

FCC TEST REPORT (WLAN -15.407)

REPORT NO.: RF130223E01-1

MODEL NO.: QCNFA222

FCC ID: PPD-QCNFA222

IC: 4104A-QCNFA222

RECEIVED: Feb. 23, 2013

TESTED: Feb. 26 to June 10, 2013

ISSUED: July 08, 2013

APPLICANT: Qualcomm Atheros, Inc.

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ISSUED BY: Bureau Veritas Consumer Products Services (H.K.)
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130223E01-1	Original release	July 08, 2013



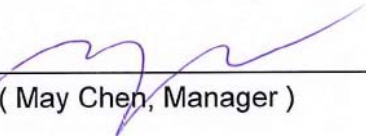
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1. CERTIFICATION

PRODUCT: PCIE 802.11a/b/g/n 2.4GHz/5GHz + USB BT 4.0 card
BRAND NAME: Qualcomm Atheros
MODEL NO.: QCNFA222
TEST SAMPLE: ENGINEERING SAMPLE
APPLICANT: Qualcomm Atheros, Inc.
TESTED: Feb. 26 to June 10, 2013
STANDARDS: FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10-2009
Canada RSS-210 Issue 8 (2010-12)
Canada RSS-Gen Issue 3 (2010-12)

The above equipment (Model: QCNFA222) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and was in 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 :  , **DATE:** July 08, 2013
(Claire Kuan, Specialist)

APPROVED BY :  , **DATE:** July 08, 2013
(May Chen, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407) ; RSS-210; RSS-Gen				
STANDARD SECTION		TEST TYPE	RESULT	REMARK
FCC Part 15	RSS-210; RSS-Gen			
15.407(b)(6)	RSS-Gen 7.2.4	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -3.23dB at 16.46484MHz
15.407(b)(1/2/3) (b)(6)	RSS-210 A9.2	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.8dB at 600.32MHz
15.407 (a/1/2)	RSS-210 A9.2	Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	RSS-210 A9.2	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407 (a/1/2)	RSS-210 A9.2 A9.4 (2)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	RSS-Gen 4.7	Frequency Stability	PASS	Meet the requirement of limit.
-	RSS-Gen 4.6	Occupied Bandwidth Measurement	-	Meet the requirement.
15.203	-	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.

NOTE: For WLAN: The EUT was operating in 2400 ~ 2483.5MHz, 5.15~5.35GHz, 5.47~5.6GHz & 5.65~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 5.15~5.35GHz, 5.47~5.6GHz & 5.65~5.725GHz. For the 2400 ~ 2483.5MHz and 5.725~5.850GHz RF parameters was recorded in another test report.

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	Value
Conducted emissions	2.98 dB
Radiated emissions (30MHz-1GHz)	5.63 dB
Radiated emissions (1GHz -6GHz)	3.54 dB
Radiated emissions (6GHz -18GHz)	4.08 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT(WLAN/DTS)

PRODUCT	PCIE 802.11a/b/g/n 2.4GHz/5GHz + USB BT 4.0 card
MODEL NO.	QCNFA222
POWER SUPPLY	DC 3.3V from host equipment
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM GFSK(BT <LE> mode) for DTS
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n (HT20, 800ns GI): up to 130Mbps 802.11n (HT20, 400ns GI): up to 144.4Mbps 802.11n (HT40, 800ns GI) : up to 270Mbps 802.11n (HT40, 400ns GI) : up to 300Mbps BT-LE(GFSK): 1Mbps
OPERATING FREQUENCY	For 15.407 802.11a: 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.5~5.7GHz
	For 15.247 2.4GHz: 2.412 ~ 2.462GHz 5GHz: 5.745 ~ 5.825GHz BT-LE(GFSK): 2.402 ~ 2.480GHz
NUMBER OF CHANNEL	For 15.407 19 for 802.11a, 802.11n (HT20) 9 for 802.11n (HT40)
	For 15.247(2.4GHz) 11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40) 40 for BT-LE(GFSK) For 15.247(5GHz) 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40)

MAXIMUM OUTPUT POWER	For 15.407 802.11a: 57.254mW 802.11n (HT20): 36.279mW 802.11n (HT40): 36.770mW For 15.247(2.4GHz) 802.11b: 151.445mW 802.11g: 430.397mW 802.11n (HT20): 348.819mW 802.11n (HT40): 171.840mW BT-LE(GFSK): 3.899mW For 15.247(5GHz) 802.11a: 176.663mW 802.11n (HT20): 135.083mW 802.11n (HT40): 103.656mW
ANTENNA TYPE	See item 3.2
ANTENNA CONNECTOR	See item 3.2
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

- There are Bluetooth technology and WLAN technology used for the EUT.
- The EUT is 2 * 2 MIMO with 802.11n beam forming function.

MODULATION MODE	Tx/Rx FUNCTION
802.11b	1TX/1RX or 2TX/2RX
802.11g	1TX/1RX or 2TX/2RX
802.11a	1TX/1RX or 2TX/2RX
802.11n (HT20)	1TX/1RX or 2TX/2RX
802.11n (HT40)	1TX/1RX or 2TX/2RX

The maximum compliance powers listed on the report are compliance with both Beam Forming and non-Beam Forming configurations.

- The EUT was pre-tested under the following modes:

Test Mode	Data rate
Mode A	400ns GI
Mode B	800ns GI

From the above modes, the worst case was found in **Mode B**. Therefore only the test data of the mode was recorded in this report.

- Spurious emission of the simultaneous operation (WiFi & Bluetooth) has been evaluated and no non-compliance was found.
- 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 ANTENNA

The antenna provided to the EUT, please refer to the following table:

Brand	Model	Antenna Type	2.4G Gain with cable loss (dBi)	5G Gain with cable loss (dBi)	2.4G Cable Loss (dBi)	5G Cable Loss (dBi)	Connector Type	Cable Length (mm)
WNC	81.EBJ15.005	PIFA	3.62	Band 1&2: 3.08 Band 3: 4.76 Band 4: 4.76	1.15	Band 1&2: 1.70 Band 3: 1.74 Band 4: 1.79	IPEX	300

Note:

1. Above antenna gains of antenna are Total (H+V).
2. All of antenna can be application for WLAN and Bluetooth.

3.3 DESCRIPTION OF TEST MODES

Operated in 5150MHz ~ 5350MHz bands:

Eight channels are provided for 802.11a and 802.11n (HT20):

CHANNEL	FREQUENCY
36	5180 MHz
40	5200 MHz
44	5220 MHz
48	5240 MHz
52	5260 MHz
56	5280 MHz
60	5300 MHz
64	5320 MHz

Four channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY
38	5190 MHz
46	5230 MHz
54	5270 MHz
62	5310 MHz

Operated in 5470MHz ~ 5725MHz bands:

Eleven channels are provided for 802.11a and 802.11n (HT20):

CHANNEL	FREQUENCY
100	5500 MHz
104	5520 MHz
108	5540 MHz
112	5560 MHz
116	5580 MHz
120	5600 MHz
124	5620 MHz
128	5640 MHz
132	5660 MHz
136	5680 MHz
140	5700 MHz

Five channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY
102	5510 MHz
110	5550 MHz
118	5590 MHz
126	5630 MHz
134	5670 MHz

- For FCC: The listed channels in the DFS band (5250~5350MHz and 5470~5725MHz) are passive scan only.
- For IC: The listed channels in the DFS band (5250~5350MHz and 5470~5725MHz) are passive scan only. The device will not operate in 5600~5650MHz band.

3.3.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

Where **PLC**: Power Line Conducted Emission

UE < 1G: Unwanted Emission below 1GHz

UE ≥ 1G: Unwanted Emission above 1GHz

APCM: Antenna Port Conducted Measurement

NOTE: The EUT's antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.

AC 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	DATA RATE (Mbps)
For 5 GHz 802.11a	36 to 140	132	OFDM	6

UNWANTED EMISSION TEST (BELOW 1 GHz):

- ☒ 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	DATA RATE (Mbps)
For 5 GHz 802.11a	36 to 140	132	OFDM	6

UNWANTED EMISSION TEST (ABOVE 1 GHz):

- ☒ Radiated versus Conducted Measurements
- ☒ 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	DATA RATE (Mbps)
802.11a	36 to 140	36, 40, 48, 52, 60, 64, 100, 116, 132, 140	OFDM	6
For 5 GHz 802.11n (HT20)	36 to 140	36, 40, 48, 52, 60, 64, 100, 116, 132, 140	OFDM	6.5
For 5 GHz 802.11n (HT40)	38 to 134	38, 46, 54, 62, 102, 110, 134	OFDM	13.5

ANTENNA PORT CONDUCTED 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	DATA RATE (Mbps)
802.11a	36 to 140	36, 40, 48, 52, 60, 64, 100, 116, 132, 140	OFDM	6
For 5 GHz 802.11n (HT20)	36 to 140	36, 40, 48, 52, 60, 64, 100, 116, 132, 140	OFDM	6.5
For 5 GHz 802.11n (HT40)	38 to 134	38, 46, 54, 62, 102, 110, 134	OFDM	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	20deg. C, 70%RH	120Vac, 60Hz	Mike Hsieh
RE<1G	25deg. C, 69%RH	120Vac, 60Hz	Tim Ho
RE≥1G	25deg. C, 67%RH 24deg. C, 68%RH	120Vac, 60Hz	Tim Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	James Chan

3.4 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 E (Section 15.407)

789033 D01 General UNII Test Procedures v01 r03

662911 D01 Multiple Transmitter Output v01 r02

ANSI C63.10-2009

Canada RSS-210 Issue 8 (2010-12)

Canada RSS-Gen Issue 3 (2010-12)

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

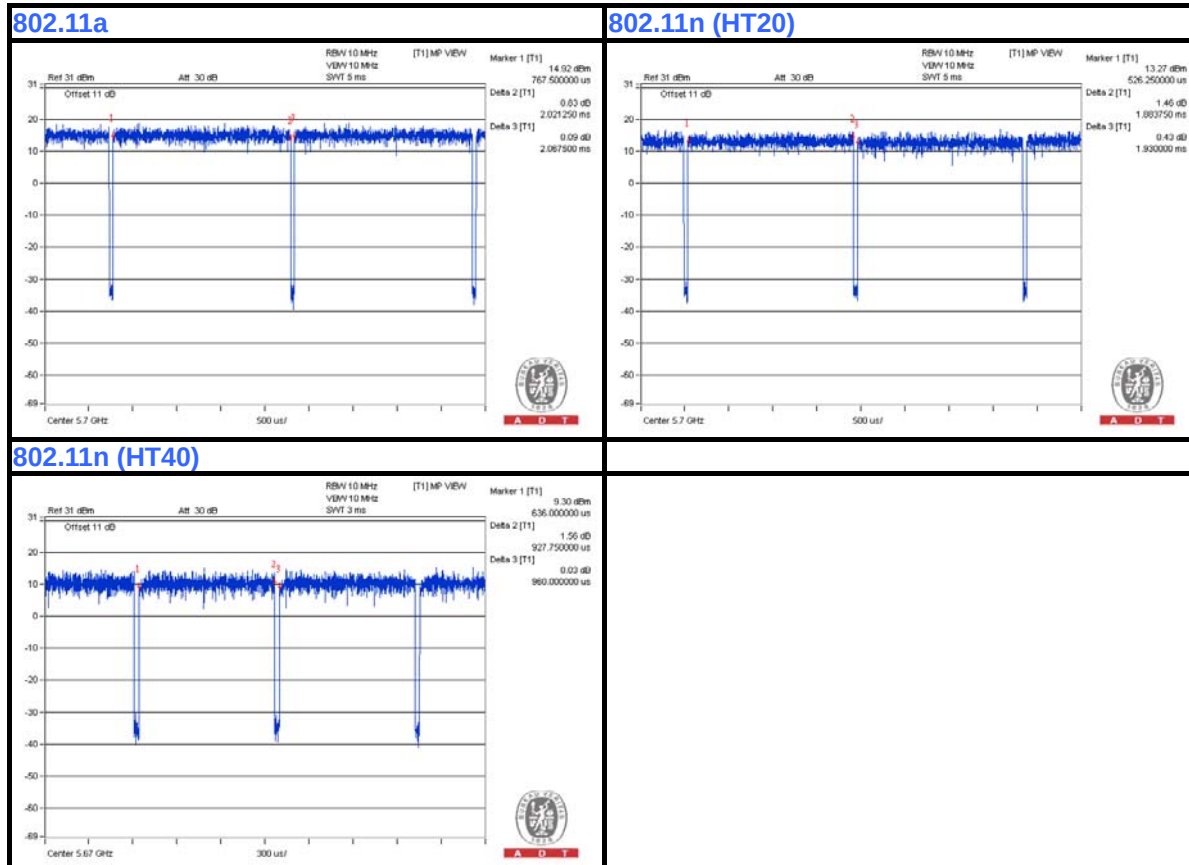
3.5 DUTY CYCLE OF TEST SIGNAL

If duty cycle is < 98%, duty factor shall be considered.

802.11a: Duty cycle = $2.021/2.067 = 0.978$, Duty factor = $10 * \log(1/0.978) = 0.10$

802.11n (HT20): Duty cycle = $1.884/1.93 = 0.976$, Duty factor = $10 * \log(1/0.976) = 0.10$

802.11n (HT40): Duty cycle = $0.928/0.96 = 0.967$, Duty factor = $10 * \log(1/0.967) = 0.15$





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3.6 DESCRIPTION OF SUPPORT UNITS

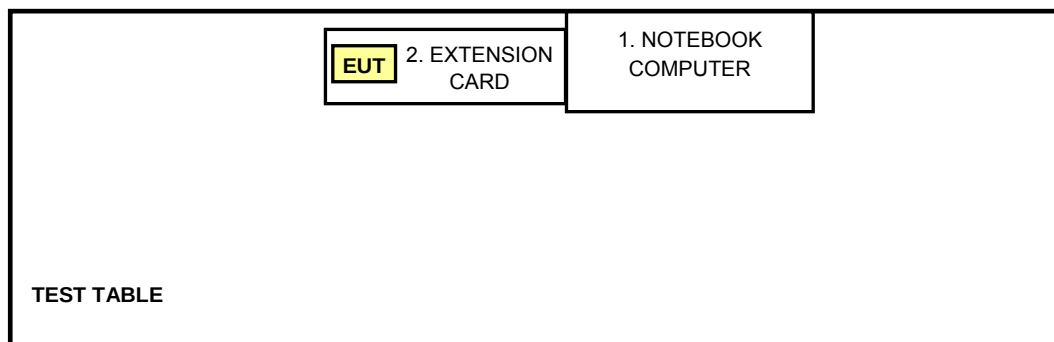
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC
2	EXTENSION CARD	Qualcomm Atheros	NA	NA	NA

No.	Signal cable description
1	NA
2	NA

Note: The power cords of the above support units were unshielded (1.8m).

3.7 CONFIGURATION OF SYSTEM UNDER TEST



4. TEST TYPES AND RESULTS

4.1 TRANSMIT POWER MEASUREMENT

4.1.1 LIMITS OF OUTPUT TRANSMIT POWER MEASUREMENT

Frequency Band	Limit
5.15 – 5.25GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.25 – 5.35GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.47 – 5.725GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.725 – 5.825GHz	The lesser of 1W (30dBm) or 17dBm + 10logB

NOTE: 1. Where B is the 26dB emission bandwidth in MHz for FCC 15.407.
2. Where B is the 99% bandwidth in MHz for RSS-210 Annex 9.

Per KDB 662911 D01 Multiple Transmitter Output v01r02 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = $5 \log(NANT/NSS)$ dB or 3 dB, whichever is less for 20-MHz channel widths with $NANT \geq 5$.

For power measurements on all other devices: Array Gain = $10 \log(NANT/NSS)$ dB.

4.1.2 TEST INSTRUMENTS

FOR POWER OUTPUT MEASUREMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter Anritsu	ML2495A	0824006	May 20, 2013	May 19, 2014
Power Sensor Anritsu	MA2411B	0738172	May 20, 2013	May 19, 2014

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. Tested date : June 10, 2013

FOR 26dB OCCUPIED BANDWIDTH

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100037	Nov. 01, 2012	Oct. 31, 2013

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. Tested date : June 10, 2013

4.1.3 TEST PROCEDURE

FOR AVERAGE POWER MEASUREMENT

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

FOR 26dB BANDWIDTH

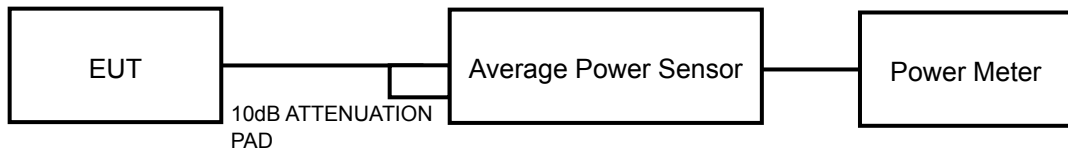
- 1) Set RBW = approximately 1% of the emission bandwidth.
- 2) Set the VBW > RBW.
- 3) Detector = Peak.
- 4) Trace mode = max hold.
- 5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

4.1.4 DEVIATION FROM TEST STANDARD

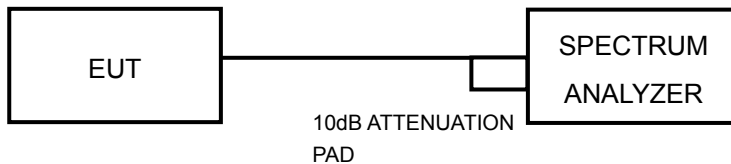
No deviation

4.1.5 TEST SETUP

FOR POWER OUTPUT MEASUREMENT



FOR 26dB OCCUPIED BANDWIDTH



4.1.6 EUT OPERATING CONDITIONS

The software (artgui.exe Ver2.3) provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.1.7 TEST RESULTS

802.11a

POWER OUTPUT

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	13.12	13.23	41.550	16.19	16.29	PASS
40	5200	13.13	13.23	41.597	16.19	16.26	PASS
48	5240	12.86	12.91	38.863	15.90	16.26	PASS
52	5260	14.41	14.72	57.254	17.58	23.26	PASS
60	5300	14.36	14.61	56.197	17.50	23.29	PASS
64	5320	14.22	14.11	52.187	17.18	23.26	PASS
100	5500	14.33	14.52	55.416	17.44	21.64	PASS
116	5580	14.18	14.34	53.346	17.27	21.58	PASS
132	5660	14.43	14.51	55.982	17.48	21.54	PASS
140	5700	13.01	12.94	39.678	15.99	21.58	PASS

Note:

5180MHz: The directional gain is 6.09dBi > 6dBi, therefore the limit needs to reduce, the power limit shall be reduced to $16.38 - (6.09 - 6) = 16.29\text{dBm}$.

5200MHz: The directional gain is 6.09dBi > 6dBi, therefore the limit needs to reduce, the power limit shall be reduced to $16.35 - (6.09 - 6) = 16.26\text{dBm}$.

5240MHz: The directional gain is 6.09dBi > 6dBi, therefore the limit needs to reduce, the power limit shall be reduced to $16.35 - (6.09 - 6) = 16.26\text{dBm}$.

5260MHz: The directional gain is 6.09dBi > 6dBi, therefore the limit needs to reduce, the power limit shall be reduced to $23.35 - (6.09 - 6) = 23.26\text{dBm}$.

5300MHz: The directional gain is 6.09dBi > 6dBi, therefore the limit needs to reduce, the power limit shall be reduced to $23.38 - (6.09 - 6) = 23.29\text{dBm}$.

5320MHz: The directional gain is 6.09dBi > 6dBi, therefore the limit needs to reduce, the power limit shall be reduced to $23.35 - (6.09 - 6) = 23.26\text{dBm}$.

5500MHz: The directional gain is 7.77dBi > 6dBi, therefore the limit needs to reduce, the power limit shall be reduced to $23.41 - (7.77 - 6) = 21.64\text{dBm}$.

5580MHz: The directional gain is 7.77dBi > 6dBi, therefore the limit needs to reduce, the power limit shall be reduced to $23.35 - (7.77 - 6) = 21.58\text{dBm}$.

5660MHz: The directional gain is 7.77dBi > 6dBi, therefore the limit needs to reduce, the power limit shall be reduced to $23.31 - (7.77 - 6) = 21.54\text{dBm}$.

5700MHz: The directional gain is 7.77dBi > 6dBi, therefore the limit needs to reduce, the power limit shall be reduced to $23.35 - (7.77 - 6) = 21.58\text{dBm}$.

802.11a

26dB OCCUPIED BANDWIDTH

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
36	5180	29.90	27.29
40	5200	29.44	28.41
48	5240	31.35	29.13
52	5260	33.76	30.97
60	5300	37.33	29.58
64	5320	33.66	29.93
100	5500	36.75	28.68
116	5580	34.66	28.73
132	5660	32.51	28.86
140	5700	30.42	29.29

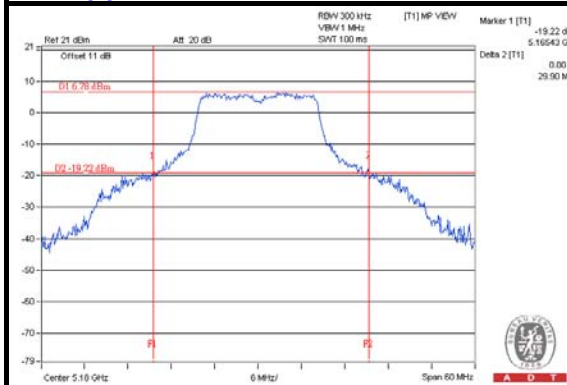
Note: For FCC output power limitation is determined based on 26dB bandwidth.

- a. 5180MHz: 18.36 dBm > 17dBm
- b. 5200MHz: 18.53 dBm > 17dBm
- c. 5240MHz: 18.64 dBm > 17dBm
- d. 5260MHz: 25.91 dBm > 24dBm
- e. 5300MHz: 25.71 dBm > 24dBm
- f. 5320MHz: 25.76 dBm > 24dBm
- g. 5500MHz: 25.58 dBm > 24dBm
- h. 5580MHz: 25.58 dBm > 24dBm
- i. 5660MHz: 25.6 dBm > 24dBm
- j. 5700MHz: 25.67 dBm > 24dBm

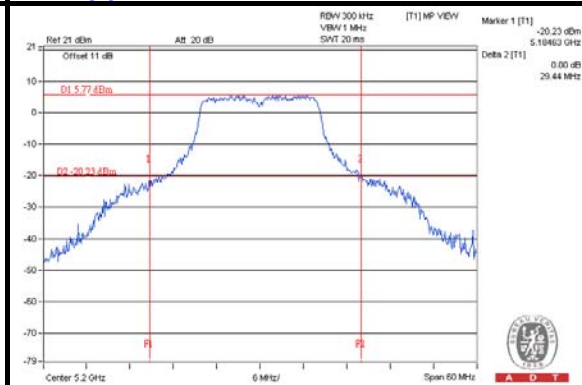
Note: For Industry Canada output power limitation is determined based on 99% bandwidth.

- a. 5180MHz: 16.38 dBm < 17dBm
- b. 5200MHz: 16.35 dBm < 17dBm
- c. 5240MHz: 16.35 dBm < 17dBm
- d. 5260MHz: 23.35 dBm < 24dBm
- e. 5300MHz: 23.38 dBm < 24dBm
- f. 5320MHz: 23.35 dBm < 24dBm
- g. 5500MHz: 23.41 dBm < 24dBm
- h. 5580MHz: 23.35 dBm < 24dBm
- i. 5660MHz: 23.31 dBm < 24dBm
- j. 5700MHz: 23.35 dBm < 24dBm

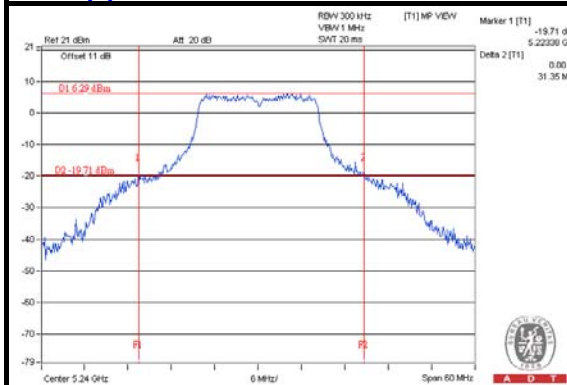
Chain(0) : CH36



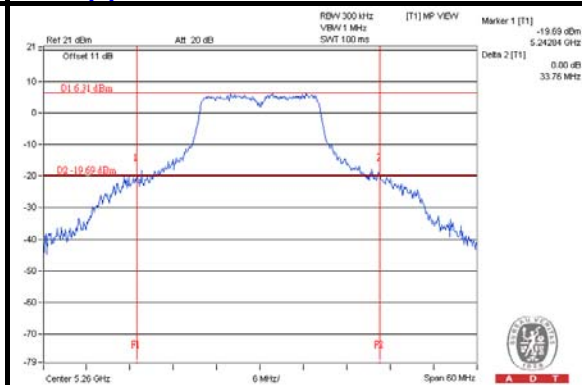
Chain(0) : CH40



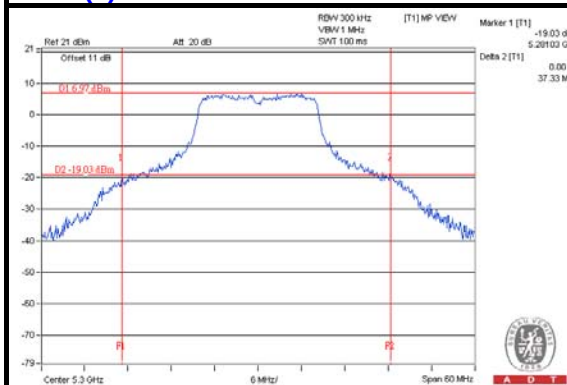
Chain(0) : CH48



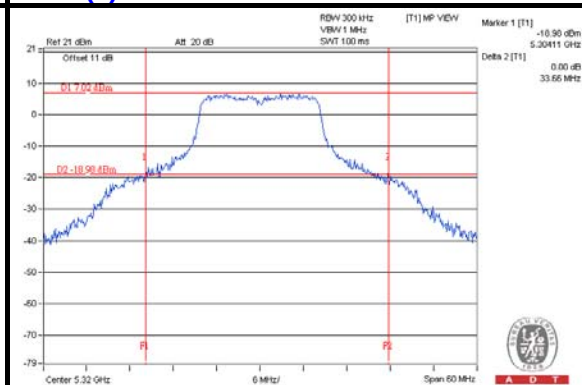
Chain(0) : CH52



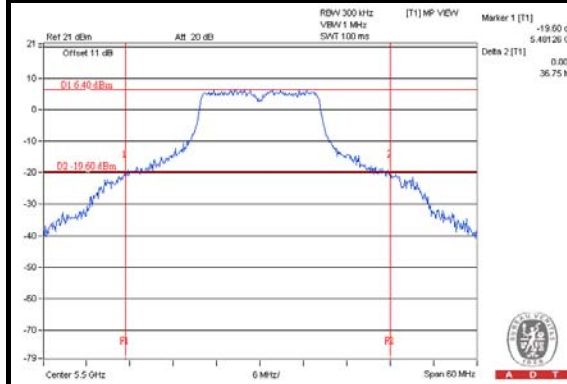
Chain(0) : CH60



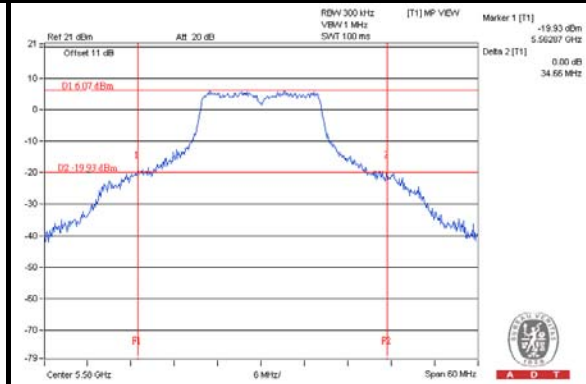
Chain(0) : CH64



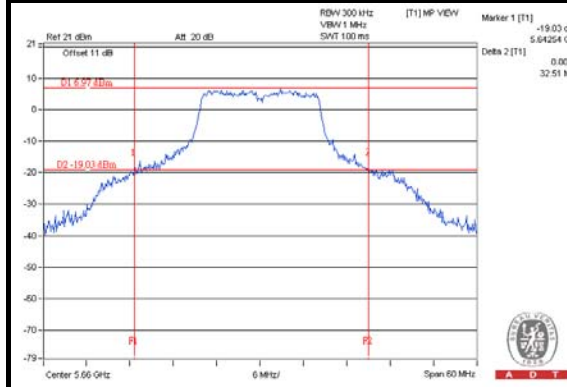
Chain(0) : CH100



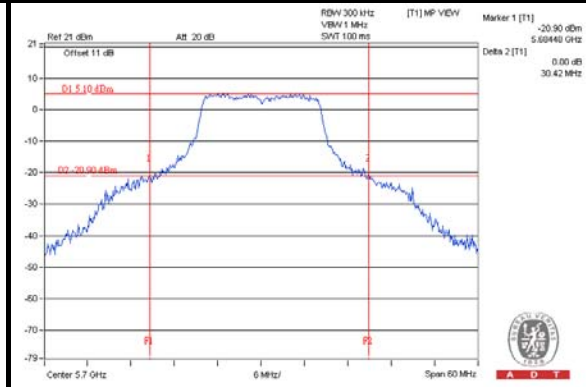
Chain(0) : CH116



Chain(0) : CH132



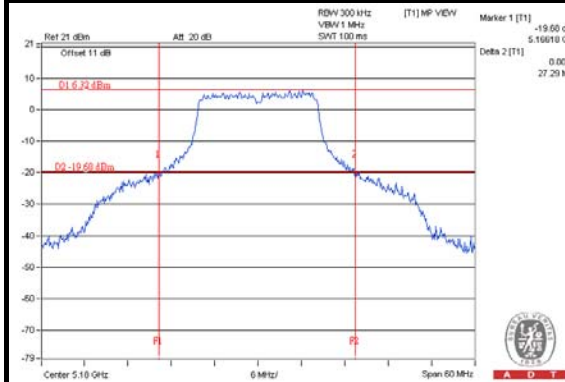
Chain(0) : CH140



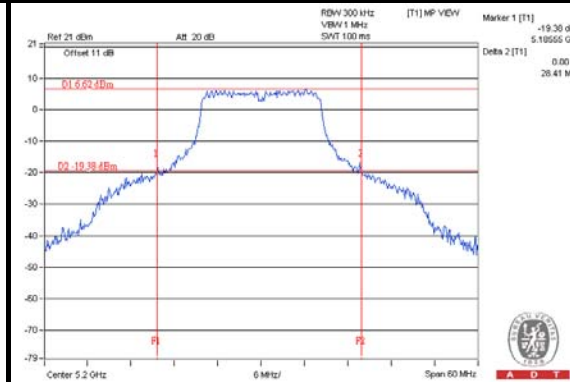


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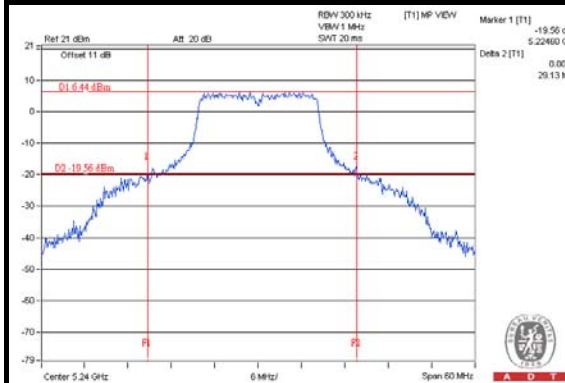
Chain(1) : CH36



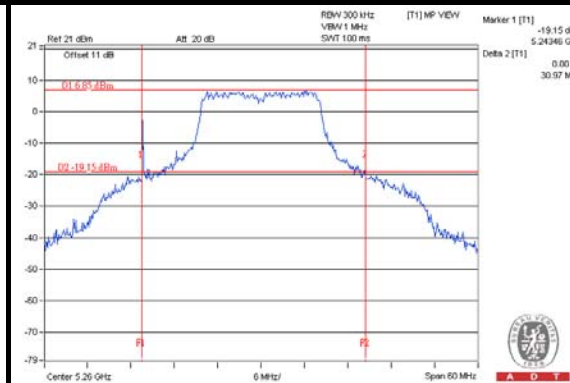
Chain(1) : CH40



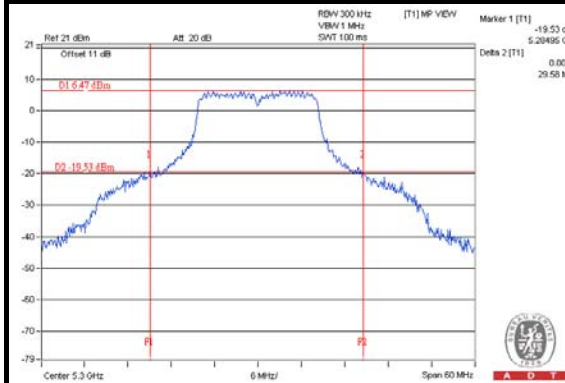
Chain(1) : CH48



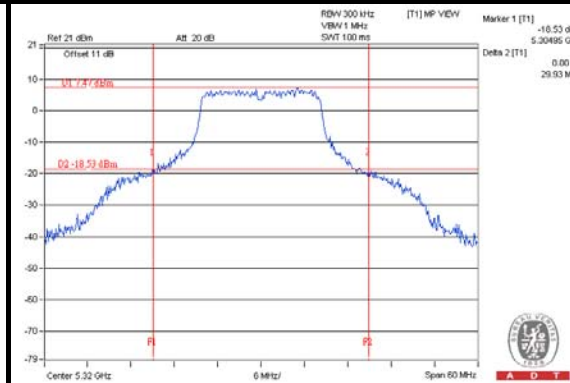
Chain(1) : CH52



Chain(1) : CH60



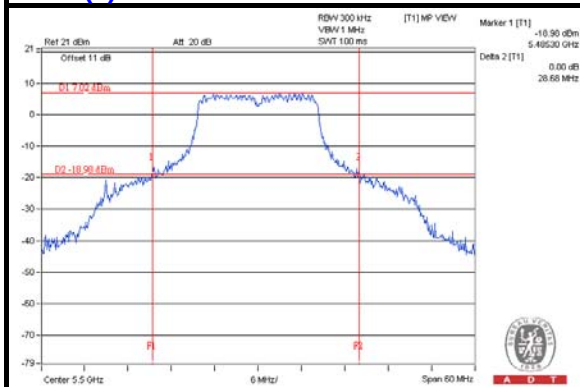
Chain(1) : CH64



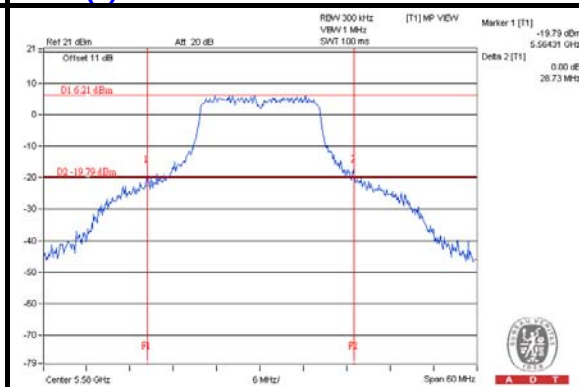


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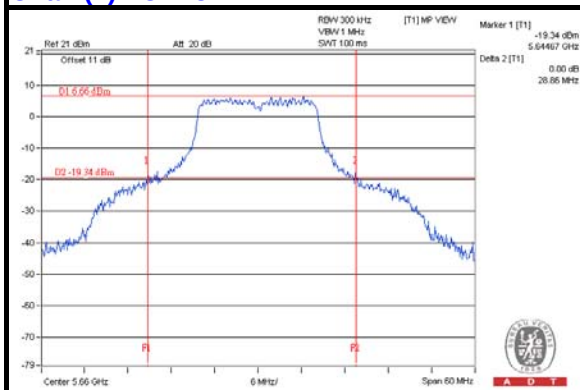
Chain(1) : CH100



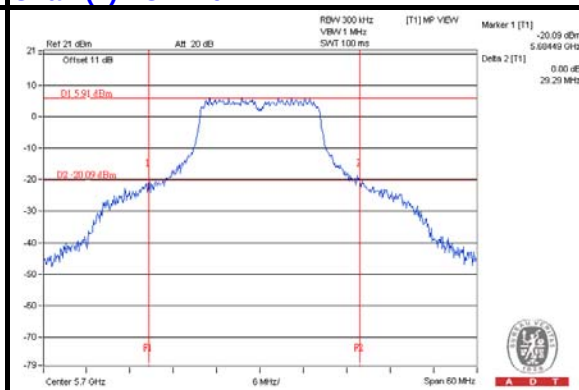
Chain(1) : CH116



Chain(1) : CH132



Chain(1) : CH140



802.11n (HT20)

POWER OUTPUT

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	12.55	12.14	34.357	15.36	16.49	PASS
40	5200	12.47	12.02	33.582	15.26	16.46	PASS
48	5240	12.45	12.55	35.568	15.51	16.49	PASS
52	5260	12.48	12.69	36.279	15.60	23.49	PASS
60	5300	12.21	12.07	32.740	15.15	23.52	PASS
64	5320	12.13	12.35	33.510	15.25	23.49	PASS
100	5500	12.33	12.17	33.582	15.26	21.81	PASS
116	5580	12.38	12.06	33.367	15.23	21.81	PASS
132	5660	12.40	12.01	33.263	15.22	21.78	PASS
140	5700	11.23	11.51	27.432	14.38	21.78	PASS

Note:

5180MHz: The directional gain is 6.09dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to 16.58-(6.09-6) = 16.49dBm.

5200MHz: The directional gain is 6.09dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to 16.55-(6.09-6) = 16.46dBm.

5240MHz: The directional gain is 6.09dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to 16.58-(6.09-6) = 16.49dBm.

5260MHz: The directional gain is 6.09dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to 23.58-(6.09-6) = 23.49dBm.

