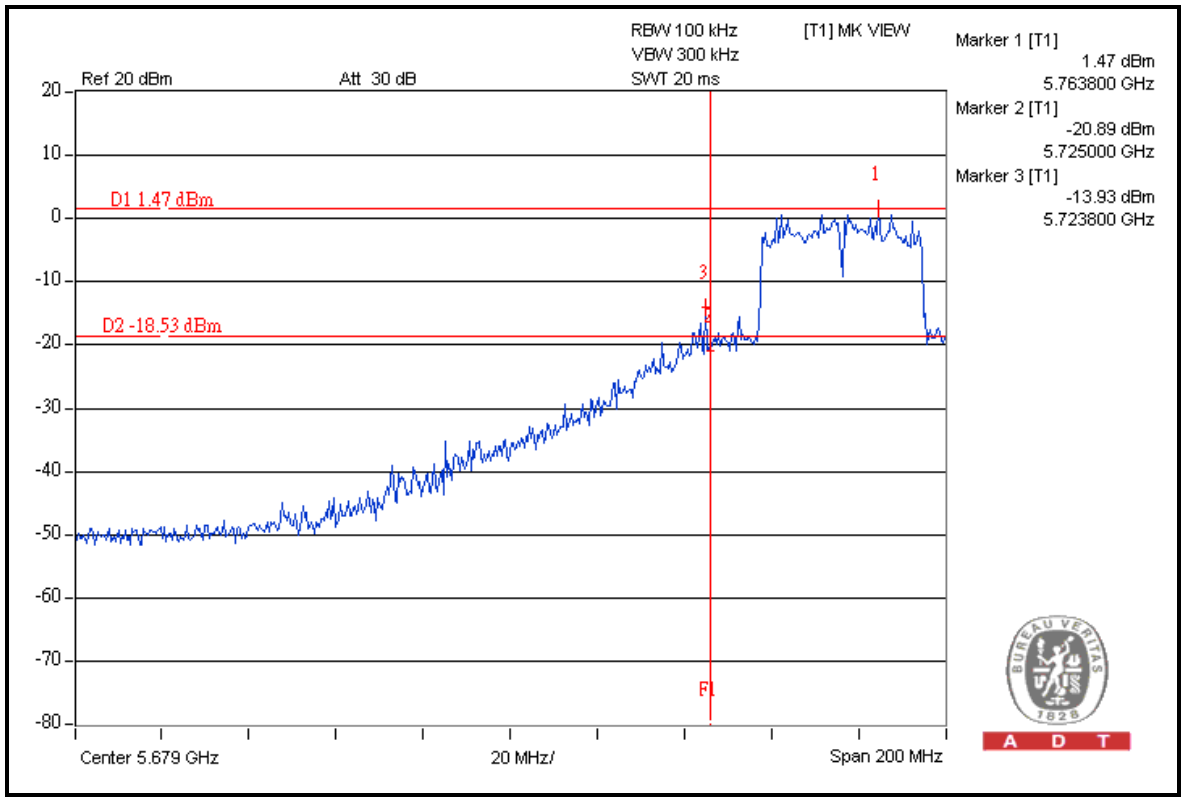


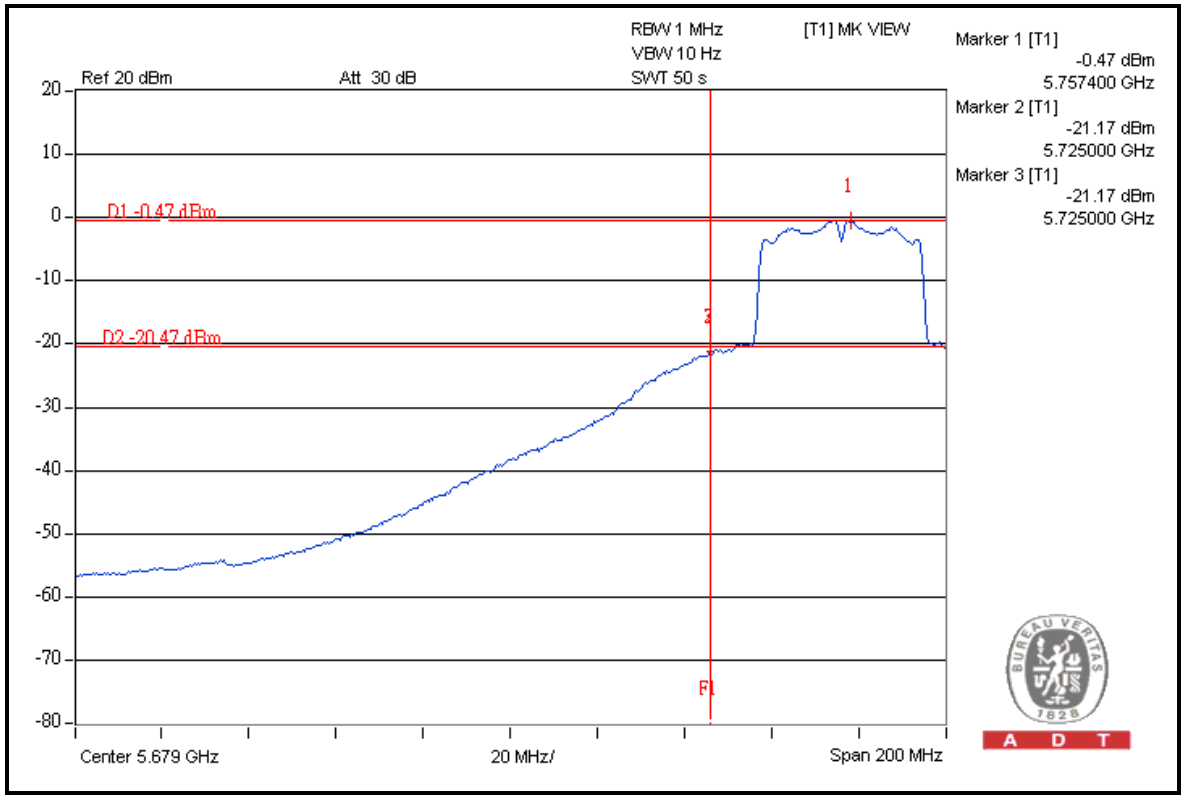

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 84.99 dBuV
D2 64.99 dBuV
F1
Center 5.884 GHz
20 MHz/
Span 200 MHz
Marker 1 [T1]
84.99 dBuV
5.806400 GHz
Marker 2 [T1]
37.00 dBuV
5.850000 GHz
Marker 3 [T1]
