

FCC Test Report (WLAN)

Report No.: RF130223E01I-1

FCC ID: PPD-QCNFA222

Test Model: QCNFA222

Received Date: Aug. 03, 2015

Test Date: Oct. 12 to 13, 2015

Issued Date: Oct. 20, 2015

Applicant: Qualcomm Atheros, Inc.

Address: 1700 Technology Drive, San Jose, CA 95110

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory

Lab Address: No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin
Chu Hsien 307, Taiwan R.O.C.

Test Location (1): No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin
Chu Hsien 307, Taiwan R.O.C.

Test Location (2): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin
Chu Hsien 307, Taiwan R.O.C.

Test Location (3): E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan R.O.C.



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.



Table of Contents

Release Control Record	4
1 Certificate of Conformity	5
2 Summary of Test Results	6
2.1 Measurement Uncertainty.....	6
2.2 Modification Record.....	6
3 General Information	7
3.1 General Description of EUT.....	7
3.2 Description of Antenna.....	9
3.3 Description of Test Modes.....	10
3.3.1 Test Mode Applicability and Tested Channel Detail.....	11
3.4 Duty Cycle of Test Signal.....	12
3.5 Description of Support Units.....	13
3.5.1 Configuration of System under Test.....	13
3.6 General Description of Applied Standards.....	14
4 Test Types and Results	15
4.1 Transmit Power Measurement.....	15
4.1.1 Limits of Transmit Power Measurement.....	15
4.1.2 Test Setup.....	15
4.1.3 Test Instruments.....	15
4.1.4 Test Procedures.....	16
4.1.5 Deviation from Test Standard.....	16
4.1.6 EUT Operating Conditions.....	16
4.1.7 Test Results.....	17
4.2 Peak Power Spectral Density Measurement.....	18
4.2.1 Limits of Peak Power Spectral Density Measurement.....	18
4.2.2 Test Setup.....	18
4.2.3 Test Instruments.....	18
4.2.4 Test Procedures.....	18
4.2.5 Deviation from Test Standard.....	18
4.2.6 EUT Operating Conditions.....	18
4.2.7 Test Results.....	19
4.3 6dB Bandwidth Measurement.....	24
4.3.1 Limits of 6dB Bandwidth Measurement.....	24
4.3.2 Test Setup.....	24
4.3.3 Test Instruments.....	24
4.3.4 Test Procedures.....	24
4.3.5 Deviation from Test Standard.....	24
4.3.6 EUT Operating Conditions.....	24
4.3.7 Test Results.....	25
4.4 Unwanted Emission (Radiated Versus Conducted).....	30
4.4.1 Limits of Unwanted Emission Measurement.....	30
4.4.2 Test Instruments.....	31
4.4.3 Test Procedures.....	32
4.4.4 Deviation from Test Standard.....	33
4.4.5 Test Setup.....	33
4.4.6 EUT Operating Conditions.....	34
4.4.7 Test Results (Radiated Measurement).....	34
4.4.8 Test Results (Conducted Measurement).....	53
4.5 Frequency Stability Measurement.....	87
4.5.1 Limits of Frequency Stability Measurement.....	87
4.5.2 Test Setup.....	87
4.5.3 Test Instruments.....	87
4.5.4 Test Procedures.....	87

4.5.5	Deviation from Test Standard	88
4.5.6	EUT Operating Conditions.....	88
4.5.7	Test Results	89
5	Pictures of Test Arrangements.....	90
6	Appendix A – Radiated Emission Measurement	91
6.1.1	Limits of Radiated Emission Measurement.....	91
6.1.2	Test Instruments	92
6.1.3	Test Procedures.....	93
6.1.4	Deviation from Test Standard	93
6.1.5	Test Setup.....	94
6.1.6	EUT Operating Conditions.....	94
6.1.7	Test Results	95
7	Appendix B – Information on the Testing Laboratories.....	111



Release Control Record

Issue No.	Description	Date Issued
RF130223E01I-1	Original release.	Oct. 20, 2015



1 Certificate of Conformity

Product: PCIE 802.11a/b/g/n 2.4GHz/5GHz + USB BT 4.0 card

Brand: Qualcomm Atheros

Test Model: QCNFA222

Sample Status: ENGINEERING SAMPLE

Applicant: Qualcomm Atheros, Inc.

Test Date: Oct. 12 to 13, 2015

Standards: 47 CFR FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10: 2013

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

Prepared by :  , **Date:** Oct. 20, 2015
Claire Kuan / Specialist

Approved by :  , **Date:** Oct. 20, 2015
May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (SECTION 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b) (1/2/3/4/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -3.1dB at 323.85MHz.
15.407(a)(1/2 /3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
15.407(a)(1/2 /3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is IPEX not a standard connector.

NOTE: 1. This report is prepared for FCC Class II change. (Upgrade the standard to section 15.407 under new rule for U-NII-3 band)

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:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.31 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.43 dB
	6GHz ~ 18GHz	3.49 dB
	18GHz ~ 40GHz	4.11 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	PCIE 802.11a/b/g/n 2.4GHz/5GHz + USB BT 4.0 card
Brand	Qualcomm Atheros
Test Model	QCNFA222
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	3.3Vdc 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 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.50 ~ 5.72GHz, 5.745 ~ 5.825GHz For 15.247 2.412 ~ 2.462GHz
Number of Channel	For 15.407 25 for 802.11a, 802.11n (HT20) 12 for 802.11n (HT40) For 15.247 11 for 802.11b/g, 802.11n (HT20) 7 for 802.11n (HT40) 40 for BT-LE(GFSK)
Output Power	See Note
Antenna Type	See item 3.2
Antenna Connector	See item 3.2
Accessory Device	NA
Data Cable Supplied	NA

Note:

- This report is prepared for FCC Class II change. The difference compared with the Report No.: RF130223E01-1 design is as the following:
 - ◆ Upgrade the standard to section 15.407 under new rule for U-NII-3 band
- According to above conditions, all test items of U-NII-3 band test item need to be performed, except for AC power conducted emission test item. And all data was verified to meet the requirements.
- There are Bluetooth technology and WLAN technology used for the EUT.
- The maximum output power(mW) table as below table:

15.407 (5GHz U-NII-3 band)	
802.11a	53.942 mW
802.11n (HT20)	34.933 mW
802.11n (HT40)	35.575 mW

5. 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.

6. In original report, 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.

7. The above EUT information is 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:

Transmitter Circuit	Brand	Model	Antenna Type	2.4GHz Gain with cable loss (dBi)	5GHz Gain with cable loss (dBi)	2.4GHz Cable Loss (dB)	5GHz Cable Loss (dB)	Connector Type	Cable Length (mm)
Chain(0)	WNC	81.EBJ15.005	PIFA	3.62	Band 1&2: 3.08 Band 3: 4.76 Band 4: 4.76	1.15	Band1&2: 1.70 Band 3: 1.74 Band 4: 1.79	IPEX	300
Chain(1)	WNC	81.EBJ15.005	PIFA	3.62	Band 1&2: 3.08 Band 3: 4.76 Band 4: 4.76	1.15	Band1&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

FOR 5745 ~ 5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20):

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

2 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

3.3.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	UE \geq 1G	UE<1G	APCM	
-	√	√	√	-

Where **UE \geq 1G**: Unwanted Emission above 1GHz **UE<1G**: Unwanted Emission below 1GHz
APCM: Antenna Port Conducted Measurement

Unwanted Emission Test (Above 1GHz):

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6
802.11n (HT20)		149 to 165	149, 157, 165	OFDM	6.5
802.11n (HT40)		151 to 159	151, 159	OFDM	13.5

Unwanted Emission Test (Below 1GHz):

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11n (HT20)	5745-5825	149 to 165	157	OFDM	6.5

Antenna Port Conducted Measurement:

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

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6
802.11n (HT20)		149 to 165	149, 157, 165	OFDM	6.5
802.11n (HT40)		151 to 159	151, 159	OFDM	13.5

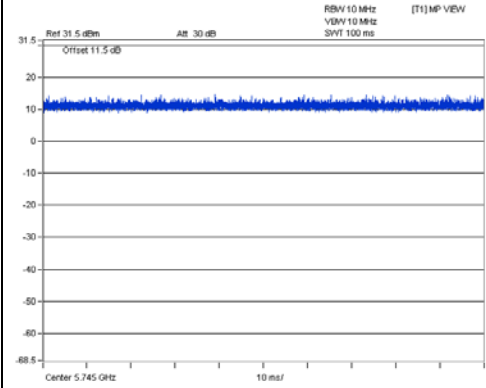
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
UE\geq1G	25deg. C, 65%RH	120Vac, 60Hz	Tim Ho
UE<1G	24deg. C, 70%RH	120Vac, 60Hz	Tim Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

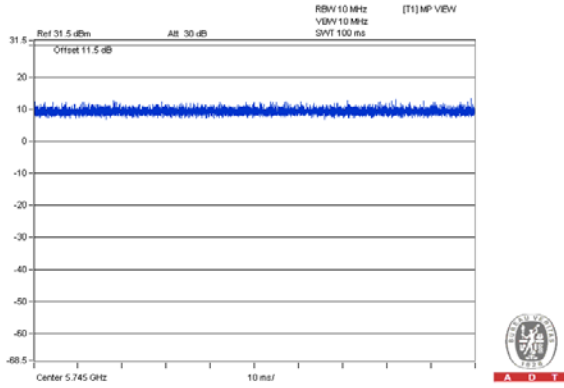
3.4 Duty Cycle of Test Signal

Duty cycle of test signal is 100 %, duty factor is not required.

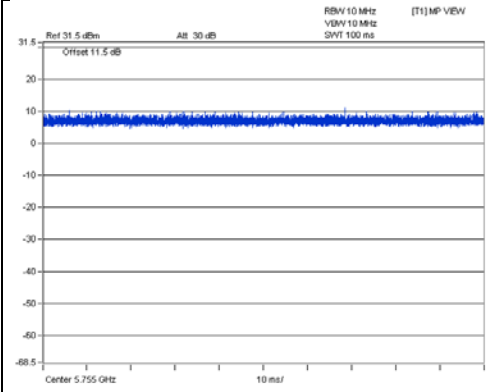
802.11a



802.11n (HT20)



802.11n (HT40)



3.5 Description of Support Units

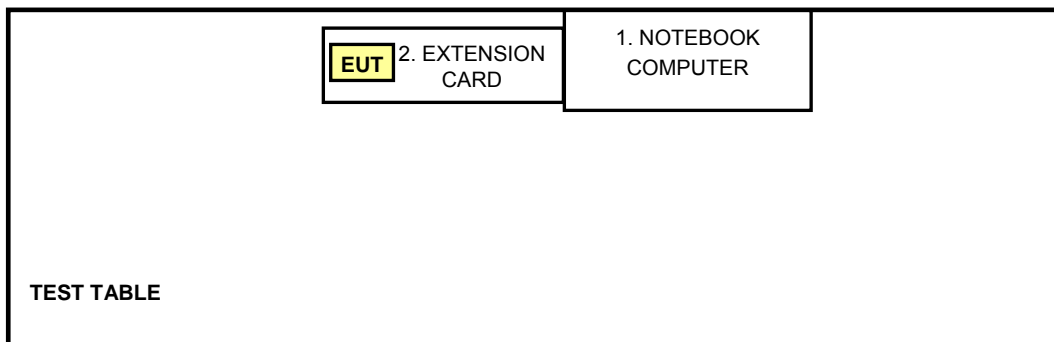
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP19L	CN-OHC416-70166-5CA-0448	PIW632500516610
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).

3.5.1 Configuration of System under Test



3.6 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 (15.407)

789033 D02 General UNII Test Procedures New Rules v01

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2013

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

4 Test Types and Results

4.1 Transmit Power Measurement

4.1.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p \leq 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
		Mobile and Portable client device	250mW (24 dBm)
U-NII-2A			250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C			250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

Note: *B is the 26 dB emission bandwidth in megahertz

Per KDB 662911 D01 Multiple Transmitter Output v02r01 Method of conducted output power measurement on IEEE 802.11 devices,

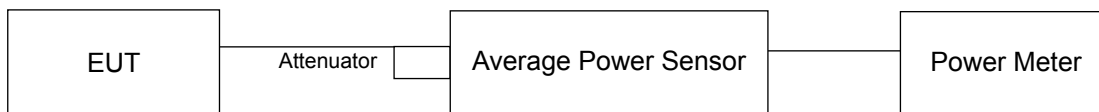
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.1.2 Test Setup



4.1.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power meter Anritsu	ML2495A	1014008	Apr. 28, 2015	Apr. 27, 2016
Power sensor Anritsu	MA2411B	0917122	Apr. 28, 2015	Apr. 27, 2016

- NOTE:**
1. The test was performed in Oven room 2.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: Oct. 13, 2015

4.1.4 Test Procedures

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

4.1.5 Deviation from Test Standard

No deviation.