5300MHz: The directional gain is 6.09dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to 23.61-(6.09-6) = 23.52dBm.

5320MHz: The directional gain is 6.09dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to 23.58-(6.09-6) = 23.49dBm.

5500MHz: The directional gain is 7.77dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to 23.58-(7.77-6) = 21.81dBm.

5580MHz: The directional gain is 7.77dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to 23.58-(7.77-6) = 21.81dBm.

5660MHz: The directional gain is 7.77dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to 23.55-(7.77-6) = 21.78dBm.

5700MHz: The directional gain is 7.77dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to 23.55-(7.77-6) = 21.78dBm.

802.11n (HT20)

26dB OCCUPIED BANDWIDTH

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
36	5180	27.80	26.75
40	5200	26.11	26.84
48	5240	28.00	26.21
52	5260	26.56	26.67
60	5300	27.76	25.91
64	5320	26.76	26.47
100	5500	27.10	26.38
116	5580	27.21	26.78
132	5660	27.92	26.71
140	5700	26.73	26.10

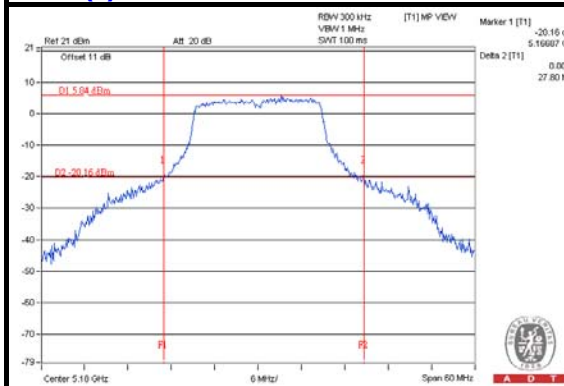
Note: For FCC output power limitation is determined based on 26dB bandwidth.

- a. 5180MHz: 18.27 dBm > 17dBm
- b. 5200MHz: 18.17 dBm > 17dBm
- c. 5240MHz: 18.18 dBm > 17dBm
- d. 5260MHz: 25.24 dBm > 24dBm
- e. 5300MHz: 25.13 dBm > 24dBm
- f. 5320MHz: 25.23 dBm > 24dBm
- g. 5500MHz: 25.21 dBm > 24dBm
- h. 5580MHz: 25.28 dBm > 24dBm
- i. 5660MHz: 25.27 dBm > 24dBm
- j. 5700MHz: 25.17 dBm > 24dBm

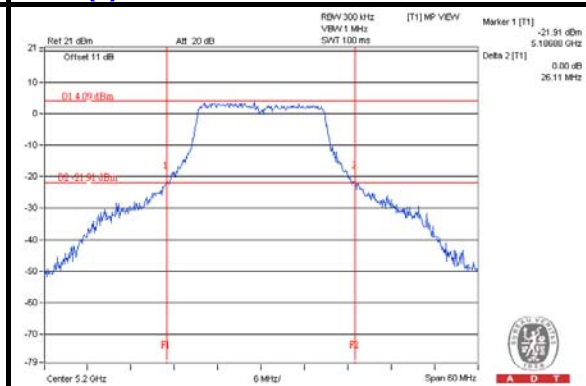
Note: For Industry Canada output power limitation is determined based on 99% bandwidth.

- a. 5180MHz: 16.58 dBm < 17dBm
- b. 5200MHz: 16.55 dBm < 17dBm
- c. 5240MHz: 16.58 dBm < 17dBm
- d. 5260MHz: 23.58 dBm < 24dBm
- e. 5300MHz: 23.61 dBm < 24dBm
- f. 5320MHz: 23.58 dBm < 24dBm
- g. 5500MHz: 23.58 dBm < 24dBm
- h. 5580MHz: 23.58 dBm < 24dBm
- i. 5660MHz: 23.55 dBm < 24dBm
- j. 5700MHz: 23.55 dBm <>24dBm

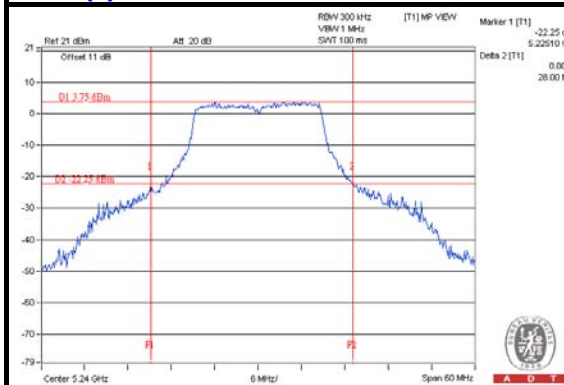
Chain(0) : CH36



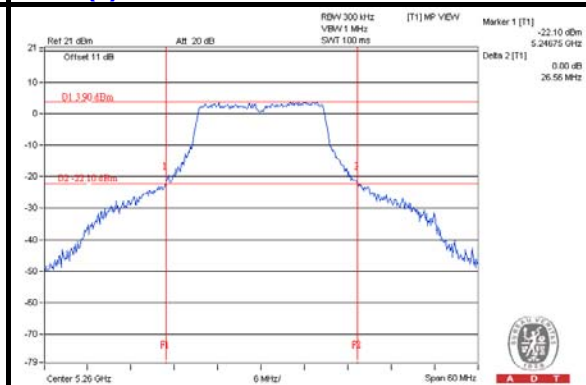
Chain(0) : CH40



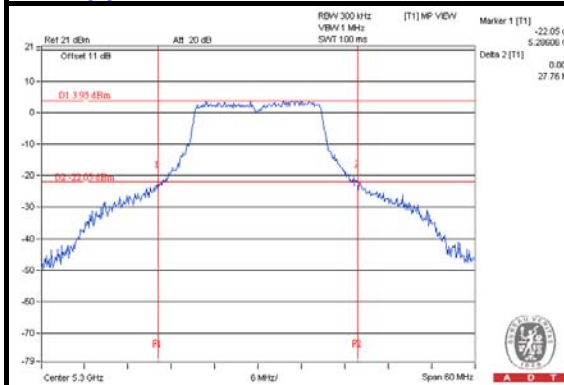
Chain(0) : CH48



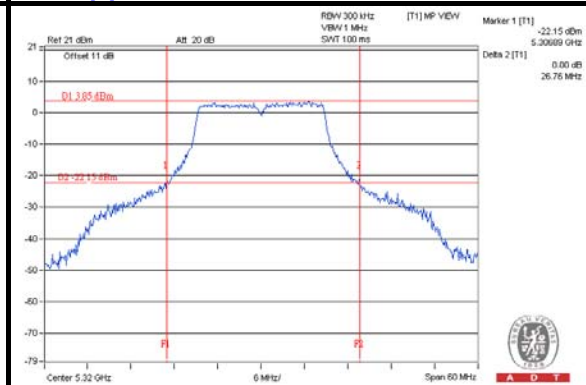
Chain(0) : CH52



Chain(0) : CH60



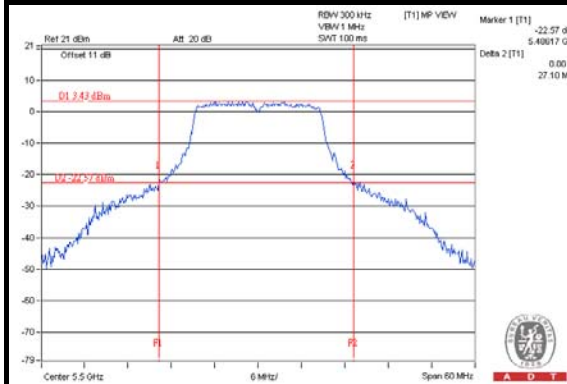
Chain(0) : CH64



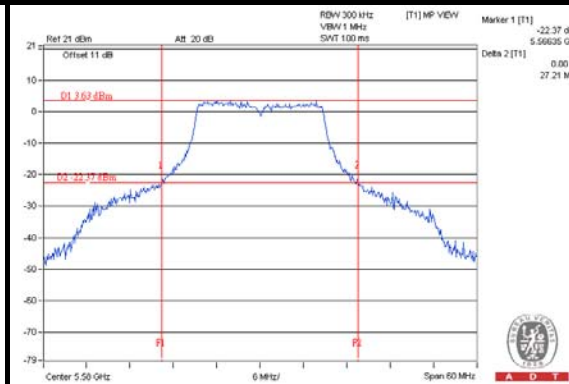


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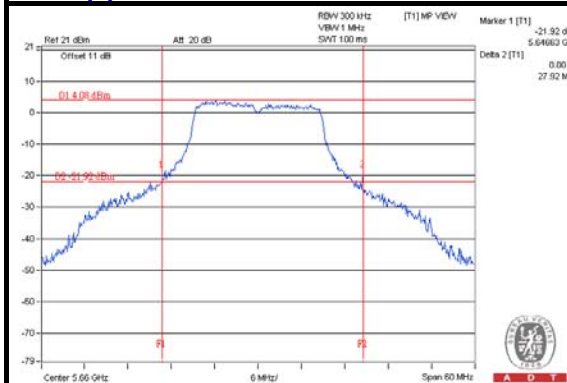
Chain(0) : CH100



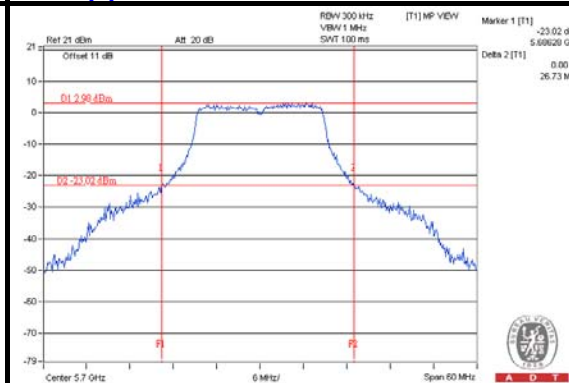
Chain(0) : CH116



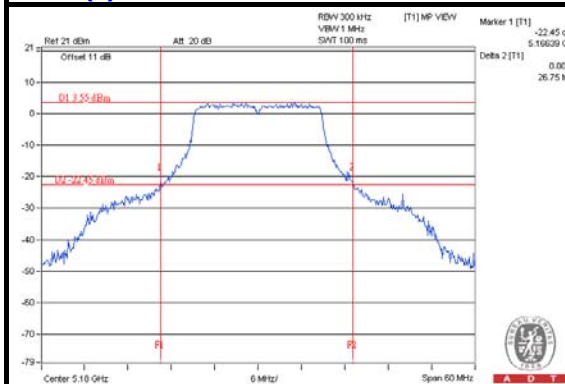
Chain(0) : CH132



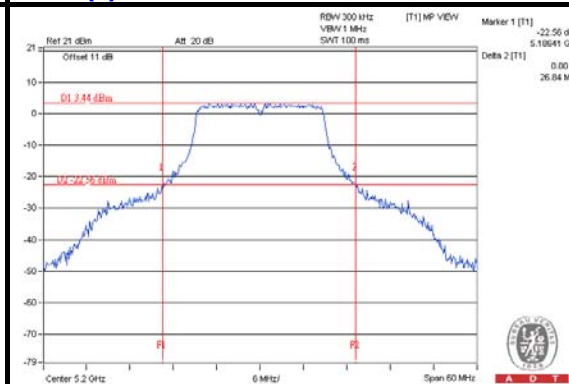
Chain(0) : CH140



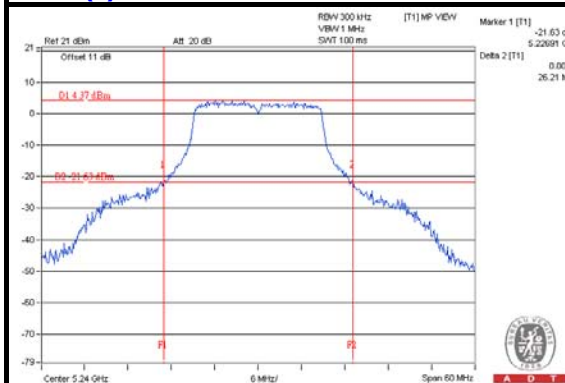
Chain(1) : CH36



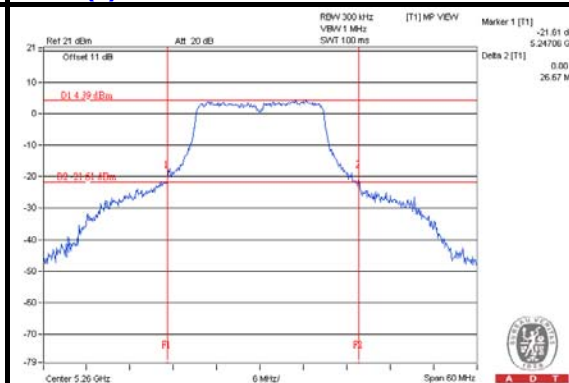
Chain(1) : CH40



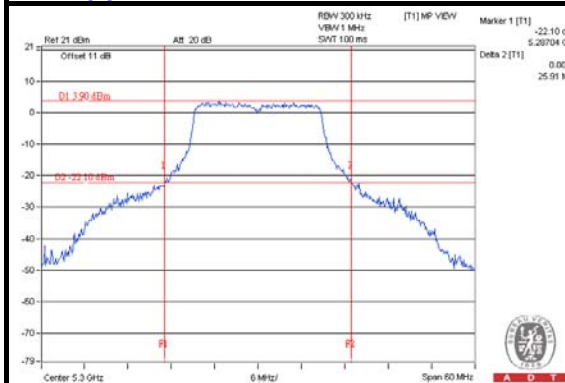
Chain(1) : CH48



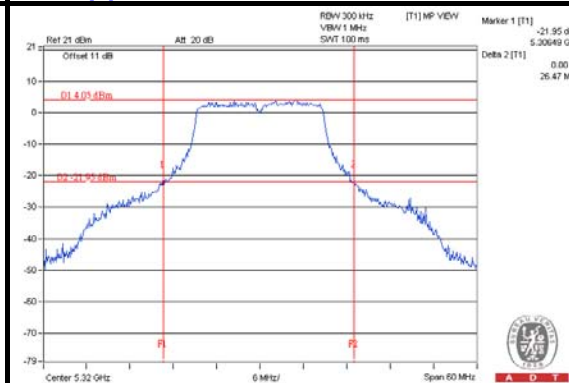
Chain(1) : CH52



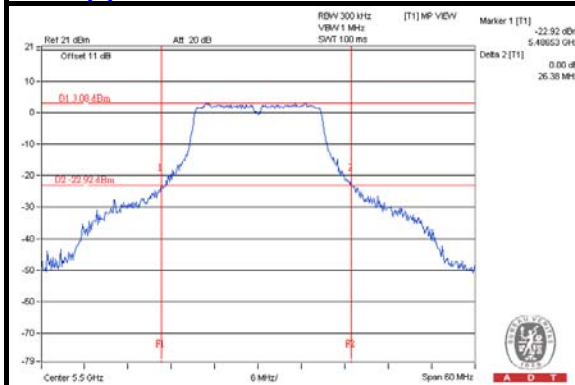
Chain(1) : CH60



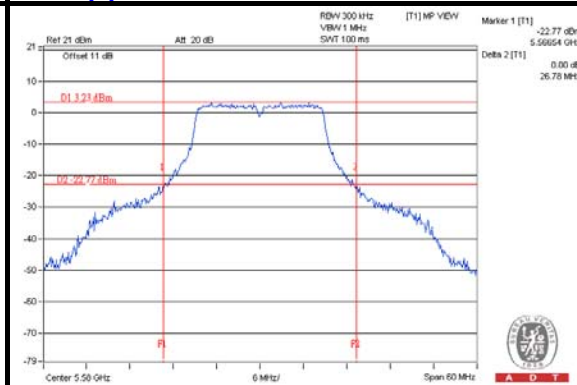
Chain(1) : CH64



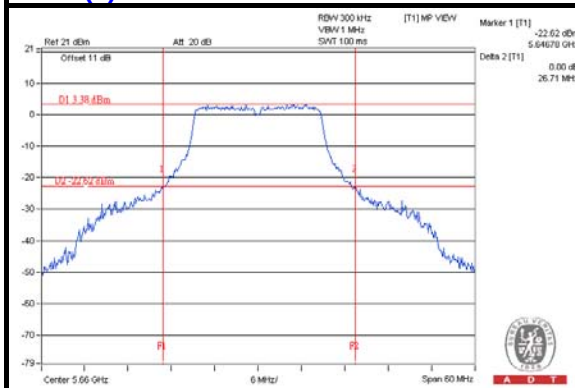
Chain(1) : CH100



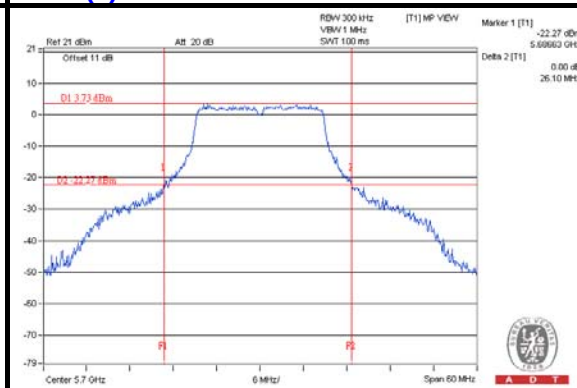
Chain(1) : CH116



Chain(1) : CH132



Chain(1) : CH140



802.11n (HT40)

POWER OUTPUT

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
38	5190	10.76	10.31	22.652	13.55	16.91	PASS
46	5230	12.28	12.36	34.123	15.33	16.91	PASS
54	5270	12.44	12.84	36.770	15.65	23.91	PASS
62	5310	10.51	10.06	21.385	13.30	23.91	PASS
102	5510	10.08	9.68	19.476	12.89	22.23	PASS
110	5550	12.46	12.51	35.444	15.50	22.23	PASS
134	5670	12.61	12.49	35.981	15.56	22.23	PASS

Note:

5190MHz: The directional gain is 6.09dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to $17-(6.09-6) = 16.91\text{dBm}$.

5230MHz: The directional gain is 6.09dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to $17-(6.09-6) = 16.91\text{dBm}$.

5270MHz: The directional gain is 6.09dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to $17-(6.09-6) = 23.91\text{dBm}$.

5310MHz: The directional gain is 6.09dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to $24-(6.09-6) = 23.91\text{dBm}$.

5510MHz: The directional gain is 7.77dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to $24-(7.77-6) = 22.23\text{dBm}$.

5550MHz: The directional gain is 7.77dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to $24-(7.77-6) = 22.23\text{dBm}$.

5670MHz: The directional gain is 7.77dBi > 6dBi, therefore the limit needs to reduce, : the power limit shall be reduced to $24-(7.77-6) = 22.23\text{dBm}$.

802.11n (HT40)

26DB OCCUPIED BANDWIDTH

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	
		CHAIN 0	CHAIN 1
38	5190	44.96	45.26
46	5230	45.23	45.49
54	5270	46.80	46.34
62	5310	45.27	70.34
102	5510	45.14	44.48
110	5550	48.23	44.85
134	5670	61.02	46.87

Note: For FCC output power limitation is determined based on 26dB bandwidth.

- a. 5190MHz: 20.53 dBm > 17dBm
- b. 5230MHz: 20.55 dBm > 17dBm
- c. 5270MHz: 27.66 dBm > 17dBm
- d. 5310MHz: 27.56 dBm > 24dBm
- e. 5510MHz: 27.48 dBm > 24dBm
- f. 5550MHz: 27.52 dBm > 24dBm
- g. 5670MHz: 27.71 dBm > 24dBm

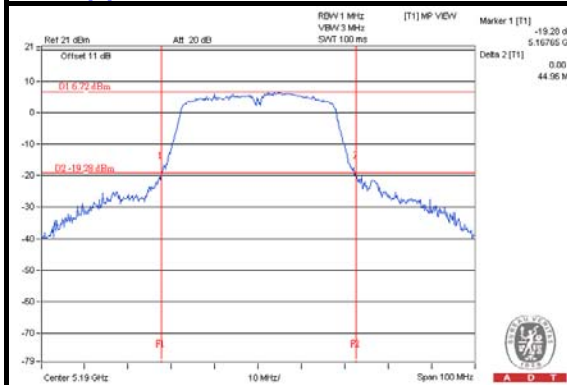
Note: For Industry Canada output power limitation is determined based on 99% bandwidth.

- a. 5190MHz: 19.61 dBm > 17dBm
- b. 5230MHz: 19.63 dBm > 17dBm
- c. 5270MHz: 26.63 dBm > 17dBm
- d. 5310MHz: 26.59 dBm > 24dBm
- e. 5510MHz: 26.61 dBm > 24dBm
- f. 5550MHz: 26.63 dBm > 24dBm
- g. 5670MHz: 26.61 dBm > 24dBm

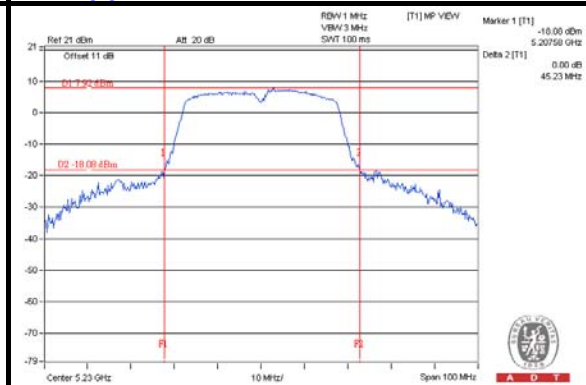


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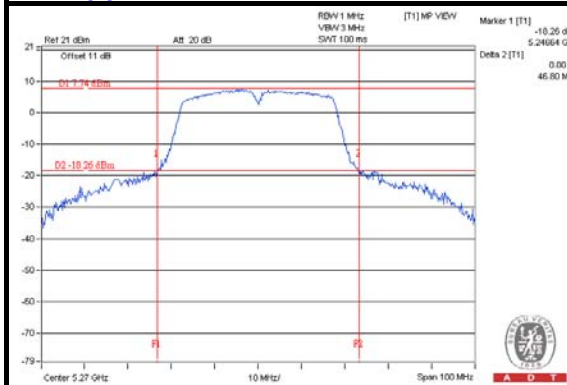
Chain(0) : CH38



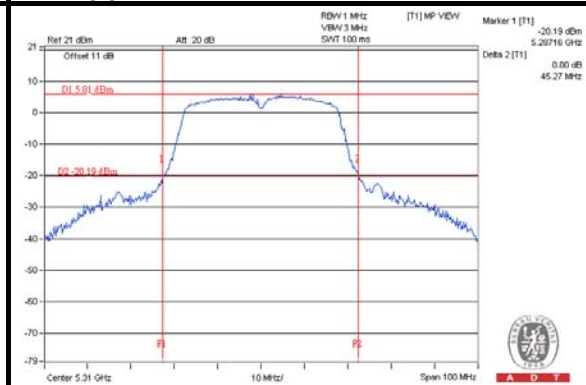
Chain(0) : CH46



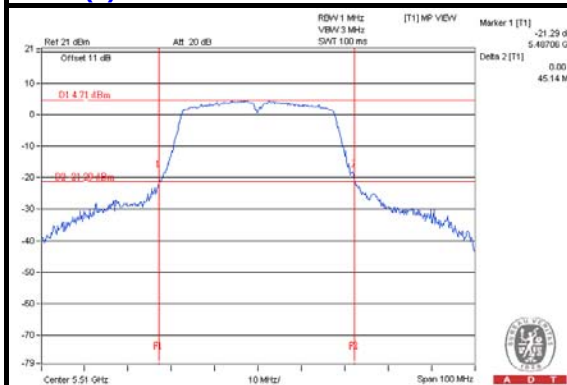
Chain(0) : CH54



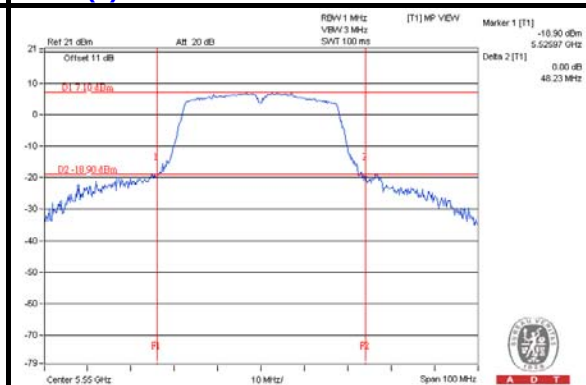
Chain(0) : CH62



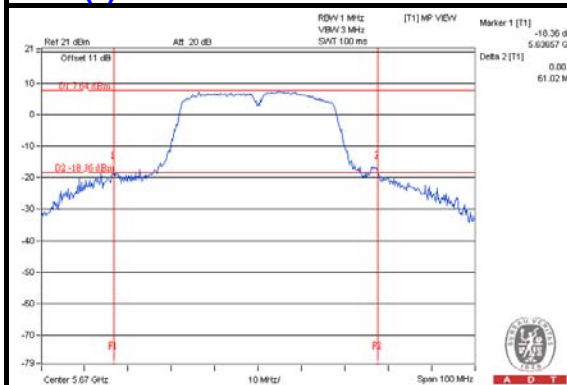
Chain(0) : CH102



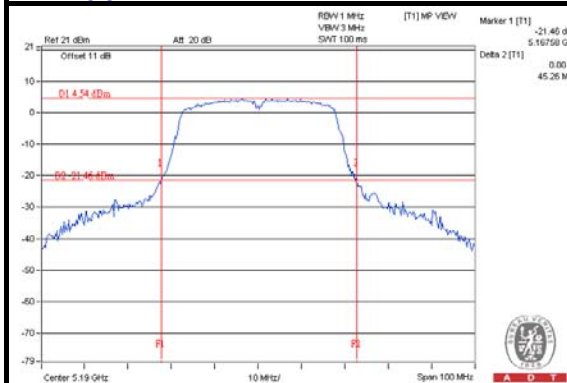
Chain(0) : CH110



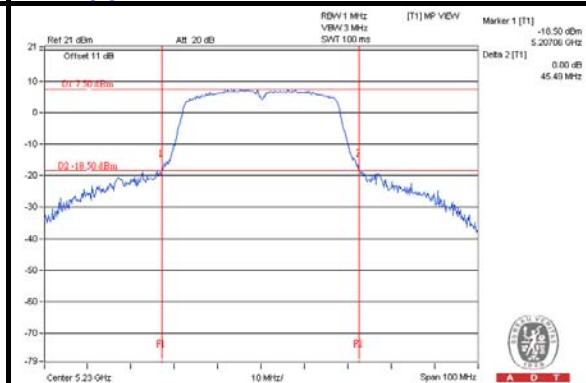
Chain(0) : CH134



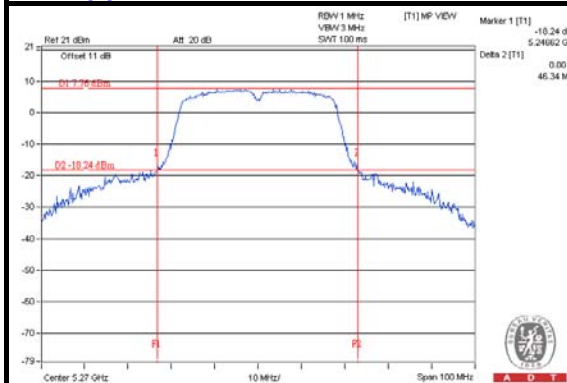
Chain(1) : CH38



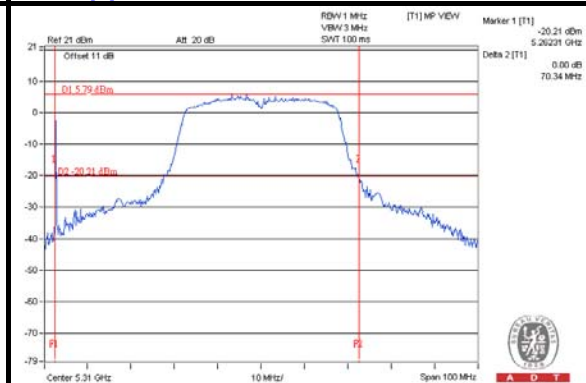
Chain(1) : CH46



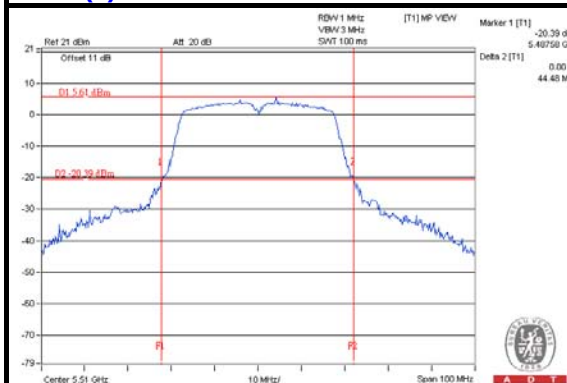
Chain(1) : CH54



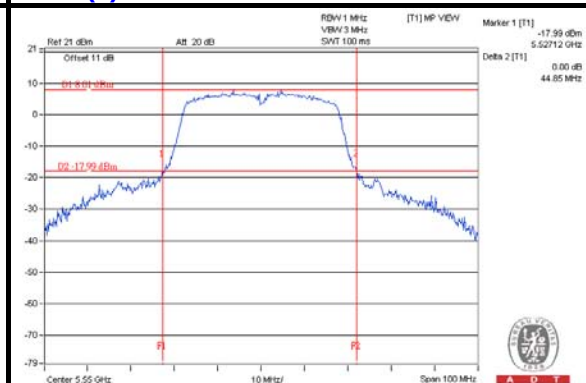
Chain(1) : CH62



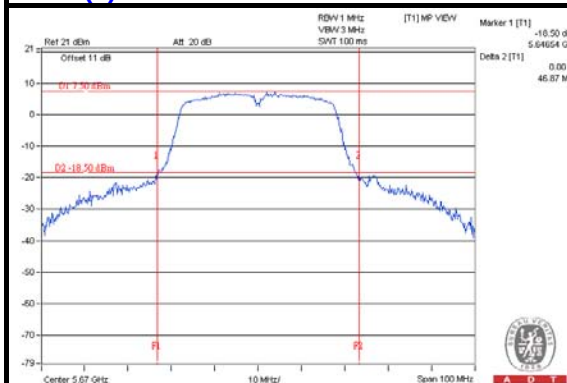
Chain(1) : CH102



Chain(1) : CH110



Chain(1) : CH134



4.2 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.2.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Frequency Band	Limit
5.15 ~ 5.25GHz	4dBm
5.25 ~ 5.35GHz	11dBm
5.47 ~ 5.725GHz	11dBm
5.725 ~ 5.825GHz	17dBm

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP40	100036	Jan. 21, 2013	Jan. 20, 2014

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. Tested date : June 10, 2013

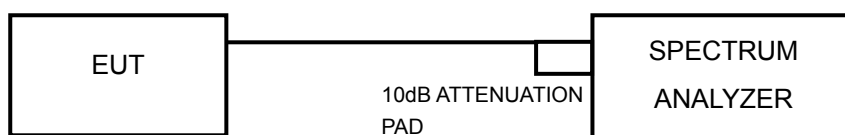
4.2.3 TEST PROCEDURES

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 1 MHz, Set VBW $\geq$ 3 MHz, Detector = RMS
- 3) Sweep time = auto, trigger set to "free run".
- 4) Trace average at least 100 traces in power averaging mode.
- 5) Record the max value

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



4.2.6 EUT OPERATING CONDITIONS

Same as the 4.1.6

4.2.7 TEST RESULTS

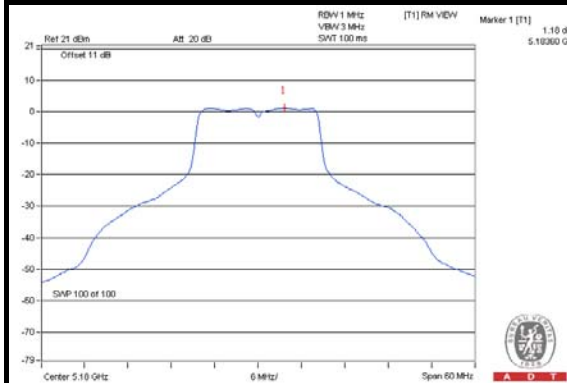
802.11a

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		DUTY FACTOR (dB)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	1.05	0.05	0.10	3.69	3.91	PASS
40	5200	1.08	0.35	0.10	3.84	3.91	PASS
48	5240	0.90	0.44	0.10	3.79	3.91	PASS
52	5260	0.97	1.02	0.10	4.11	10.91	PASS
60	5300	1.34	0.50	0.10	4.05	10.91	PASS
64	5320	1.24	1.25	0.10	4.36	10.91	PASS
100	5500	1.06	0.74	0.10	4.01	9.23	PASS
116	5580	0.82	0.08	0.10	3.58	9.23	PASS
132	5660	1.33	-0.08	0.10	3.79	9.23	PASS
140	5700	0.15	-0.17	0.10	3.10	9.23	PASS

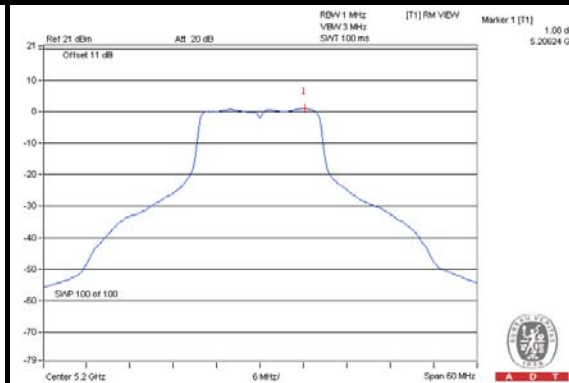
NOTE:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5150~5250MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 6.09\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $4 - (6.09 - 6) = 3.91\text{dBm}$.
3. 5250~5350MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 6.09\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $11 - (6.09 - 6) = 10.91\text{dBm}$.
4. 5470~5725MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.77\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $11 - (7.77 - 6) = 9.23\text{dBm}$.
5. Refer to section 3.5 for duty cycle spectrum plot.