40.35 dBuV
5.852000 GHz

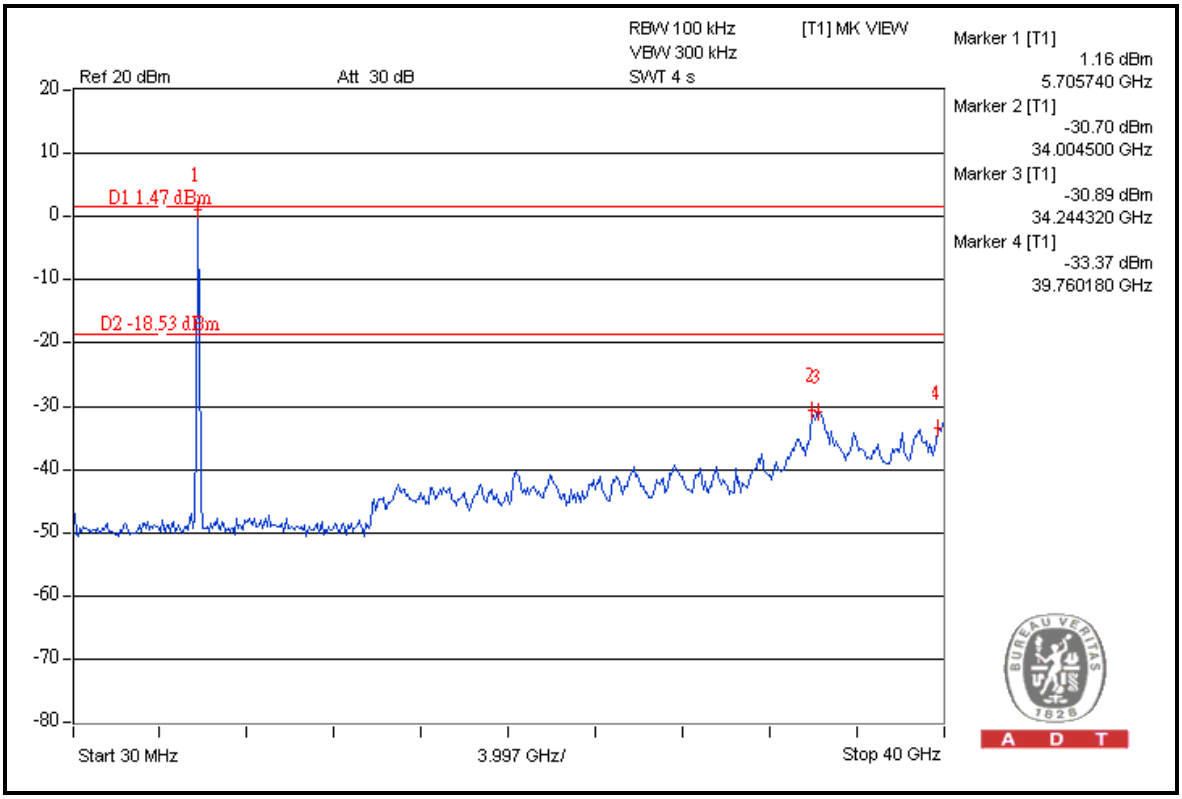

RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 72.56 dBuV
D2 52.56 dBuV
F1
Center 5.884 GHz
20 MHz/
Span 200 MHz
Marker 1 [T1]
72.56 dBuV
5.797200 GHz
Marker 2 [T1]
41.30 dBuV
5.850000 GHz
Marker 3 [T1]
41.30 dBuV
5.850000 GHz