4.1.6 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.

4.1.7 Test Results

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
149	5745	8.78	9.54	16.546	12.19	28.23	Pass
157	5785	14.12	14.49	53.942	17.32	28.23	Pass
165	5825	12.36	12.56	35.249	15.47	28.23	Pass

NOTE: 1. Directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30-(7.77-6) = 28.23\text{dBm}$.

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
149	5745	6.92	7.32	10.315	10.13	28.23	Pass
157	5785	12.02	12.79	34.933	15.43	28.23	Pass
165	5825	11.52	11.60	28.645	14.57	28.23	Pass

NOTE: 1. Directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30-(7.77-6) = 28.23\text{dBm}$.

802.11n (HT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
151	5755	7.43	7.54	11.209	10.50	28.23	Pass
159	5795	12.11	12.86	35.575	15.51	28.23	Pass

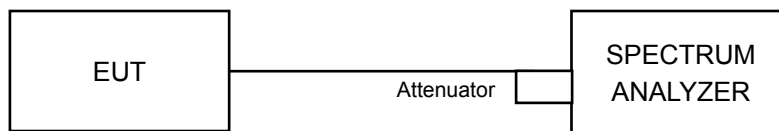
NOTE: 1. Directional gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30-(7.77-6) = 28.23\text{dBm}$.

4.2 Peak Power Spectral Density Measurement

4.2.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
		Mobile and Portable client device	11dBm/ MHz
U-NII-2A			11dBm/ MHz
U-NII-2C			11dBm/ MHz
U-NII-3		√	30dBm/ MHz

4.2.2 Test Setup



4.2.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.2.4 Test Procedures

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set span to at least 1.5 times the OBW.
- c) Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d) Set VBW $\geq 3 \times \text{RBW}$.
- e) Detector = power averaging (RMS) or sample detector (when RMS not available).
- f) Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span}/\text{RBW}$.
- g) Sweep time = auto couple.
- h) Employ trace averaging (RMS) mode over a minimum of 100 traces.
- i) Use the peak marker function to determine the maximum amplitude level.

4.2.5 Deviation from Test Standard

No deviation.

4.2.6 EUT Operating Conditions

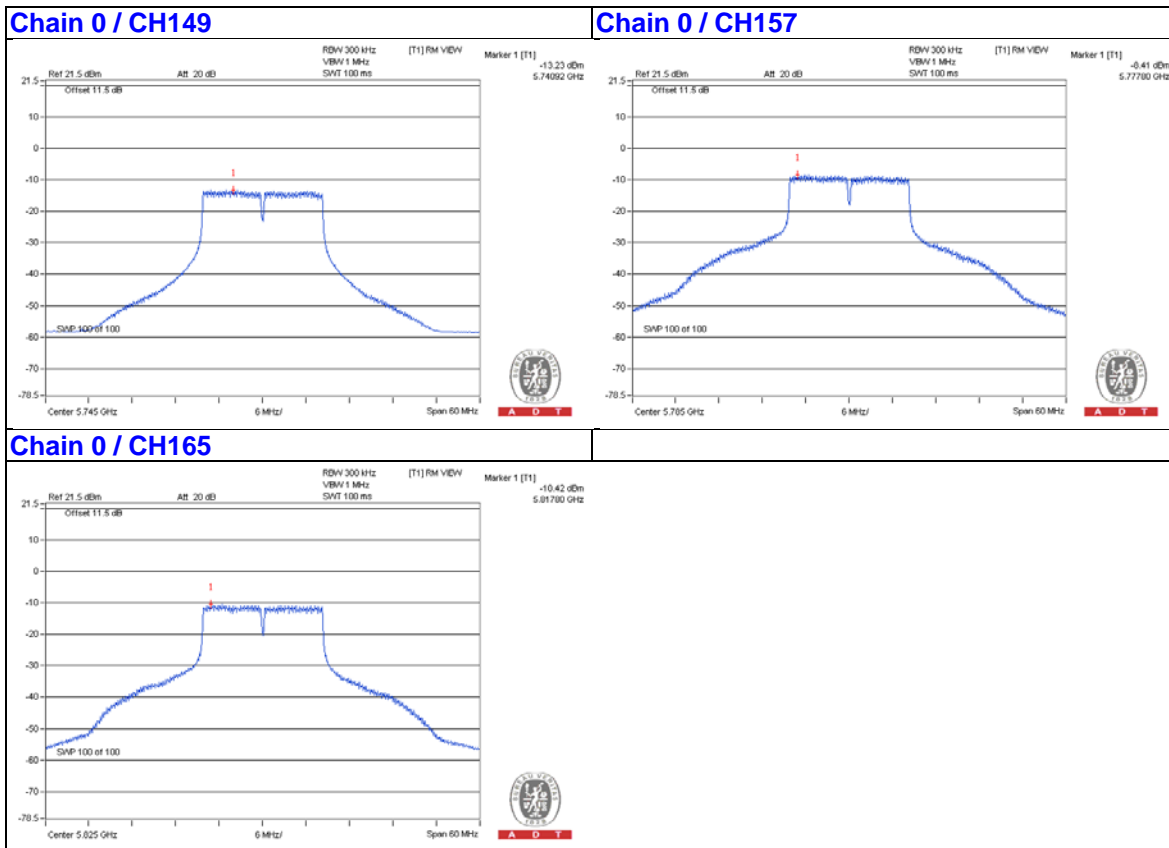
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

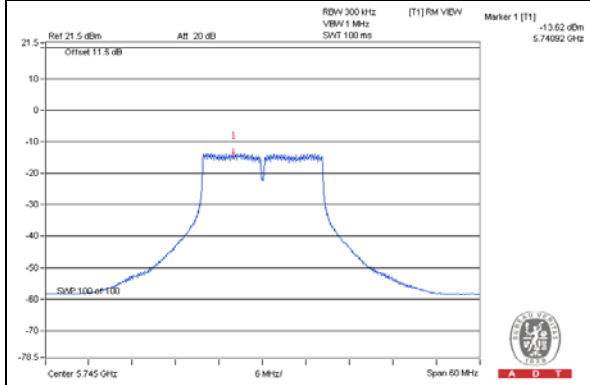
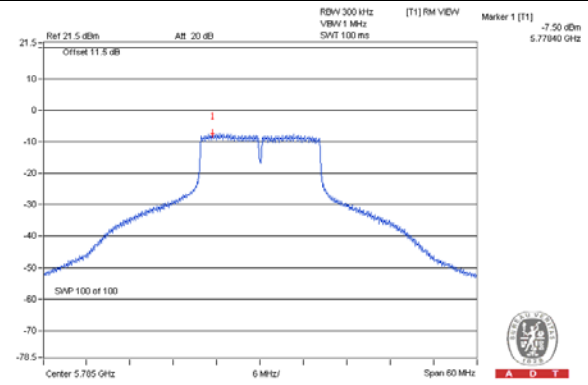
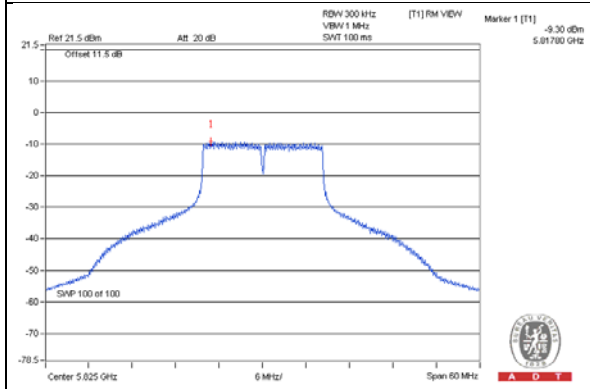
4.2.7 Test Results

802.11a

TX chain	Chan.	Chan. Freq. (MHz)	PSD		10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)				
0	149	5745	-13.23	-11.01	3.01	-8.00	28.23	Pass
	157	5785	-8.41	-6.19	3.01	-3.18	28.23	Pass
	165	5825	-10.42	-8.20	3.01	-5.19	28.23	Pass
1	149	5745	-13.62	-11.40	3.01	-8.39	28.23	Pass
	157	5785	-7.50	-5.28	3.01	-2.27	28.23	Pass
	165	5825	-9.30	-7.08	3.01	-4.07	28.23	Pass

NOTE: 1. Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 30-(7.77-6) = 28.23dBm.