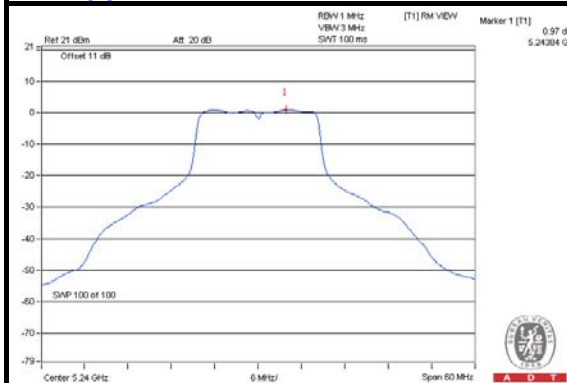
Chain(0) : CH36



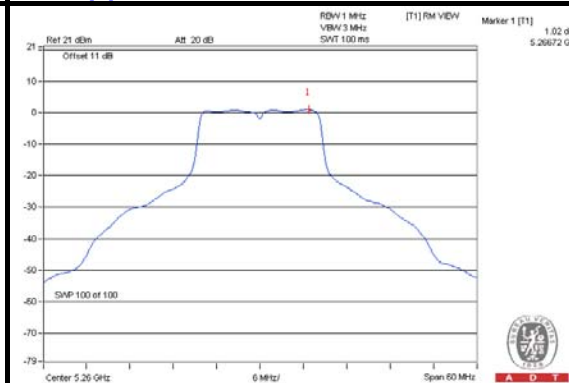
Chain(0) : CH40



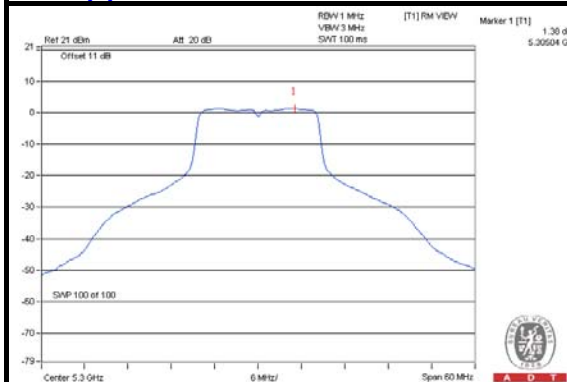
Chain(0) : CH48



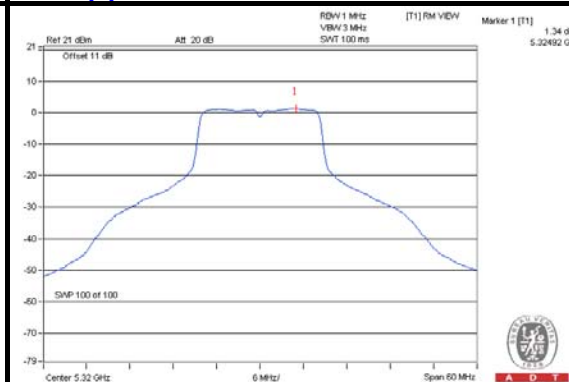
Chain(0) : CH52



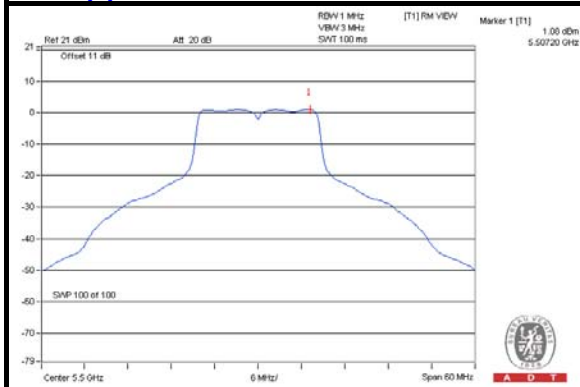
Chain(0) : CH60



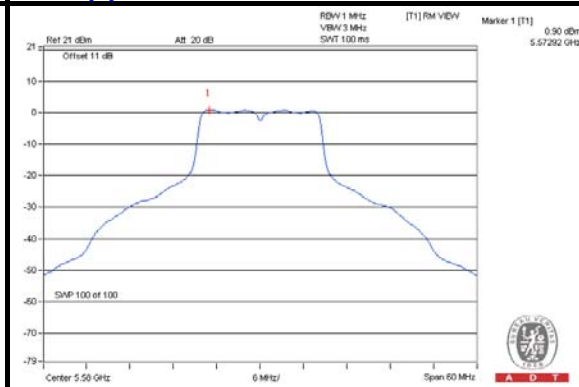
Chain(0) : CH64



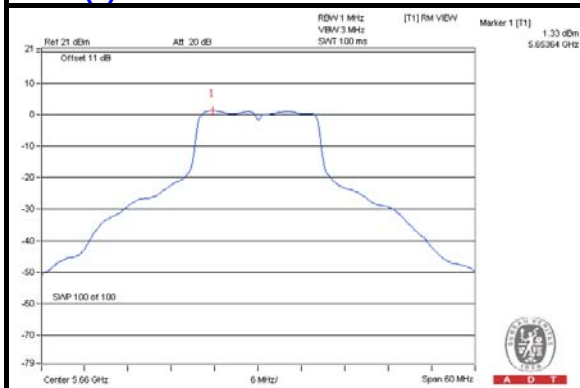
Chain(0) : CH100



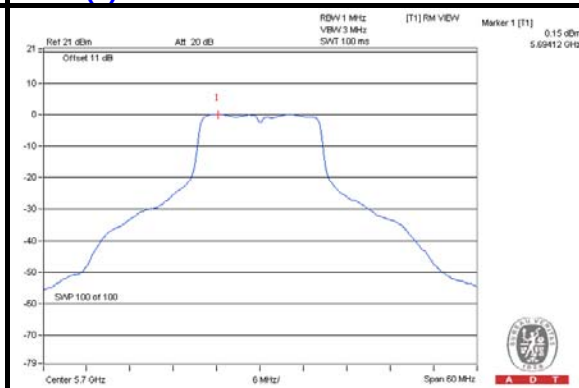
Chain(0) : CH116



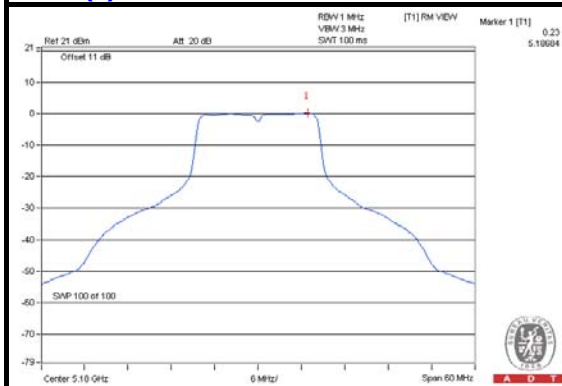
Chain(0) : CH132



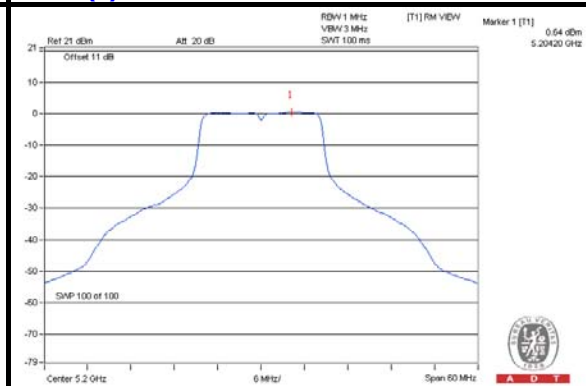
Chain(0) : CH140



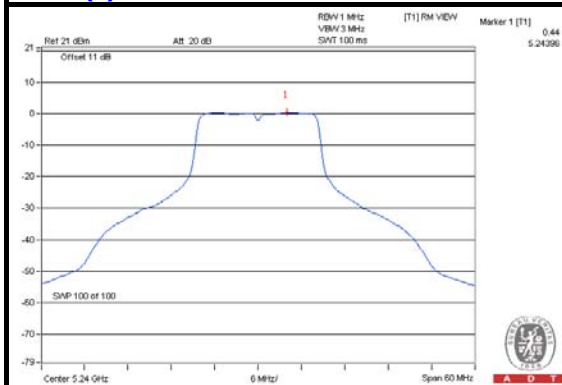
Chain(1) : CH36



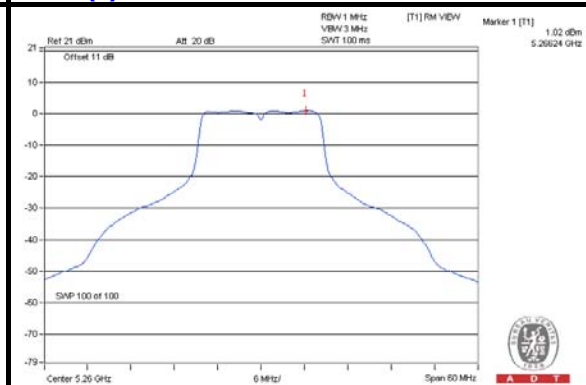
Chain(1) : CH40



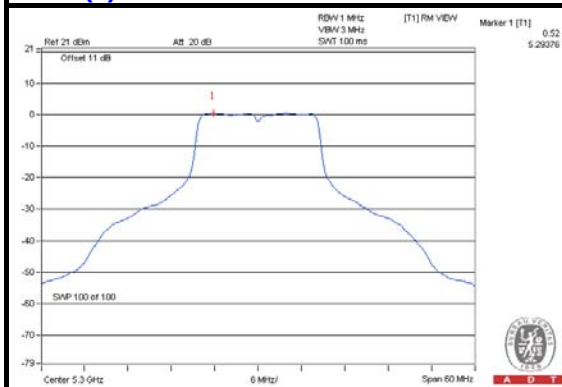
Chain(1) : CH48



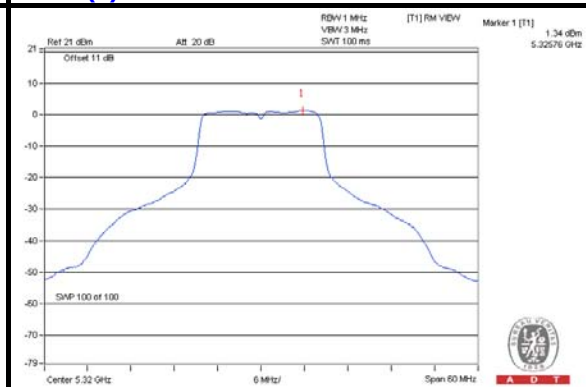
Chain(1) : CH52



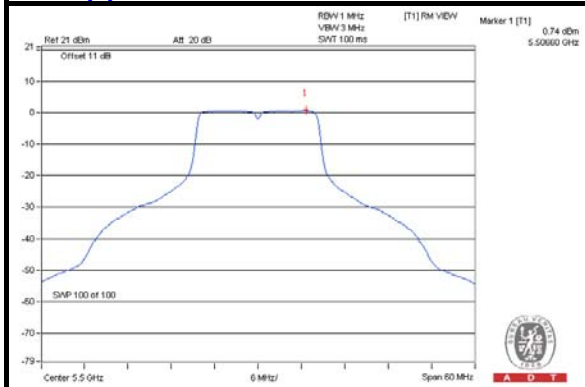
Chain(1) : CH60



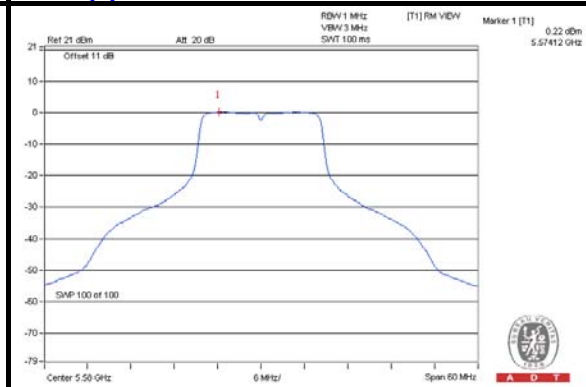
Chain(1) : CH64



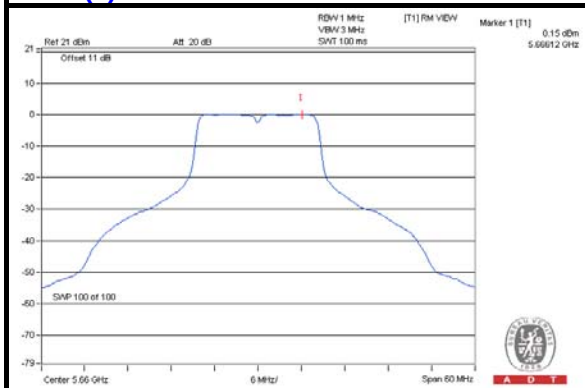
Chain(1) : CH100



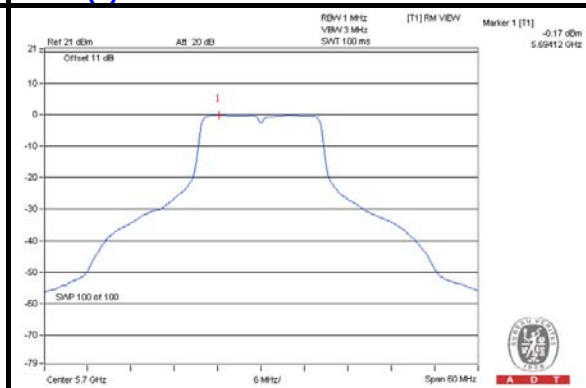
Chain(1) : CH116



Chain(1) : CH132



Chain(1) : CH140

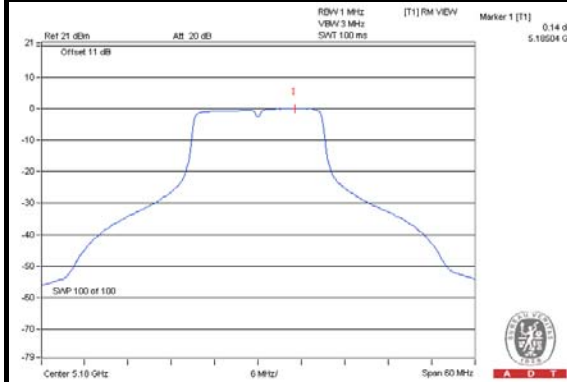


802.11n (HT20)

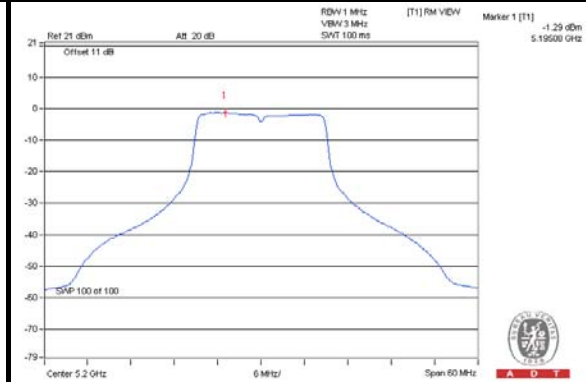
CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		DUTY FACTOR (dB)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	0.11	-2.10	0.10	2.25	3.91	PASS
40	5200	-1.29	-2.02	0.10	1.47	3.91	PASS
48	5240	-0.86	-1.67	0.10	1.86	3.91	PASS
52	5260	-1.28	-1.12	0.10	1.91	10.91	PASS
60	5300	-1.53	-2.30	0.10	1.21	10.91	PASS
64	5320	-1.57	-1.58	0.10	1.54	10.91	PASS
100	5500	-1.85	-2.30	0.10	1.04	9.23	PASS
116	5580	-1.60	-2.36	0.10	1.15	9.23	PASS
132	5660	-1.37	-2.40	0.10	1.26	9.23	PASS
140	5700	-2.12	-2.45	0.10	0.83	9.23	PASS

- NOTE:**
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
 2. 5150~5250MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 6.09\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $4-(6.09-6) = 3.91\text{dBm}$.
 3. 5250~5350MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 6.09\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $11-(6.09-6) = 10.91\text{dBm}$.
 4. 5470~5725MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.77\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $11-(7.77-6) = 9.23\text{dBm}$.
 5. Refer to section 3.5 for duty cycle spectrum plot.

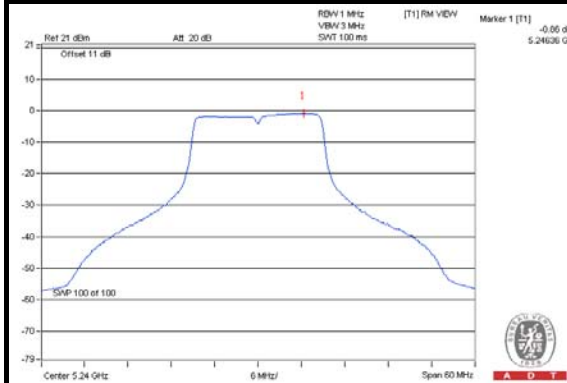
Chain(0) : CH36



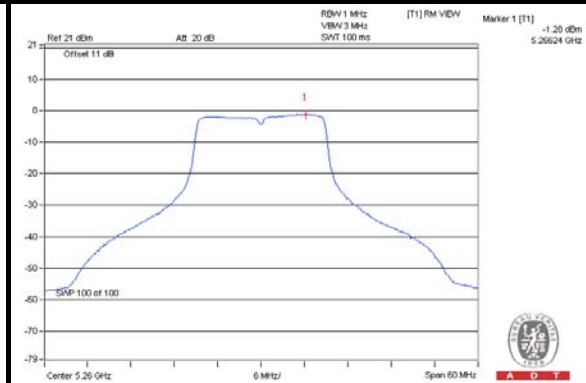
Chain(0) : CH40



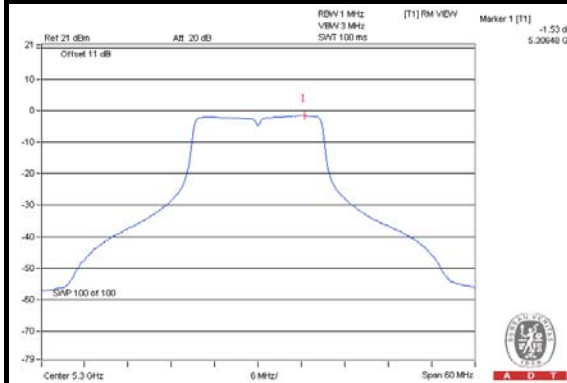
Chain(0) : CH48



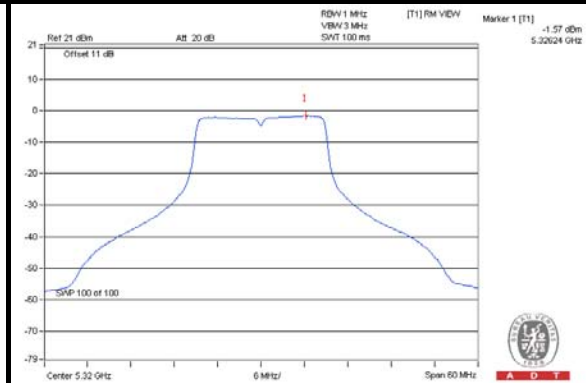
Chain(0) : CH52



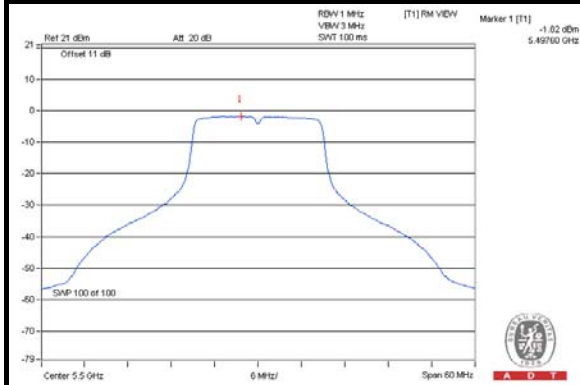
Chain(0) : CH60



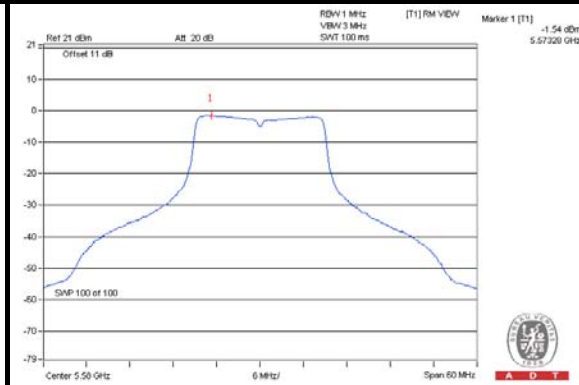
Chain(0) : CH64



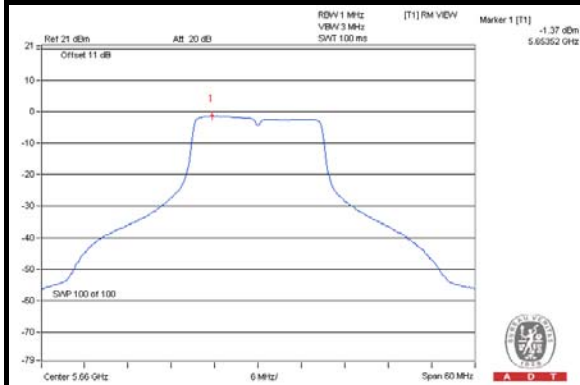
Chain(0) : CH100



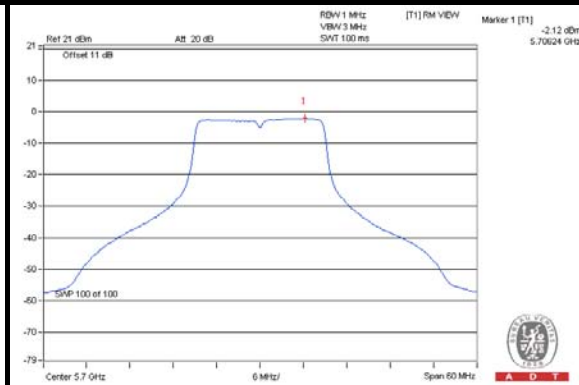
Chain(0) : CH116



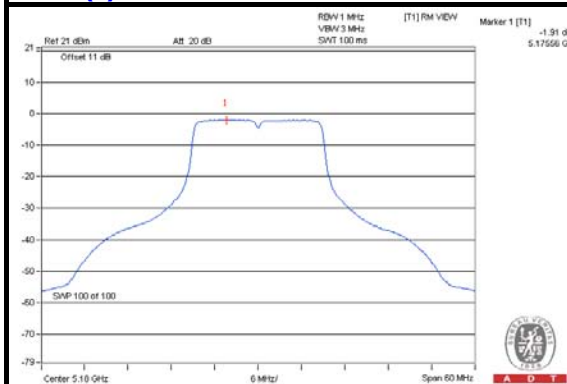
Chain(0) : CH132



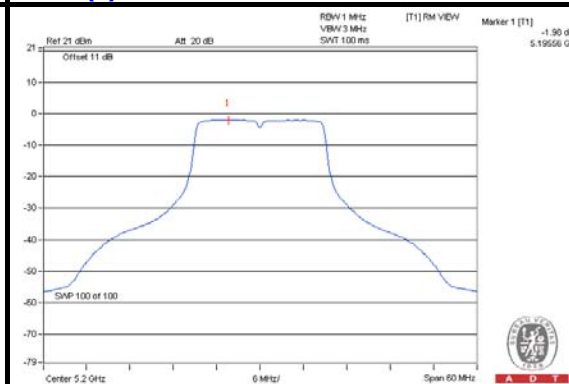
Chain(0) : CH140



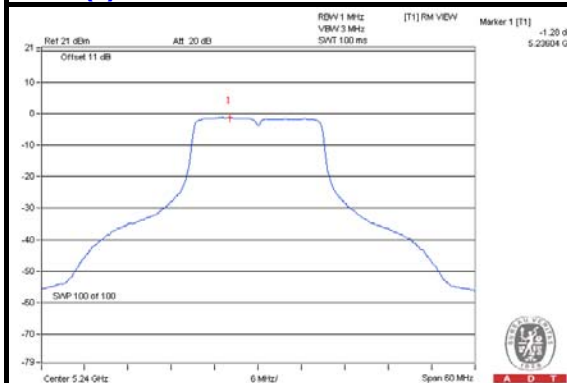
Chain(1) : CH36



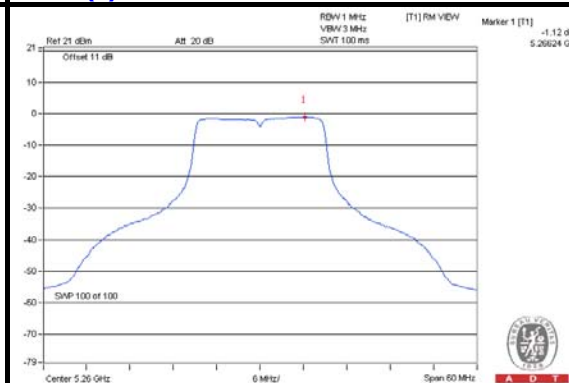
Chain(1) : CH40



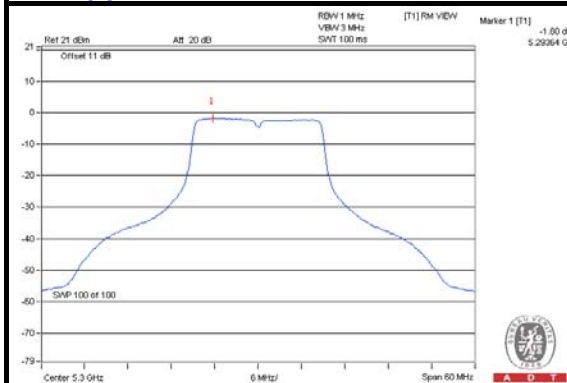
Chain(1) : CH48



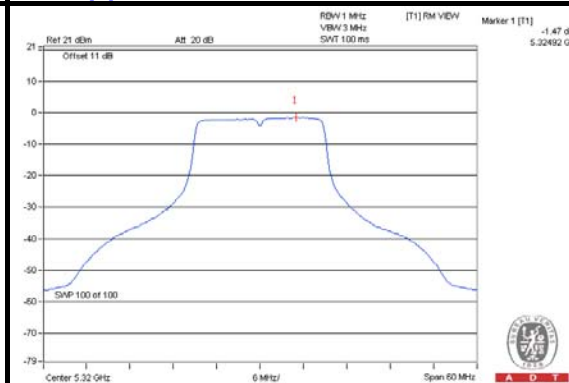
Chain(1) : CH52



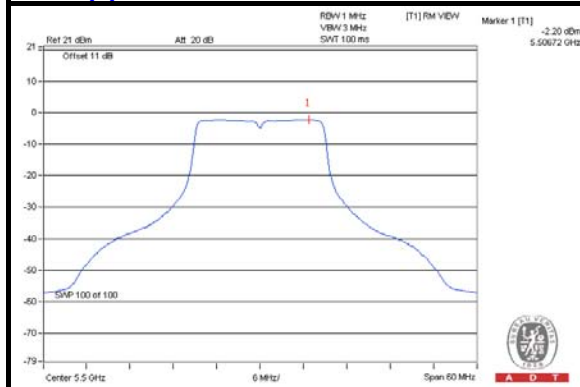
Chain(1) : CH60



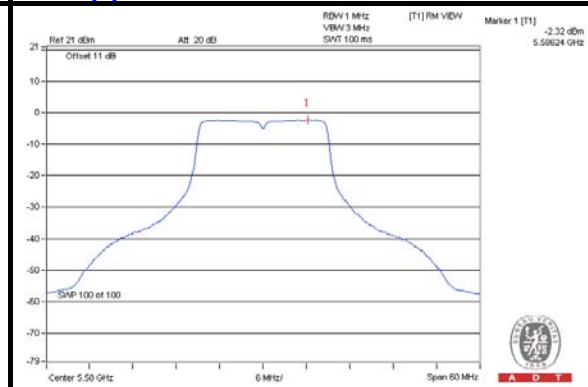
Chain(1) : CH64



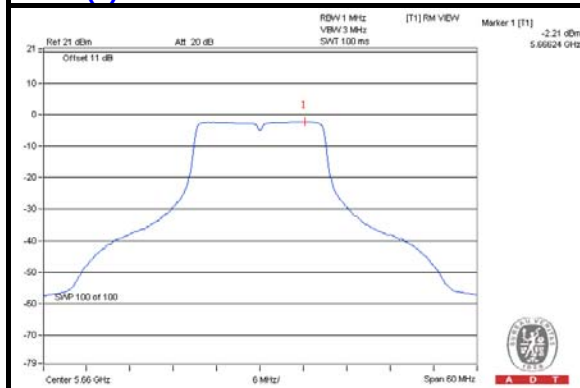
Chain(1) : CH100



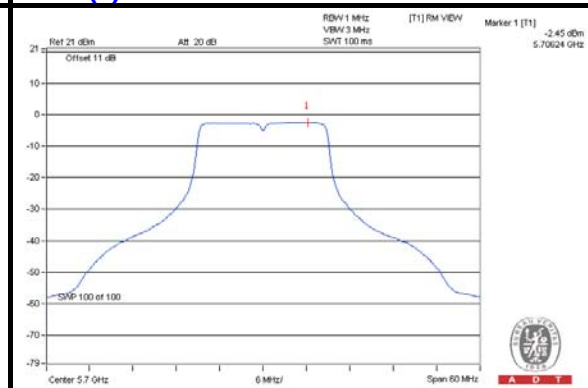
Chain(1) : CH116



Chain(1) : CH132



Chain(1) : CH140

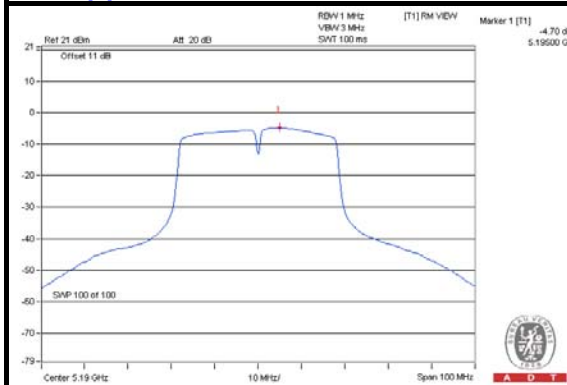


802.11n (HT40)

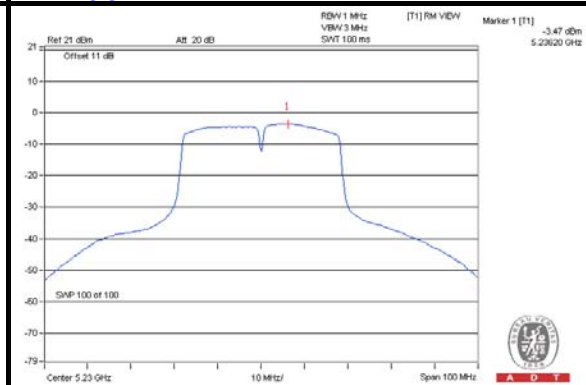
CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		DUTY FACTOR (dB)	TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
38	5190	-4.70	-6.82	0.15	-2.47	3.91	PASS
46	5230	-3.47	-4.16	0.15	-0.64	3.91	PASS
54	5270	-3.85	-3.59	0.15	-0.56	10.91	PASS
62	5310	-5.87	-6.85	0.15	-3.17	10.91	PASS
102	5510	-6.44	-7.01	0.15	-3.55	9.23	PASS
110	5550	-4.31	-4.30	0.15	-1.14	9.23	PASS
134	5670	-3.63	-4.56	0.15	-0.91	9.23	PASS

- NOTE:**
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
 2. 5190~5230MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 6.09\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $4-(6.09-6) = 3.91\text{dBm}$.
 3. 5270~5310MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 6.09\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $11-(6.09-6) = 10.91\text{dBm}$.
 4. 5510~5670MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.77\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $11-(7.77-6) = 9.23\text{dBm}$.
 5. Refer to section 3.5 for duty cycle spectrum plot.

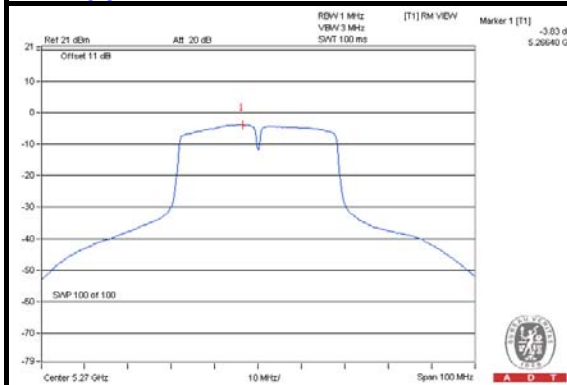
Chain(0) : CH38



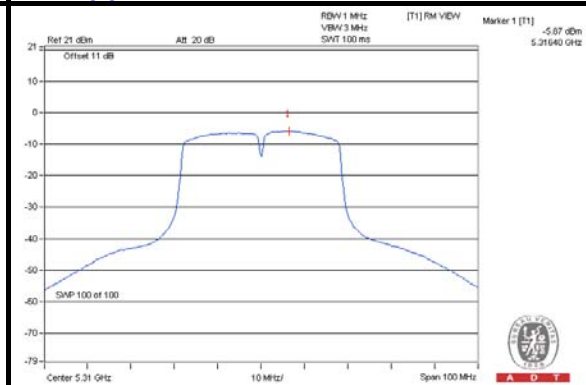
Chain(0) : CH46



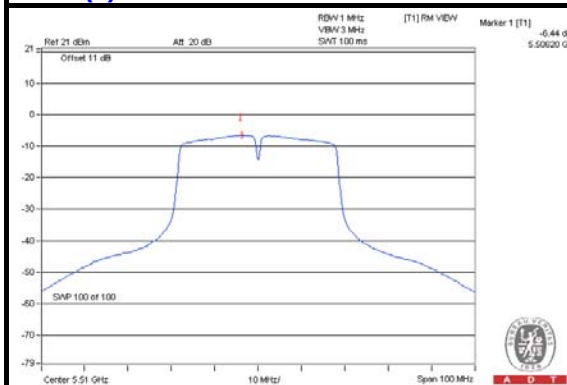
Chain(0) : CH54



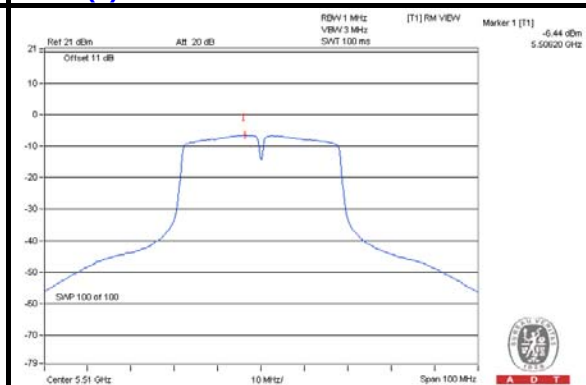
Chain(0) : CH62



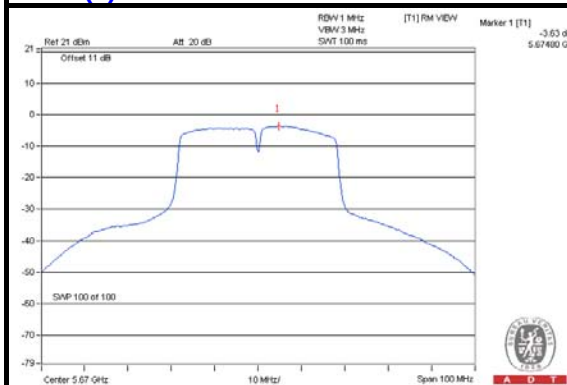
Chain(0) : CH102



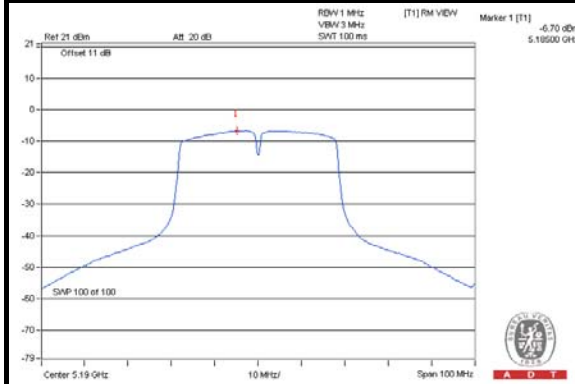
Chain(0) : CH110



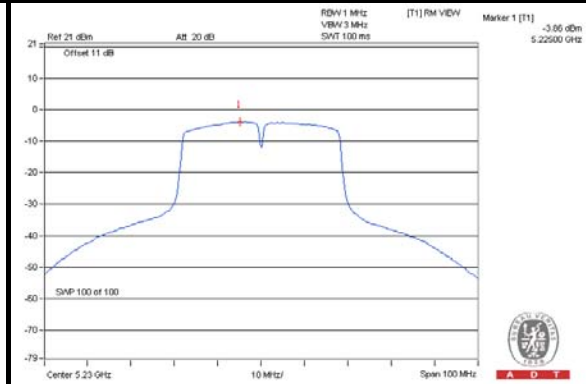
Chain(0) : CH134



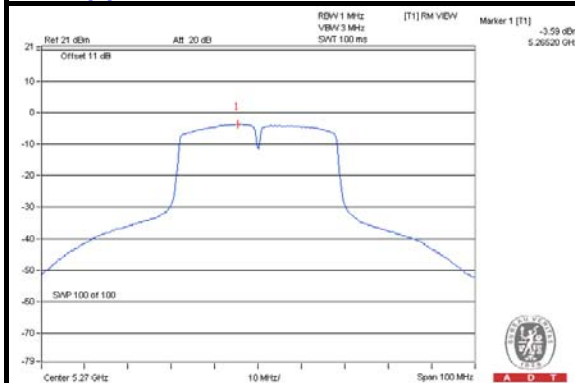
Chain(1) : CH38



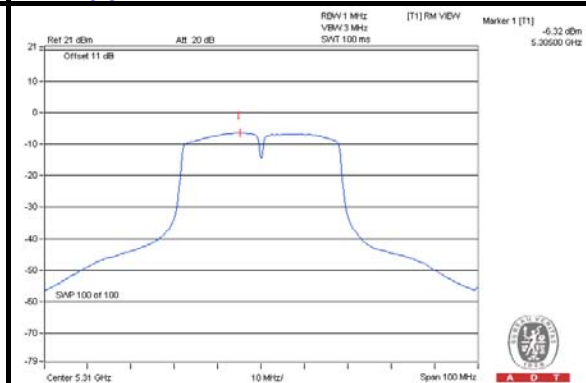
Chain(1) : CH46



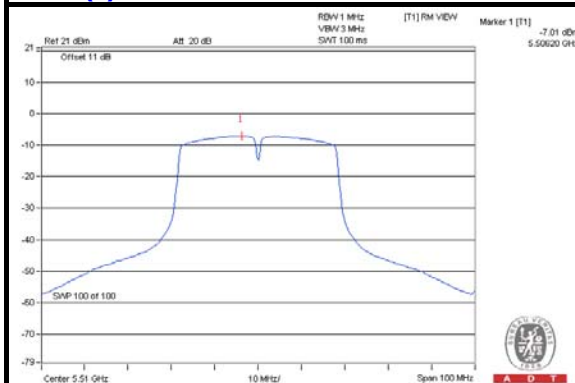
Chain(1) : CH54



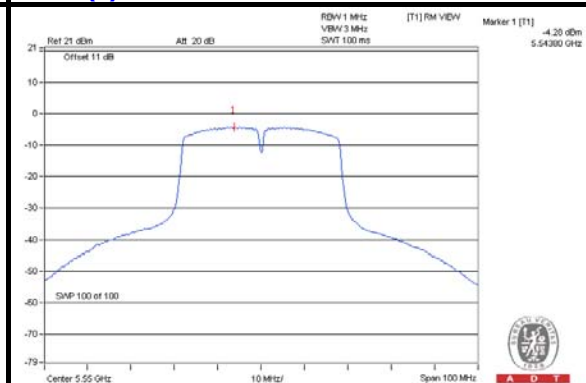
Chain(1) : CH62



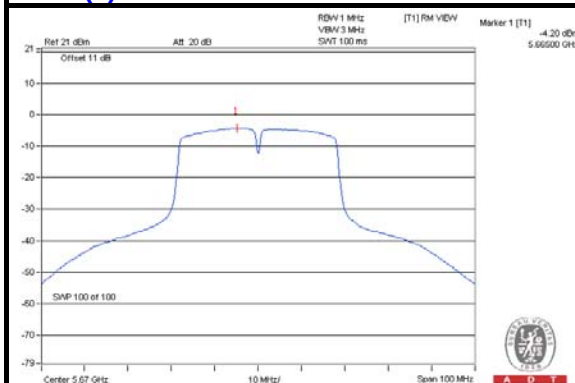
Chain(1) : CH102



Chain(1) : CH110



Chain(1) : CH134



4.3 PEAK POWER EXCURSION MEASUREMENT

4.3.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Shall not exceed 13 dB.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100037	Nov. 01, 2012	Oct. 31, 2013

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. Tested date : June 10, 2013

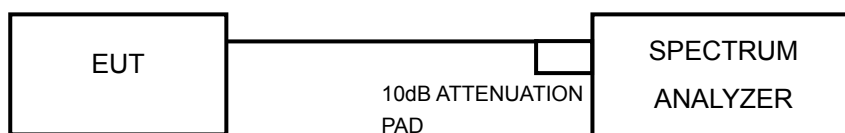
4.3.3 TEST PROCEDURE

1. Set RBW = 1 MHz, VBW $\geq$ 3 MHz, Detector = peak.
2. Trace mode = max-hold. Allow the sweeps to continue until the trace stabilizes.
3. Use the peak search function to find the peak of the spectrum.
4. Measure the PPSD.
5. Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

The software(artgui.exe Ver2.3) provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.3.7 TEST RESULTS