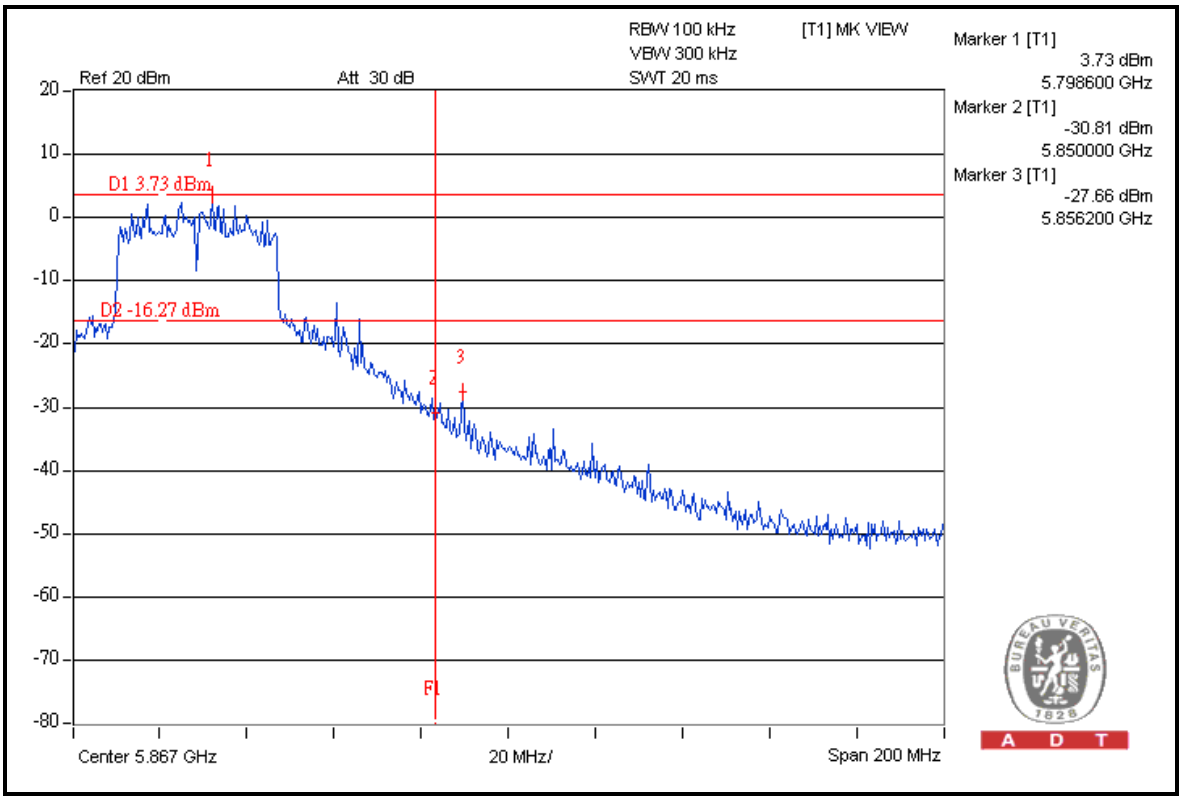
FOR CONDUCTED MEASURED

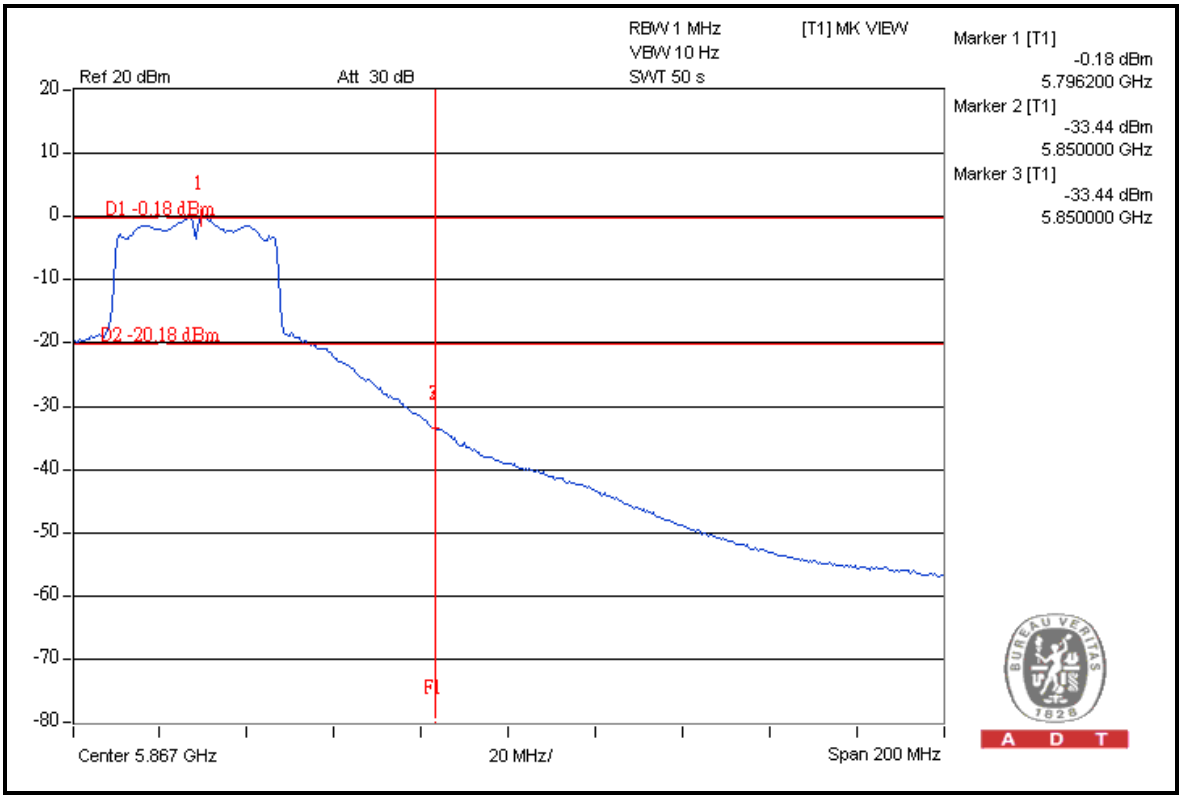
CHAIN 0

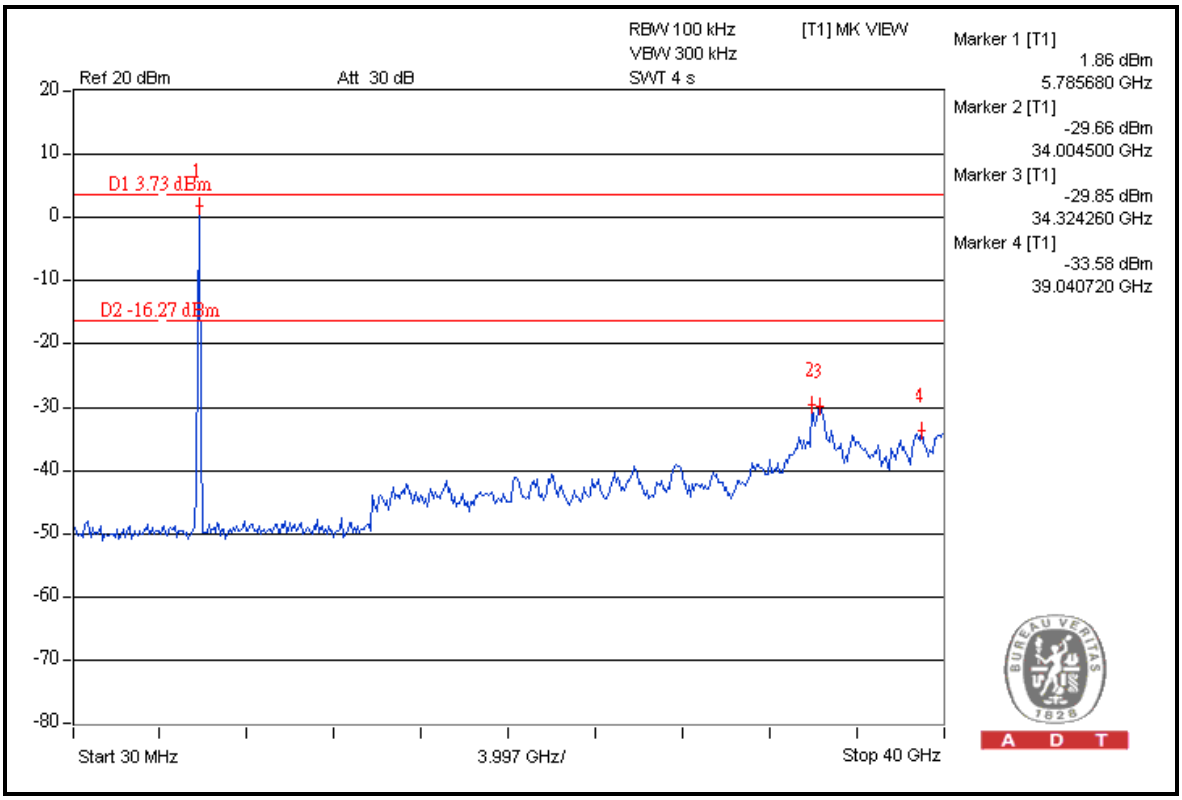




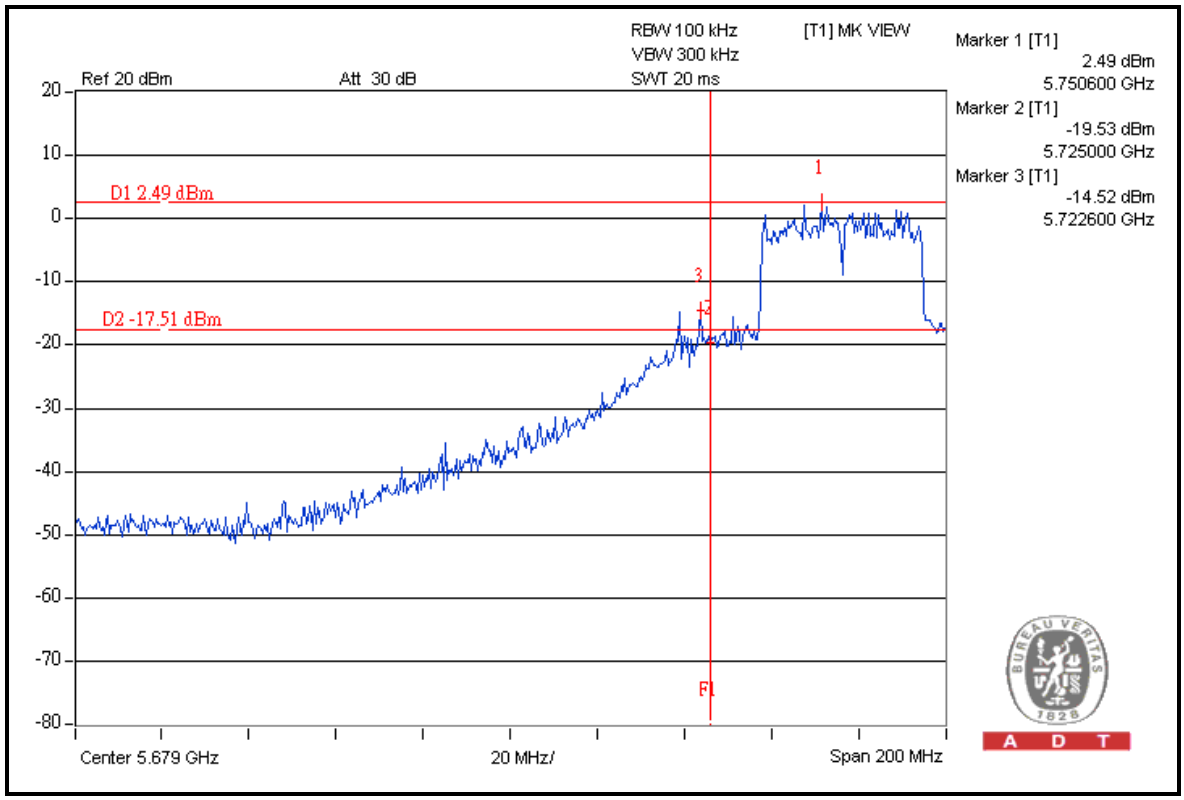

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