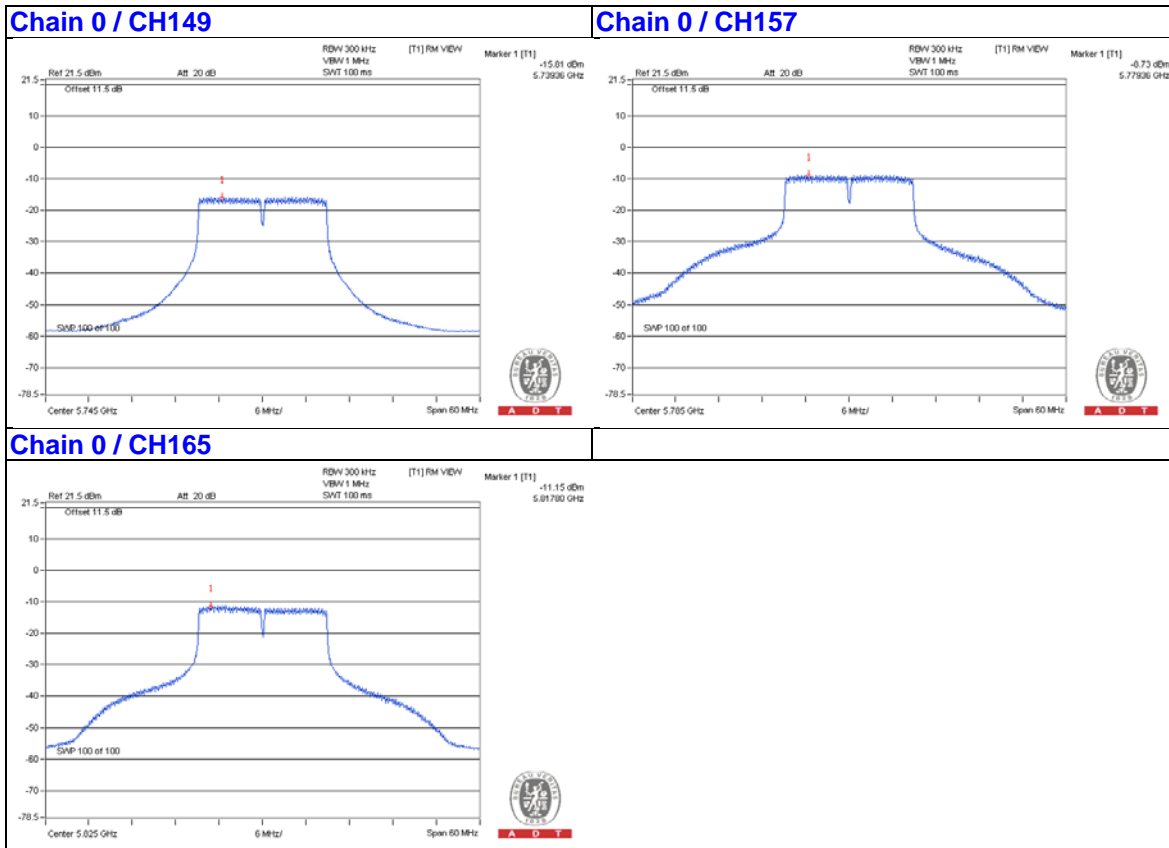


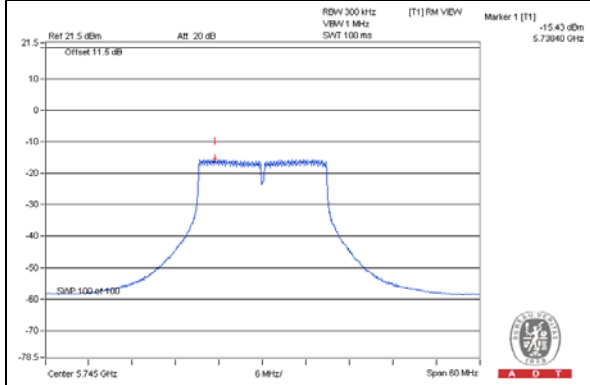
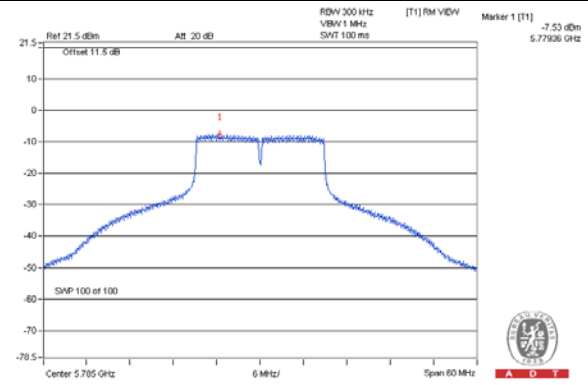
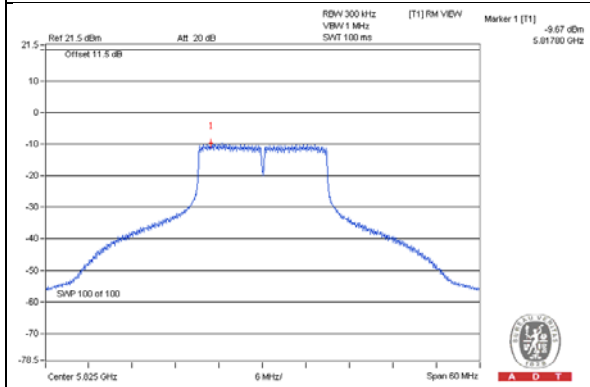
Chain 1 / CH149**Chain 1 / CH157****Chain 1 / CH165**

802.11n (HT20)

TX chain	Chan.	Chan. Freq. (MHz)	PSD		10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)				
0	149	5745	-15.81	-13.59	3.01	-10.58	28.23	Pass
	157	5785	-8.73	-6.51	3.01	-3.50	28.23	Pass
	165	5825	-11.15	-8.93	3.01	-5.92	28.23	Pass
1	149	5745	-15.43	-13.21	3.01	-10.20	28.23	Pass
	157	5785	-7.53	-5.31	3.01	-2.30	28.23	Pass
	165	5825	-9.67	-7.45	3.01	-4.44	28.23	Pass

NOTE: 1. Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 30-(7.77-6) = 28.23dBm.



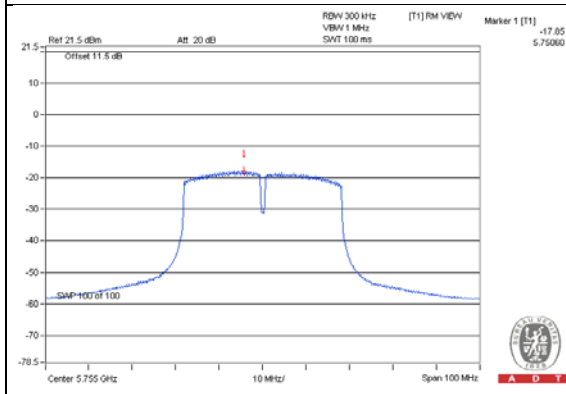
Chain 1 / CH149**Chain 1 / CH157****Chain 1 / CH165**

802.11n (HT40)

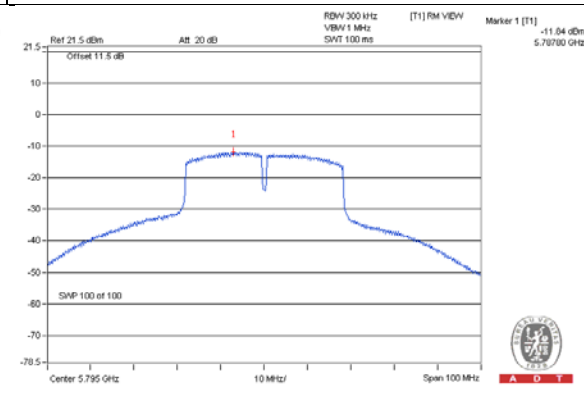
TX chain	Chan.	Chan. Freq. (MHz)	PSD		10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
			(dBm/300kHz)	(dBm/500kHz)				
0	151	5745	-17.85	-15.63	3.01	-12.62	28.23	Pass
	159	5785	-11.84	-9.62	3.01	-6.61	28.23	Pass
1	151	5745	-17.95	-15.73	3.01	-12.72	28.23	Pass
	159	5785	-10.94	-8.72	3.01	-5.71	28.23	Pass

NOTE: 1. Directional gain = 4.76dBi + 10log(2) = 7.77dBi > 6dB, so the power density limit shall be reduced to 30-(7.77-6) = 28.23dBm.

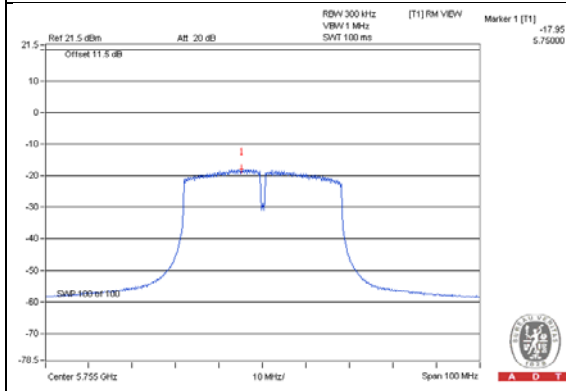
Chain 0 / CH151



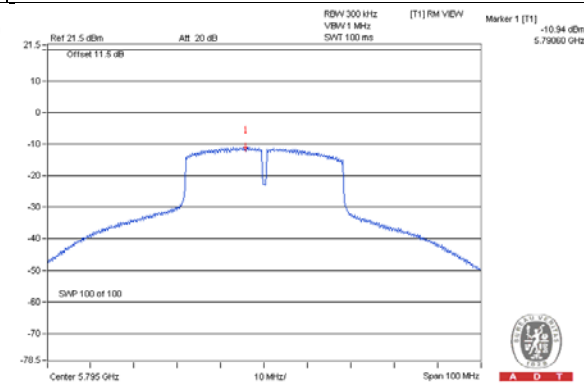
Chain 0 / CH159



Chain 1 / CH151



Chain 1 / CH159

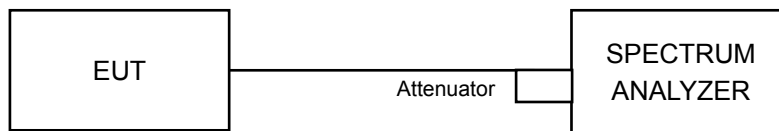


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedures

MEASUREMENT PROCEDURE REF

- a. Set resolution bandwidth (RBW) = 100kHz
- b. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- c. Trace mode = max hold.
- d. Sweep = auto couple.
- e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

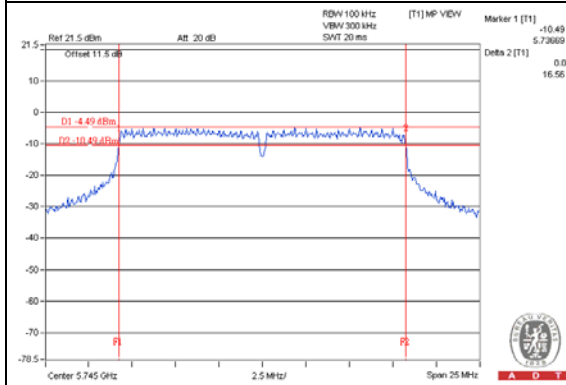
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Results

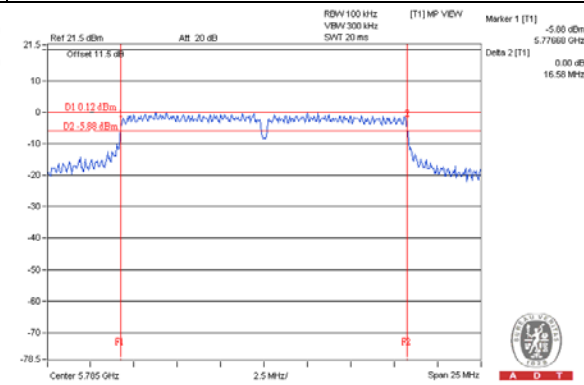
802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	16.56	16.65	0.5	Pass
157	5785	16.58	16.61	0.5	Pass
165	5825	16.58	16.59	0.5	Pass

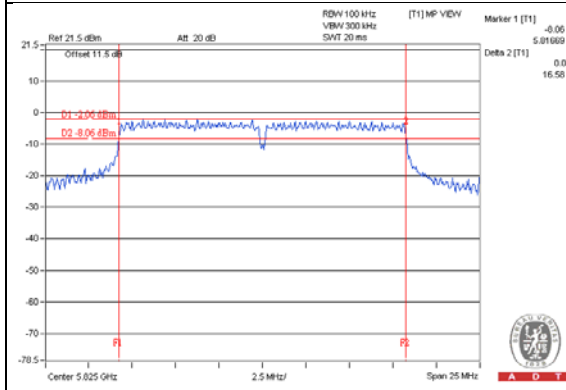
Chain 0 / CH149



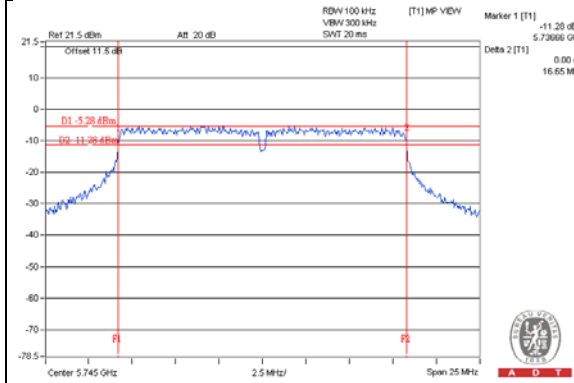
Chain 0 / CH157



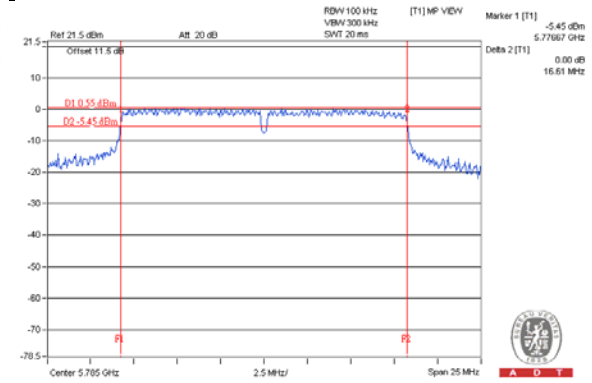
Chain 0 / CH165



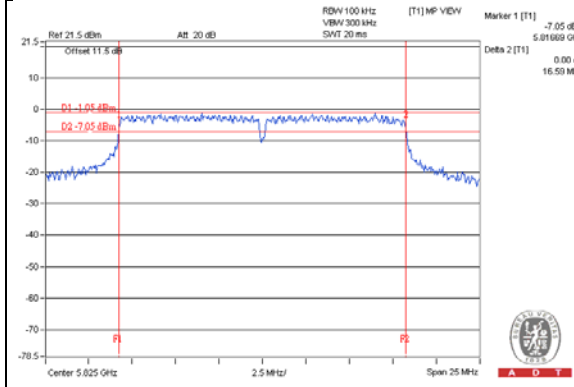
Chain 1 / CH149



Chain 1 / CH157



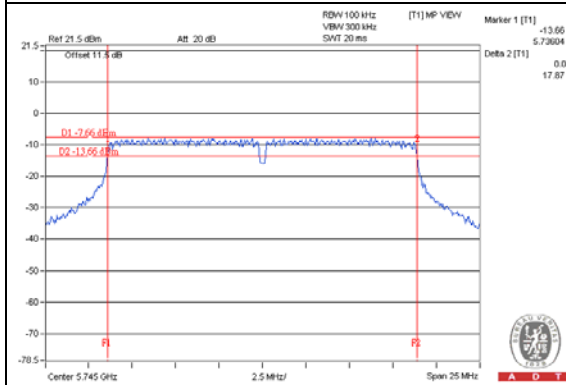
Chain 1 / CH165



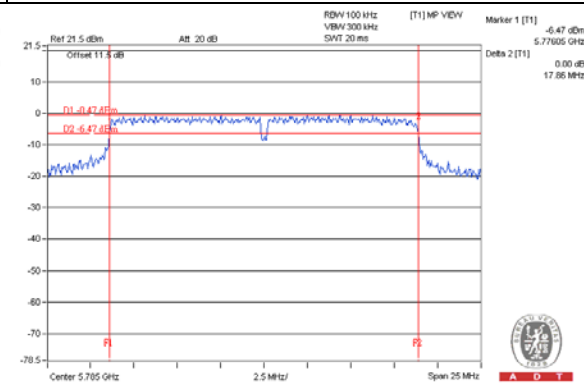
802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	17.87	17.88	0.5	Pass
157	5785	17.86	17.87	0.5	Pass
165	5825	17.86	17.86	0.5	Pass