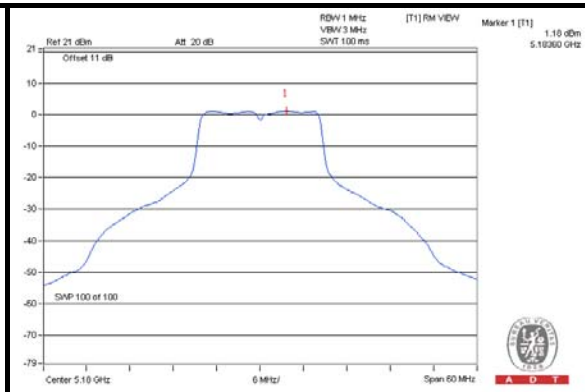
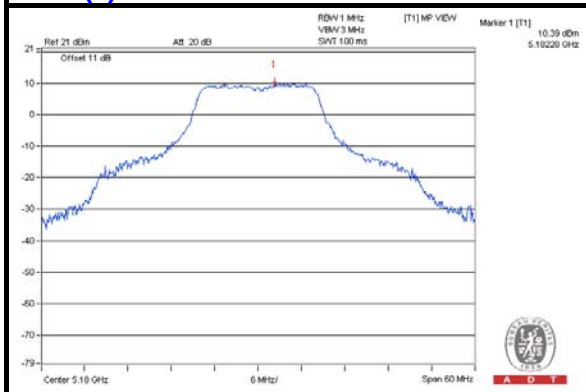
802.11a

CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)		PPSD (dBm)		PEAK EXCURSION (dB)		LIMIT (dB)	PASS/ FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1		
36	5180	10.39	10.29	1.15	0.15	9.24	10.14	13	PASS
40	5200	9.77	10.42	1.18	0.45	8.59	9.97	13	PASS
48	5240	10.13	11.01	1.00	0.54	9.13	10.47	13	PASS
52	5260	10.01	10.86	1.07	1.12	8.94	9.74	13	PASS
60	5300	10.36	10.68	1.44	0.60	8.92	10.08	13	PASS
64	5320	10.34	11.29	1.34	1.35	9.00	9.94	13	PASS
100	5500	10.15	10.84	1.16	0.84	8.99	10.00	13	PASS
116	5580	9.90	10.18	0.92	0.18	8.98	10.00	13	PASS
132	5660	10.08	10.29	1.43	0.02	8.65	10.27	13	PASS
140	5700	9.38	10.42	0.25	-0.07	9.13	10.49	13	PASS

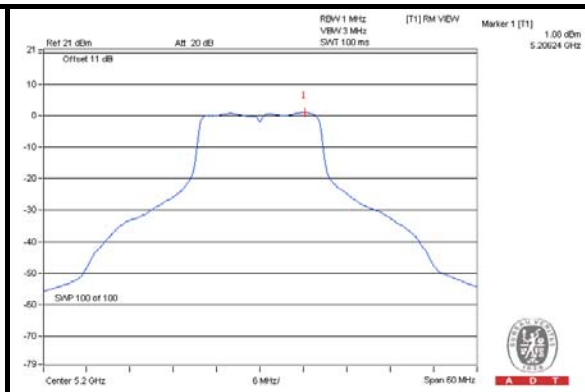
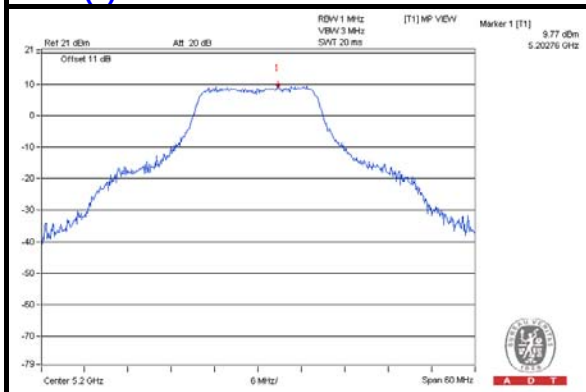
PEAK VALUE

PPSD

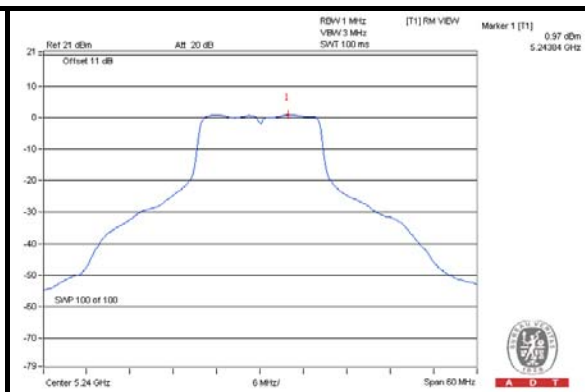
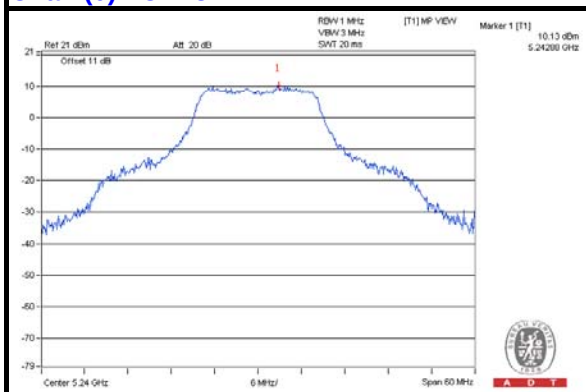
Chain(0) : CH36



Chain(0) : CH40



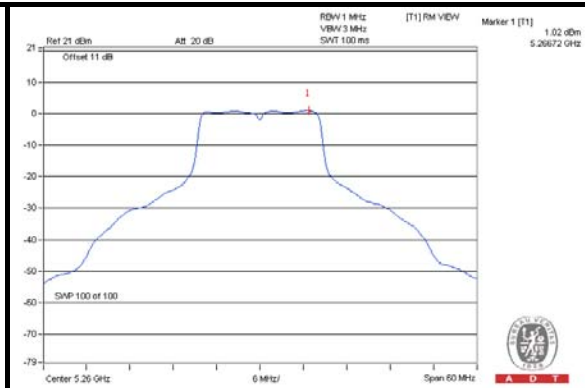
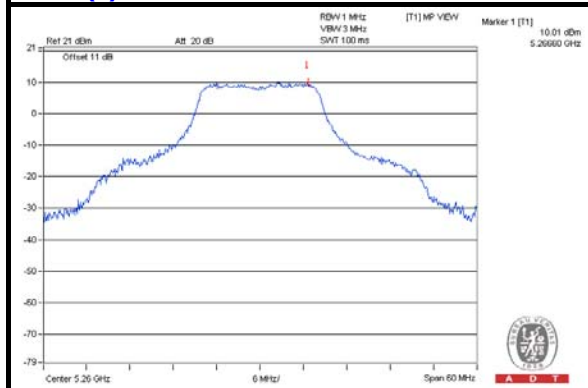
Chain(0) : CH48



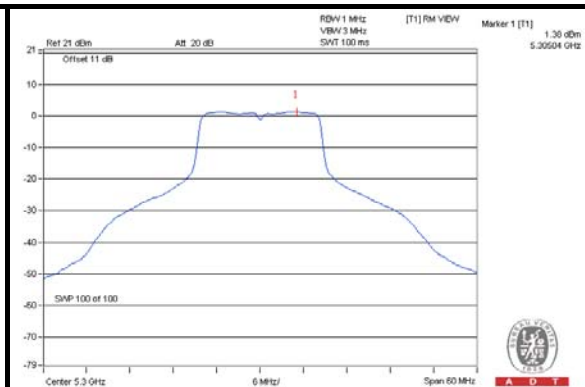
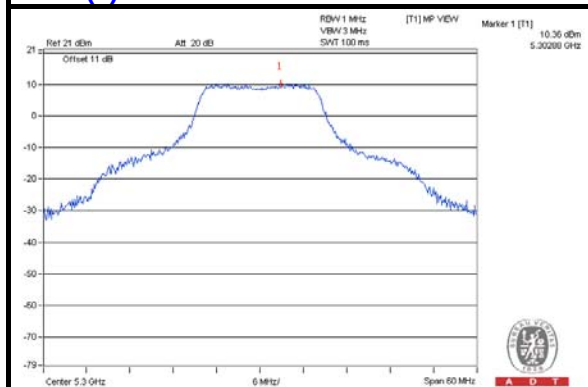
PEAK VALUE

PPSD

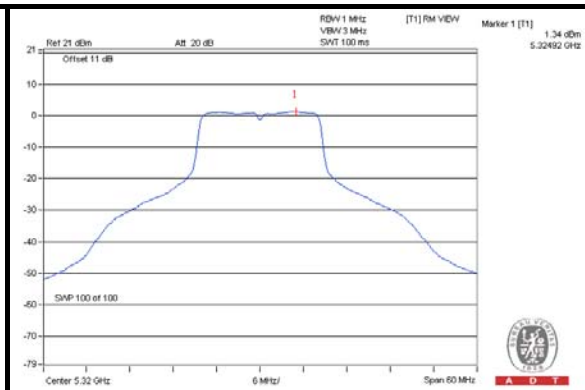
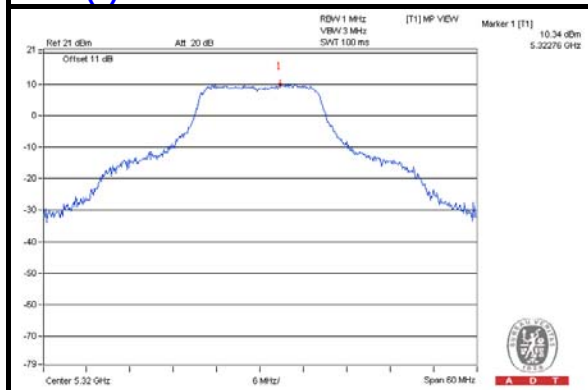
Chain(0) : CH52



Chain(0) : CH60



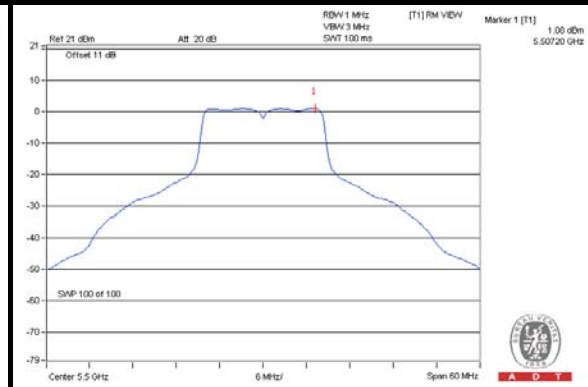
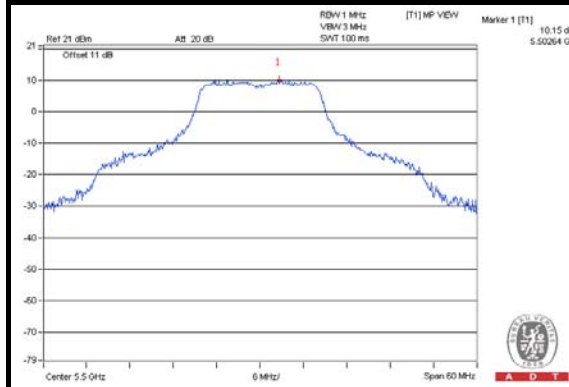
Chain(0) : CH64



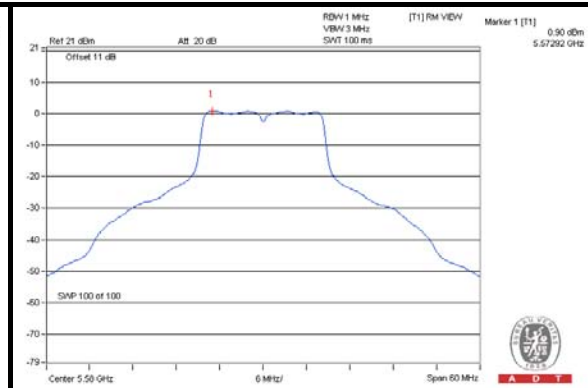
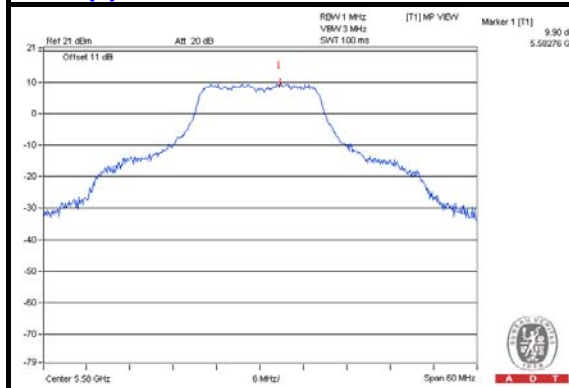
PEAK VALUE

PPSD

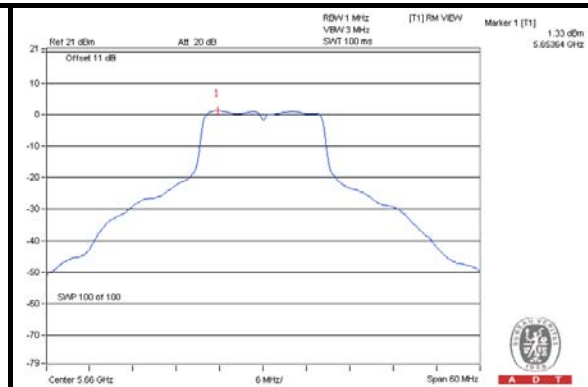
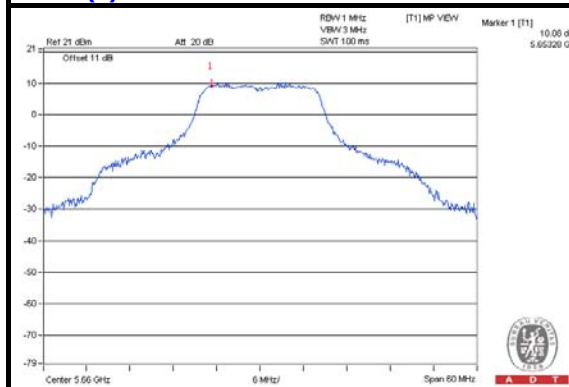
Chain(0) : CH100



Chain(0) : CH116



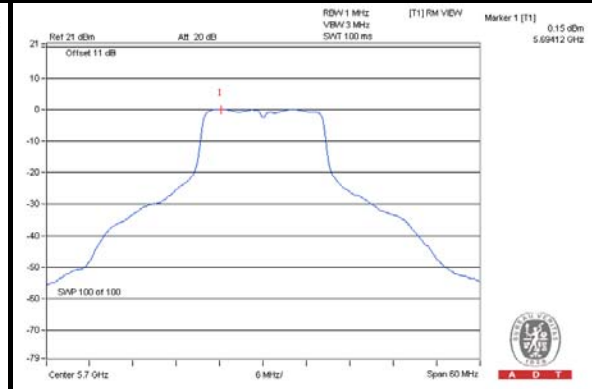
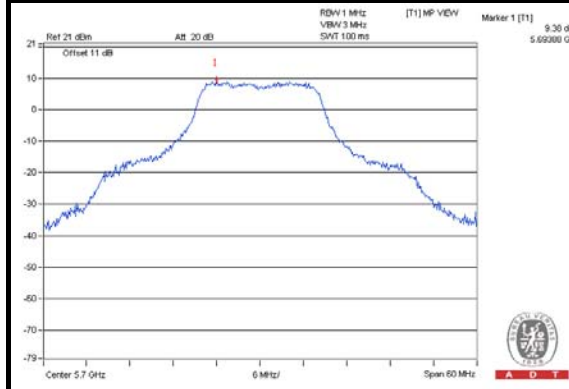
Chain(0) : CH132



PEAK VALUE

PPSD

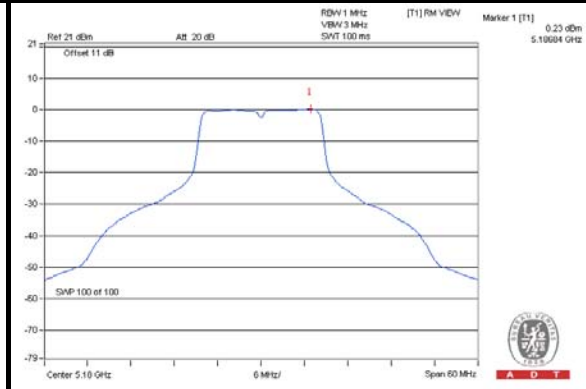
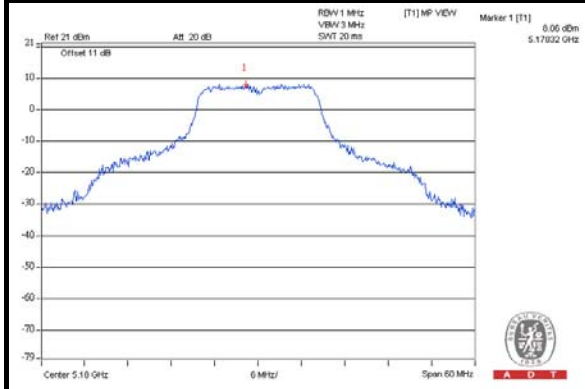
Chain(0) : CH140



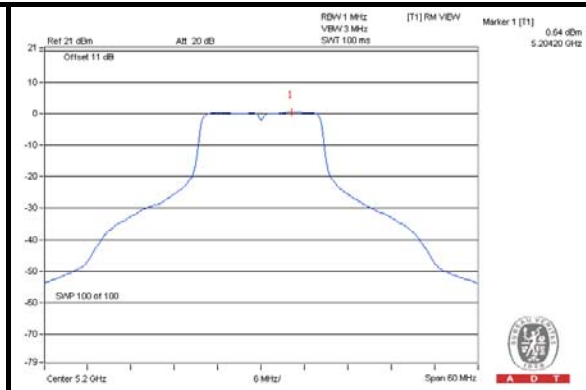
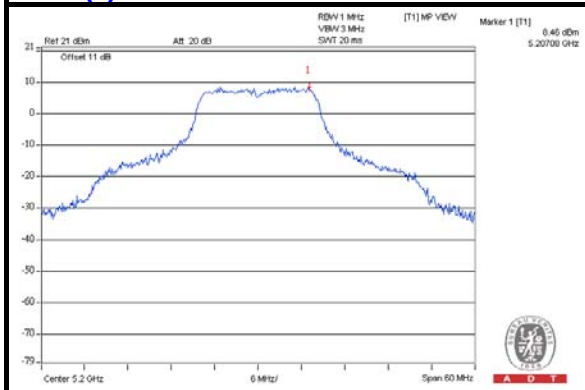
PEAK VALUE

PPSD

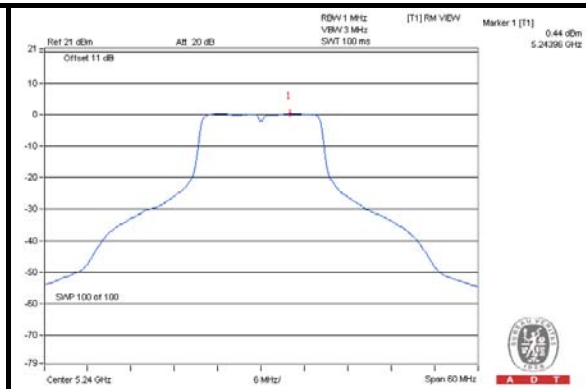
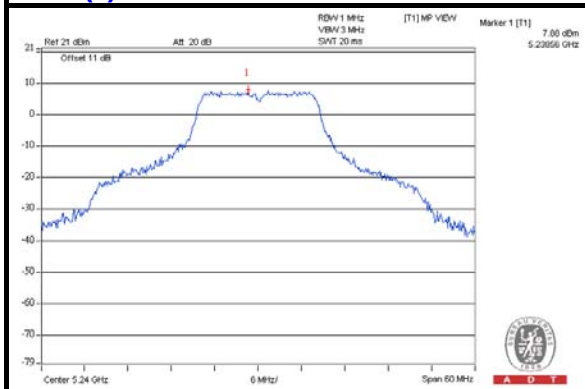
Chain(1) : CH36



Chain(1) : CH40



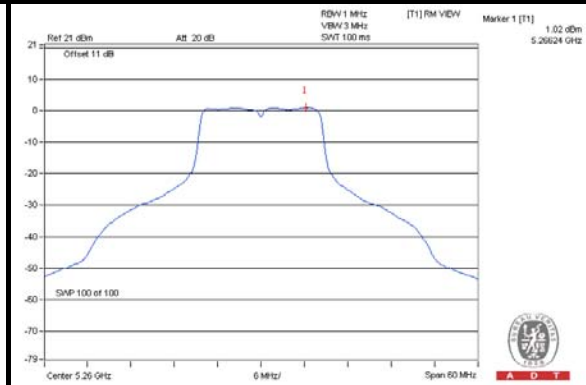
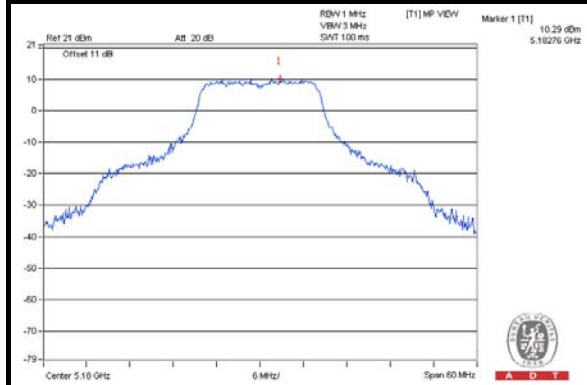
Chain(1) : CH48



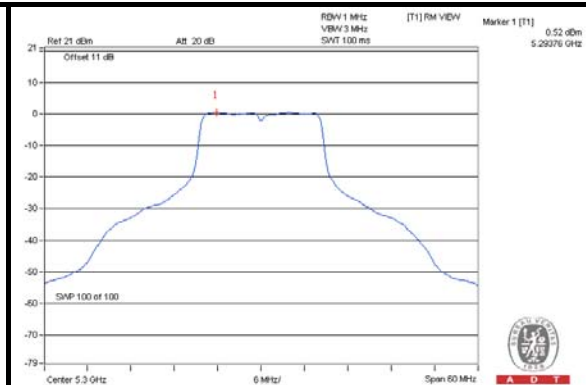
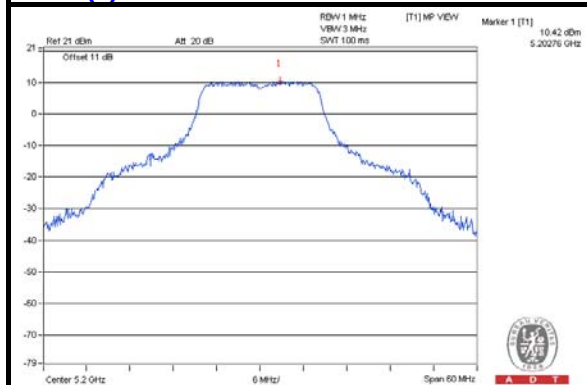
PEAK VALUE

PPSD

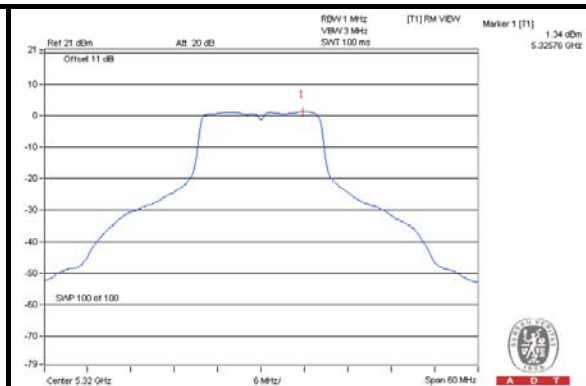
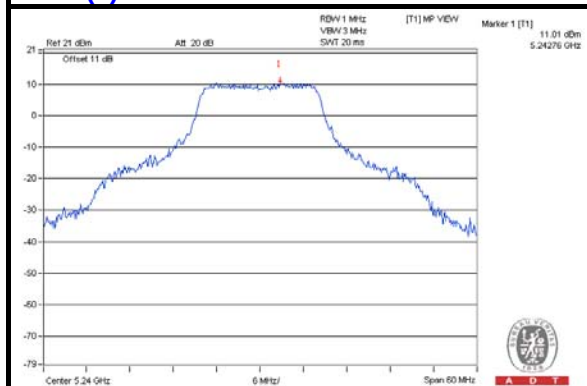
Chain(1) : CH52



Chain(1) : CH60



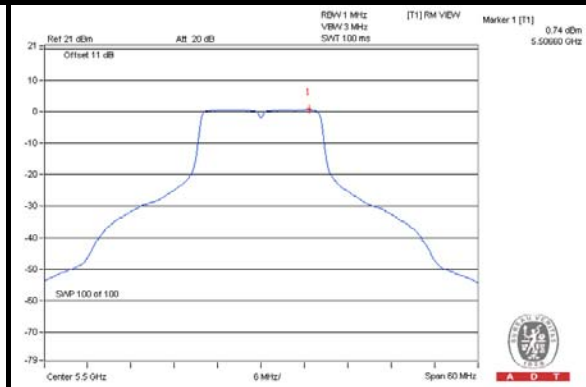
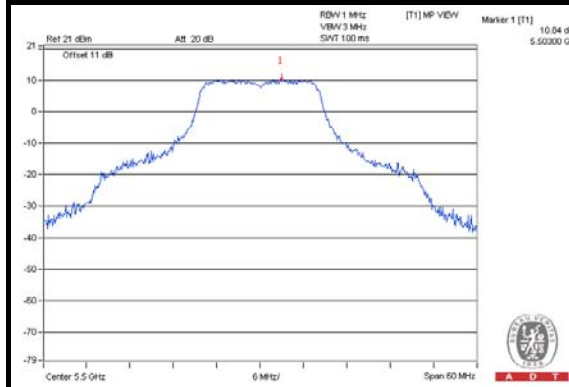
Chain(1) : CH64



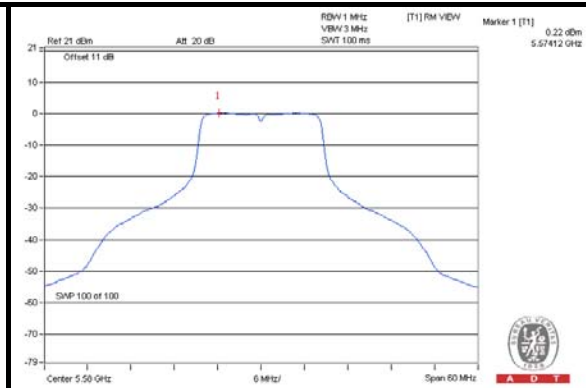
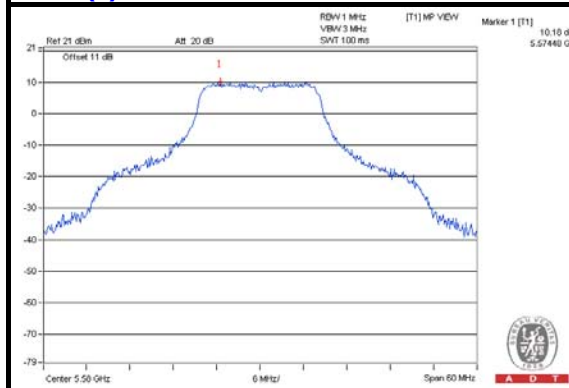
PEAK VALUE

PPSD

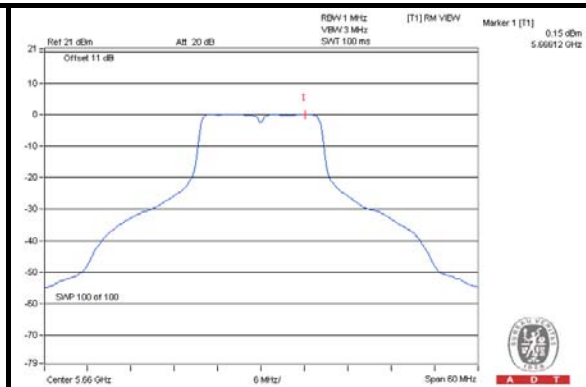
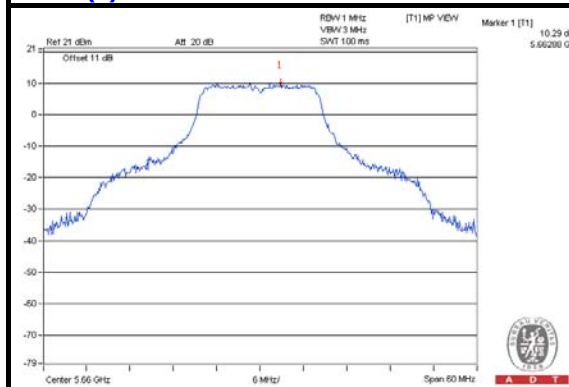
Chain(1) : CH100

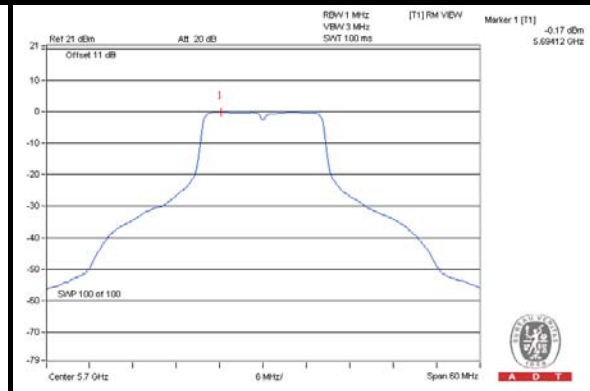
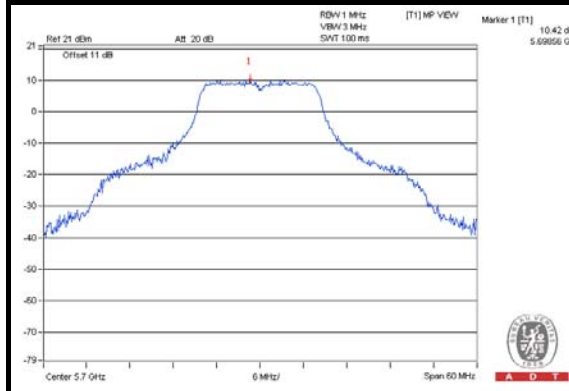


Chain(1) : CH116



Chain(1) : CH132



PEAK VALUE
PPSD
Chain(1) : CH140




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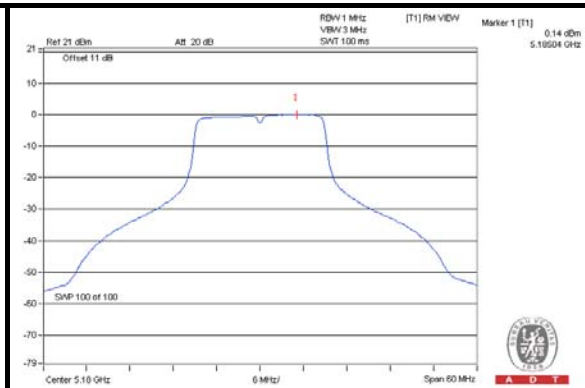
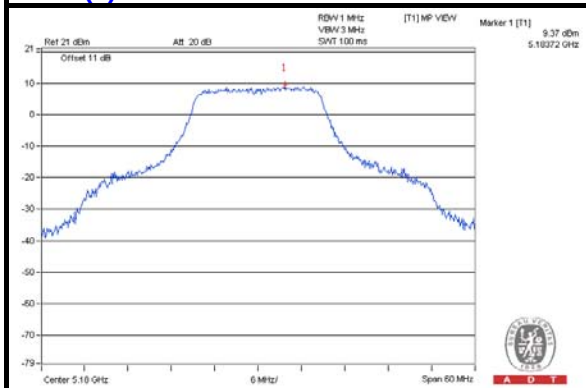
802.11n (HT20)

CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)		PPSD (dBm)		PEAK EXCURSION (dB)		LIMIT (dB)	PASS/ FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1		
36	5180	9.37	6.91	0.21	-2.00	9.16	8.91	13	PASS
40	5200	7.49	7.07	-1.19	-1.92	8.68	8.99	13	PASS
48	5240	7.50	7.09	-0.76	-1.57	8.26	8.66	13	PASS
52	5260	7.67	7.56	-1.18	-1.02	8.85	8.58	13	PASS
60	5300	7.34	6.70	-1.43	-2.20	8.77	8.90	13	PASS
64	5320	7.52	7.07	-1.47	-1.48	8.99	8.55	13	PASS
100	5500	7.31	6.66	-1.75	-2.20	9.06	8.86	13	PASS
116	5580	7.66	6.18	-1.50	-2.26	9.16	8.44	13	PASS
132	5660	7.47	6.81	-1.27	-2.30	8.74	9.11	13	PASS
140	5700	6.58	6.60	-2.02	-2.35	8.60	8.95	13	PASS

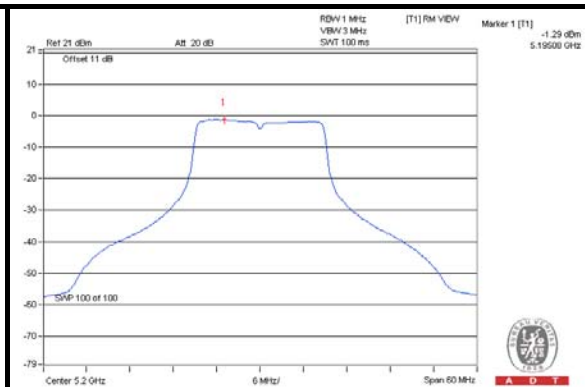
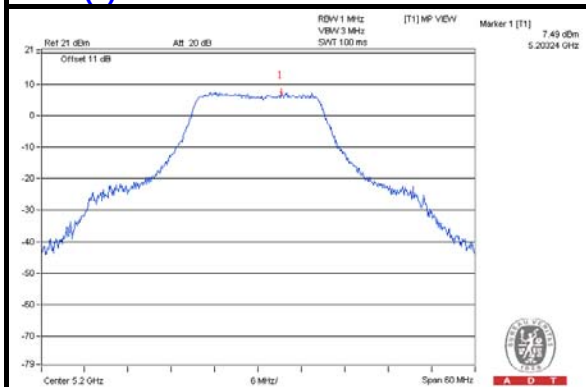
PEAK VALUE

PPSD

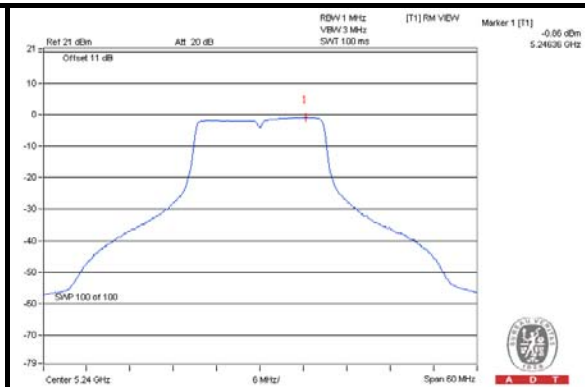
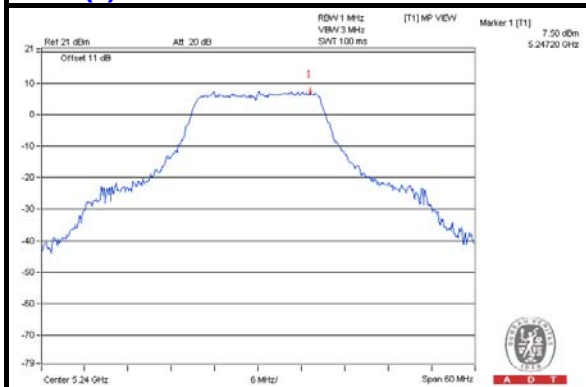
Chain(0) : CH36



Chain(0) : CH40



Chain(0) : CH48



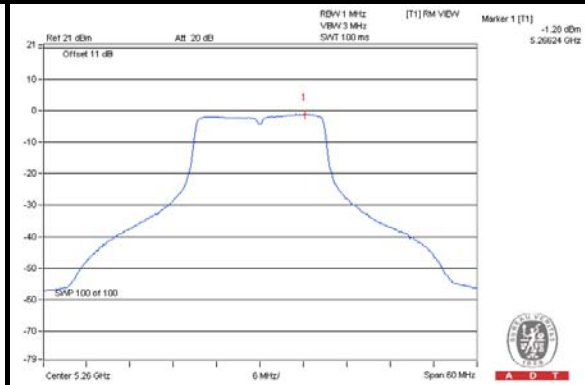
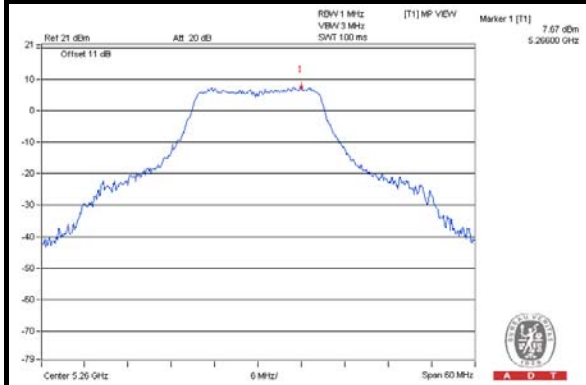


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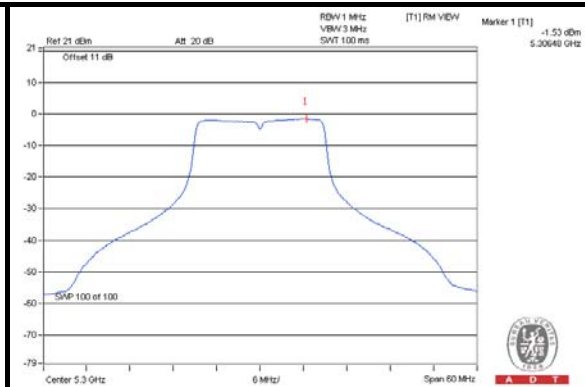
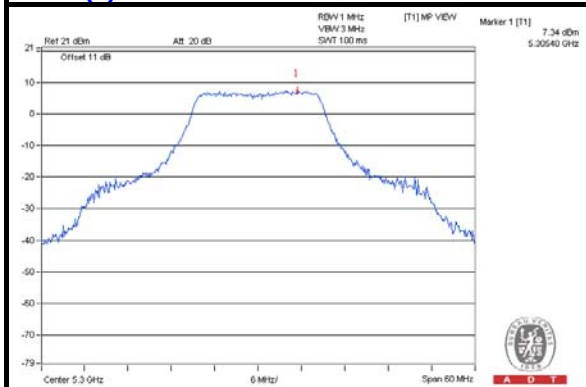
PEAK VALUE