1.16 dBm
5.705740 GHz
Marker 2 [T1]
-30.70 dBm
34.004500 GHz
Marker 3 [T1]
-30.89 dBm
34.244320 GHz
Marker 4 [T1]
-33.37 dBm
39.760180 GHz
D1 1.47 dBm
D2 -18.53 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz

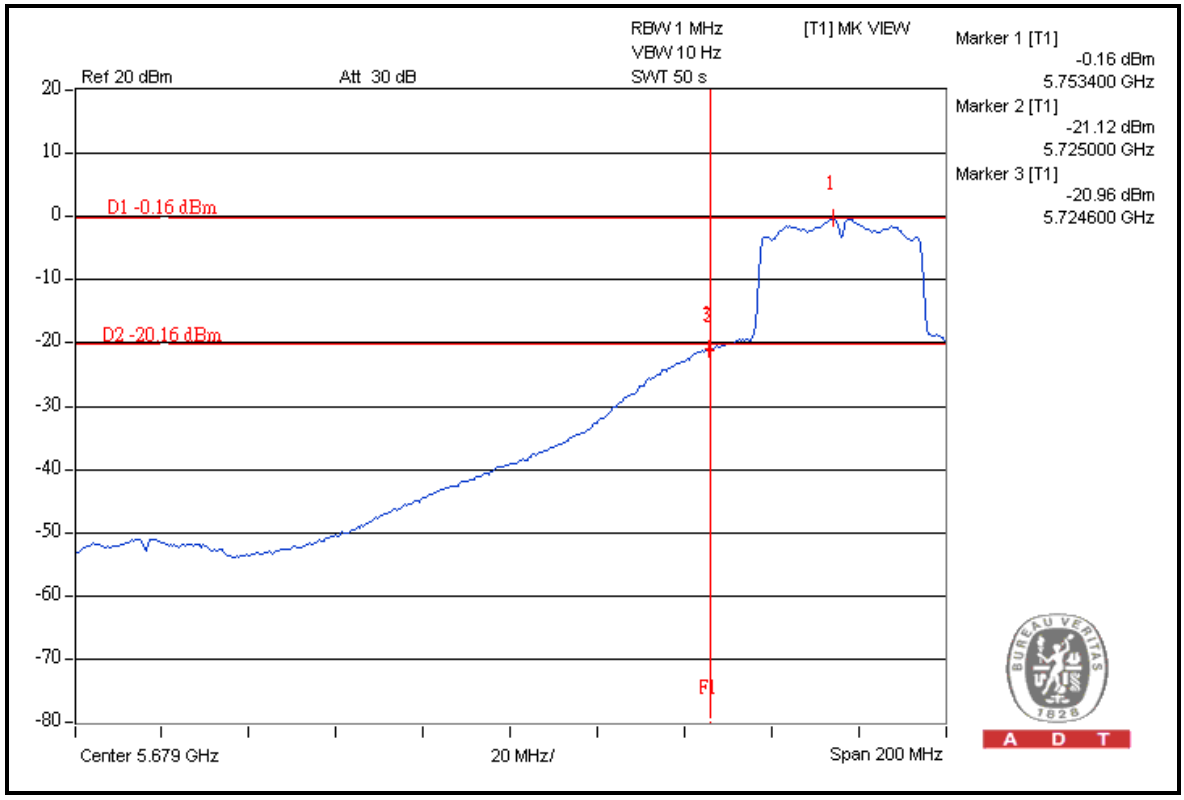

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
3.73 dBm
5.798600 GHz
Marker 2 [T1]
-30.81 dBm
5.850000 GHz
Marker 3 [T1]
-27.66 dBm
5.856200 GHz
D1 3.73 dBm
D2 -16.27 dBm
Center 5.867 GHz
20 MHz/
Span 200 MHz