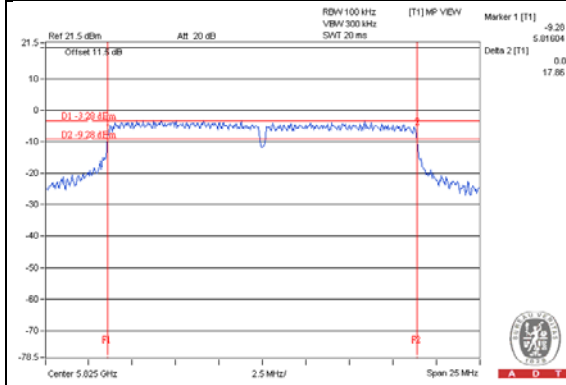
Chain 0 / CH149

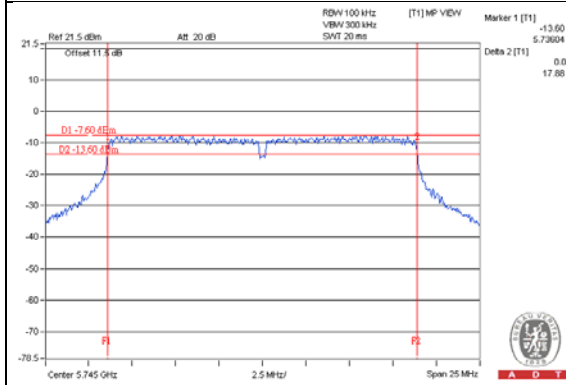
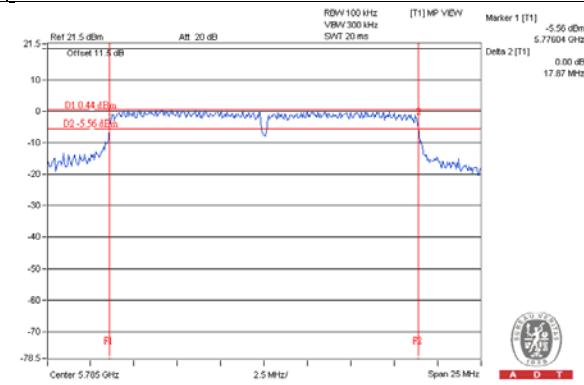
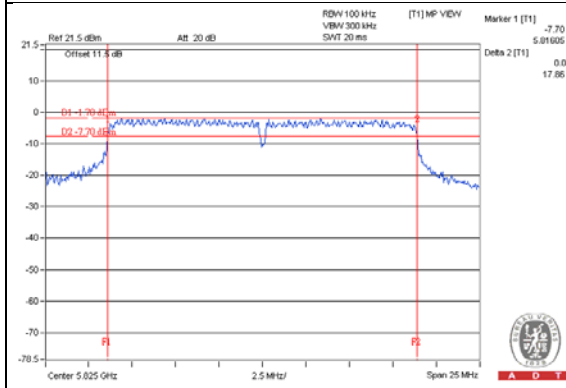


Chain 0 / CH157



Chain 0 / CH165

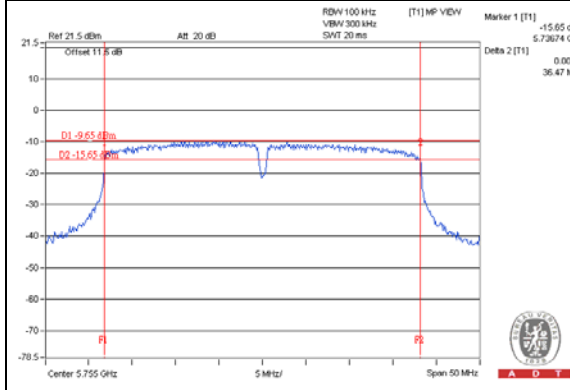


Chain 1 / CH149**Chain 1 / CH157****Chain 1 / CH165**

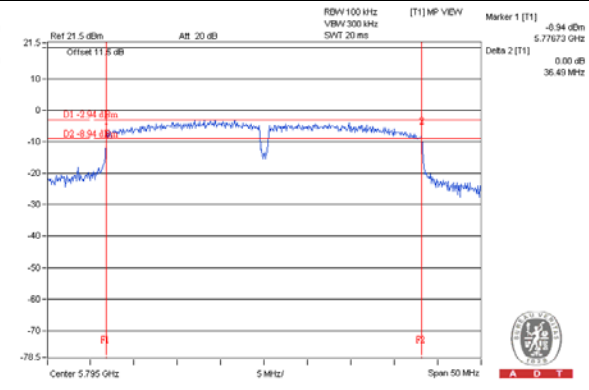
802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	36.47	36.50	0.5	Pass
159	5795	36.49	36.48	0.5	Pass

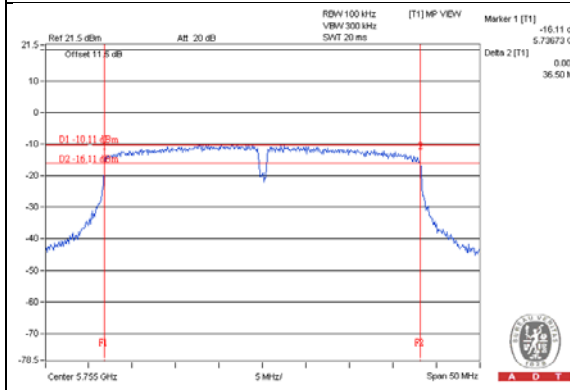
Chain 0 / CH151



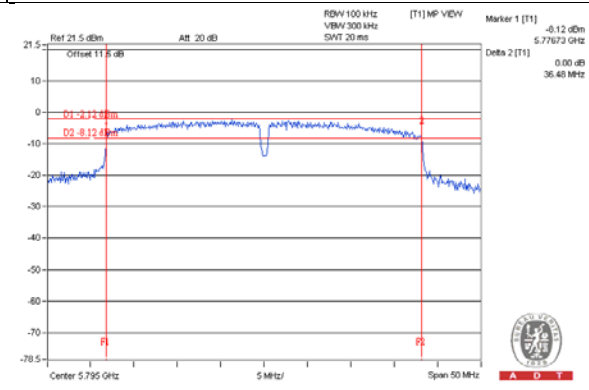
Chain 0 / CH159



Chain 1 / CH151



Chain 1 / CH159



4.4 Unwanted Emission (Radiated Versus Conducted)

4.4.1 Limits of Unwanted Emission 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.

Limits of Unwanted Emission out of the Restricted Bands

APPLICABLE TO	LIMIT	
789033 D02 General UNII Test Procedure New Rules v01	FIELD STRENGTH AT 3m	
	PK:74 (dBuV/m)	AV:54 (dBuV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK:-27 (dBm/MHz)	PK:68.2 (dBuV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK:-27 (dBm/MHz) ^{*1} PK:-17 (dBm/MHz) ^{*2}	PK:68.2 (dBuV/m) ^{*1} PK:78.2 (dBuV/m) ^{*2}

NOTE: ^{*1} beyond 10MHz of the band edge ^{*2} within 10 MHz of band edge

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

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

4.4.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY54450088	July 24, 2015	July 23, 2016
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Feb. 06, 2015	Feb. 05, 2016
Pre-Amplifier Agilent	8449B	3008A01922	Sep. 19, 2015	Sep. 18, 2016
RF Cable	EMC104-SM-SM-2000 EMC104-SM-SM-5000 EMC104-SM-SM-5000	150318 150323 150324	Mar. 31, 2015	Mar. 30, 2016
Spectrum Analyzer R&S	FSV40	100964	June 26, 2015	June 25, 2016
Pre-Amplifier EMCI	EMC184045	980143	Jan. 16, 2015	Jan. 15, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Feb. 05, 2015	Feb. 04, 2016
RF Cable	SUCOFLEX 104	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated _V8.7.07	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 test was performed in 966 Chamber No. 4.
3. The FCC Site Registration No. is 292998
4. The CANADA Site Registration No. is 20331-2
5. Tested Date: Oct. 12, 2015
- 6.

4.4.3 Test Procedures

Following FCC KDB 789033 D02 General UNII Test Procedures:

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 (for below 1GHz) / 1.5 meters (for above 1GHz) 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 and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. 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.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

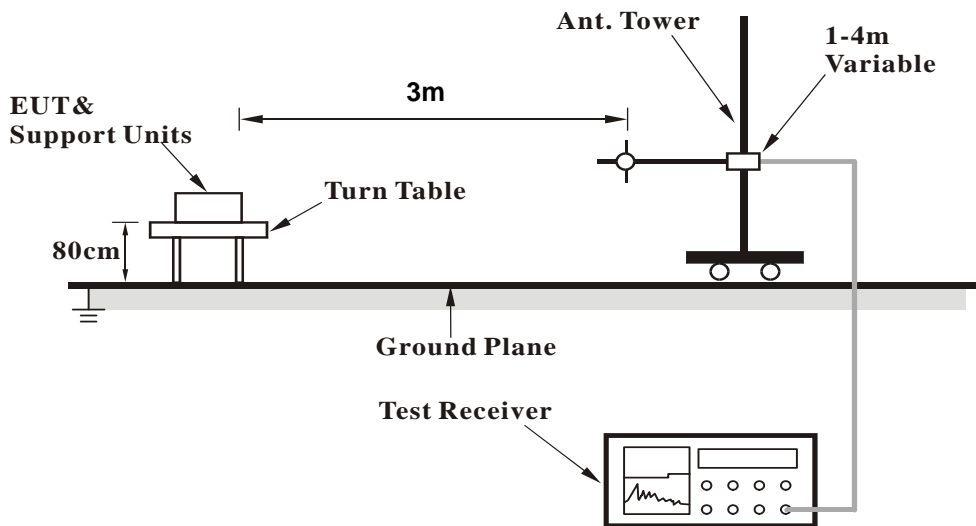
4.4.4 Deviation from Test Standard

No deviation.