PPSD

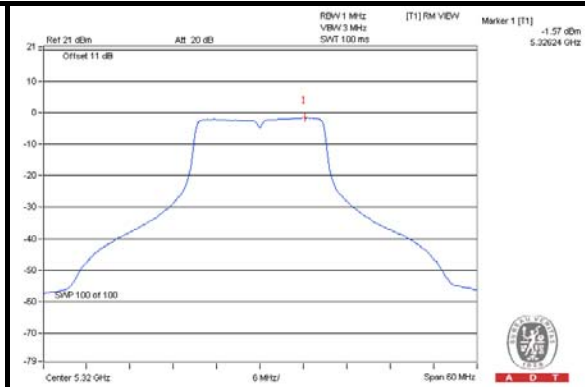
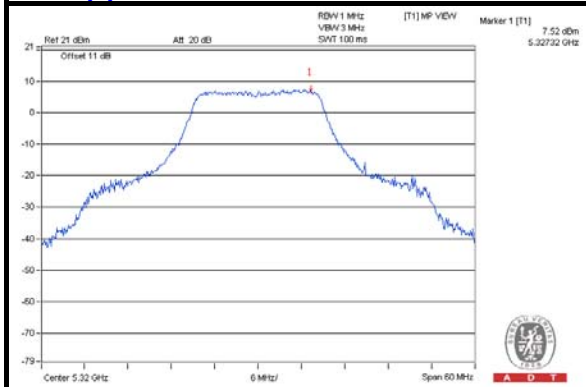
Chain(0) : CH52



Chain(0) : CH60



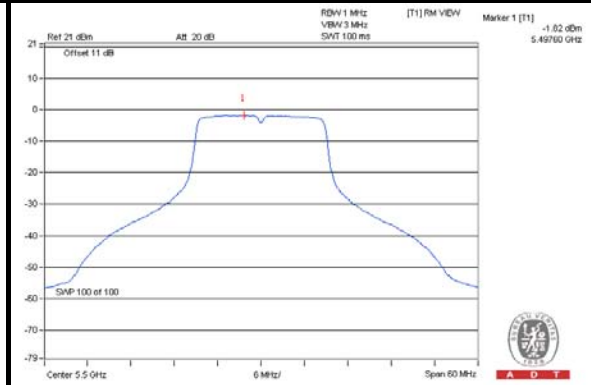
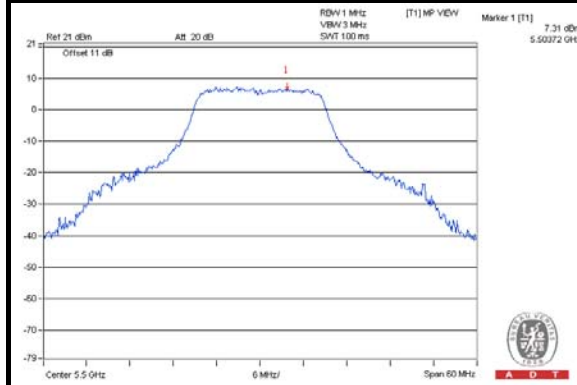
Chain(0) : CH64



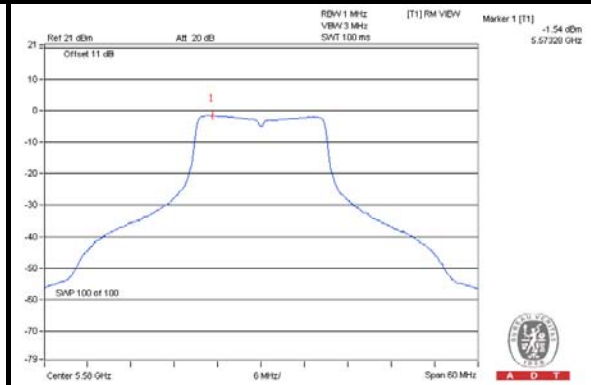
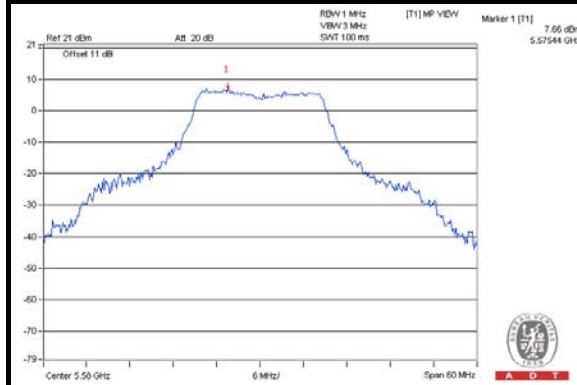
PEAK VALUE

PPSD

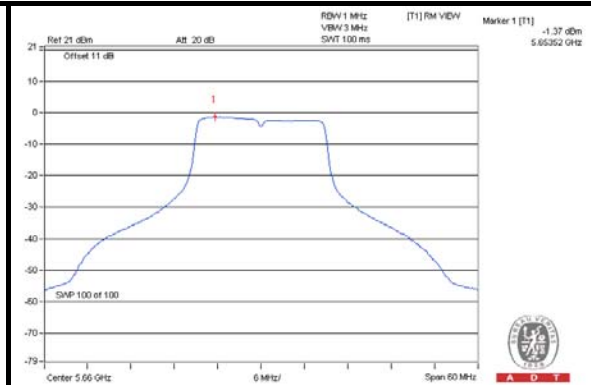
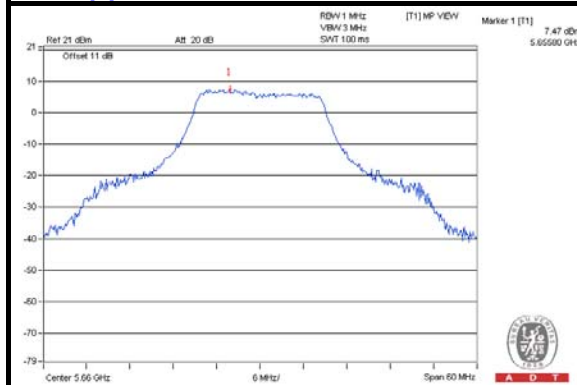
Chain(0) : CH100

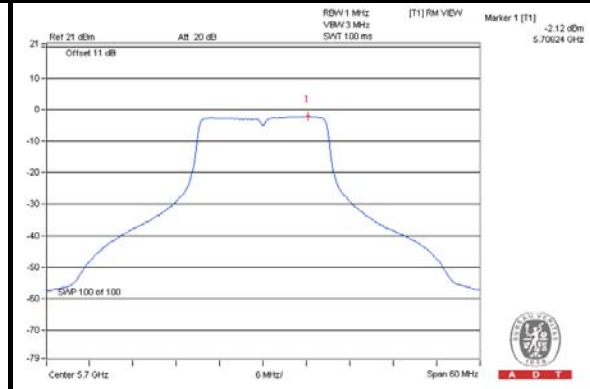
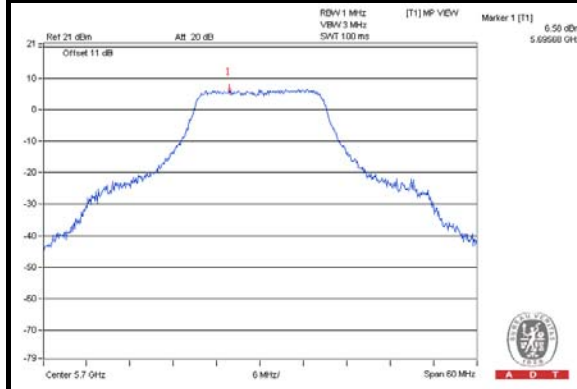


Chain(0) : CH116



Chain(0) : CH132



PEAK VALUE
PPSD
Chain(0) : CH140


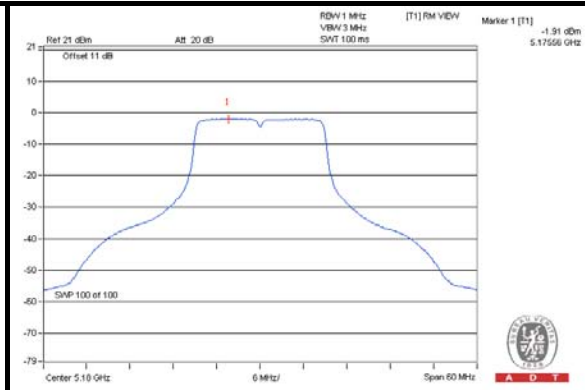
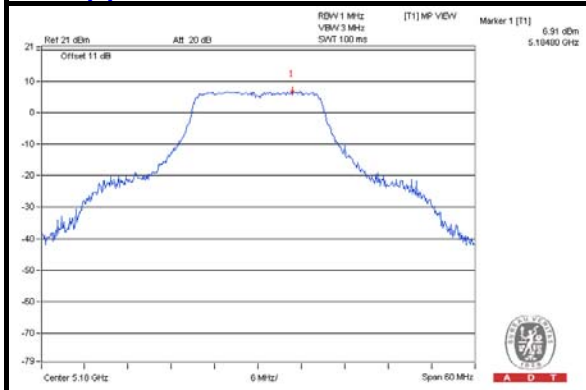


A D T

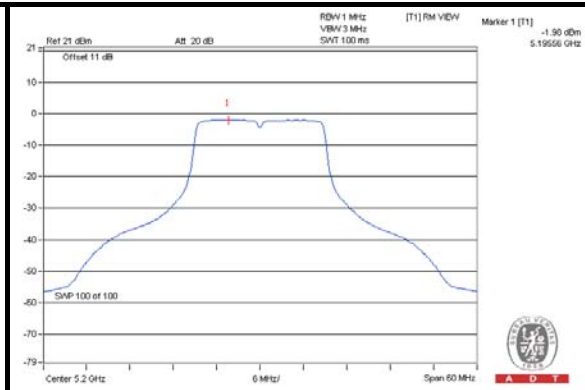
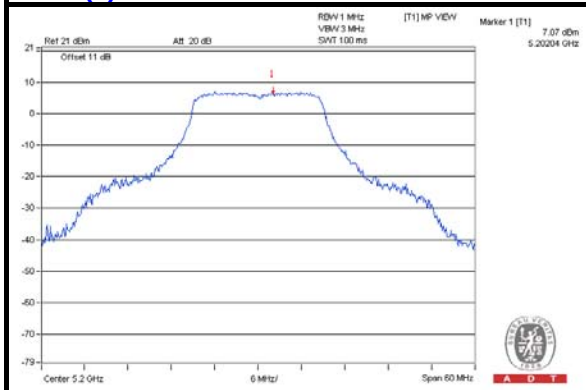
PEAK VALUE

PPSD

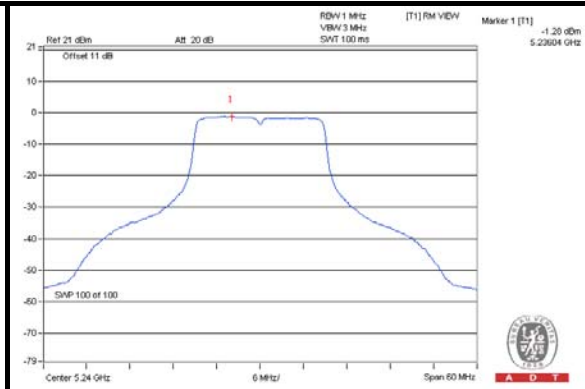
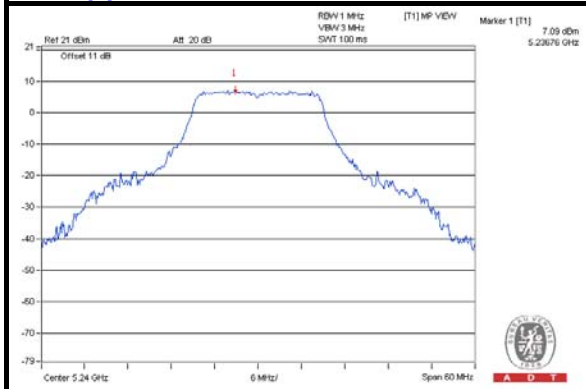
Chain(1) : CH36



Chain(1) : CH40



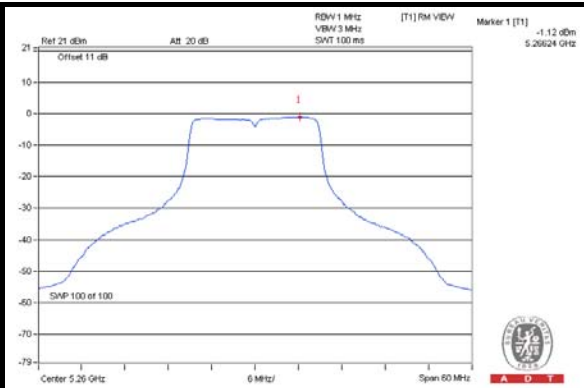
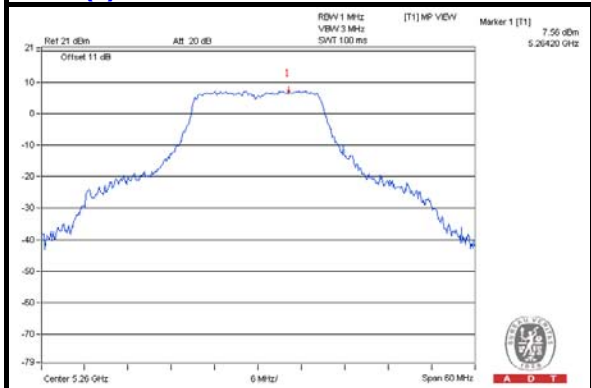
Chain(1) : CH48



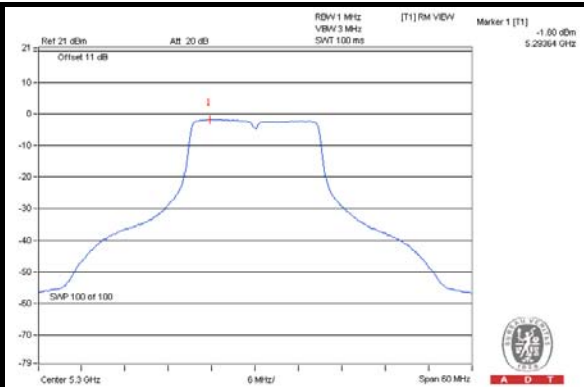
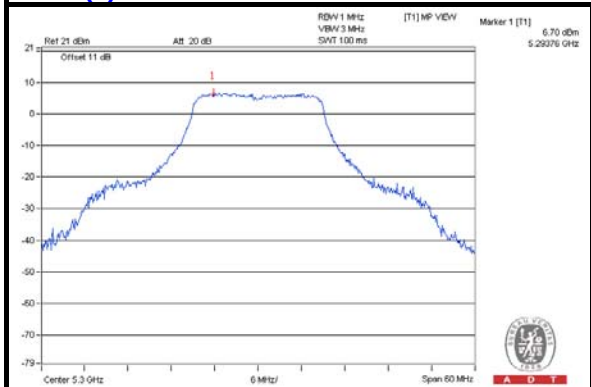
PEAK VALUE

PPSD

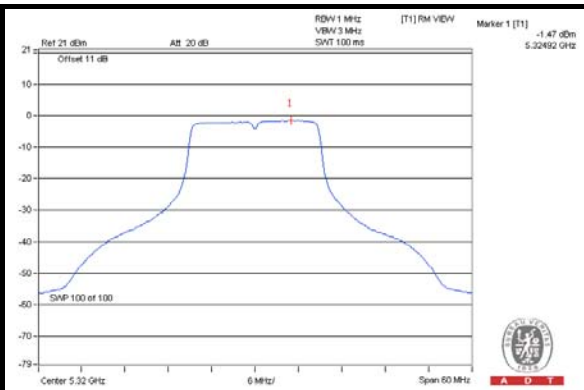
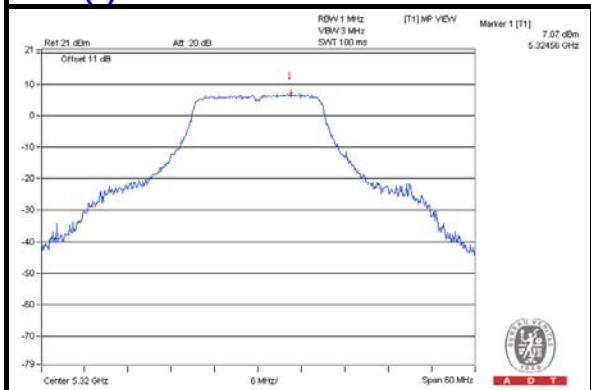
Chain(1) : CH52



Chain(1) : CH60



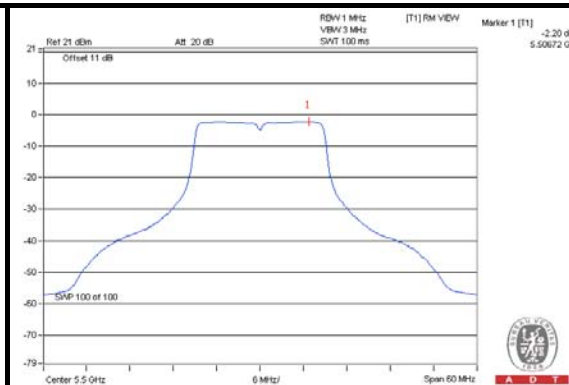
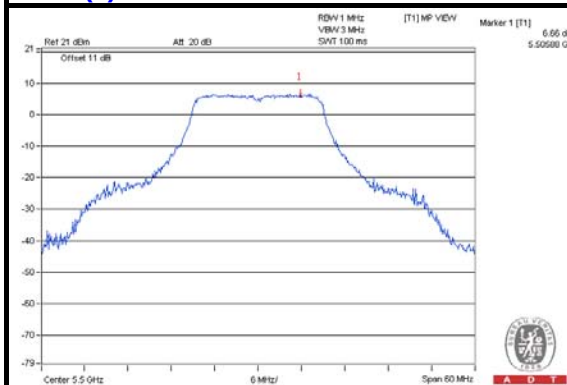
Chain(1) : CH64



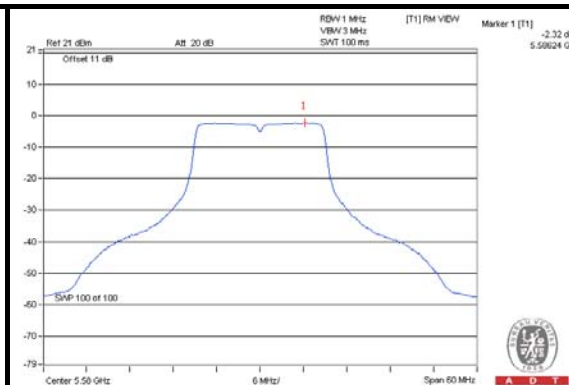
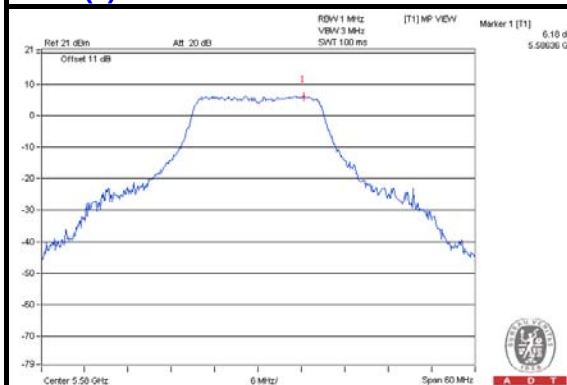
PEAK VALUE

PPSD

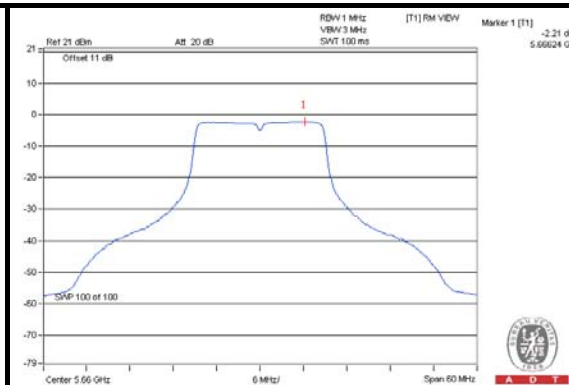
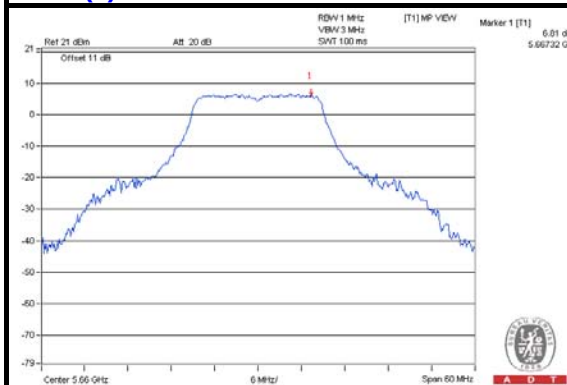
Chain(1) : CH100

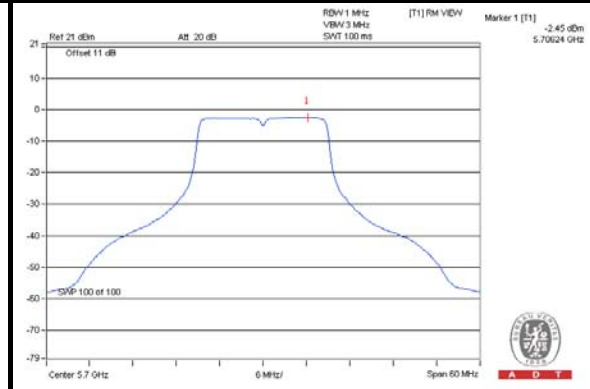
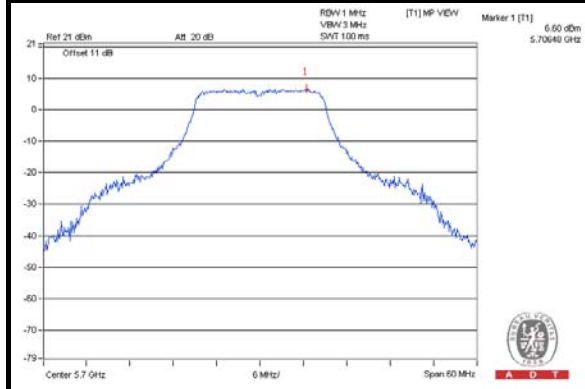


Chain(1) : CH116



Chain(1) : CH132



PEAK VALUE
PPSD
Chain(1) : CH140




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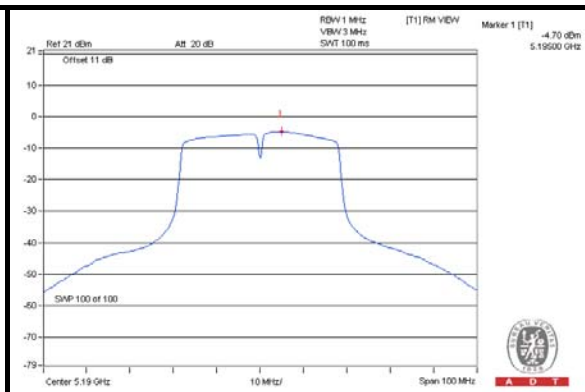
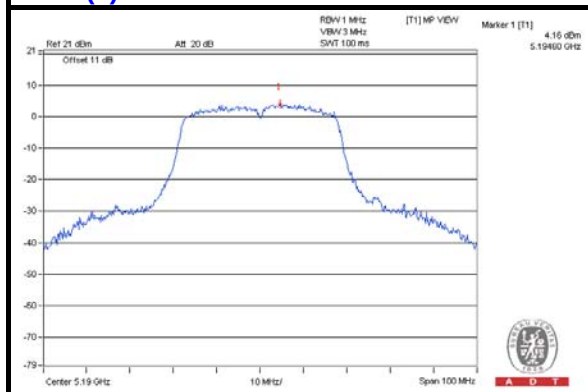
802.11n (HT40)

CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)		PPSD (dBm)		PEAK EXCURSION (dB)		LIMIT (dB)	PASS/ FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1		
38	5190	4.16	3.00	-4.55	-6.67	8.71	9.67	13	PASS
46	5230	5.88	5.26	-3.32	-4.01	9.20	9.27	13	PASS
54	5270	5.74	5.69	-3.70	-3.44	9.44	9.13	13	PASS
62	5310	3.44	2.71	-5.72	-6.70	9.16	9.41	13	PASS
102	5510	3.24	2.65	-6.29	-6.86	9.53	9.51	13	PASS
110	5550	5.32	5.20	-4.16	-4.15	9.48	9.35	13	PASS
134	5670	5.81	5.02	-3.48	-4.41	9.29	9.43	13	PASS

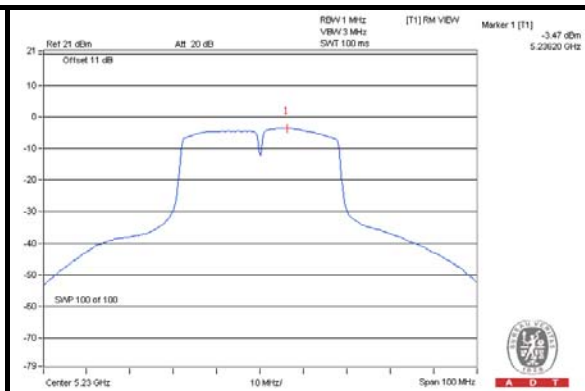
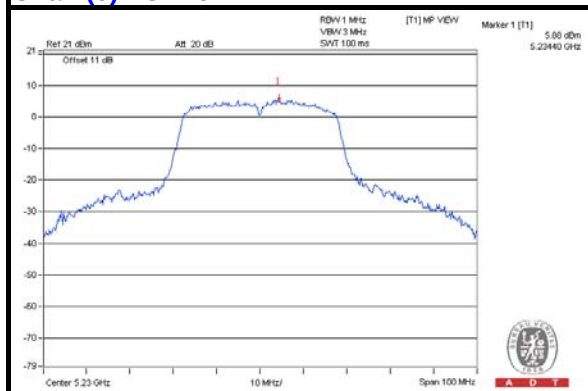
PEAK VALUE

PPSD

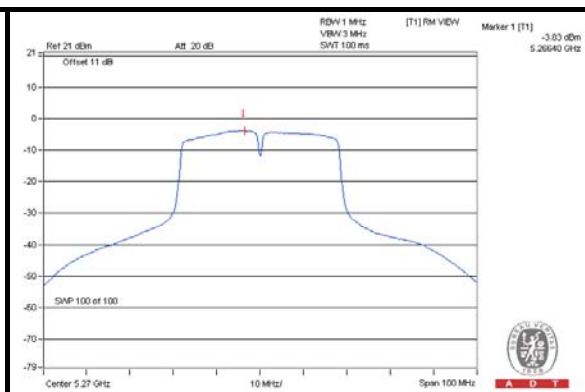
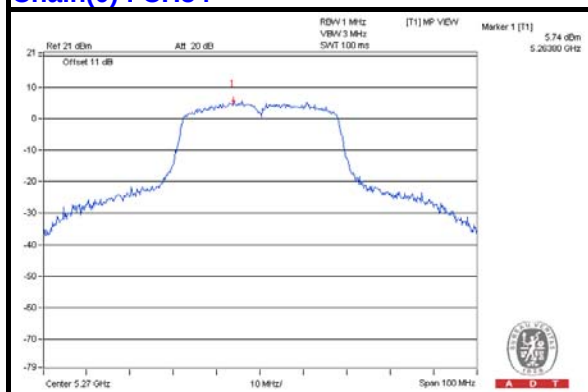
Chain(0) : CH38



Chain(0) : CH46



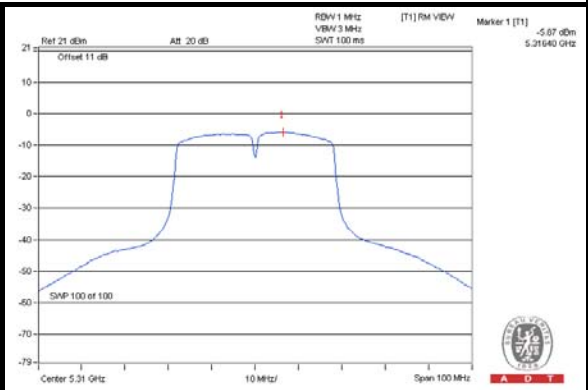
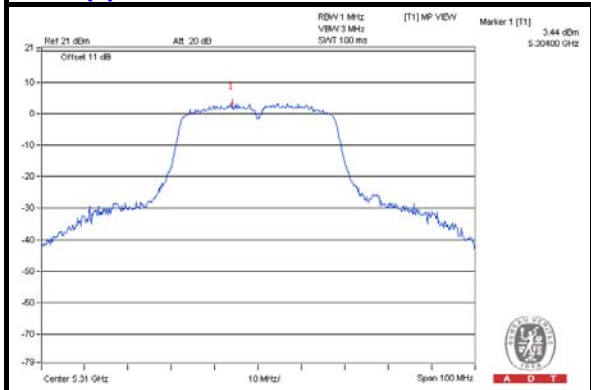
Chain(0) : CH54



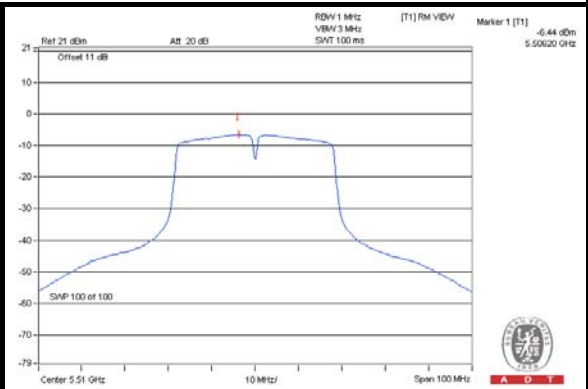
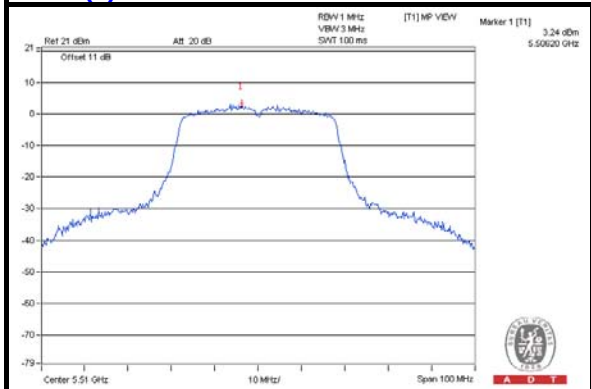
PEAK VALUE

PPSD

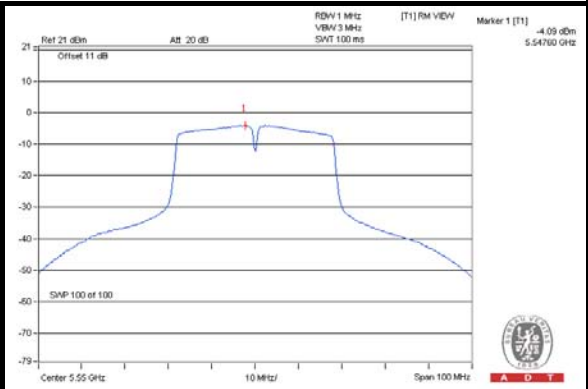
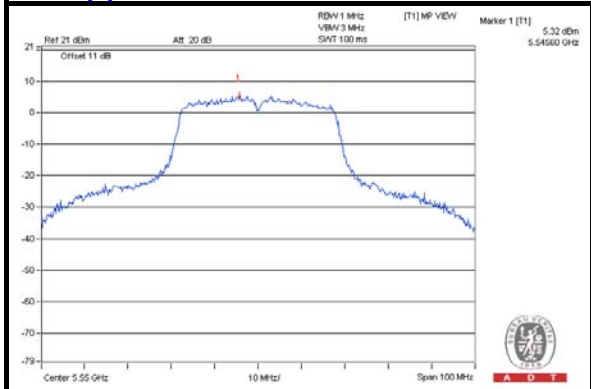
Chain(0) : CH62

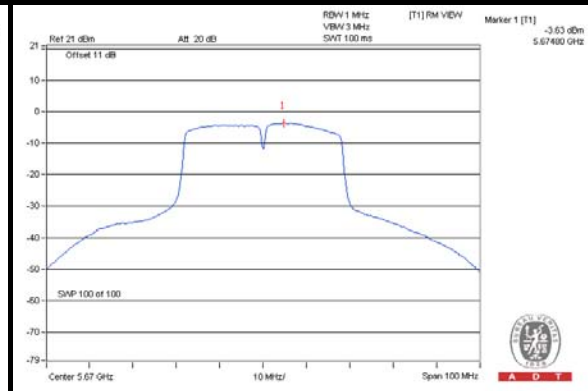
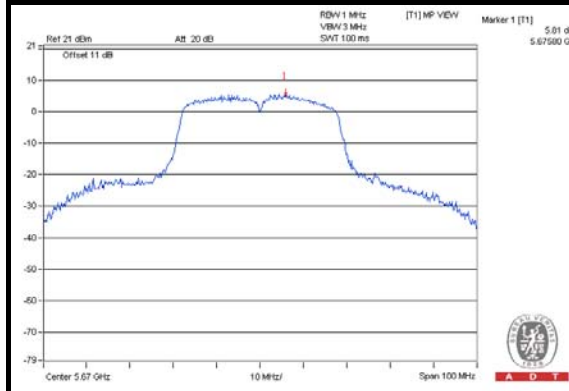


Chain(0) : CH102



Chain(0) : CH110



PEAK VALUE
PPSD
Chain(0) : CH134


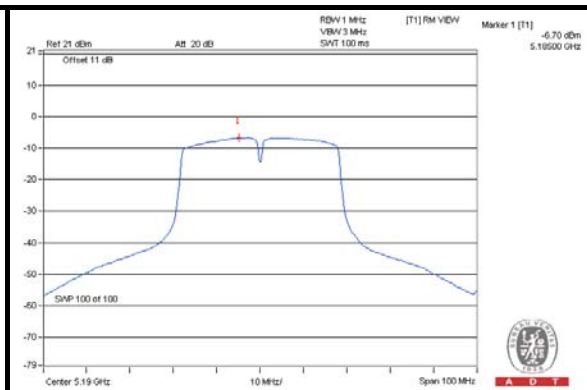
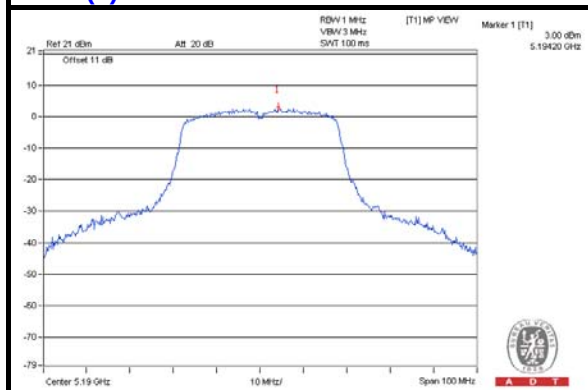


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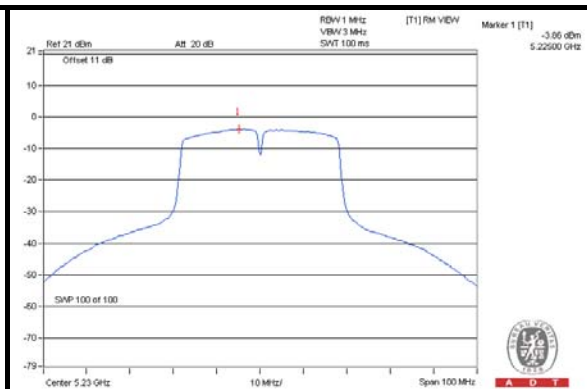
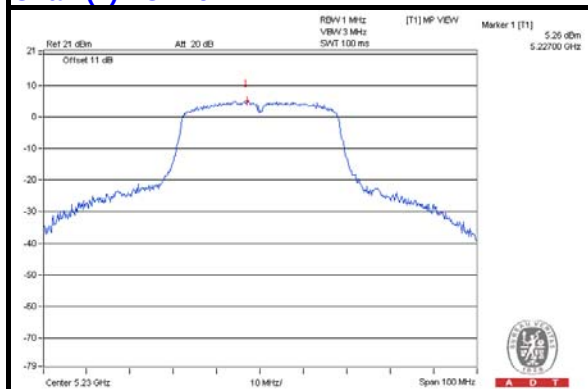
PEAK VALUE

PPSD

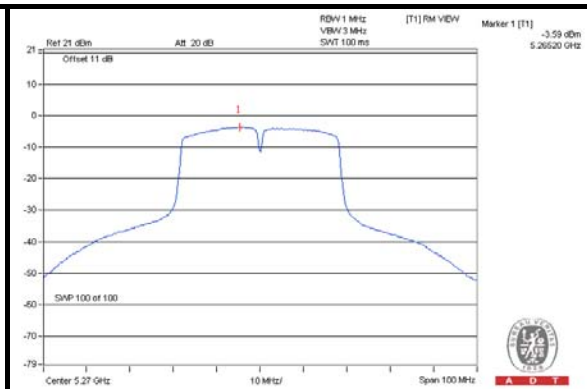
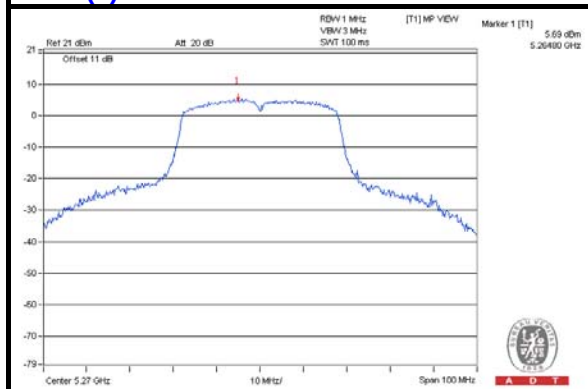
Chain(1) : CH38