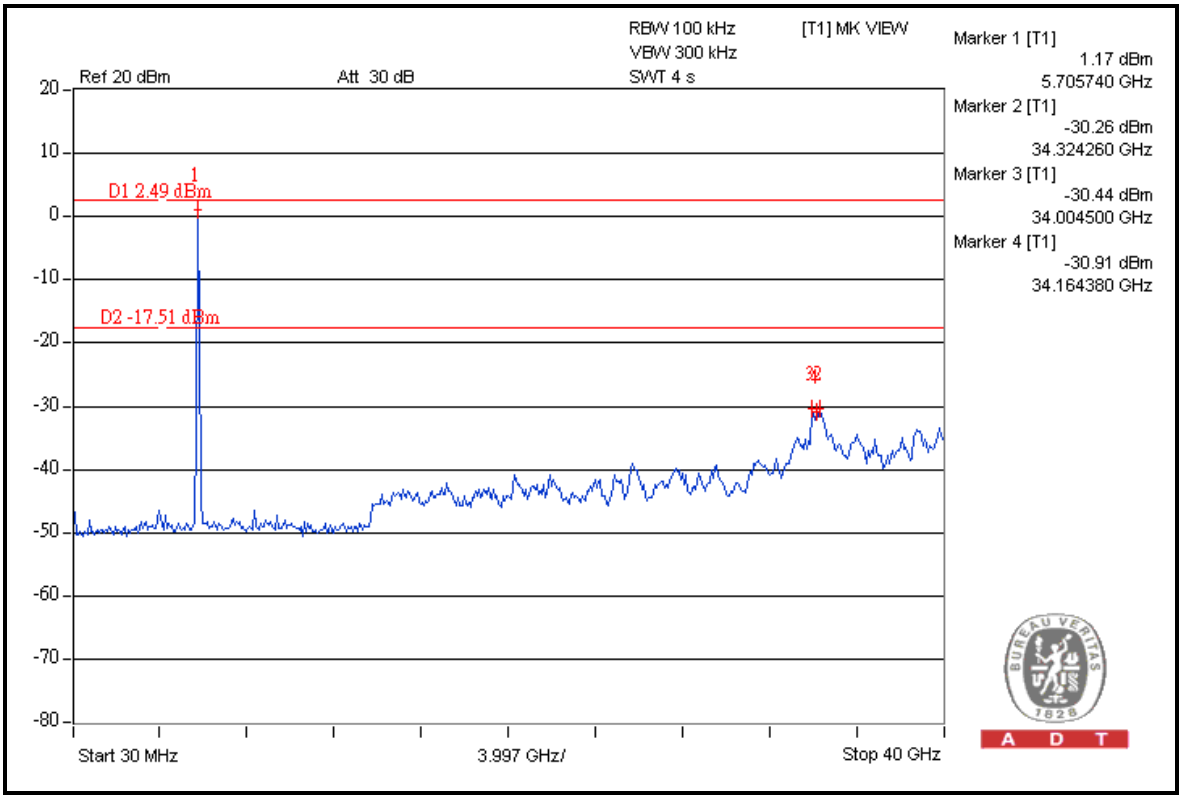

RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-0.18 dBm
5.796200 GHz
Marker 2 [T1]
-33.44 dBm
5.850000 GHz
Marker 3 [T1]
-33.44 dBm
5.850000 GHz
D1 -0.18 dBm
D2 -20.18 dBm
Center 5.867 GHz
20 MHz/
Span 200 MHz