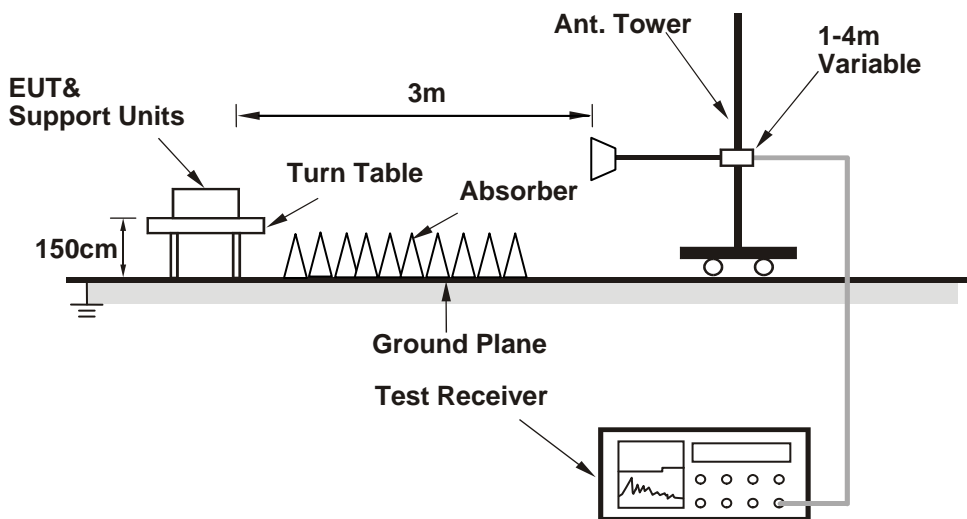
4.4.5 Test Setup

For radiated configuration:

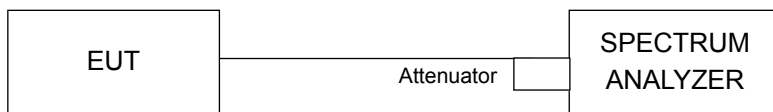
<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For conducted configuration:



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

4.4.6 EUT Operating Conditions

1. 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.

4.4.7 Test Results (Radiated Measurement)

Radiated versus Conducted Measurement	
<input type="checkbox"/> Conducted measurement	<input checked="" type="checkbox"/> 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).	

Radiated test was done with 50ohm terminator on antenna port

Above 1GHz Data

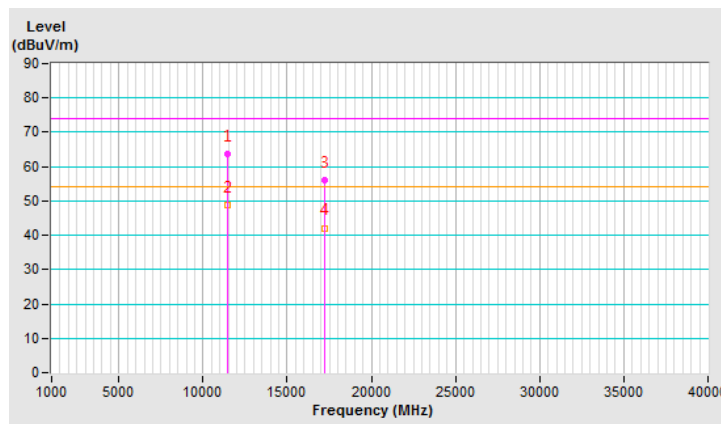
802.11a

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	11490.00	63.8 PK	74.0	-10.2	1.04 H	257	49.46	14.34
2	11490.00	48.7 AV	54.0	-5.3	1.04 H	257	34.36	14.34
3	#17235.00	56.1 PK	74.0	-17.9	1.27 H	162	35.24	20.86
4	#17235.00	42.1 AV	54.0	-11.9	1.27 H	162	21.24	20.86

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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.

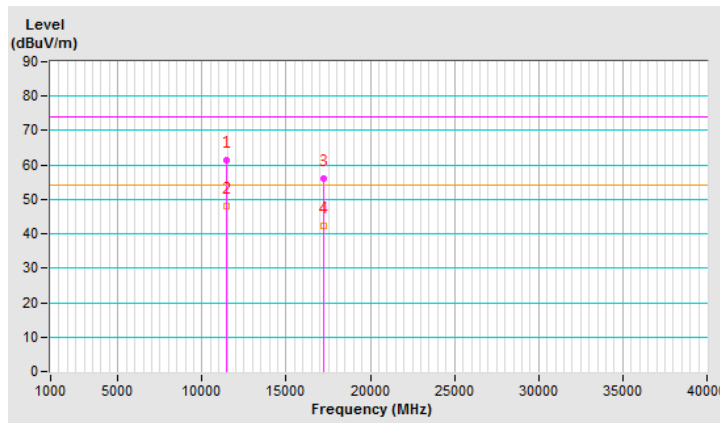


CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11490.00	61.4 PK	74.0	-12.6	1.15 V	235	47.06	14.34
2	11490.00	47.9 AV	54.0	-6.1	1.15 V	235	33.56	14.34
3	#17235.00	56.0 PK	74.0	-18.0	1.62 V	133	35.14	20.86
4	#17235.00	42.2 AV	54.0	-11.8	1.62 V	133	21.34	20.86

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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.

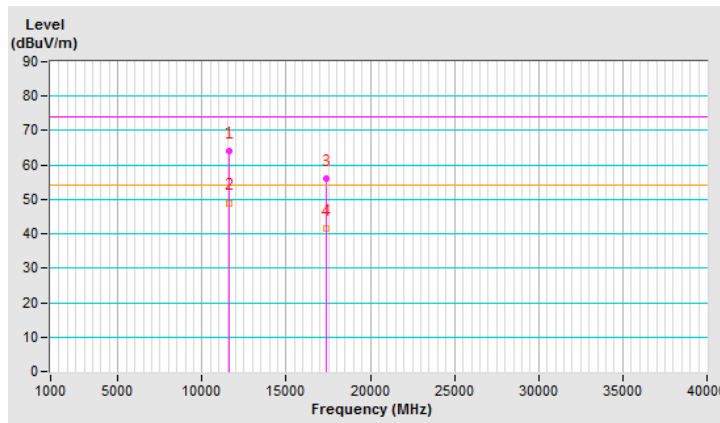


CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11570.00	63.9 PK	74.0	-10.1	1.04 H	257	49.80	14.10
2	11570.00	49.0 AV	54.0	-5.0	1.04 H	257	34.90	14.10
3	#17355.00	55.9 PK	74.0	-18.1	1.22 H	168	34.68	21.22
4	#17355.00	41.7 AV	54.0	-12.3	1.22 H	168	20.48	21.22

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.

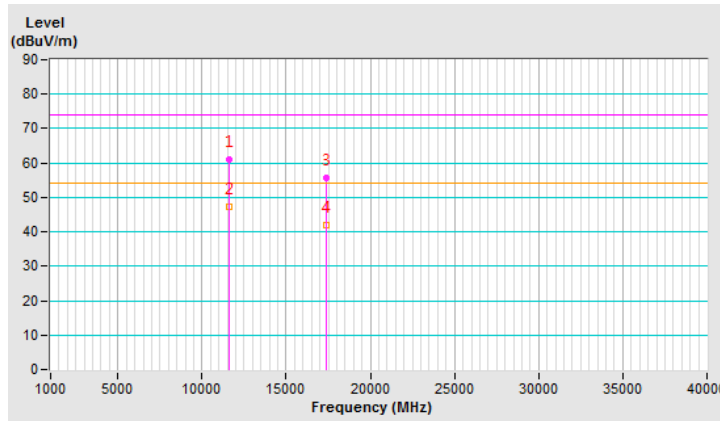


CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11570.00	61.0 PK	74.0	-13.0	1.05 V	258	46.90	14.10
2	11570.00	47.4 AV	54.0	-6.6	1.05 V	258	33.30	14.10
3	#17355.00	55.7 PK	74.0	-18.3	1.71 V	143	34.48	21.22
4	#17355.00	41.9 AV	54.0	-12.1	1.71 V	143	20.68	21.22

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.

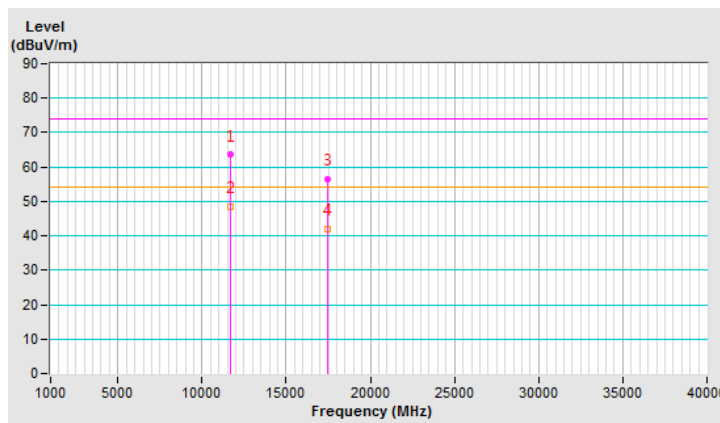


CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11650.00	63.5 PK	74.0	-10.5	1.09 H	272	49.54	13.96
2	11650.00	48.6 AV	54.0	-5.4	1.09 H	272	34.64	13.96
3	#17475.00	56.6 PK	74.0	-17.4	1.24 H	183	34.53	22.07
4	#17475.00	42.1 AV	54.0	-11.9	1.24 H	183	20.03	22.07

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.

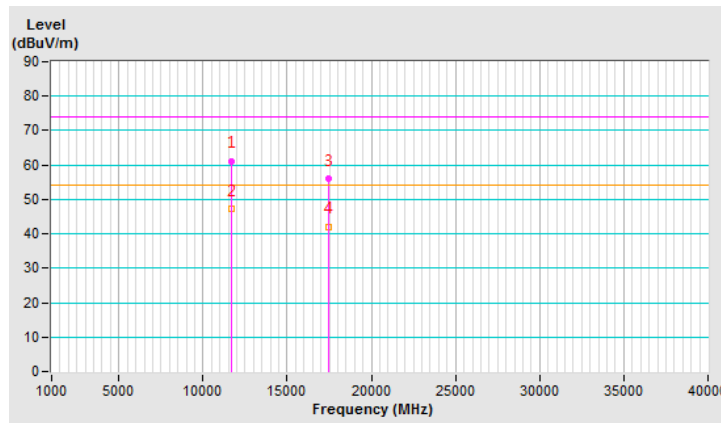


CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11650.00	61.2 PK	74.0	-12.8	1.13 V	252	47.24	13.96
2	11650.00	47.4 AV	54.0	-6.6	1.13 V	252	33.44	13.96
3	#17475.00	56.1 PK	74.0	-17.9	1.69 V	122	34.03	22.07
4	#17475.00	42.1 AV	54.0	-11.9	1.69 V	122	20.03	22.07

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.



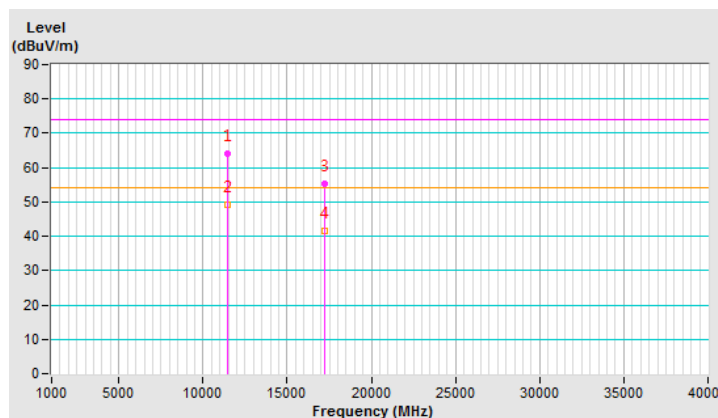
802.11n (HT20)

CHANNEL	TX Channel 149	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	11490.00	64.2 PK	74.0	-9.8	1.00 H	266	49.86	14.34
2	11490.00	49.1 AV	54.0	-4.9	1.00 H	266	34.76	14.34
3	#17235.00	55.4 PK	74.0	-18.6	1.24 H	182	34.54	20.86
4	#17235.00	41.5 AV	54.0	-12.5	1.24 H	182	20.64	20.86

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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.

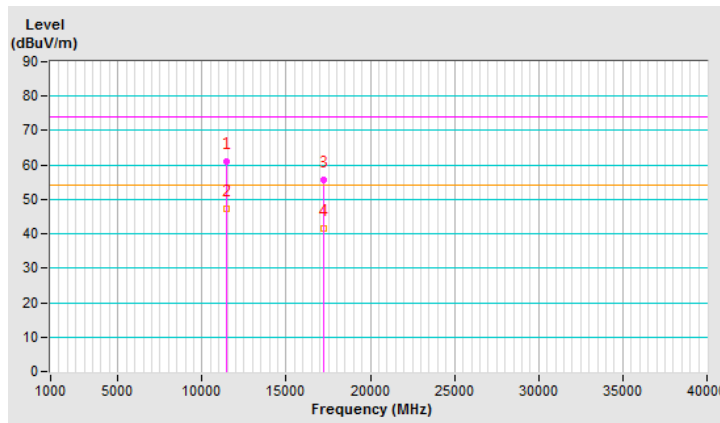


CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11490.00	61.0 PK	74.0	-13.0	1.09 V	243	46.66	14.34
2	11490.00	47.3 AV	54.0	-6.7	1.09 V	243	32.96	14.34
3	#17235.00	55.5 PK	74.0	-18.5	1.62 V	130	34.64	20.86
4	#17235.00	41.7 AV	54.0	-12.3	1.62 V	130	20.84	20.86

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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.