Chain(1) : CH46



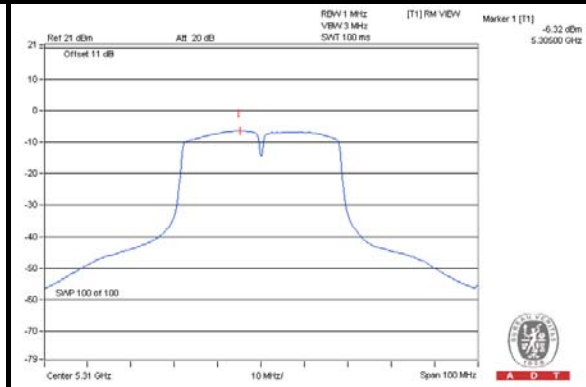
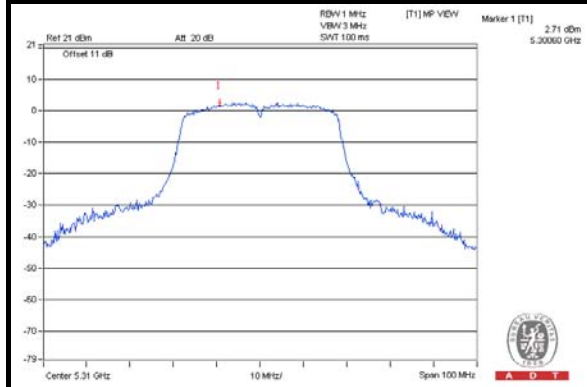
Chain(1) : CH54



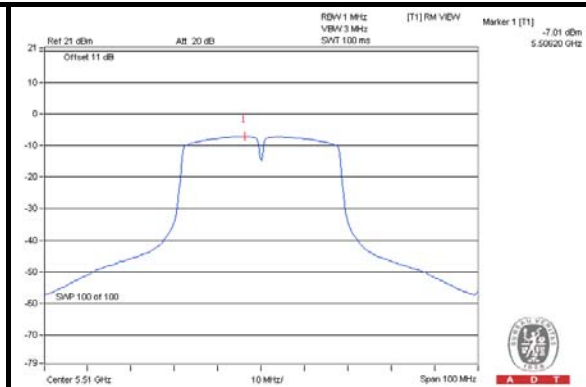
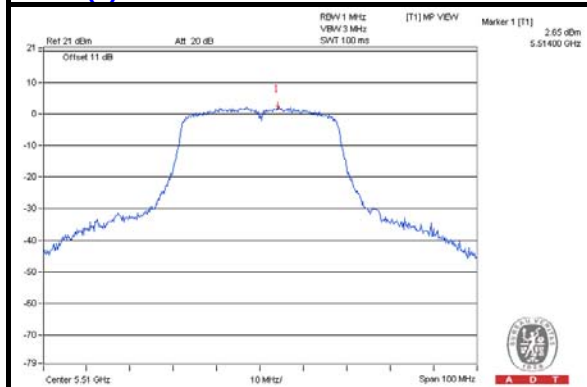
PEAK VALUE

PPSD

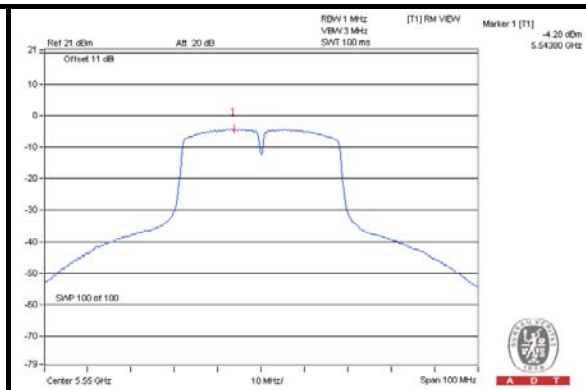
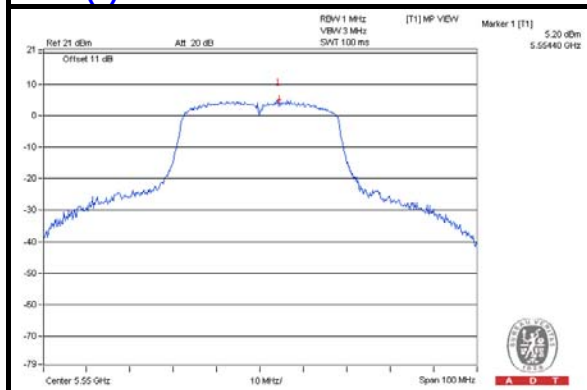
Chain(1) : CH62

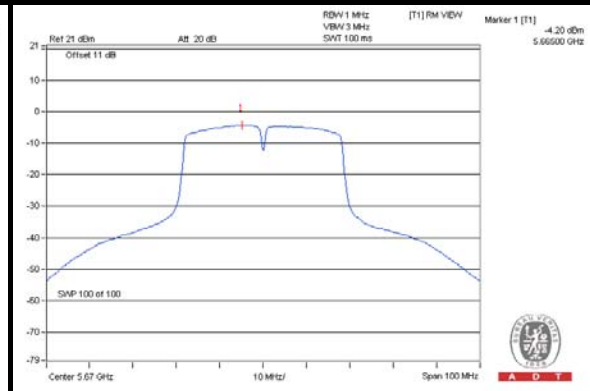
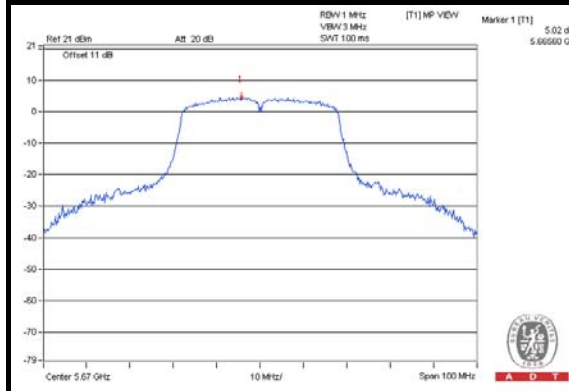


Chain(1) : CH102



Chain(1) : CH110



PEAK VALUE
PPSD
Chain(1) : CH134




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4.4 OCCUPIED BANDWIDTH MEASUREMENT

4.4.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100037	Nov. 01, 2012	Oct. 31, 2013

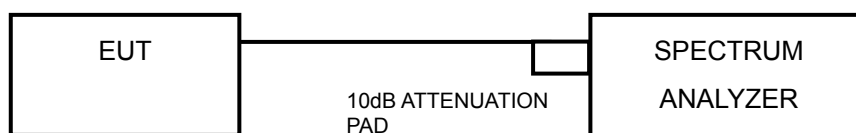
Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Tested date : June 10, 2013

4.4.2 TEST PROCEDURE

1. Set RBW $\geq 1\%$ of the emission bandwidth.
2. Set the VBW $> 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Record the 99% emission bandwidth.

4.4.3 TEST SETUP



4.4.4 EUT OPERATING CONDITIONS

The software(artgui.exe Ver2.3) provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.4.5 TEST RESULTS

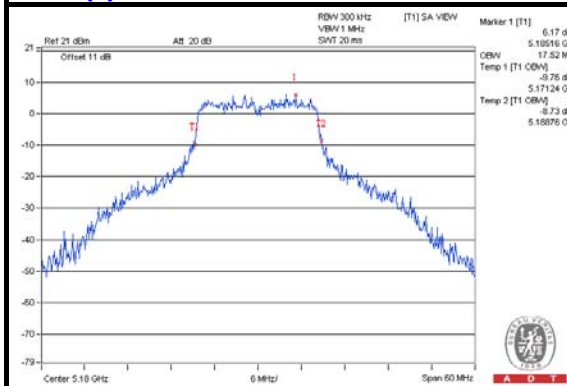
802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
36	5180	17.52	17.28
40	5200	17.28	17.16
48	5240	17.64	17.16
52	5260	17.52	17.16
60	5300	17.76	17.28
64	5320	17.52	17.16
100	5500	17.76	17.40
116	5580	17.64	17.16
132	5660	17.76	17.04
140	5700	17.28	17.16

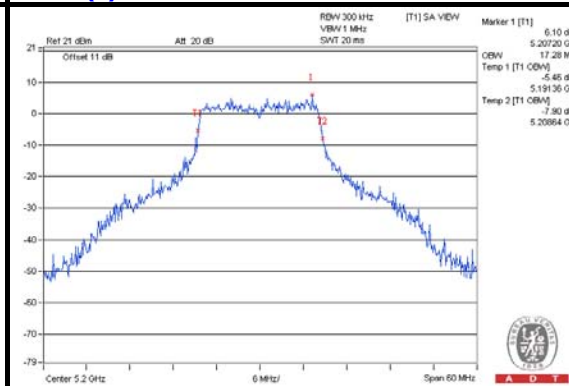


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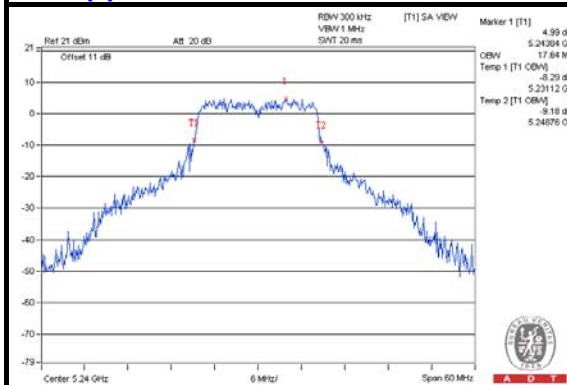
Chain(0) : CH36



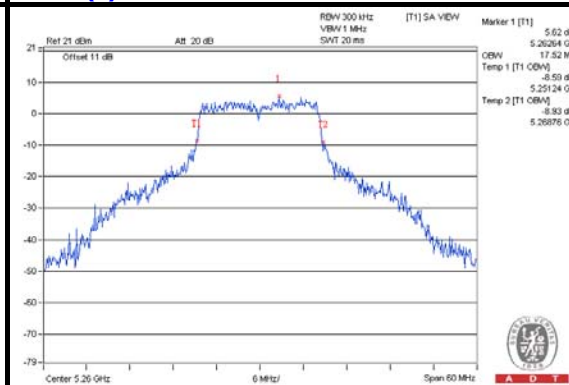
Chain(0) : CH40



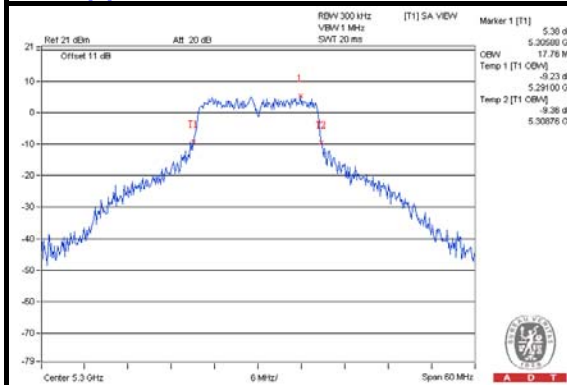
Chain(0) : CH48



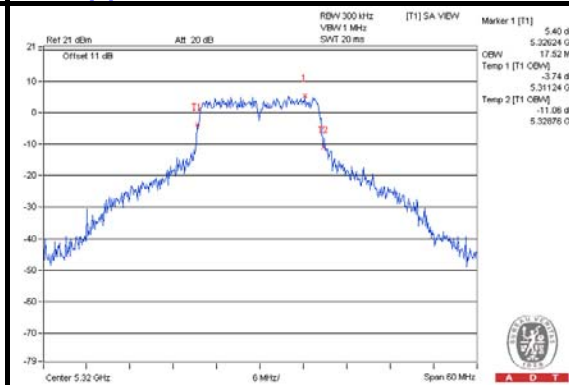
Chain(0) : CH52



Chain(0) : CH60



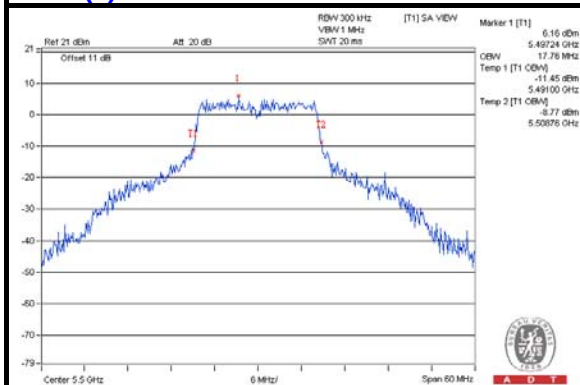
Chain(0) : CH64



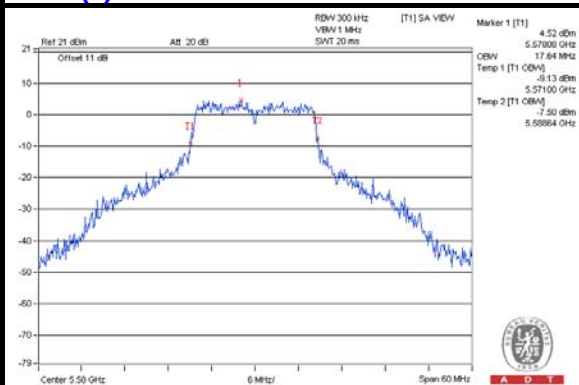


A D T

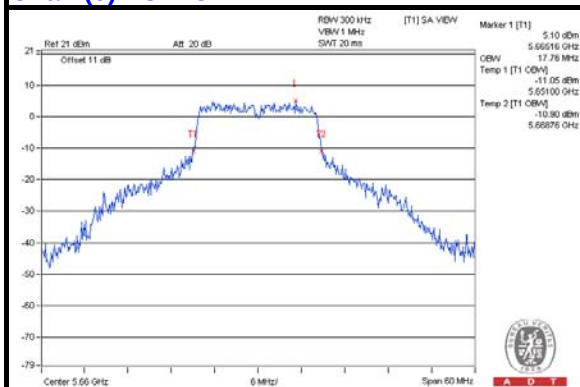
Chain(0) : CH100



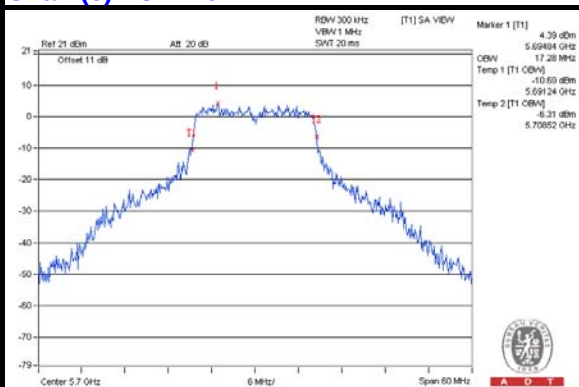
Chain(0) : CH116



Chain(0) : CH132



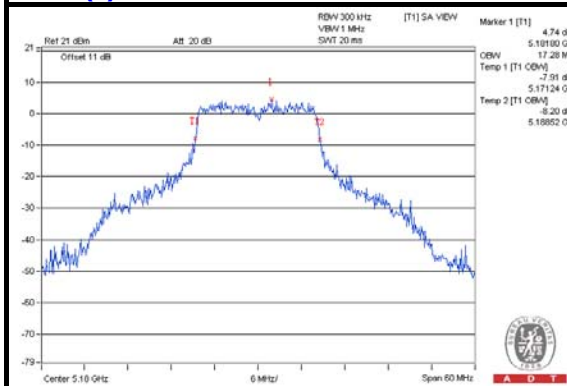
Chain(0) : CH140



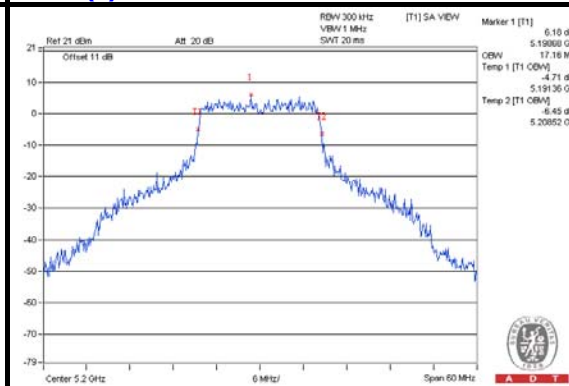


A D T

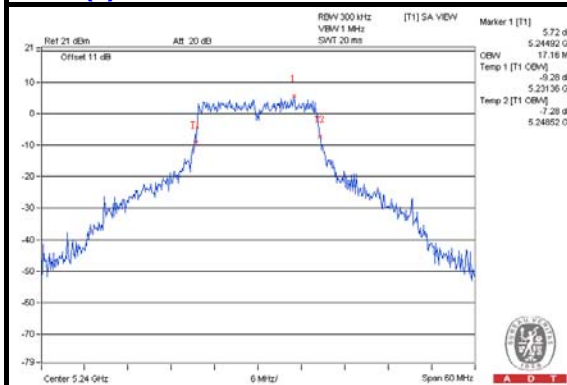
Chain(1) : CH36



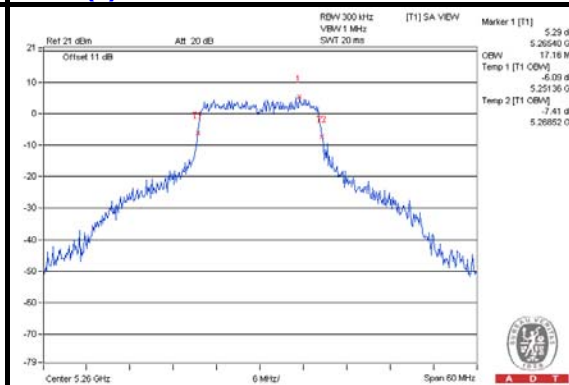
Chain(1) : CH40



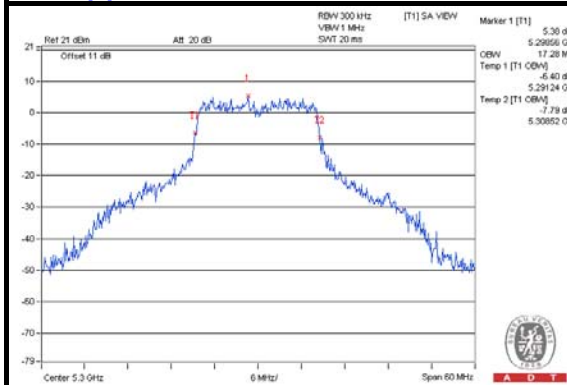
Chain(1) : CH48



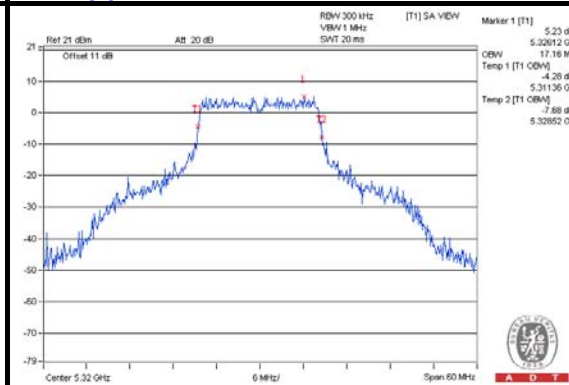
Chain(1) : CH52



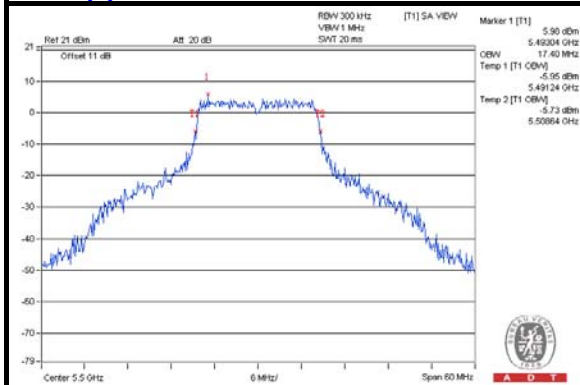
Chain(1) : CH60



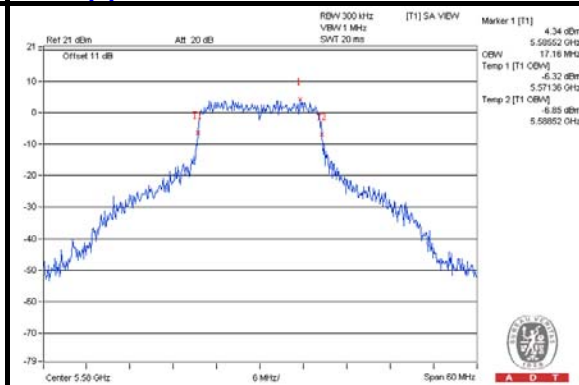
Chain(1) : CH64



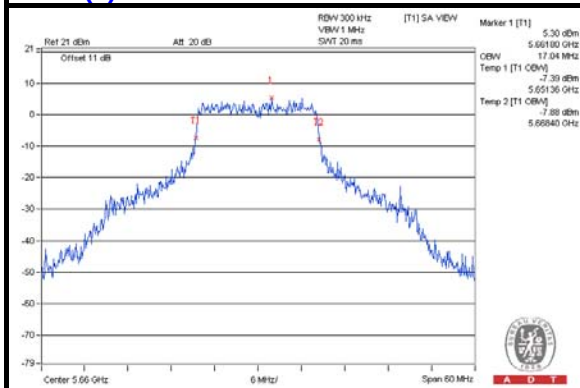
Chain(1) : CH100



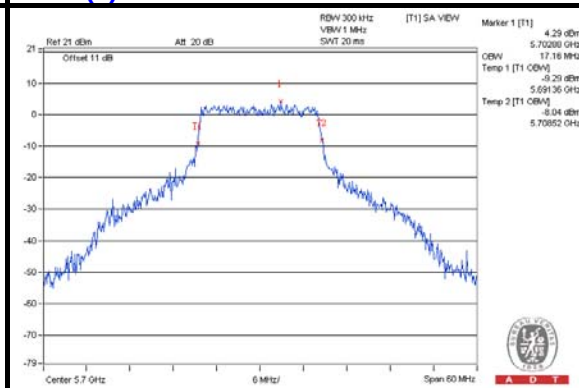
Chain(1) : CH116



Chain(1) : CH132



Chain(1) : CH140



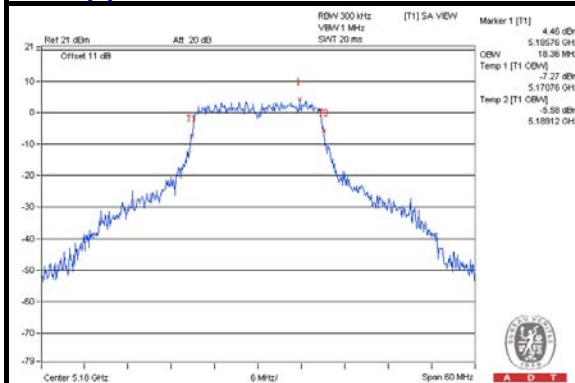
802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
36	5180	18.36	18.12
40	5200	18.24	18.00
48	5240	18.24	18.12
52	5260	18.12	18.12
60	5300	18.24	18.24
64	5320	18.12	18.36
100	5500	18.12	18.12
116	5580	18.36	18.12
132	5660	18.24	18.00
140	5700	18.00	18.12

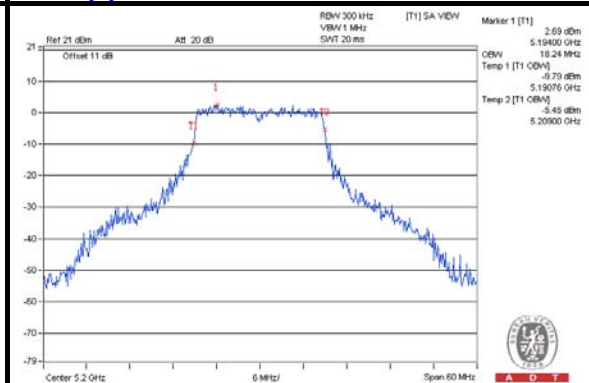


A D T

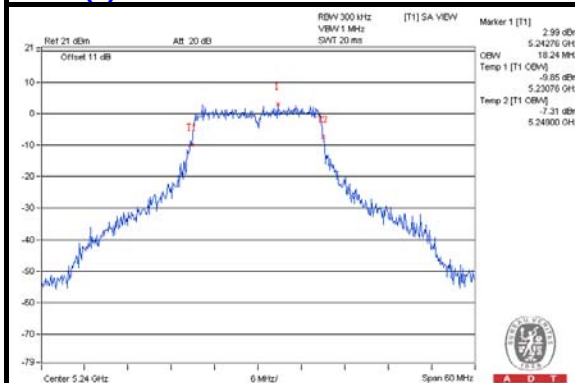
Chain(0) : CH36



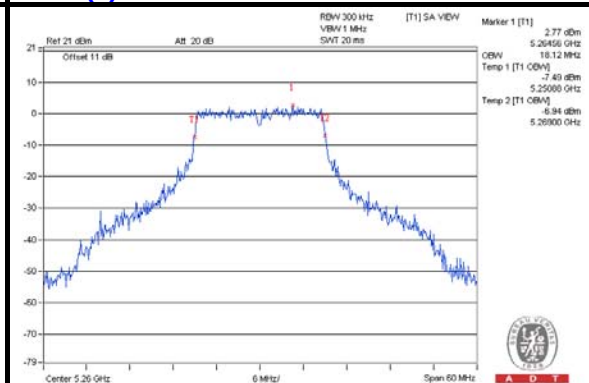
Chain(0) : CH40



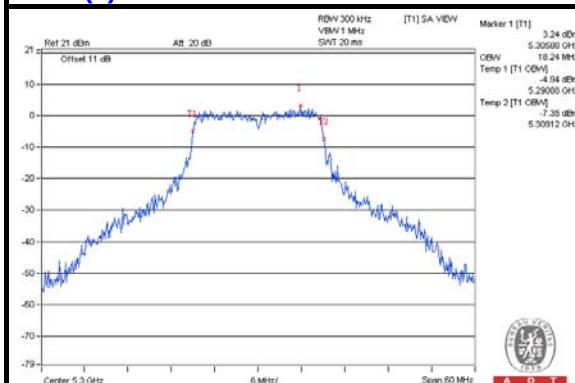
Chain(0) : CH48



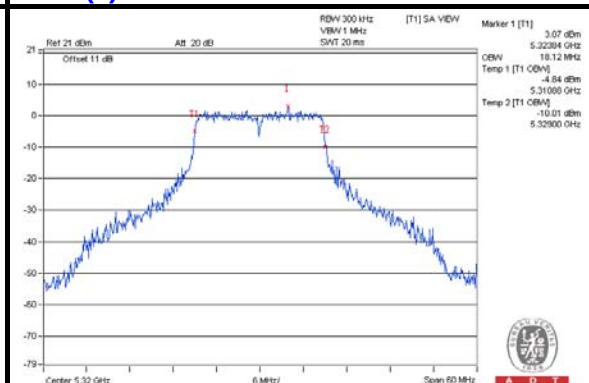
Chain(0) : CH52



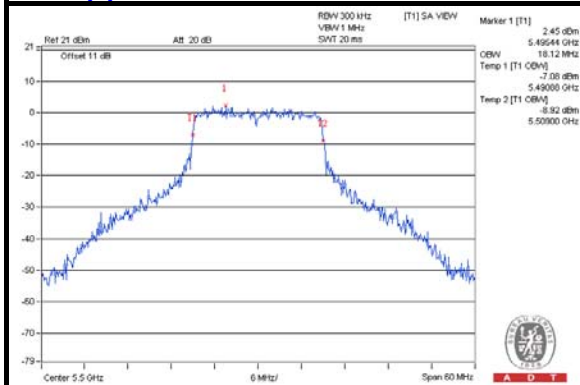
Chain(0) : CH60



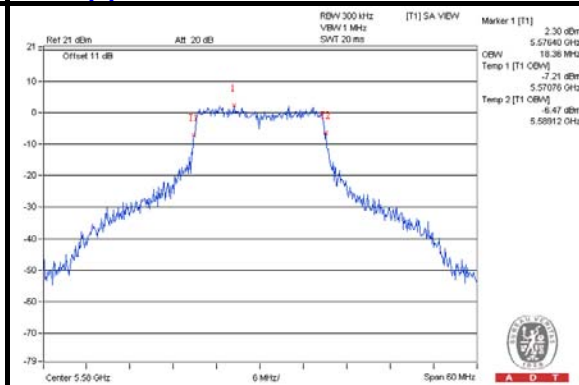
Chain(0) : CH64



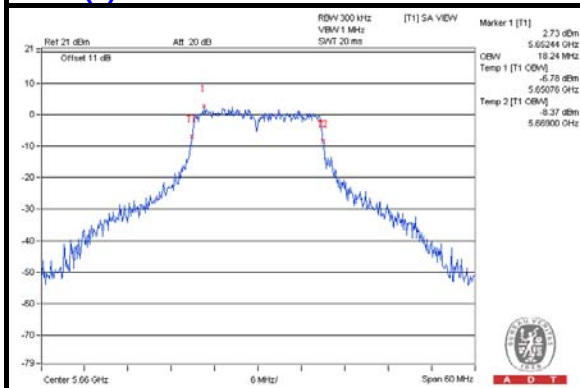
Chain(0) : CH100



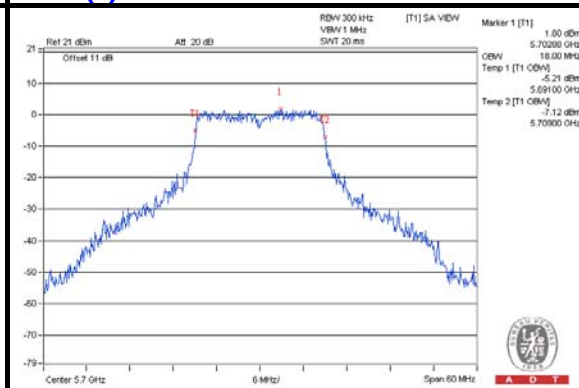
Chain(0) : CH116



Chain(0) : CH132



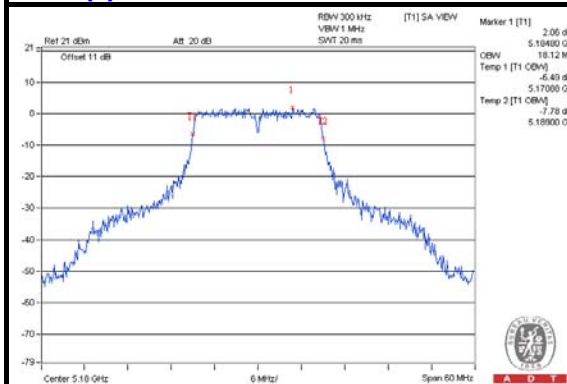
Chain(0) : CH140



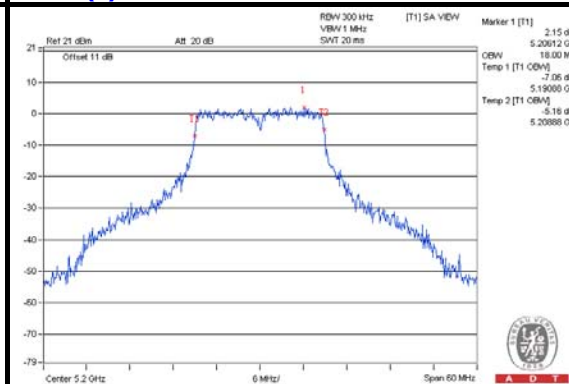


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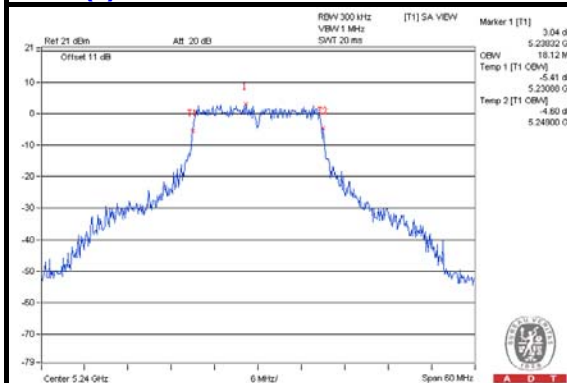
Chain(1) : CH36



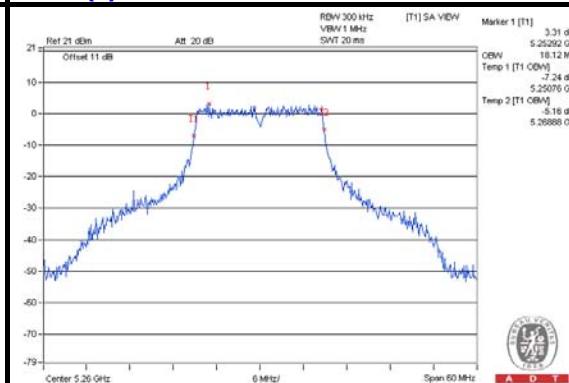
Chain(1) : CH40



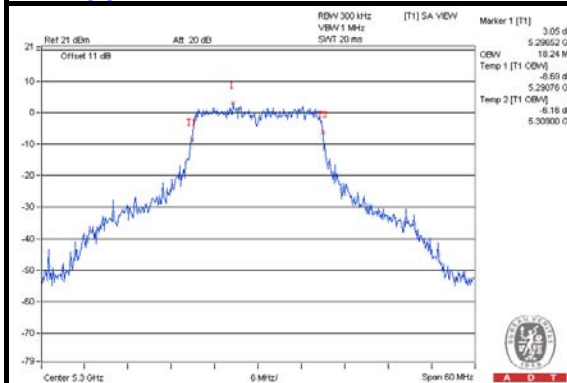
Chain(1) : CH48



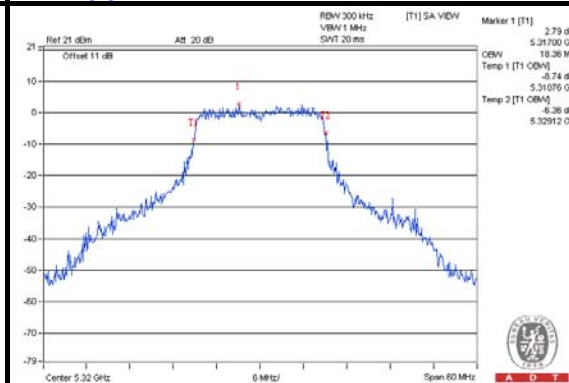
Chain(1) : CH52



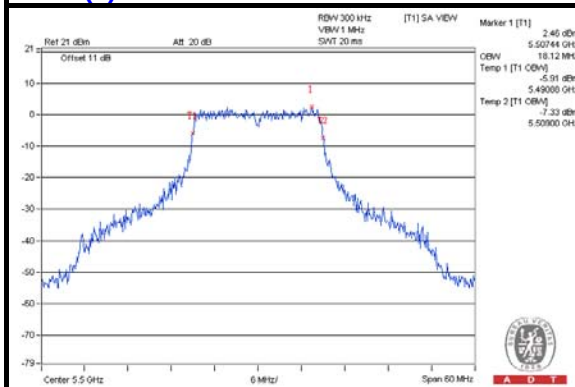
Chain(1) : CH60



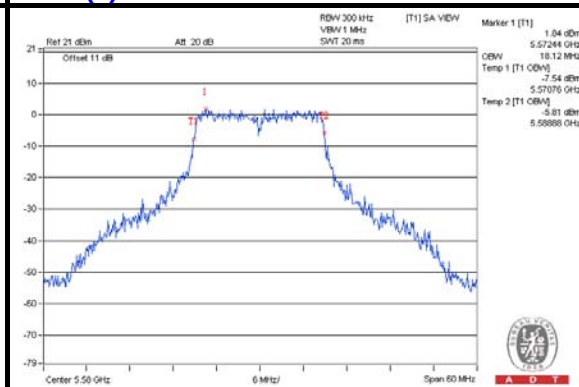
Chain(1) : CH64



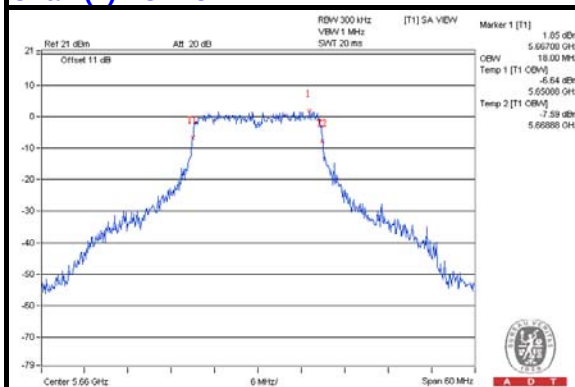
Chain(1) : CH100



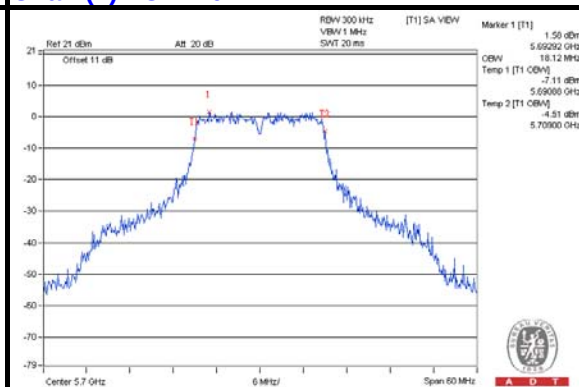
Chain(1) : CH116



Chain(1) : CH132



Chain(1) : CH140



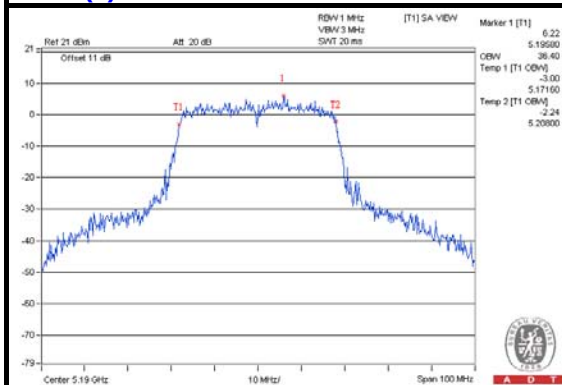
802.11n (HT40)