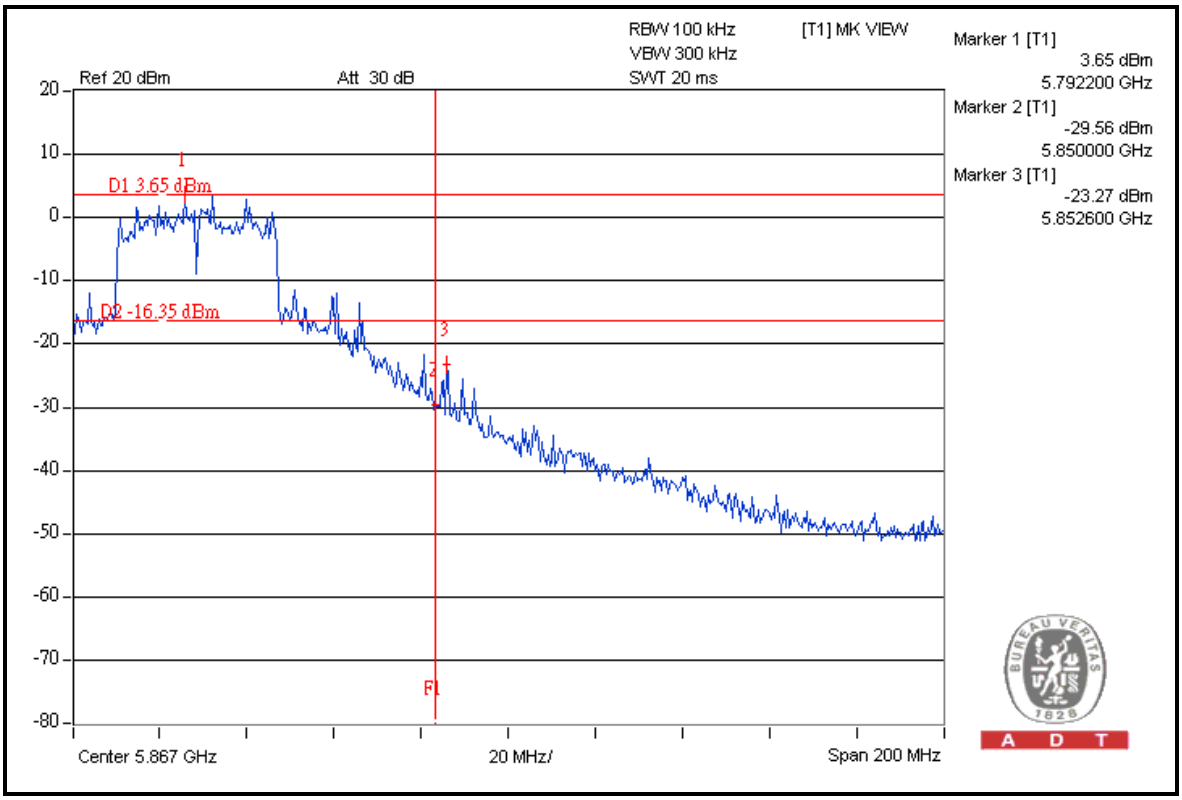

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
1.86 dBm
5.785680 GHz
Marker 2 [T1]
-29.66 dBm
34.004500 GHz
Marker 3 [T1]
-29.85 dBm
34.324260 GHz
Marker 4 [T1]
-33.58 dBm
39.040720 GHz
D1 3.73 dBm
D2 -16.27 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz