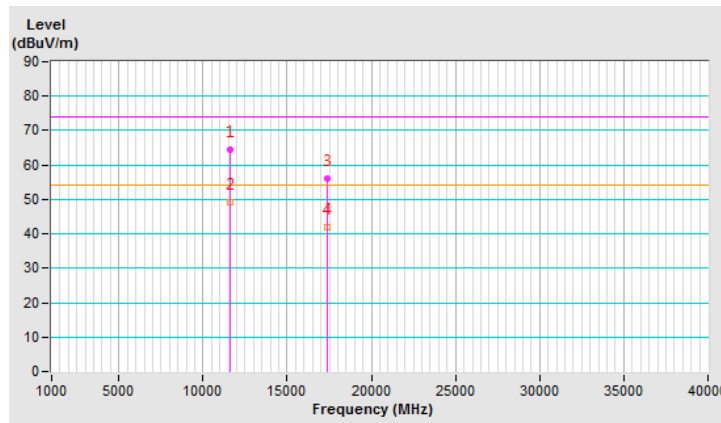


CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11570.00	64.4 PK	74.0	-9.6	1.09 H	268	50.30	14.10
2	11570.00	49.3 AV	54.0	-4.7	1.09 H	268	35.20	14.10
3	#17355.00	56.2 PK	74.0	-17.8	1.21 H	181	34.98	21.22
4	#17355.00	41.9 AV	54.0	-12.1	1.21 H	181	20.68	21.22

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.

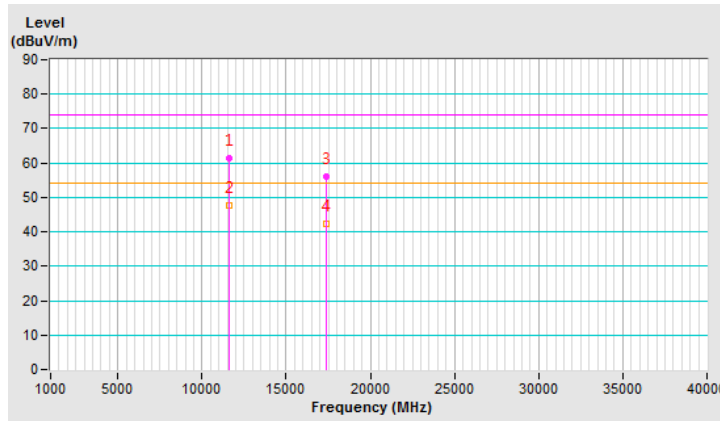


CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11570.00	61.3 PK	74.0	-12.7	1.10 V	252	47.20	14.10
2	11570.00	47.5 AV	54.0	-6.5	1.10 V	252	33.40	14.10
3	#17355.00	56.2 PK	74.0	-17.8	1.65 V	122	34.98	21.22
4	#17355.00	42.4 AV	54.0	-11.6	1.65 V	122	21.18	21.22

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.



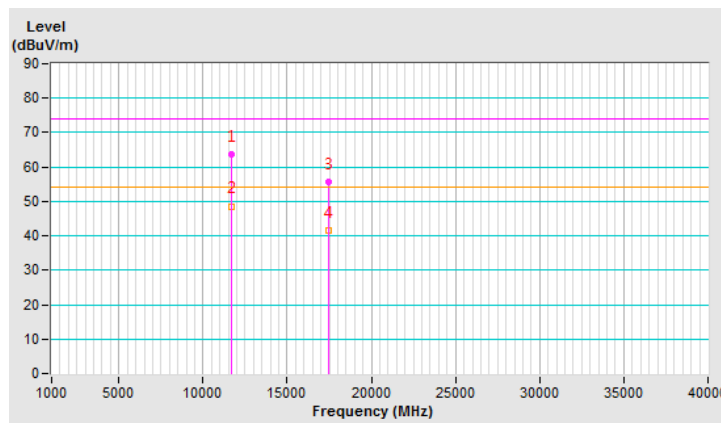
CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11650.00	63.7 PK	74.0	-10.3	1.00 H	249	49.74	13.96
2	11650.00	48.6 AV	54.0	-5.4	1.00 H	249	34.64	13.96
3	#17475.00	55.5 PK	74.0	-18.5	1.22 H	179	33.43	22.07
4	#17475.00	41.5 AV	54.0	-12.5	1.22 H	179	19.43	22.07

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.

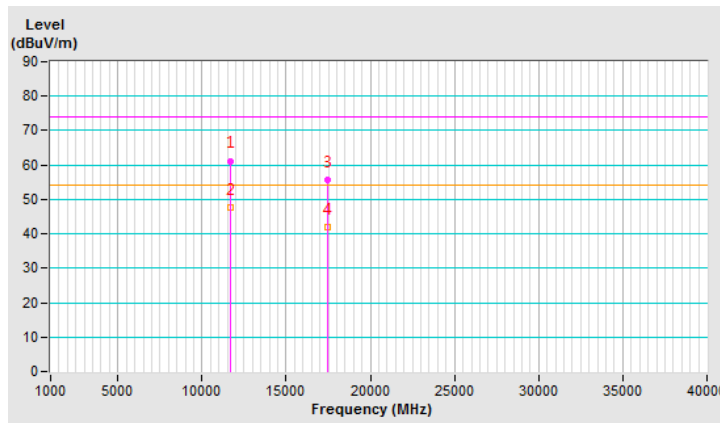


CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11650.00	61.2 PK	74.0	-12.8	1.16 V	253	47.24	13.96
2	11650.00	47.6 AV	54.0	-6.4	1.16 V	253	33.64	13.96
3	#17475.00	55.8 PK	74.0	-18.2	1.70 V	123	33.73	22.07
4	#17475.00	42.0 AV	54.0	-12.0	1.70 V	123	19.93	22.07

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.



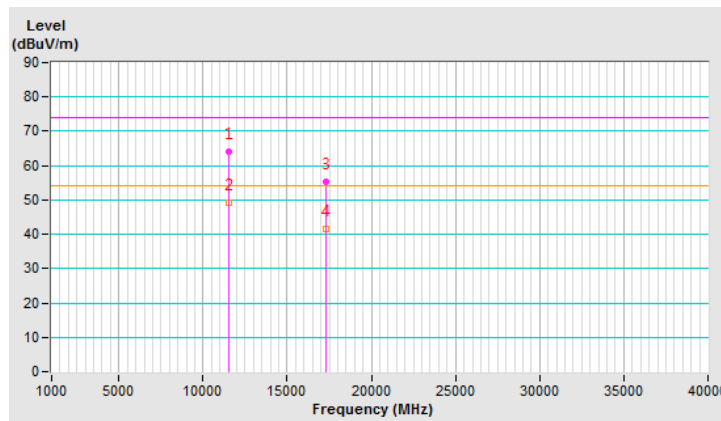
802.11n (HT40)

CHANNEL	TX Channel 151	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	11510.00	64.1 PK	74.0	-9.9	1.05 H	246	49.80	14.30
2	11510.00	49.1 AV	54.0	-4.9	1.05 H	246	34.80	14.30
3	#17265.00	55.4 PK	74.0	-18.6	1.25 H	180	34.53	20.87
4	#17265.00	41.4 AV	54.0	-12.6	1.25 H	180	20.53	20.87

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.

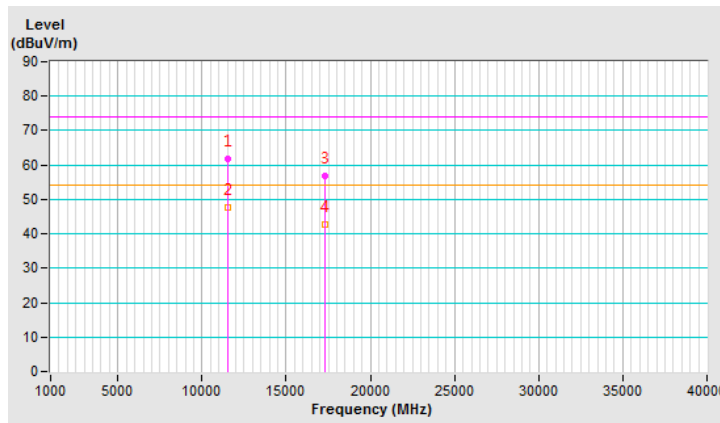


CHANNEL	TX Channel 151	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11510.00	61.7 PK	74.0	-12.3	1.05 V	246	47.40	14.30
2	11510.00	47.6 AV	54.0	-6.4	1.05 V	246	33.30	14.30
3	#17265.00	56.7 PK	74.0	-17.3	1.70 V	141	35.83	20.87
4	#17265.00	42.7 AV	54.0	-11.3	1.70 V	141	21.83	20.87

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.

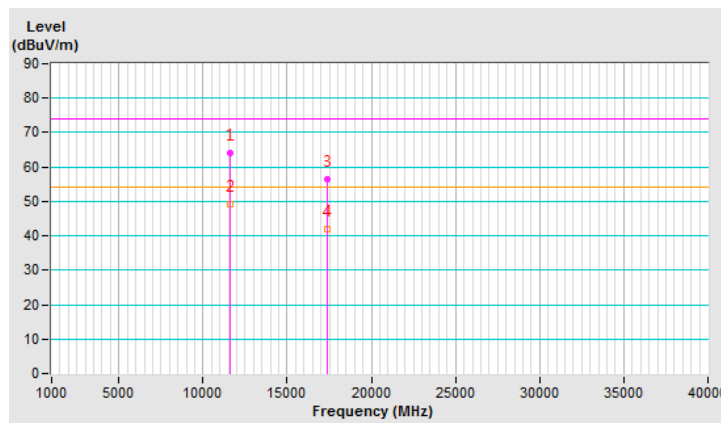


CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11590.00	64.0 PK	74.0	-10.0	1.00 H	273	49.98	14.02
2	11590.00	49.2 AV	54.0	-4.8	1.00 H	273	35.18	14.02
3	#17385.00	56.3 PK	74.0	-17.7	1.22 H	160	34.91	21.39
4	#17385.00	41.8 AV	54.0	-12.2	1.22 H	160	20.41	21.39

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.

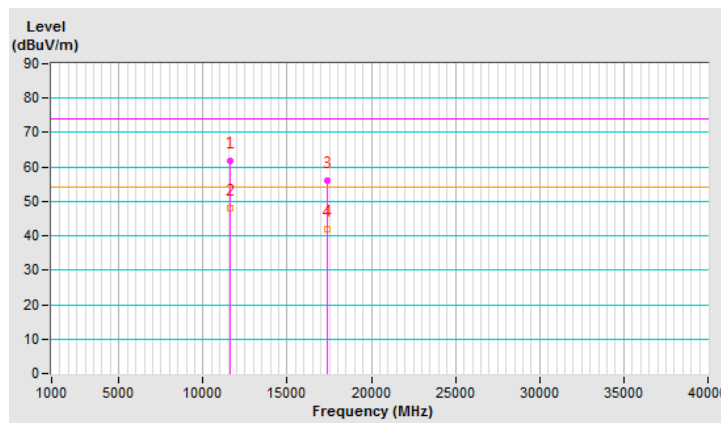


CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	11590.00	61.7 PK	74.0	-12.3	1.12 V	248	47.68	14.02
2	11590.00	48.0 AV	54.0	-6.0	1.12 V	248	33.98	14.02
3	#17385.00	55.9 PK	74.0	-18.1	1.65 V	144	34.51	21.39
4	#17385.00	42.0 AV	54.0	-12.0	1.65 V	144	20.61	21.39

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.