CHANNEL	CHANNEL FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN(0)	CHAIN(1)
38	5190	36.40	36.40
46	5230	36.60	36.60
54	5270	36.60	36.60
62	5310	36.20	36.40
102	5510	36.40	36.40
110	5550	36.80	36.60
134	5670	36.40	36.60

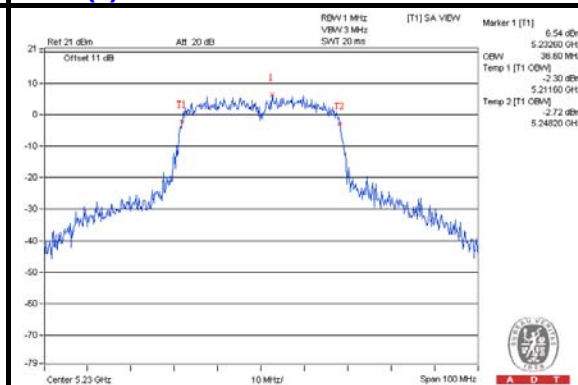


A D T

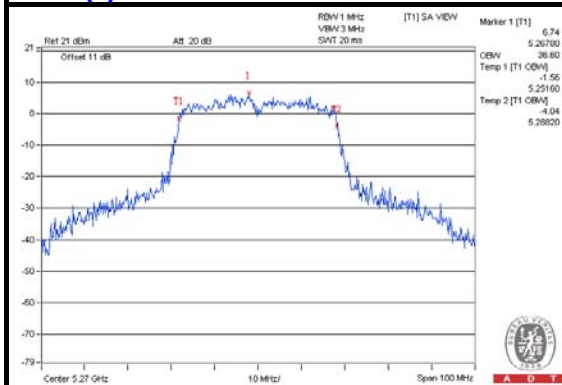
Chain(0) : CH38



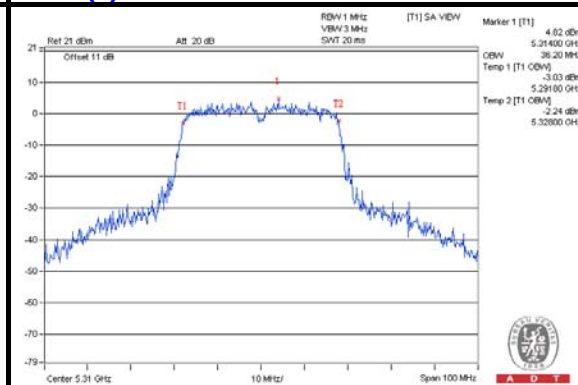
Chain(0) : CH46



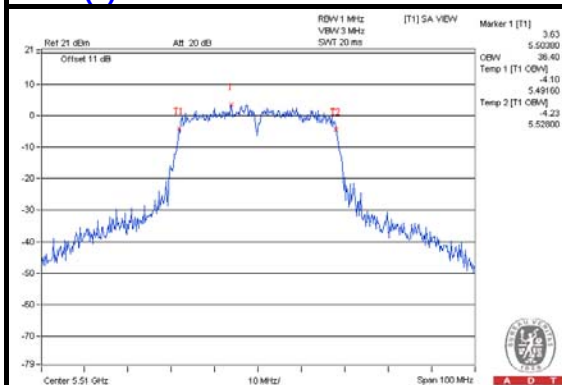
Chain(0) : CH54



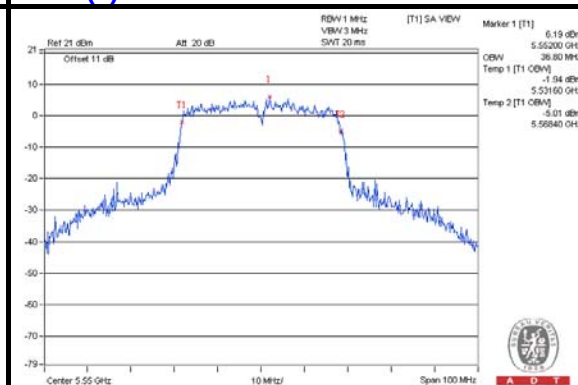
Chain(0) : CH62



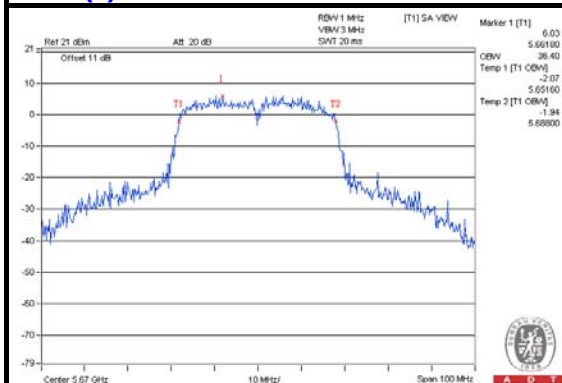
Chain(0) : CH102



Chain(0) : CH110



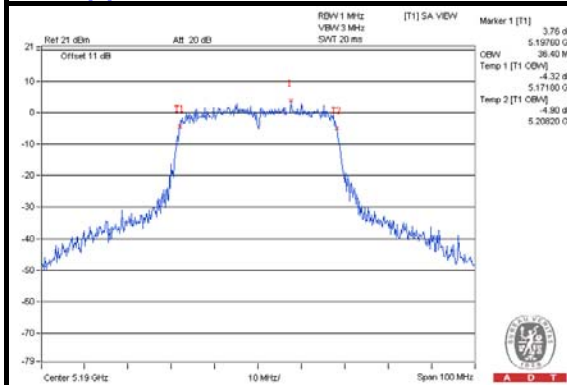
Chain(0) : CH134



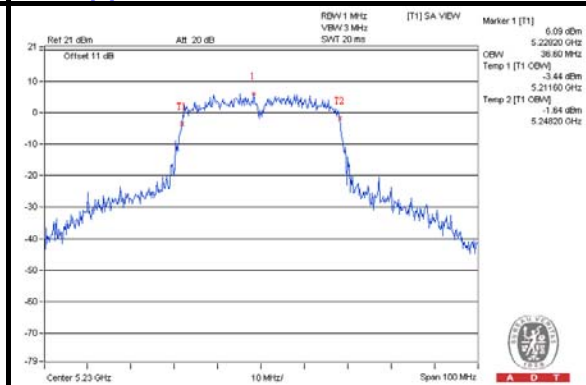


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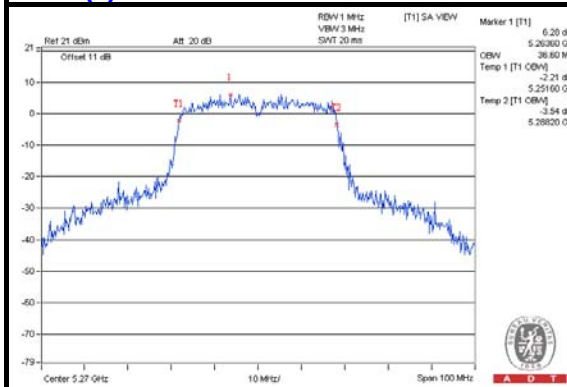
Chain(1) : CH38



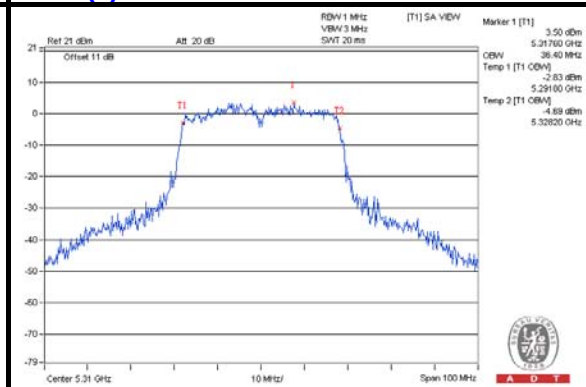
Chain(1) : CH46



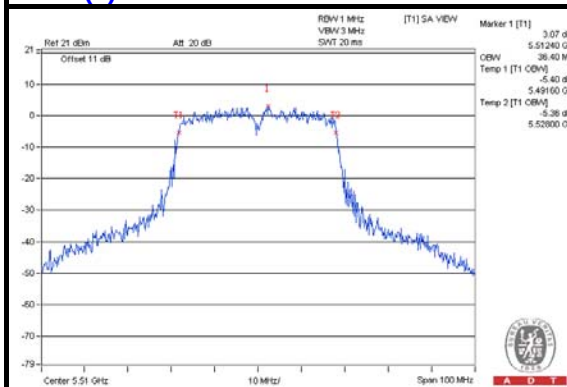
Chain(0) : CH54



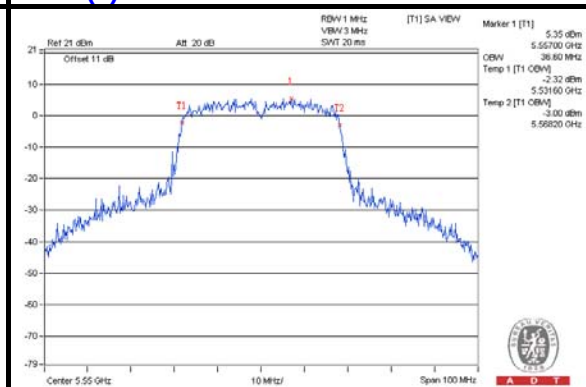
Chain(0) : CH62



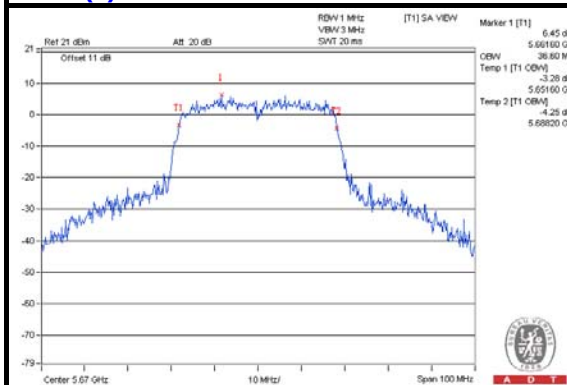
Chain(1) : CH102



Chain(1) : CH110



Chain(1) : CH134



4.5 UNWANTED EMISSION MEASUREMENT(RADIATED VERSUS CONDUCTED)

4.5.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table:

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. 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.

4.5.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
√	FIELD STRENGTH AT 3m (dBμV/m)	
	PK	AV
	74	54
	EIRP LIMIT (dBm)	EQUIVALENT FIELD STRENGTH AT 3m (dBμV/m)
	PK	PK
	-27	68.3

NOTE:

1. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts).}$$



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4.5.3 TEST INSTRUMENTS

Below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Sep. 03, 2012	Sep. 02, 2013
MXE EMI Receiver Agilent	N9038A	MY51210105	Jan. 29, 2013	Jan. 28, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A02578	June 26, 2012	June 25, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Apr. 09, 2012	Apr. 08, 2013
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 19, 2012	Nov. 18, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 25, 2012	Dec. 24, 2013
RF Cable	NA	CHGCAB_001	Oct. 06, 2012	Oct. 05, 2013
Software	ADT_Radiated _V8.7.05	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	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, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.
7. Tested Date: Feb. 26, 2013



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Above 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Sep. 03, 2012	Sep. 02, 2013
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 16, 2013	Jan. 15, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 30, 2012	Oct. 29, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Mar. 25, 2013	Mar. 24, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Nov. 27, 2012	Nov. 26, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 26, 2012	Dec. 25, 2013
RF Cable	NA	CHHCAB_001	Oct. 07, 2012	Oct. 06, 2013
Software	ADT_Radiated _V8.7.05	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	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, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5. The CANADA Site Registration No. is IC 7450H-3.
6. Tested Date: June 06 to 11, 2013

4.5.4 TEST PROCEDURES

For Below 1GHz test:

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited test facility. 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 quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for quasi-peak detection (QP) at frequency below 1GHz.

For Above 1GHz test:

Following FCC KDB 558074 D01 DTS Meas. Guidance :

Radiated versus Conducted Measurements.

The unwanted emission limits in both the restricted and non-restricted bands are based on antenna-port conducted measurements in conjunction with cabinet emissions tests are permitted to demonstrate compliance.

The following steps was performed:

- a. Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.
- b. Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT
- c. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater
- d. EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)

e. For all of Radiation emission test

- e-1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- e-2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- e-3. 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.
- e-4. 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-5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- e-6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin 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 of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.
- 3. All modes of operation were investigated and the worst-case emissions are reported.

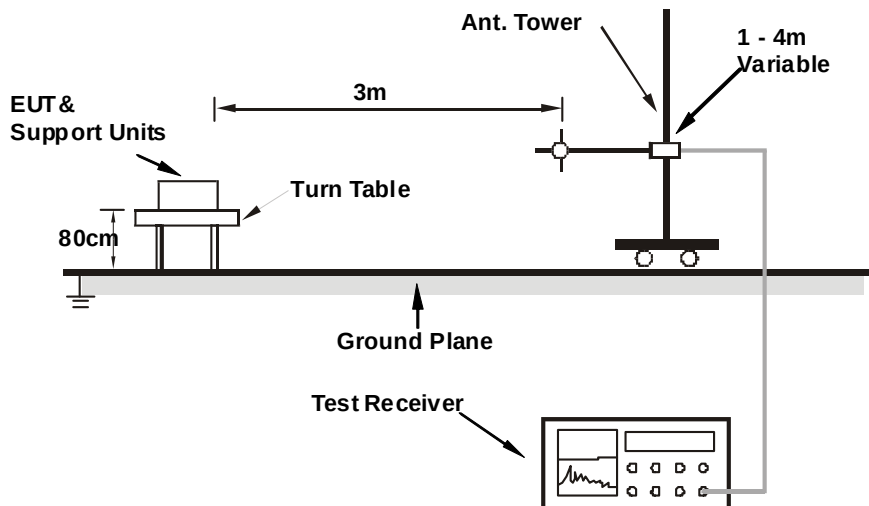
4.5.5 DEVIATION FROM TEST STANDARD

No deviation

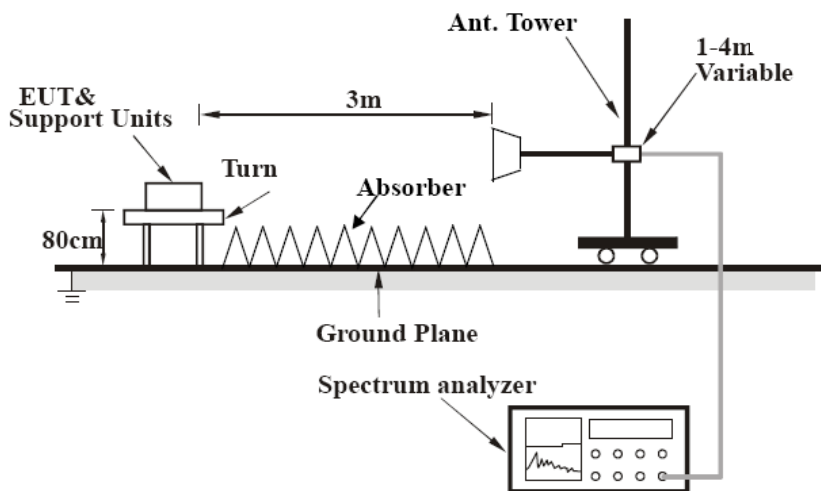
4.5.6 TEST SETUP

For radiated configuration:

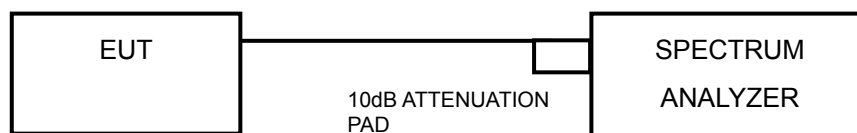
<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For conducted configuration:



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.5.7 EUT OPERATING CONDITION

1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “artgui.exe Ver2.3” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.5.8 TEST RESULTS (RADIATED MEASUREMENT)

Radiated versus Conducted Measurement	
☐ Conducted measurement	☒ Radiated measurement
<u>For Radiated measurement:</u> The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation) <u>For Conducted measurement:</u> The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).	

BELOW 1GHz WORST-CASE DATA

802.11a

CHANNEL	TX Channel 132	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	300.00	40.7 QP	46.0	-5.3	1.00 H	34	25.37	15.29
2	366.56	43.5 QP	46.0	-2.5	2.00 H	268	26.48	17.00
3	398.06	42.7 QP	46.0	-3.4	2.00 H	261	24.84	17.81
4	497.65	41.7 QP	46.0	-4.3	2.00 H	360	21.41	20.33
5	600.33	43.8 QP	46.0	-2.2	1.00 H	268	21.17	22.66
6	796.08	43.2 QP	46.0	-2.8	1.50 H	266	17.36	25.84
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	99.99	33.9 QP	43.5	-9.6	2.00 V	301	24.04	9.88
2	299.89	38.6 QP	46.0	-7.4	1.50 V	264	23.33	15.29
3	366.56	39.3 QP	46.0	-6.7	2.00 V	294	22.33	17.00
4	398.06	38.7 QP	46.0	-7.3	2.00 V	294	20.89	17.81
5	600.32	44.2 QP	46.0	-1.8	1.00 V	220	21.51	22.66
6	799.98	42.4 QP	46.0	-3.6	1.00 V	299	16.48	25.92

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.

Radiated test was done with 50ohm terminator on antenna port

ABOVE 1GHz DATA

802.11a

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#10360.00	58.5 PK	74.0	-15.5	1.52 H	133	44.71	13.79
2	#10360.00	45.4 AV	54.0	-8.6	1.52 H	133	31.61	13.79
3	15540.00	62.2 PK	74.0	-11.8	1.33 H	124	42.67	19.53
4	15540.00	51.4 AV	54.0	-2.6	1.33 H	124	31.87	19.53
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	#10360.00	58.5 PK	74.0	-15.5	1.52 V	133	44.71	13.79
2	#10360.00	45.4 AV	54.0	-8.6	1.52 V	133	31.61	13.79
3	15540.00	62.2 PK	74.0	-11.8	1.37 V	112	42.67	19.53
4	15540.00	51.5 AV	54.0	-2.5	1.37 V	112	31.97	19.53

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.



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CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#10400.00	58.3 PK	74.0	-15.7	1.55 H	126	44.64	13.66
2	#10400.00	45.1 AV	54.0	-8.9	1.55 H	126	31.44	13.66
3	15600.00	62.2 PK	74.0	-11.8	1.27 H	133	42.56	19.64
4	15600.00	51.6 AV	54.0	-2.4	1.27 H	133	31.96	19.64

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	#10400.00	58.6 PK	74.0	-15.4	1.57 V	129	44.94	13.66
2	#10400.00	45.3 AV	54.0	-8.7	1.57 V	129	31.64	13.66
3	15600.00	62.2 PK	74.0	-11.8	1.32 V	115	42.56	19.64
4	15600.00	51.2 AV	54.0	-2.8	1.32 V	115	31.56	19.64

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.



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CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#10480.00	59.5 PK	74.0	-14.5	1.59 H	105	45.43	14.07
2	#10480.00	45.8 AV	54.0	-8.2	1.59 H	105	31.73	14.07
3	15720.00	61.9 PK	74.0	-12.1	1.36 H	118	43.09	18.81
4	15720.00	51.0 AV	54.0	-3.0	1.36 H	118	32.19	18.81
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	#10480.00	59.2 PK	74.0	-14.8	1.55 V	120	45.13	14.07
2	#10480.00	45.7 AV	54.0	-8.3	1.55 V	120	31.63	14.07
3	15720.00	61.7 PK	74.0	-12.3	1.31 V	122	42.89	18.81
4	15720.00	50.8 AV	54.0	-3.2	1.31 V	122	31.99	18.81

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 52	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#10520.00	58.8 PK	74.0	-15.2	1.49 H	150	44.69	14.11
2	#10520.00	45.4 AV	54.0	-8.6	1.49 H	150	31.29	14.11
3	15780.00	62.2 PK	74.0	-11.8	1.30 H	115	43.36	18.84
4	15780.00	51.3 AV	54.0	-2.7	1.30 H	115	32.46	18.84
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	#10520.00	58.8 PK	74.0	-15.2	1.53 V	143	44.69	14.11
2	#10520.00	45.4 AV	54.0	-8.6	1.53 V	143	31.29	14.11
3	15780.00	61.8 PK	74.0	-12.2	1.32 V	100	42.96	18.84
4	15780.00	51.0 AV	54.0	-3.0	1.32 V	100	32.16	18.84

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.



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CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	10600.00	58.2 PK	74.0	-15.8	1.51 H	117	44.33	13.87
2	10600.00	44.8 AV	54.0	-9.2	1.51 H	117	30.93	13.87
3	15900.00	62.6 PK	74.0	-11.4	1.38 H	122	43.92	18.68
4	15900.00	51.6 AV	54.0	-2.4	1.38 H	122	32.92	18.68

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	10600.00	58.4 PK	74.0	-15.6	1.56 V	133	44.53	13.87
2	10600.00	44.8 AV	54.0	-9.2	1.56 V	133	30.93	13.87
3	15900.00	62.5 PK	74.0	-11.5	1.37 V	117	43.82	18.68
4	15900.00	51.6 AV	54.0	-2.4	1.37 V	117	32.92	18.68

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



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CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	10640.00	57.8 PK	74.0	-16.2	1.55 H	134	43.76	14.04
2	10640.00	44.8 AV	54.0	-9.2	1.55 H	134	30.76	14.04
3	15960.00	63.1 PK	74.0	-10.9	1.34 H	123	44.55	18.55
4	15960.00	51.6 AV	54.0	-2.4	1.34 H	123	33.05	18.55

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	10640.00	58.2 PK	74.0	-15.8	1.52 V	118	44.16	14.04
2	10640.00	45.1 AV	54.0	-8.9	1.52 V	118	31.06	14.04
3	15960.00	62.5 PK	74.0	-11.5	1.30 V	115	43.95	18.55
4	15960.00	51.2 AV	54.0	-2.8	1.30 V	115	32.65	18.55

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11000.00	58.5 PK	74.0	-15.5	1.52 H	111	43.97	14.53
2	11000.00	45.4 AV	54.0	-8.6	1.52 H	111	30.87	14.53
3	#16500.00	63.8 PK	74.0	-10.2	1.33 H	115	42.85	20.95
4	#16500.00	51.5 AV	54.0	-2.5	1.33 H	115	30.55	20.95

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	11000.00	58.2 PK	74.0	-15.8	1.58 V	122	43.67	14.53
2	11000.00	45.2 AV	54.0	-8.8	1.58 V	122	30.67	14.53
3	#16500.00	63.2 PK	74.0	-10.8	1.34 V	119	42.25	20.95
4	#16500.00	51.3 AV	54.0	-2.7	1.34 V	119	30.35	20.95

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.



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CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11160.00	58.0 PK	74.0	-16.0	1.49 H	105	43.43	14.57
2	11160.00	45.0 AV	54.0	-9.0	1.49 H	105	30.43	14.57
3	#16740.00	62.2 PK	74.0	-11.8	1.35 H	138	40.47	21.73
4	#16740.00	51.7 AV	54.0	-2.3	1.35 H	138	29.97	21.73

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	11160.00	58.1 PK	74.0	-15.9	1.51 V	109	43.53	14.57
2	11160.00	45.0 AV	54.0	-9.0	1.51 V	109	30.43	14.57
3	#16740.00	62.1 PK	74.0	-11.9	1.35 V	131	40.37	21.73
4	#16740.00	51.2 AV	54.0	-2.8	1.35 V	131	29.47	21.73

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 132	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11320.00	58.8 PK	74.0	-15.2	1.55 H	124	43.46	15.34
2	11320.00	45.6 AV	54.0	-8.4	1.55 H	124	30.26	15.34
3	#16980.00	62.1 PK	74.0	-11.9	1.38 H	141	39.38	22.72
4	#16980.00	51.2 AV	54.0	-2.8	1.38 H	141	28.48	22.72
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	11320.00	58.3 PK	74.0	-15.7	1.54 V	131	42.96	15.34
2	11320.00	45.4 AV	54.0	-8.6	1.54 V	131	30.06	15.34
3	#16980.00	62.1 PK	74.0	-11.9	1.35 V	129	39.38	22.72
4	#16980.00	51.5 AV	54.0	-2.5	1.35 V	129	28.78	22.72

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11400.00	58.0 PK	74.0	-16.0	1.55 H	128	43.03	14.97
2	11400.00	45.0 AV	54.0	-9.0	1.55 H	128	30.03	14.97
3	#17100.00	66.9 PK	74.0	-7.1	1.96 H	76	44.32	22.58
4	#17100.00	51.4 AV	54.0	-2.6	1.96 H	76	28.82	22.58
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	11400.00	58.7 PK	74.0	-15.3	1.58 V	115	43.73	14.97
2	11400.00	45.4 AV	54.0	-8.6	1.58 V	115	30.43	14.97
3	#17100.00	66.7 PK	74.0	-7.3	1.94 V	91	44.12	22.58
4	#17100.00	51.6 AV	54.0	-2.4	1.94 V	91	29.02	22.58

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

802.11n (HT20)

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#10360.00	58.3 PK	74.0	-15.7	1.50 H	117	44.51	13.79
2	#10360.00	45.3 AV	54.0	-8.7	1.50 H	117	31.51	13.79
3	15540.00	63.4 PK	74.0	-10.6	1.25 H	113	43.87	19.53
4	15540.00	51.8 AV	54.0	-2.2	1.25 H	113	32.27	19.53
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	#10360.00	58.5 PK	74.0	-15.5	1.48 V	120	44.71	13.79
2	#10360.00	45.6 AV	54.0	-8.4	1.48 V	120	31.81	13.79
3	15540.00	63.0 PK	74.0	-11.0	1.25 V	100	43.47	19.53
4	15540.00	51.4 AV	54.0	-2.6	1.25 V	100	31.87	19.53

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.



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CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#10400.00	58.9 PK	74.0	-15.1	1.49 H	113	45.24	13.66
2	#10400.00	45.8 AV	54.0	-8.2	1.49 H	113	32.14	13.66
3	15600.00	62.0 PK	74.0	-12.0	1.20 H	123	42.36	19.64
4	15600.00	50.8 AV	54.0	-3.2	1.20 H	123	31.16	19.64

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	#10400.00	58.4 PK	74.0	-15.6	1.51 V	120	44.74	13.66
2	#10400.00	45.3 AV	54.0	-8.7	1.51 V	120	31.64	13.66
3	15600.00	62.1 PK	74.0	-11.9	1.24 V	130	42.46	19.64
4	15600.00	51.0 AV	54.0	-3.0	1.24 V	130	31.36	19.64

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.



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CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#10480.00	58.6 PK	74.0	-15.4	1.48 H	132	44.53	14.07
2	#10480.00	45.6 AV	54.0	-8.4	1.48 H	132	31.53	14.07
3	15720.00	62.2 PK	74.0	-11.8	1.22 H	122	43.39	18.81
4	15720.00	51.4 AV	54.0	-2.6	1.22 H	122	32.59	18.81
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	#10480.00	57.8 PK	74.0	-16.2	1.54 V	109	43.73	14.07
2	#10480.00	45.0 AV	54.0	-9.0	1.54 V	109	30.93	14.07
3	15720.00	62.7 PK	74.0	-11.3	1.25 V	105	43.89	18.81
4	15720.00	51.1 AV	54.0	-2.9	1.25 V	105	32.29	18.81

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.



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CHANNEL	TX Channel 52	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#10520.00	58.5 PK	74.0	-15.5	1.53 H	101	44.39	14.11
2	#10520.00	45.3 AV	54.0	-8.7	1.53 H	101	31.19	14.11
3	15780.00	62.2 PK	74.0	-11.8	1.21 H	120	43.36	18.84
4	15780.00	51.2 AV	54.0	-2.8	1.21 H	120	32.36	18.84

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	#10520.00	58.6 PK	74.0	-15.4	1.53 V	107	44.49	14.11
2	#10520.00	45.5 AV	54.0	-8.5	1.53 V	107	31.39	14.11
3	15780.00	62.4 PK	74.0	-11.6	1.25 V	131	43.56	18.84
4	15780.00	51.1 AV	54.0	-2.9	1.25 V	131	32.26	18.84

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.



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CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	10600.00	58.5 PK	74.0	-15.5	1.58 H	96	44.63	13.87
2	10600.00	45.3 AV	54.0	-8.7	1.58 H	96	31.43	13.87
3	15900.00	62.8 PK	74.0	-11.2	1.31 H	137	44.12	18.68
4	15900.00	51.4 AV	54.0	-2.6	1.31 H	137	32.72	18.68

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	10600.00	58.5 PK	74.0	-15.5	1.53 V	106	44.63	13.87
2	10600.00	45.3 AV	54.0	-8.7	1.53 V	106	31.43	13.87
3	15900.00	62.2 PK	74.0	-11.8	1.35 V	120	43.52	18.68
4	15900.00	51.0 AV	54.0	-3.0	1.35 V	120	32.32	18.68

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



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CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	10640.00	58.2 PK	74.0	-15.8	1.58 H	115	44.16	14.04
2	10640.00	45.2 AV	54.0	-8.8	1.58 H	115	31.16	14.04
3	15960.00	62.8 PK	74.0	-11.2	1.23 H	135	44.25	18.55
4	15960.00	51.3 AV	54.0	-2.7	1.23 H	135	32.75	18.55

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	10640.00	58.3 PK	74.0	-15.7	1.52 V	125	44.26	14.04
2	10640.00	45.1 AV	54.0	-8.9	1.52 V	125	31.06	14.04
3	15960.00	62.4 PK	74.0	-11.6	1.35 V	120	43.85	18.55
4	15960.00	50.9 AV	54.0	-3.1	1.35 V	120	32.35	18.55

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



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CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11000.00	58.3 PK	74.0	-15.7	1.52 H	130	43.77	14.53
2	11000.00	45.0 AV	54.0	-9.0	1.52 H	130	30.47	14.53
3	#16500.00	62.1 PK	74.0	-11.9	1.47 H	135	41.15	20.95
4	#16500.00	51.1 AV	54.0	-2.9	1.47 H	135	30.15	20.95

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	11000.00	58.3 PK	74.0	-15.7	1.49 V	128	43.77	14.53
2	11000.00	44.9 AV	54.0	-9.1	1.49 V	128	30.37	14.53
3	#16500.00	62.1 PK	74.0	-11.9	1.49 V	128	41.15	20.95
4	#16500.00	50.9 AV	54.0	-3.1	1.49 V	128	29.95	20.95

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.



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CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11160.00	58.3 PK	74.0	-15.7	1.57 H	132	43.73	14.57
2	11160.00	44.9 AV	54.0	-9.1	1.57 H	132	30.33	14.57
3	#16740.00	62.7 PK	74.0	-11.3	1.44 H	136	40.97	21.73
4	#16740.00	50.7 AV	54.0	-3.3	1.44 H	136	28.97	21.73
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	11160.00	58.4 PK	74.0	-15.6	1.54 V	138	43.83	14.57
2	11160.00	45.1 AV	54.0	-8.9	1.54 V	138	30.53	14.57
3	#16740.00	62.1 PK	74.0	-11.9	1.39 V	123	40.37	21.73
4	#16740.00	50.7 AV	54.0	-3.3	1.39 V	123	28.97	21.73

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 136	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11320.00	58.3 PK	74.0	-15.7	1.42 H	144	42.96	15.34
2	11320.00	45.3 AV	54.0	-8.7	1.42 H	144	29.96	15.34
3	#16980.00	61.5 PK	74.0	-12.5	1.39 H	124	38.78	22.72
4	#16980.00	50.3 AV	54.0	-3.7	1.39 H	124	27.58	22.72
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	11320.00	58.4 PK	74.0	-15.6	1.45 V	137	43.06	15.34
2	11320.00	45.1 AV	54.0	-8.9	1.45 V	137	29.76	15.34
3	#16980.00	61.6 PK	74.0	-12.4	1.39 V	124	38.88	22.72
4	#16980.00	51.2 AV	54.0	-2.8	1.39 V	124	28.48	22.72

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.



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CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11400.00	58.9 PK	74.0	-15.1	1.55 H	133	43.93	14.97
2	11400.00	45.5 AV	54.0	-8.5	1.55 H	133	30.53	14.97
3	#17100.00	62.6 PK	74.0	-11.4	1.39 H	122	40.02	22.58
4	#17100.00	50.5 AV	54.0	-3.5	1.39 H	122	27.92	22.58

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	11400.00	59.0 PK	74.0	-15.0	1.53 V	134	44.03	14.97
2	11400.00	45.4 AV	54.0	-8.6	1.53 V	134	30.43	14.97
3	#17100.00	62.1 PK	74.0	-11.9	1.43 V	130	39.52	22.58
4	#17100.00	50.9 AV	54.0	-3.1	1.43 V	130	28.32	22.58

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

802.11n (HT40)

CHANNEL	TX Channel 38	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#10380.00	55.8 PK	74.0	-18.2	1.26 H	167	42.08	13.72
2	#10380.00	45.4 AV	54.0	-8.6	1.26 H	167	31.68	13.72
3	15570.00	62.4 PK	74.0	-11.6	1.37 H	124	42.82	19.58
4	15570.00	51.1 AV	54.0	-2.9	1.37 H	124	31.52	19.58
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	#10380.00	55.5 PK	74.0	-18.5	1.22 V	151	41.78	13.72
2	#10380.00	45.2 AV	54.0	-8.8	1.22 V	151	31.48	13.72
3	15570.00	62.4 PK	74.0	-11.6	1.35 V	120	42.82	19.58
4	15570.00	50.9 AV	54.0	-3.1	1.35 V	120	31.32	19.58

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.



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CHANNEL	TX Channel 46	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#10460.00	55.6 PK	74.0	-18.4	1.29 H	113	41.64	13.96
2	#10460.00	45.6 AV	54.0	-8.4	1.29 H	113	31.64	13.96
3	15690.00	62.5 PK	74.0	-11.5	1.30 H	108	43.61	18.89
4	15690.00	51.3 AV	54.0	-2.7	1.30 H	108	32.41	18.89

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	#10460.00	55.5 PK	74.0	-18.5	1.35 V	120	41.54	13.96
2	#10460.00	45.1 AV	54.0	-8.9	1.35 V	120	31.14	13.96
3	15690.00	62.4 PK	74.0	-11.6	1.35 V	120	43.51	18.89
4	15690.00	50.9 AV	54.0	-3.1	1.35 V	120	32.01	18.89

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.



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CHANNEL	TX Channel 54	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	#10540.00	55.4 PK	74.0	-18.6	1.31 H	116	41.35	14.05
2	#10540.00	45.1 AV	54.0	-8.9	1.31 H	116	31.05	14.05
3	15810.00	62.9 PK	74.0	-11.1	1.42 H	135	44.07	18.83
4	15810.00	51.1 AV	54.0	-2.9	1.42 H	135	32.27	18.83
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	#10540.00	55.2 PK	74.0	-18.8	1.36 V	125	41.15	14.05
2	#10540.00	45.3 AV	54.0	-8.7	1.36 V	125	31.25	14.05
3	15810.00	62.9 PK	74.0	-11.1	1.36 V	125	44.07	18.83
4	15810.00	51.4 AV	54.0	-2.6	1.36 V	125	32.57	18.83

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.



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CHANNEL	TX Channel 62	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	10620.00	58.2 PK	74.0	-15.8	1.52 H	129	44.24	13.96
2	10620.00	45.1 AV	54.0	-8.9	1.52 H	129	31.14	13.96
3	15930.00	62.8 PK	74.0	-11.2	1.30 H	117	44.19	18.61
4	15930.00	51.6 AV	54.0	-2.4	1.30 H	117	32.99	18.61
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	10620.00	58.2 PK	74.0	-15.8	1.50 V	113	44.24	13.96
2	10620.00	45.3 AV	54.0	-8.7	1.50 V	113	31.34	13.96
3	15930.00	62.4 PK	74.0	-11.6	1.32 V	129	43.79	18.61
4	15930.00	51.3 AV	54.0	-2.7	1.32 V	129	32.69	18.61

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

CHANNEL	TX Channel 102	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11020.00	57.9 PK	74.0	-16.1	1.53 H	110	43.38	14.52
2	11020.00	45.0 AV	54.0	-9.0	1.53 H	110	30.48	14.52
3	#16530.00	62.5 PK	74.0	-11.5	1.28 H	128	41.22	21.28
4	#16530.00	51.7 AV	54.0	-2.3	1.28 H	128	30.42	21.28

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	11020.00	58.3 PK	74.0	-15.7	1.54 V	105	43.78	14.52
2	11020.00	45.4 AV	54.0	-8.6	1.54 V	105	30.88	14.52
3	#16530.00	63.0 PK	74.0	-11.0	1.30 V	122	41.72	21.28
4	#16530.00	51.2 AV	54.0	-2.8	1.30 V	122	29.92	21.28

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.