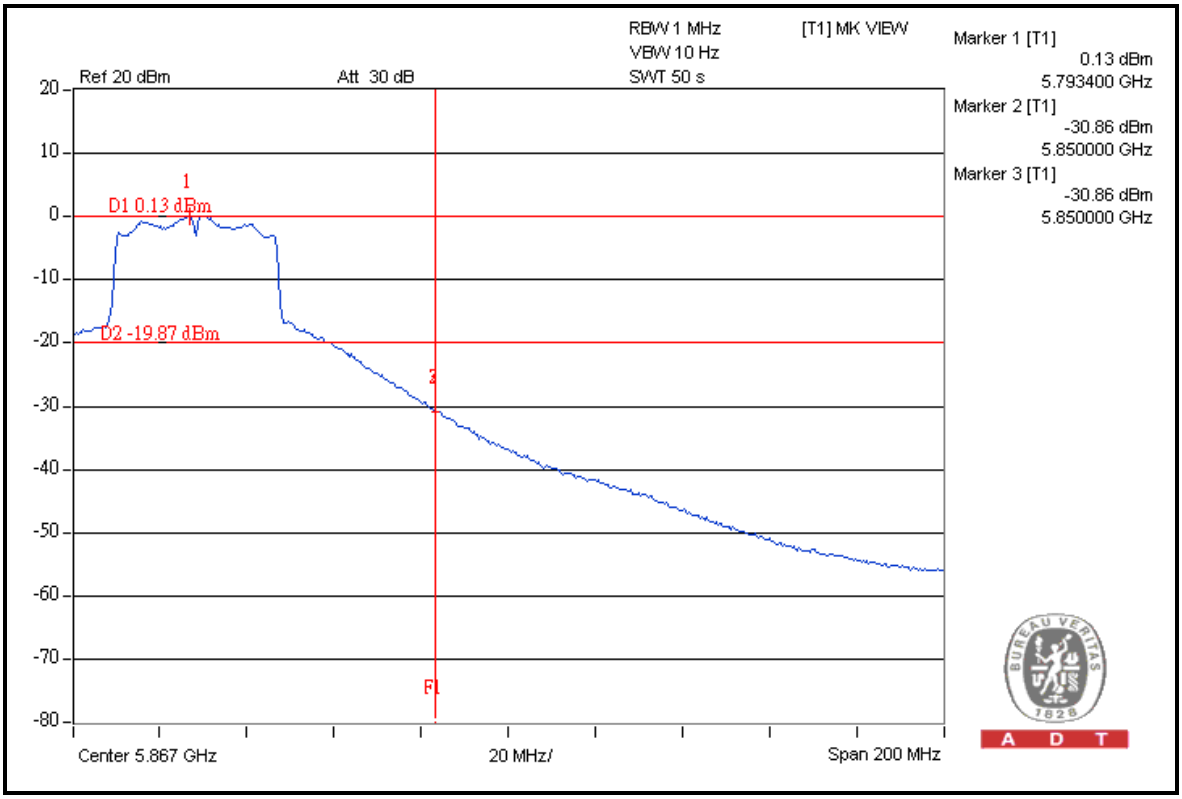
CHAIN 1

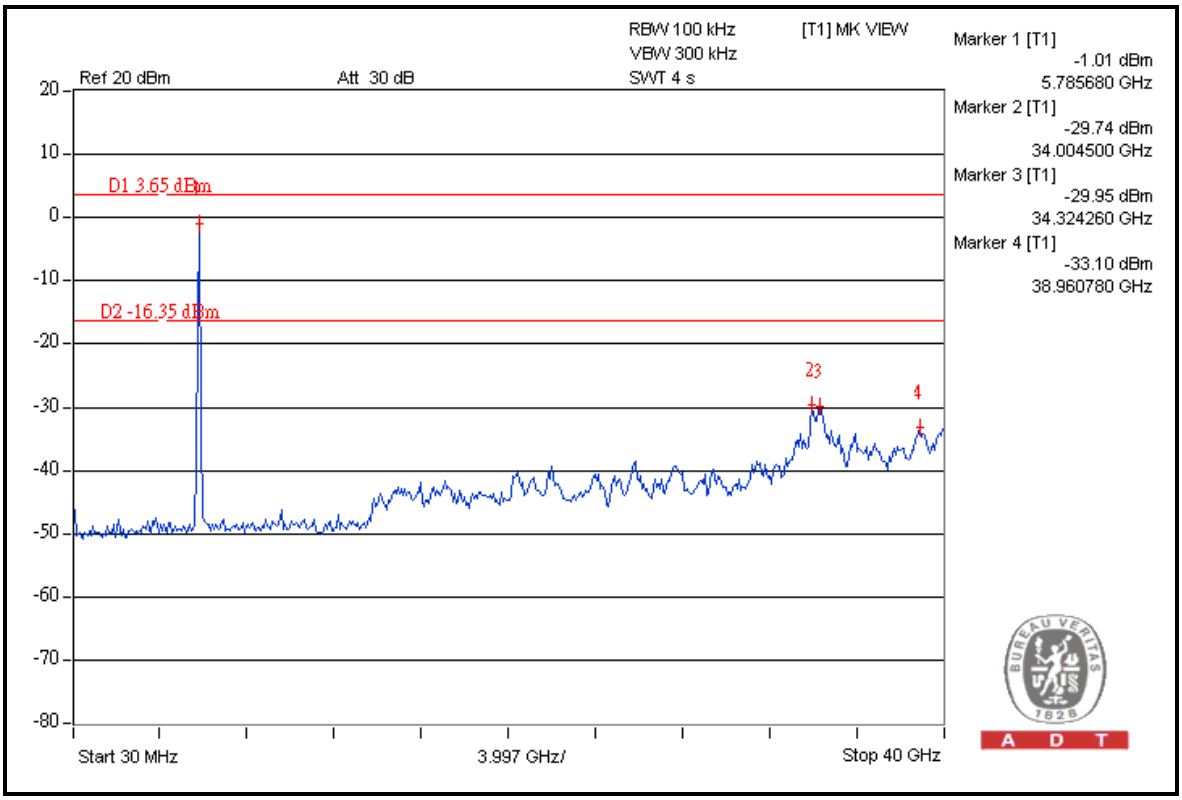

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
2.49 dBm
5.750600 GHz
Marker 2 [T1]
-19.53 dBm
5.725000 GHz
Marker 3 [T1]
-14.52 dBm
5.722600 GHz
D1 2.49 dBm
D2 -17.51 dBm
Center 5.679 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-0.16 dBm
5.753400 GHz
Marker 2 [T1]
-21.12 dBm
5.725000 GHz
Marker 3 [T1]
-20.96 dBm
5.724600 GHz
D1 -0.16 dBm
D2 -20.16 dBm
Center 5.679 GHz
20 MHz/
Span 200 MHz


RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
1.17 dBm
5.705740 GHz
Marker 2 [T1]
-30.26 dBm
34.324260 GHz
Marker 3 [T1]
-30.44 dBm
34.004500 GHz
Marker 4 [T1]
-30.91 dBm
34.164380 GHz
D1 2.49 dBm
D2 -17.51 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
3.65 dBm
5.792200 GHz
Marker 2 [T1]
-29.56 dBm
5.850000 GHz
Marker 3 [T1]
-23.27 dBm
5.852600 GHz
D1 3.65 dBm
D2 -16.35 dBm
Center 5.867 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
0.13 dBm
5.793400 GHz
Marker 2 [T1]
-30.86 dBm
5.850000 GHz
Marker 3 [T1]
-30.86 dBm
5.850000 GHz
D1 0.13 dBm
D2 -19.87 dBm
Center 5.867 GHz
20 MHz/
Span 200 MHz


RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-1.01 dBm
5.785680 GHz
Marker 2 [T1]
-29.74 dBm
34.004500 GHz
Marker 3 [T1]
-29.95 dBm
34.324260 GHz
Marker 4 [T1]
-33.10 dBm
38.960780 GHz
D1 3.65 dBm
D2 -16.35 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz

6. PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).

7. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Email: service.adt@tw.bureauveritas.com
Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.

8. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---