Below 1GHz Data

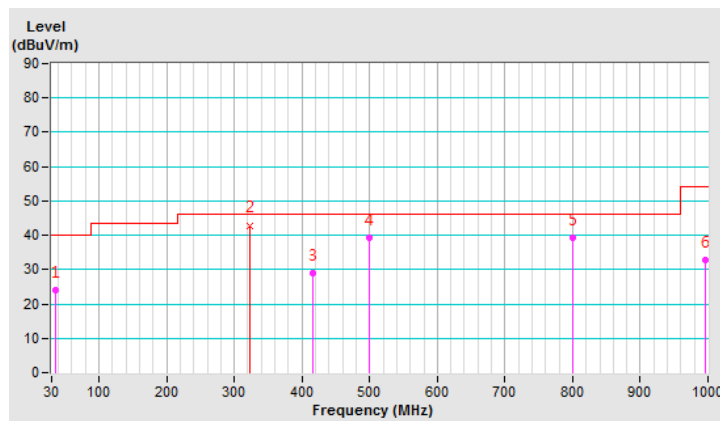
802.11a

CHANNEL	TX Channel 149	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	35.19	24.0 QP	40.0	-16.0	1.00 H	217	38.44	-14.48
2	323.85	42.9 QP	46.0	-3.1	1.00 H	348	54.47	-11.57
3	416.42	29.0 QP	46.0	-17.0	1.00 H	24	38.56	-9.55
4	499.63	39.3 QP	46.0	-6.7	1.00 H	140	47.10	-7.78
5	799.33	39.4 QP	46.0	-6.6	1.00 H	241	41.41	-2.04
6	996.10	32.7 QP	54.0	-21.3	1.00 H	32	32.26	0.42

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

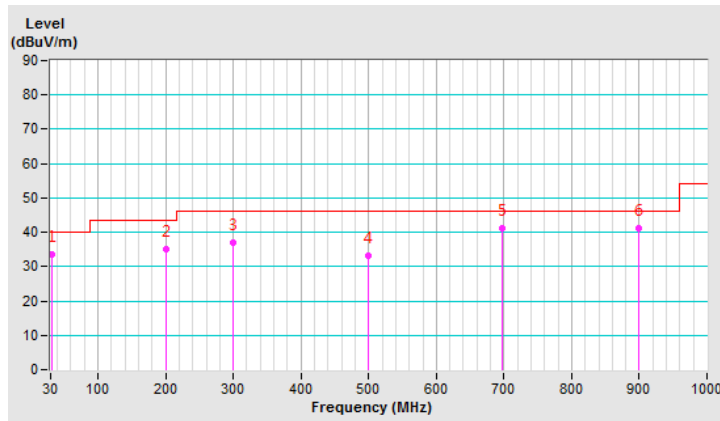


CHANNEL	TX Channel 149	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	30.97	33.4 QP	40.0	-6.6	1.00 V	8	48.20	-14.82
2	199.80	35.2 QP	43.5	-8.3	1.00 V	304	51.64	-16.45
3	298.79	36.9 QP	46.0	-9.1	1.00 V	291	49.56	-12.62
4	499.53	33.3 QP	46.0	-12.7	1.00 V	314	41.10	-7.78
5	697.04	41.1 QP	46.0	-4.9	1.00 V	281	44.83	-3.74
6	899.19	41.1 QP	46.0	-5.0	1.00 V	287	41.93	-0.88

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



4.4.8 Test Results (Conducted Measurement)

Radiated versus Conducted Measurement	
<input checked="" type="checkbox"/> Conducted measurement	<input type="checkbox"/> 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
<p>a. The composite gain will be used when signal support the correlated signal. (Composite gain = $4.76\text{dBi} + 10\log(2) = 7.77\text{dBi}$)</p> <p>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.</p> <p>c. For the band edge the gain for the specific band may have been used.</p> <p>d. In restricted bands below 1000 MHz, add upper bound on ground plane reflection: For $f = 30 - 1000$ MHz, add 4.7 dB.</p> <p>Note: The conducted emission test was considered some factor to compute test result.</p>

Above 1GHz Data
802.11a - Channel 149

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3828.125 PK	64.2	74	-9.8	-40.17	-44.58	7.77	-31.06
2	3828.125 AV	59.96	54	* 5.96	-43.98	-50.32	7.77	-35.3
3	7659.375 PK	59.01	74	-14.99	-46.35	-47.83	7.77	-36.25
4	7659.375 AV	39.37	54	-14.63	-67.37	-66.07	7.77	-55.89
5	11490.625 PK	60.9	74	-13.1	-47.74	-43.52	7.77	-34.36
6	11490.625 AV	44.06	54	-9.94	-65.54	-60.05	7.77	-51.2

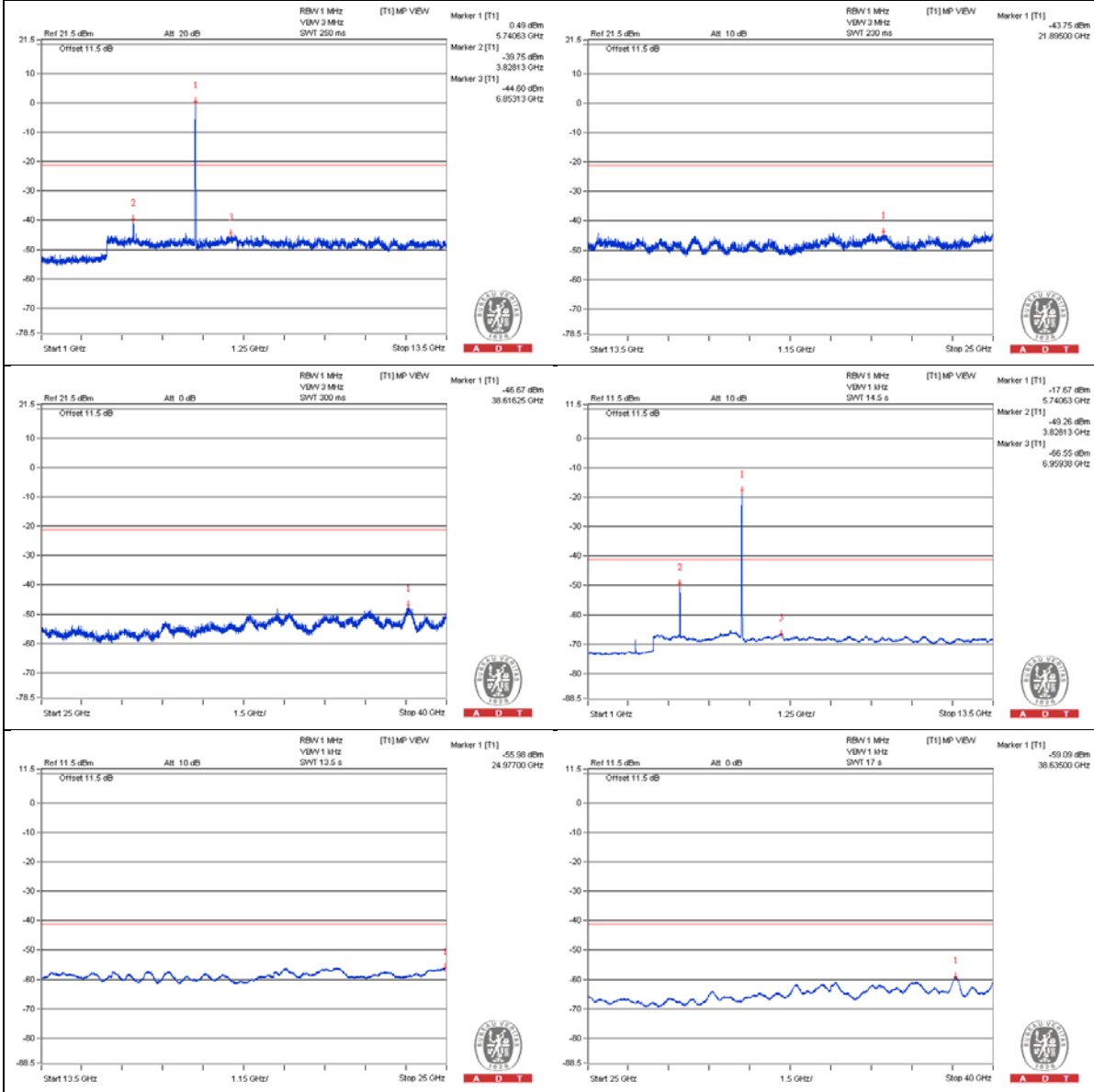
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

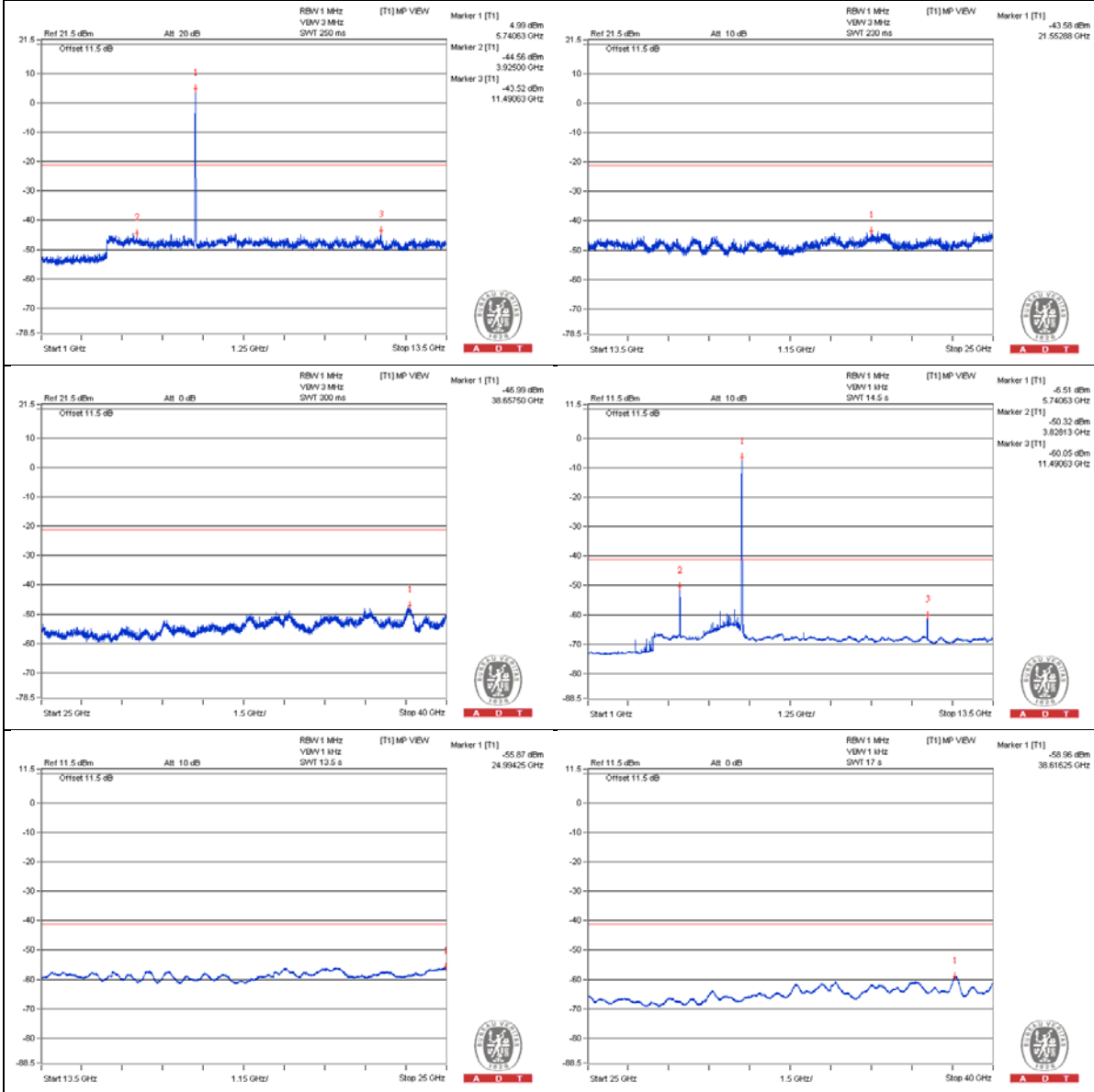
d = measurement distance in 3 meters.