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CHANNEL	TX Channel 110	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11100.00	57.9 PK	74.0	-16.1	1.48 H	115	43.43	14.47
2	11100.00	45.3 AV	54.0	-8.7	1.48 H	115	30.83	14.47
3	#16650.00	63.7 PK	74.0	-10.3	1.25 H	132	41.81	21.89
4	#16650.00	51.6 AV	54.0	-2.4	1.25 H	132	29.71	21.89

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	11100.00	58.7 PK	74.0	-15.3	1.51 V	116	44.23	14.47
2	11100.00	45.8 AV	54.0	-8.2	1.51 V	116	31.33	14.47
3	#16650.00	63.2 PK	74.0	-10.8	1.26 V	130	41.31	21.89
4	#16650.00	51.1 AV	54.0	-2.9	1.26 V	130	29.21	21.89

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 134	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11340.00	57.6 PK	74.0	-16.4	1.52 H	87	42.35	15.25
2	11340.00	44.8 AV	54.0	-9.2	1.52 H	87	29.55	15.25
3	#17010.00	63.7 PK	74.0	-10.3	1.24 H	121	40.86	22.84
4	#17010.00	51.6 AV	54.0	-2.4	1.24 H	121	28.76	22.84
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	11340.00	57.9 PK	74.0	-16.1	1.48 V	90	42.65	15.25
2	11340.00	45.2 AV	54.0	-8.8	1.48 V	90	29.95	15.25
3	#17010.00	63.4 PK	74.0	-10.6	1.30 V	113	40.56	22.84
4	#17010.00	50.6 AV	54.0	-3.4	1.30 V	113	27.76	22.84

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

4.5.9 TEST RESULTS (CONDUCTED MEASUREMENT)

Radiated versus Conducted Measurement	
☒ Conducted measurement	☐ Radiated measurement
<u>For Radiated measurement:</u> The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation) <u>For Conducted measurement:</u> The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).	

Conducted Measurement Factor
a. The composite gain will be used when signal support the correlated signal. (Composite gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2]$ = 6.09dBi for Band 1 & 2, 7.77dBi for Band 3) b. For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands. c. For the band edge the gain for the specific band may have been used. d. In restricted bands below 1000 MHz, add upper bound on ground plane reflection: For f = 30 – 1000 MHz, add 4.7 dB. Note: The conducted emission test was considered some factor to compute test result.



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ABOVE 1GHz DATA

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Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
36	3453.125 PK	-40.43	-39.64	-37.01	-21.26	-15.75	PASS
	3453.125 AV	-50.42	-45.86	-44.56	-41.26	-3.3	PASS
	10362.5 PK	-43.02	-34.02	-33.51	-21.26	-12.25	PASS
	10362.5 AV	-53.66	-45.66	-45.02	-41.26	-3.76	PASS
	15544.125 PK	-41.86	-43.01	-39.39	-21.26	-18.13	PASS
	15535.5 AV	-54.59	-54.42	-51.49	-41.26	-10.23	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
36	5150 PK	-30.27	-32.21	-28.12	-21.26	-6.86	PASS
	5150 AV	-51.66	-50.52	-48.04	-41.26	-6.78	PASS



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Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
40	3465.625 PK	-42.8	-39.84	-38.06	-21.26	-16.8	PASS
	3465.625 AV	-50.73	-44.51	-43.58	-41.26	-2.32	PASS
	10400 PK	-44.52	-30.41	-30.24	-21.26	-8.98	PASS
	10400 AV	-54.28	-44.27	-43.86	-41.26	-2.6	PASS
	15598.75 PK	-44.34	-42.61	-40.38	-21.26	-19.12	PASS
	15601.625 AV	-55.53	-54.78	-52.13	-41.26	-10.87	PASS



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Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
48	3493.75 PK	-41.84	-38.95	-37.15	-21.26	-15.89	PASS
	3493.75 AV	-49.74	-43.89	-42.89	-41.26	-1.63	PASS
	10478.125 PK	-45.13	-32.57	-32.34	-21.26	-11.08	PASS
	10478.125 AV	-54.61	-43.82	-43.47	-41.26	-2.21	PASS
	15716.625 PK	-44.41	-44.45	-41.42	-21.26	-20.16	PASS
	15719.5 AV	-55.58	-54.6	-52.05	-41.26	-10.79	PASS



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Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
52	3506.25 PK	-40.6	-37.61	-35.84	-21.26	-14.58	PASS
	3506.25 AV	-49.32	-43.83	-42.75	-41.26	-1.49	PASS
	10518.75 PK	-42.98	-30.2	-29.98	-21.26	-8.72	PASS
	10521.875 AV	-54.44	-43.14	-42.83	-41.26	-1.57	PASS
	15788.5 PK	-43.78	-43.35	-40.55	-21.26	-19.29	PASS
	15779.875 AV	-55.18	-53.62	-51.32	-41.26	-10.06	PASS



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Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
60	3534.375 PK	-40.81	-37.62	-35.92	-21.26	-14.66	PASS
	3531.25 AV	-48.74	-43.3	-42.21	-41.26	-0.95	PASS
	10603.125 PK	-42.96	-31.87	-31.54	-21.26	-10.28	PASS
	10600 AV	-53.8	-44.35	-43.88	-41.26	-2.62	PASS
	15906.375 PK	-43.59	-40.85	-39	-21.26	-17.74	PASS
	15900.625 AV	-54.58	-52.31	-50.29	-41.26	-9.03	PASS

802.11a

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
64	3546.875 PK	-41.14	-38.42	-36.56	-21.26	-15.3	PASS
	3546.875 AV	-48.57	-43.75	-42.51	-41.26	-1.25	PASS
	10637.5 PK	-43.27	-31.55	-31.27	-21.26	-10.01	PASS
	10640.625 AV	-53.75	-44.56	-44.07	-41.26	-2.81	PASS
	15958.125 PK	-44.31	-40.29	-38.84	-21.26	-17.58	PASS
	15958.125 AV	-54.96	-51.96	-50.2	-41.26	-8.94	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
64	5350 PK	-24.29	-31.95	-23.6	-21.26	-2.34	PASS
	5350 AV	-49.67	-49.28	-46.46	-41.26	-5.2	PASS

802.11a

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
100	3665.625 PK	-38.68	-35.71	-33.94	-21.26	-12.68	PASS
	3665.625 AV	-44.66	-42.53	-40.46	-41.26	0.8	PASS*
	11006.25 PK	-42.9	-30.89	-30.62	-21.26	-9.36	PASS
	11003.125 AV	-53.25	-42.81	-42.43	-41.26	-1.17	PASS
	16490 PK	-41.67	-40.25	-37.89	-21.26	-16.63	PASS
	16501.5 AV	-52.56	-50.15	-48.18	-41.26	-6.92	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
100	5469.5 PK	-24.77	-25.04	-21.89	-21.26	-0.63	PASS
	5470 AV	-46.56	-47.14	-43.83	-41.26	-2.57	PASS

*The unwanted emission at 3.6GHz was verified and the test result was passed by radiated measurement. (Please refer APPENDIX A)



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802.11a**Conducted spurious emission table**

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
116	3718.75 PK	-36.11	-37.23	-33.62	-21.26	-12.36	PASS
	3718.75 AV	-41.64	-42.21	-38.91	-41.26	2.35	PASS*
	11162.5 PK	-40.2	-30.31	-29.89	-21.26	-8.63	PASS
	11162.5 AV	-52.73	-42.3	-41.92	-41.26	-0.66	PASS
	16734.375 PK	-42.93	-40.23	-38.36	-21.26	-17.1	PASS
	16734.375 AV	-53.84	-52.11	-49.88	-41.26	-8.62	PASS

*The unwanted emission at 3.7GHz was verified and the test result was passed by radiated measurement. (Please refer APPENDIX A)



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802.11a

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
132	3771.875 PK	-34.96	-37.71	-33.11	-21.26	-11.85	PASS
	3771.875 AV	-38.73	-42.01	-37.06	-41.26	4.2	PASS*
	11321.875 PK	-40.87	-29.53	-29.22	-21.26	-7.96	PASS
	11321.875 AV	-51.99	-42.44	-41.98	-41.26	-0.72	PASS
	16973 PK	-41.47	-37.05	-35.71	-21.26	-14.45	PASS
	16984.5 AV	-51.71	-49.74	-47.6	-41.26	-6.34	PASS

*The unwanted emission at 3.7GHz was verified and the test result was passed by radiated measurement. (Please refer APPENDIX A)

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Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
140	3800 PK	-35.36	-37.83	-33.41	-21.26	-12.15	PASS
	3800 AV	-38.11	-42.31	-36.71	-41.26	4.55	PASS*
	11403.125 PK	-40.34	-33.18	-32.42	-21.26	-11.16	PASS
	11403.125 AV	-52.31	-44.5	-43.83	-41.26	-2.57	PASS
	17096.625 PK	-43.01	-38.22	-36.98	-21.26	-15.72	PASS
	17096.625 AV	-52.77	-51.68	-49.18	-41.26	-7.92	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
140	5726.2 PK	-24.76	-27.5	-22.91	-21.26	-1.65	PASS
	5725 AV	-45.91	-46.39	-43.13	-41.26	-1.87	PASS

*The unwanted emission at 3.8GHz was verified and the test result was passed by radiated measurement. (Please refer APPENDIX A)



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802.11n(HT20)**Conducted spurious emission table**

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
36	3453.125 PK	-41.74	-38.33	-36.7	-21.26	-15.44	PASS
	3453.125 AV	-50.89	-45.17	-44.14	-41.26	-2.88	PASS
	10362.5 PK	-44.41	-33.64	-33.29	-21.26	-12.03	PASS
	10359.375 AV	-54.22	-46.26	-45.62	-41.26	-4.36	PASS
	15535.5 PK	-43.56	-43.54	-40.54	-21.26	-19.28	PASS
	15538.375 AV	-54.58	-54.3	-51.43	-41.26	-10.17	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
36	5150 PK	-30.69	-34.38	-29.14	-21.26	-7.88	PASS
	5150 AV	-52.02	-52.03	-49.01	-41.26	-7.75	PASS



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802.11n(HT20)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
40	3465.625 PK	-42.13	-39.47	-37.59	-21.26	-16.33	PASS
	3465.625 AV	-51.62	-44.62	-43.83	-41.26	-2.57	PASS
	10400 PK	-44.53	-34.84	-34.4	-21.26	-13.14	PASS
	10400 AV	-54.62	-46.73	-46.08	-41.26	-4.82	PASS
	15604.5 PK	-44.53	-43.17	-40.79	-21.26	-19.53	PASS
	15590.125 AV	-55.43	-55.21	-52.31	-41.26	-11.05	PASS



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802.11n(HT20)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
48	3493.75 PK	-41.23	-39.17	-37.07	-21.26	-15.81	PASS
	3493.75 AV	-51.16	-43.66	-42.95	-41.26	-1.69	PASS
	10487.5 PK	-44.6	-34.72	-34.3	-21.26	-13.04	PASS
	10481.25 AV	-54.89	-46.39	-45.82	-41.26	-4.56	PASS
	15716.625 PK	-44.39	-43.93	-41.14	-21.26	-19.88	PASS
	15713.75 AV	-55.57	-55.07	-52.3	-41.26	-11.04	PASS



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802.11n(HT20)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
52	3506.25 PK	-41.88	-39.33	-37.41	-21.26	-16.15	PASS
	3506.25 AV	-50.75	-43.58	-42.82	-41.26	-1.56	PASS
	10525 PK	-44.38	-34.35	-33.94	-21.26	-12.68	PASS
	10521.875 AV	-54.57	-46.6	-45.96	-41.26	-4.7	PASS
	15779.875 PK	-44.37	-43.88	-41.11	-21.26	-19.85	PASS
	15788.5 AV	-54.82	-54.62	-51.71	-41.26	-10.45	PASS



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802.11n(HT20)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
60	3534.375 PK	-40.92	-38.9	-36.78	-21.26	-15.52	PASS
	3531.25 AV	-49.77	-43.67	-42.72	-41.26	-1.46	PASS
	10593.75 PK	-43.24	-36.63	-35.77	-21.26	-14.51	PASS
	10600 AV	-54.09	-49.13	-47.93	-41.26	-6.67	PASS
	15900.625 PK	-42.62	-43.92	-40.21	-21.26	-18.95	PASS
	15897.75 AV	-54.49	-53.98	-51.22	-41.26	-9.96	PASS

802.11n(HT20)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
64	3546.875 PK	-41.19	-38.38	-36.55	-21.26	-15.29	PASS
	3546.875 AV	-50.12	-43.71	-42.82	-41.26	-1.56	PASS
	10637.5 PK	-41.67	-38.71	-36.93	-21.26	-15.67	PASS
	10640.625 AV	-54.23	-48.26	-47.28	-41.26	-6.02	PASS
	15955.25 PK	-44.83	-43.55	-41.13	-21.26	-19.87	PASS
	15961 AV	-55.15	-54.39	-51.74	-41.26	-10.48	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
64	5350.8 PK	-35.29	-36.4	-32.8	-21.26	-11.54	PASS
	5350 AV	-52.49	-52.35	-49.41	-41.26	-8.15	PASS

802.11n(HT20)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
100	3665.625 PK	-39.26	-37.62	-35.35	-21.26	-14.09	PASS
	3665.625 AV	-46.3	-42.6	-41.06	-41.26	0.2	PASS*
	11000 PK	-43.24	-33.5	-33.06	-21.26	-11.8	PASS
	11003.125 AV	-52.98	-47.22	-46.2	-41.26	-4.94	PASS
	16501.5 PK	-40.93	-41.29	-38.1	-21.26	-16.84	PASS
	16501.5 AV	-52.39	-51.74	-49.04	-41.26	-7.78	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
100	5468.5 PK	-31.57	-37.92	-30.66	-21.26	-9.4	PASS
	5470 AV	-50.87	-51.25	-48.05	-41.26	-6.79	PASS

*The unwanted emission at 3.6GHz was verified and the test result was passed by radiated measurement. (Please refer APPENDIX A)



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802.11n(HT20)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
116	3718.75 PK	-37.44	-37.9	-34.65	-21.26	-13.39	PASS
	3718.75 AV	-42.39	-42.59	-39.48	-41.26	1.78	PASS*
	11156.25 PK	-42.81	-33.77	-33.26	-21.26	-12	PASS
	11162.5 AV	-53.07	-45.65	-44.93	-41.26	-3.67	PASS
	16740.125 PK	-42.44	-41.62	-39	-21.26	-17.74	PASS
	16748.75 AV	-53.4	-53.4	-50.39	-41.26	-9.13	PASS

*The unwanted emission at 3.7GHz was verified and the test result was passed by radiated measurement. (Please refer APPENDIX A)

802.11n(HT20)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
132	3771.875 PK	-35.91	-36.87	-33.35	-21.26	-12.09	PASS
	3771.875 AV	-39	-41.7	-37.13	-41.26	4.13	PASS*
	11318.75 PK	-42.58	-32.92	-32.47	-21.26	-11.21	PASS
	11321.875 AV	-52.75	-45.23	-44.52	-41.26	-3.26	PASS
	16973 PK	-39.55	-38.77	-36.13	-21.26	-14.87	PASS
	16973 AV	-51.48	-51	-48.22	-41.26	-6.96	PASS

*The unwanted emission at 3.7GHz was verified and the test result was passed by radiated measurement. (Please refer APPENDIX A)

802.11n(HT20)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
140	3800 PK	-35.36	-37.83	-33.41	-21.26	-12.15	PASS
	3800 AV	-38.11	-42.31	-36.71	-41.26	4.55	PASS*
	11403.125 PK	-40.34	-33.18	-32.42	-21.26	-11.16	PASS
	11403.125 AV	-52.31	-44.5	-43.83	-41.26	-2.57	PASS
	17096.625 PK	-43.01	-38.22	-36.98	-21.26	-15.72	PASS
	17096.625 AV	-52.77	-51.68	-49.18	-41.26	-7.92	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
140	5725 PK	-27.2	-28.67	-24.86	-21.26	-3.6	PASS
	5725 AV	-46.84	-46.98	-43.9	-41.26	-2.64	PASS

*The unwanted emission at 3.8GHz was verified and the test result was passed by radiated measurement. (Please refer APPENDIX A)

802.11n(HT40)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
38	3459.375 PK	-42.36	-40.05	-38.04	-21.26	-16.78	PASS
	3459.375 AV	-51.57	-45.05	-44.18	-41.26	-2.92	PASS
	10375 PK	-44.53	-40.04	-38.72	-21.26	-17.46	PASS
	10384.375 AV	-54.36	-51.36	-49.6	-41.26	-8.34	PASS
	15567.125 PK	-43.29	-43.44	-40.35	-21.26	-19.09	PASS
	15561.375 AV	-54.83	-54.92	-51.86	-41.26	-10.6	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
38	5150 PK	-26.99	-28.73	-24.76	-21.26	-3.5	PASS
	5150 AV	-44.03	-46.07	-41.92	-41.26	-0.66	PASS



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802.11n(HT40)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
46	3484.375 PK	-41.63	-38.62	-36.86	-21.26	-15.6	PASS
	3484.375 AV	-51.1	-43.95	-43.18	-41.26	-1.92	PASS
	10462.5 PK	-45.32	-36.89	-36.31	-21.26	-15.05	PASS
	10456.25 AV	-55.02	-48.67	-47.76	-41.26	-6.5	PASS
	15682.125 PK	-44.59	-43.38	-40.93	-21.26	-19.67	PASS
	15699.375 AV	-55.49	-55.4	-52.43	-41.26	-11.17	PASS



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802.11n(HT40)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
54	3512.5 PK	-40.26	-37.9	-35.91	-21.26	-14.65	PASS
	3512.5 AV	-50.55	-43.89	-43.04	-41.26	-1.78	PASS
	10543.75 PK	-42.62	-37.11	-36.03	-21.26	-14.77	PASS
	10537.5 AV	-54.3	-48.8	-47.72	-41.26	-6.46	PASS
	15808.625 PK	-43.51	-42.78	-40.12	-21.26	-18.86	PASS
	15811.5 AV	-54.67	-54.59	-51.62	-41.26	-10.36	PASS



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802.11n(HT40)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
62	3540.625 PK	-42.26	-39.49	-37.65	-21.26	-16.39	PASS
	3540.625 AV	-50.53	-44.53	-43.56	-41.26	-2.3	PASS
	10615.625 PK	-42.88	-41.91	-39.36	-21.26	-18.1	PASS
	10625 AV	-54.25	-52.23	-50.11	-41.26	-8.85	PASS
	15923.625 PK	-43.74	-42.59	-40.12	-21.26	-18.86	PASS
	15920.75 AV	-54.76	-54.72	-51.73	-41.26	-10.47	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
62	5350.8 PK	-26.37	-29.78	-24.74	-21.26	-3.48	PASS
	5350 AV	-43.7	-46.32	-41.81	-41.26	-0.55	PASS

802.11n(HT40)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
102	3671.875 PK	-38.88	-37.24	-34.97	-21.26	-13.71	PASS
	3671.875 AV	-46.65	-43.18	-41.57	-41.26	-0.31	PASS
	11012.5 PK	-41.9	-40.7	-38.25	-21.26	-16.99	PASS
	11021.875 AV	-53.39	-51.63	-49.41	-41.26	-8.15	PASS
	16530.25 PK	-42.05	-42	-39.01	-21.26	-17.75	PASS
	16521.625 AV	-53.07	-52.91	-49.98	-41.26	-8.72	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
102	5467 PK	-26.13	-31.28	-24.97	-21.26	-3.71	PASS
	5470 AV	-44.17	-45.69	-41.85	-41.26	-0.59	PASS



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802.11n(HT40)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
110	3700 PK	-38.38	-41.36	-36.61	-21.26	-15.35	PASS
	3700 AV	-44.37	-52.02	-43.68	-41.26	-2.42	PASS
	11100 PK	-42.66	-43.28	-39.95	-21.26	-18.69	PASS
	11109.375 AV	-53.56	-53.52	-50.53	-41.26	-9.27	PASS
	16651 PK	-42.87	-42.65	-39.75	-21.26	-18.49	PASS
	16659.625 AV	-54.02	-54.21	-51.1	-41.26	-9.84	PASS

802.11n(HT40)

Conducted spurious emission table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
134	3778.125 PK	-35.03	-36.71	-32.78	-21.26	-11.52	PASS
	3778.125 AV	-38.63	-41.84	-36.93	-41.26	4.33	PASS*
	11337.5 PK	-42.19	-34.42	-33.75	-21.26	-12.49	PASS
	11340.625 AV	-52.55	-47.07	-45.99	-41.26	-4.73	PASS
	17001.75 PK	-41.71	-39.6	-37.52	-21.26	-16.26	PASS
	17004.625 AV	-51.93	-51.18	-48.53	-41.26	-7.27	PASS

Bandedge table

Channel	SPURIOUS EMISSION/ HARMONIC FREQ.(MHz)	POWER LEVEL (dBm)		TOTAL POWER LEVEL (dBm)	SPURIOUS EMISSION/ HARMONIC Limit(dBm)	Margin (dB)	PASS/FAIL
		Chain 0	Chain 1				
134	5727 PK	-32.08	-36.08	-30.62	-21.26	-9.36	PASS
	5725 AV	-49.93	-50.76	-47.31	-41.26	-6.05	PASS

*The unwanted emission at 3.7GHz was verified and the test result was passed by radiated measurement. (Please refer APPENDIX A)

4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency of the carrier signal shall be maintained within band of operation

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100037	Nov. 01, 2012	Oct. 31, 2013
Temperature & Humidity Chamber GIANTFORCE	GTH-150-40-S P-AR	MAA0812-008	Jan. 17, 2013	Jan. 16, 2014

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. Tested date : June 10, 2013

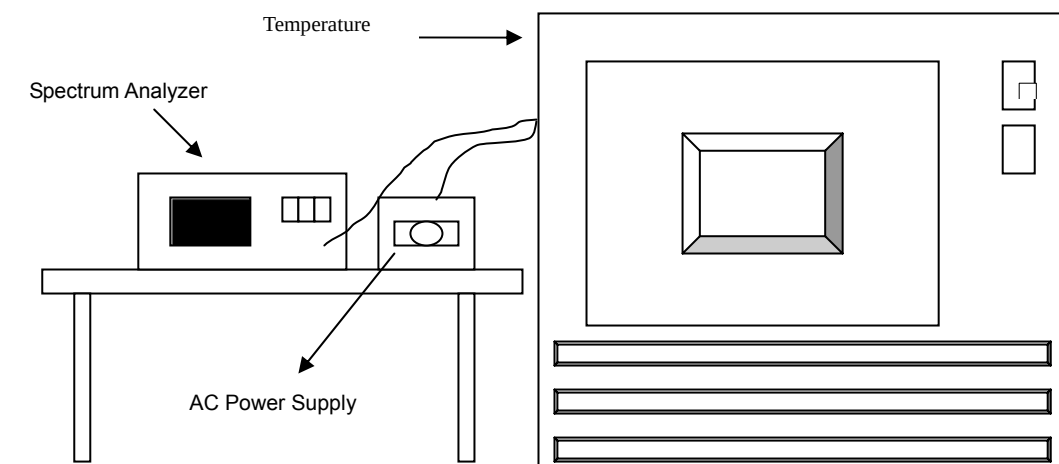
4.6.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

Set the EUT transmit at un-modulation mode to test frequency stability.

4.6.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	%	(MHz)	%	(MHz)	%	(MHz)	%
50	120	5320.0167	0.00031	5320.017	0.00032	5320.0148	0.00028	5320.0147	0.00028
40	120	5320.0158	0.00030	5320.0116	0.00022	5320.0115	0.00022	5320.0149	0.00028
30	120	5319.9786	-0.00040	5319.9781	-0.00041	5319.9727	-0.00051	5319.9808	-0.00036
20	120	5319.9853	-0.00028	5319.984	-0.00030	5319.9798	-0.00038	5319.9805	-0.00037
10	120	5319.9833	-0.00031	5319.9858	-0.00027	5319.9856	-0.00027	5319.9862	-0.00026
0	120	5320.0275	0.00052	5320.0302	0.00057	5320.0263	0.00049	5320.0216	0.00041
-10	120	5319.9906	-0.00018	5319.9856	-0.00027	5319.9922	-0.00015	5319.9946	-0.00010
-20	120	5320.003	0.00006	5319.997	-0.00006	5320.0034	0.00006	5320.0016	0.00003
-30	120	5320.0044	0.00008	5320.0121	0.00023	5320.0094	0.00018	5320.005	0.00009

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift	Measured Frequency	Frequency Drift
		(MHz)	%	(MHz)	%	(MHz)	%	(MHz)	%
20	138	5319.9849	-0.00028	5319.984	-0.00030	5319.9798	-0.00038	5319.9806	-0.00036
	120	5319.9853	-0.00028	5319.984	-0.00030	5319.9798	-0.00038	5319.9805	-0.00037
	102	5319.9862	-0.00026	5319.9851	-0.00028	5319.9793	-0.00039	5319.9813	-0.00035

4.7 AC POWER LINE CONDUCTED EMISSION MEASUREMENT

4.7.1 LIMITS OF AC POWER LINE CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	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 0.50 MHz.

4.7.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 08, 2013	Mar. 07, 2014
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 06, 2012	Sep. 05, 2013
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 08, 2012	June 07, 2013
RF Cable (JYEBAO)	5DFB	COCCAB-001	Mar. 11, 2013	Mar. 10, 2014
50 ohms Terminator	50	EMC-3	Sep. 25, 2012	Sep. 24, 2013
Software ADT	BV ADT_Cond_V7.3.7.3	NA	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 test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: Mar. 14, 2013

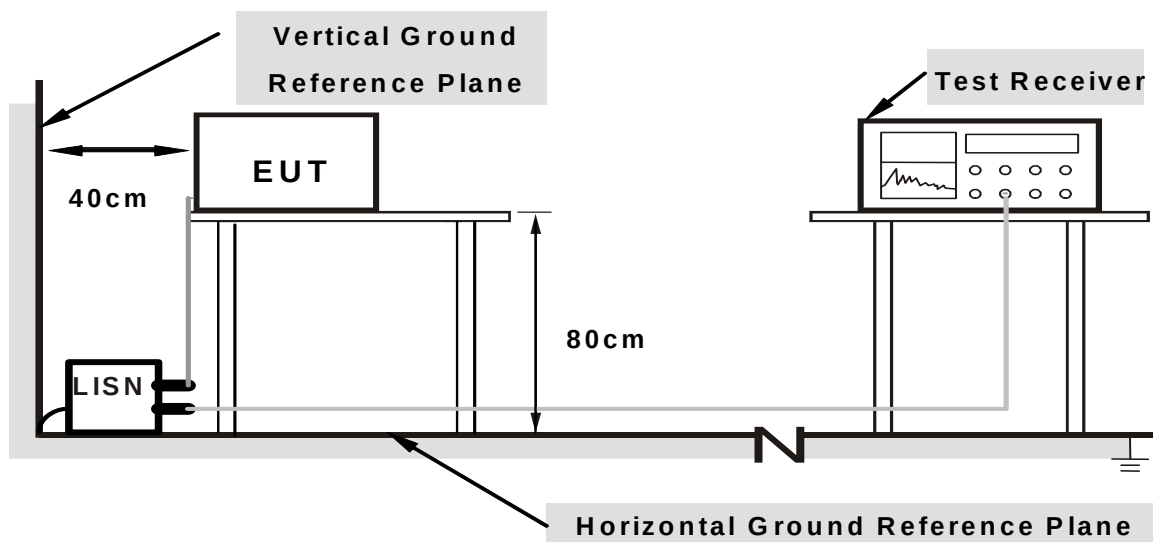
4.7.3 TEST PROCEDURES

- 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.
- b. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- d. The frequency range from 150kHz to 30MHz was searched. Emission level under (Limit – 20dB) was not recorded.

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 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 from other units and other metal planes

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.7.6 EUT OPERATING CONDITIONS

Same as the 4.6.6

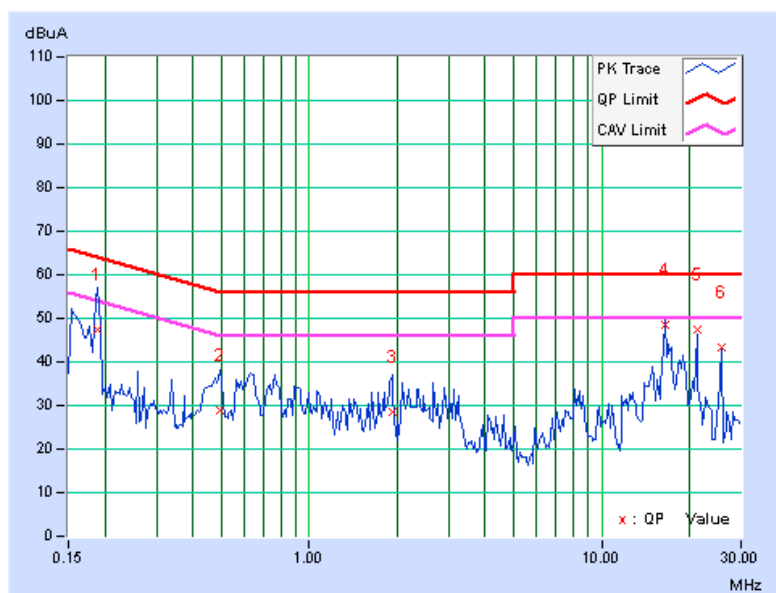
4.7.7 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18906	0.12	47.15	25.23	47.27	25.35	64.08	54.08	-16.81	-28.73
2	0.49766	0.16	28.64	16.79	28.80	16.95	56.04	46.04	-27.23	-29.08
3	1.91797	0.23	28.45	18.28	28.68	18.51	56.00	46.00	-27.32	-27.49
4	16.46484	0.79	47.73	45.98	48.52	46.77	60.00	50.00	-11.48	-3.23
5	21.16797	0.95	46.45	44.97	47.40	45.92	60.00	50.00	-12.60	-4.08
6	25.87500	1.09	42.41	41.04	43.50	42.13	60.00	50.00	-16.50	-7.87

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

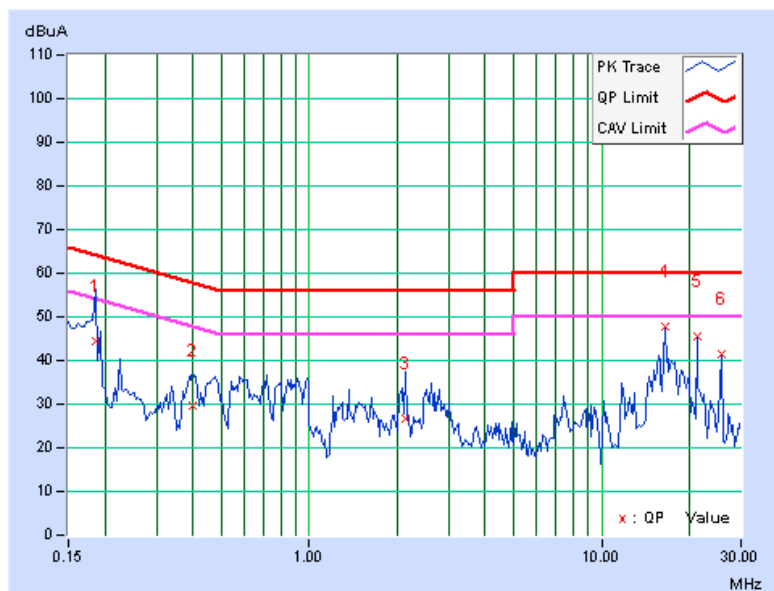


PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18516	0.10	44.40	22.42	44.50	22.52	64.25	54.25	-19.76	-31.74
2	0.40000	0.15	29.37	16.77	29.52	16.92	57.85	47.85	-28.33	-30.93
3	2.14844	0.21	26.41	17.28	26.62	17.49	56.00	46.00	-29.38	-28.51
4	16.46484	0.54	47.24	45.55	47.78	46.09	60.00	50.00	-12.22	-3.91
5	21.16797	0.63	44.95	44.49	45.58	45.12	60.00	50.00	-14.42	-4.88
6	25.87500	0.74	40.84	40.54	41.58	41.28	60.00	50.00	-18.42	-8.72

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value





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5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. 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.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

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Web Site: www.bureauveritas-adt.com

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

7.APPENDIX A - RADIATED EMISSION MEASUREMENT(FOR 5GHZ, 5725~5850MHZ BAND)

7.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

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. 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.

7.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Sep. 03, 2012	Sep. 02, 2013
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 16, 2013	Jan. 15, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 30, 2012	Oct. 29, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Mar. 25, 2013	Mar. 24, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Nov. 27, 2012	Nov. 26, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 26, 2012	Dec. 25, 2013
RF Cable	NA	CHHCAB_001	Oct. 07, 2012	Oct. 06, 2013
Software	ADT_Radiated _V8.7.05	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	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, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5. The CANADA Site Registration No. is IC 7450H-3.
6. Tested Date: June 06, 2013

7.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. 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 and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

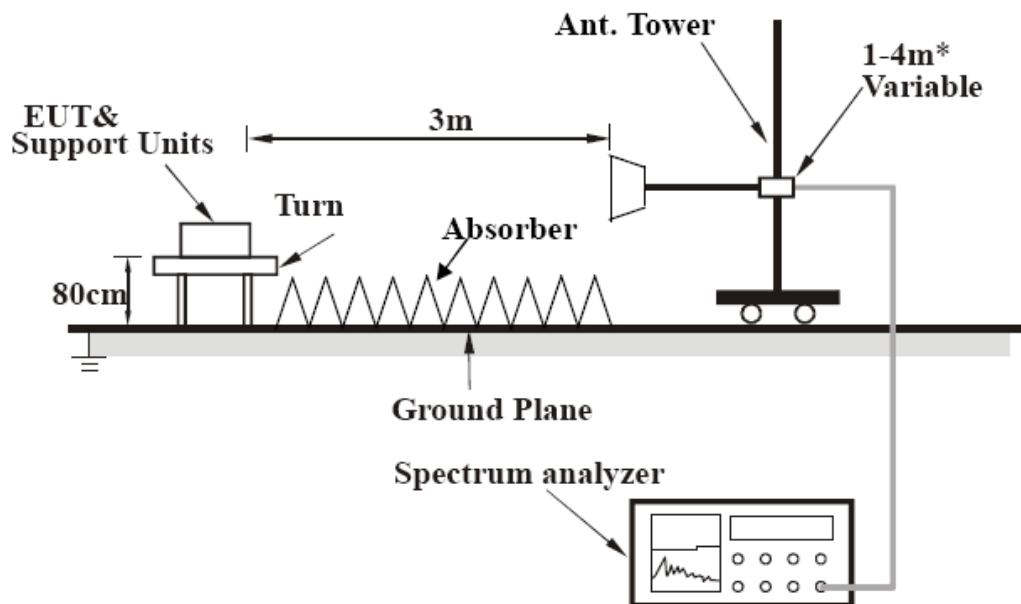
NOTE:

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

7.1.4 DEVIATION FROM TEST STANDARD

No deviation

7.1.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

7.1.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “Artgui.exe Ver2.3” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

7.1.7 TEST RESULTS

802.11a

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK) Average (AV)
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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	3666.67	54.5 PK	74.0	-19.5	1.00 H	53	54.01	0.49
2	3666.67	42.1 AV	54.0	-11.9	1.00 H	53	41.61	0.49
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	3666.67	53.3 PK	74.0	-20.7	1.00 V	317	52.81	0.49
2	3666.67	42.1 AV	54.0	-11.9	1.00 V	317	41.61	0.49

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value



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CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3720.00	52.5 PK	74.0	-21.5	1.00 H	28	51.68	0.82
2	3720.00	42.1 AV	54.0	-11.9	1.00 H	28	41.28	0.82
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	3720.00	53.7 PK	74.0	-20.3	1.00 V	262	52.88	0.82
2	3720.00	42.2 AV	54.0	-11.8	1.00 V	262	41.38	0.82

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value



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CHANNEL	TX Channel 132	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3773.33	53.4 PK	74.0	-20.6	1.00 H	360	52.17	1.23
2	3773.33	42.4 AV	54.0	-11.6	1.00 H	360	41.17	1.23
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	3773.33	53.4 PK	74.0	-20.6	1.00 V	174	52.17	1.23
2	3773.33	42.3 AV	54.0	-11.7	1.00 V	174	41.07	1.23

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value



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CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3800.00	52.5 PK	74.0	-21.5	1.00 H	140	51.07	1.43
2	3800.00	42.8 AV	54.0	-11.2	1.00 H	140	41.37	1.43
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	3800.00	54.0 PK	74.0	-20.0	1.00 V	174	52.57	1.43
2	3800.00	42.4 AV	54.0	-11.6	1.00 V	174	40.97	1.43

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value

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CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3666.67	51.2 PK	74.0	-22.8	1.01 H	124	50.44	0.76
2	3666.67	41.2 AV	54.0	-12.8	1.01 H	124	40.44	0.76
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	3666.67	51.0 PK	74.0	-23.0	1.00 V	56	50.24	0.76
2	3666.67	40.0 AV	54.0	-14.0	1.00 V	56	39.24	0.76

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value



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CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3720.00	51.0 PK	74.0	-23.0	1.05 H	134	49.91	1.09
2	3720.00	40.8 AV	54.0	-13.2	1.05 H	134	39.71	1.09

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	3720.00	50.6 PK	74.0	-23.4	1.00 V	46	49.51	1.09
2	3720.00	39.6 AV	54.0	-14.4	1.00 V	46	38.51	1.09

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value



A D T

CHANNEL	TX Channel 132	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3773.33	51.1 PK	74.0	-22.9	1.00 H	127	49.58	1.52
2	3773.33	40.9 AV	54.0	-13.1	1.00 H	127	39.38	1.52
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	3773.33	50.5 PK	74.0	-23.5	1.00 V	50	48.98	1.52
2	3773.33	39.4 AV	54.0	-14.6	1.00 V	50	37.88	1.52

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value



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CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3800.00	51.4 PK	74.0	-22.6	1.00 H	116	49.67	1.73
2	3800.00	41.3 AV	54.0	-12.7	1.00 H	116	39.57	1.73

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	3800.00	49.8 PK	74.0	-24.2	1.00 V	42	48.07	1.73
2	3800.00	39.0 AV	54.0	-15.0	1.00 V	42	37.27	1.73

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value



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802.11n (HT40)

CHANNEL	TX Channel 134	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3780.00	52.1 PK	74.0	-21.9	1.00 H	122	49.55	2.55
2	3780.00	41.8 AV	54.0	-12.2	1.00 H	122	39.25	2.55
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	3780.00	49.1 PK	74.0	-24.9	1.00 V	44	46.55	2.55
2	3780.00	38.8 AV	54.0	-15.2	1.00 V	44	36.25	2.55

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value



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

No modifications were made to the EUT by the lab during the test.

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