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

Chain 0



Chain 1

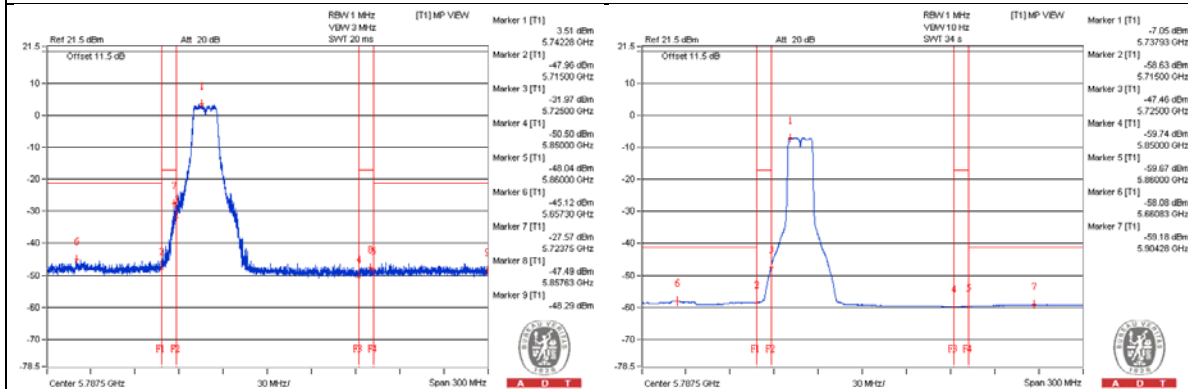


Bandedge table

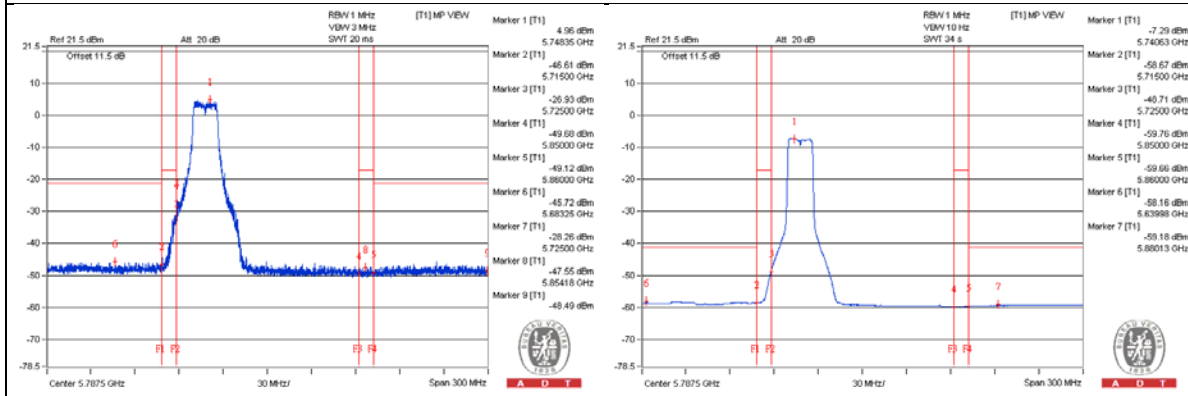
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5659.775 PK	59.98	74	-14.02	-45.29	-46.99	7.77	-35.28
2	5660.75 AV	47.86	54	-6.14	-58.08	-58.29	7.77	-47.4
3	5723.75 PK	76.55	78.2	-1.65	-27.57	-33.01	7.77	-18.71
4	5857.625 PK	58.48	78.2	-19.72	-47.49	-47.64	7.77	-36.78
5	5915.75 PK	57.63	74	-16.37	-48.67	-48.16	7.77	-37.63
6	5916.425 AV	46.84	54	-7.16	-59.19	-59.22	7.77	-48.42

Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain 0



Chain 1



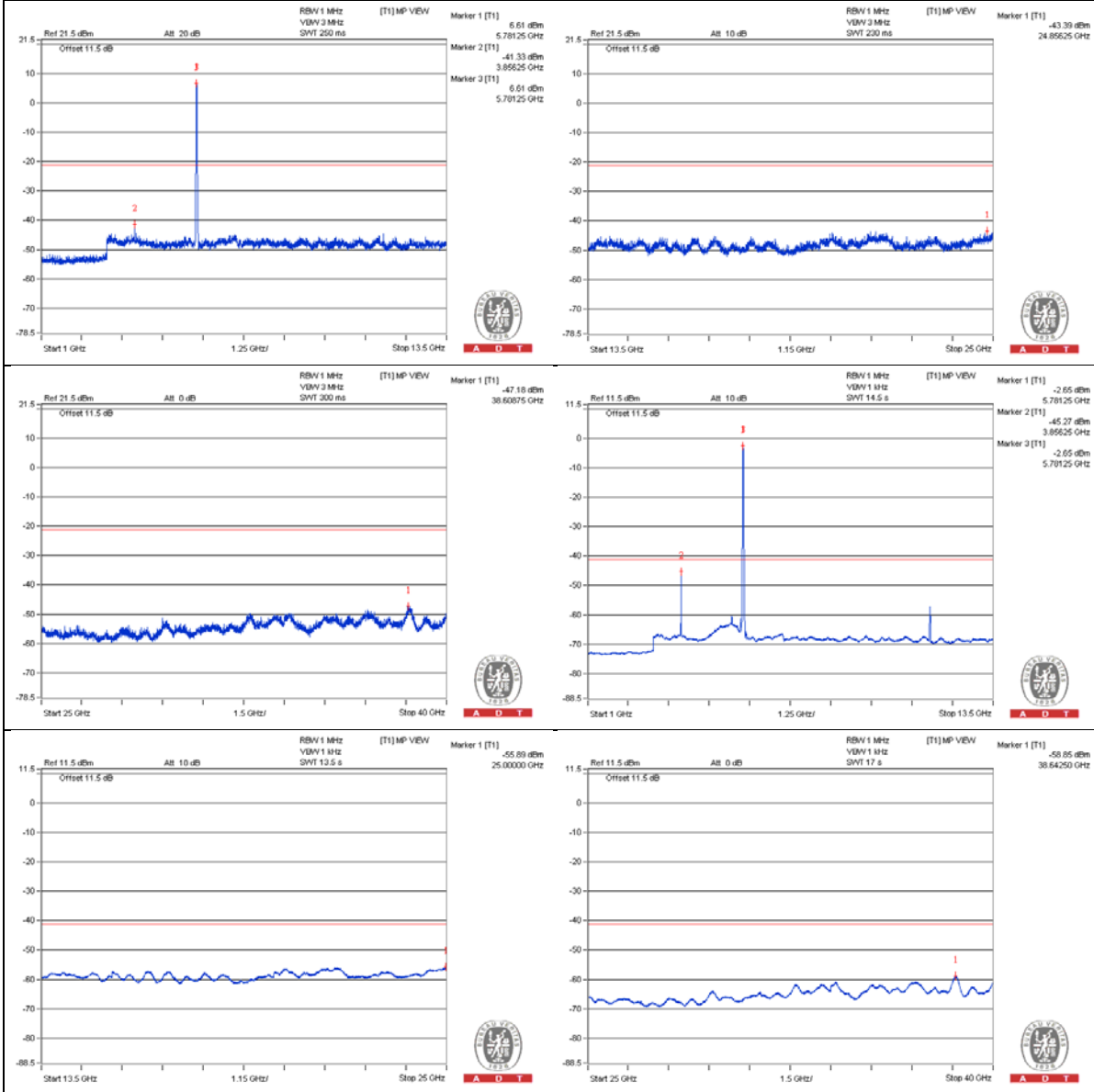
802.11a - Channel 157
Conducted spurious emission table

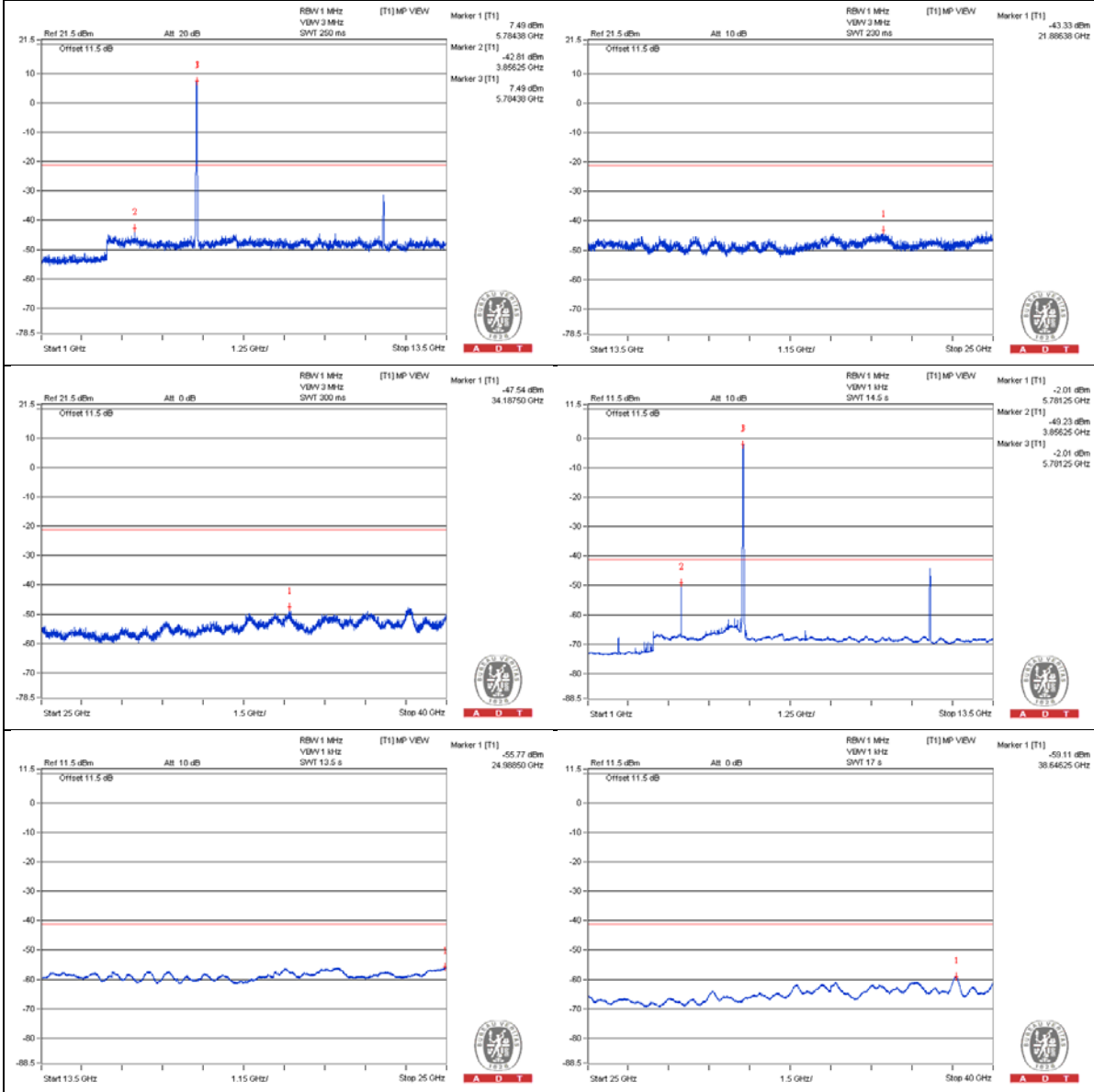
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3856.25 PK	64.03	74	-9.97	-41.33	-42.81	7.77	-31.23
2	3856.25 AV	59.23	54	* 5.23	-45.27	-49.23	7.77	-36.03
3	7712.5 PK	57.29	74	-16.71	-48.88	-48.62	7.77	-37.97
4	7712.5 AV	39.51	54	-14.49	-68.03	-65.42	7.77	-55.75
5	11571.875 PK	70.79	74	-3.21	-44.69	-32.49	7.77	-24.47
6	11568.75 AV	59	54	* 5	-58.5	-44.19	7.77	-36.26

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

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

Chain 0

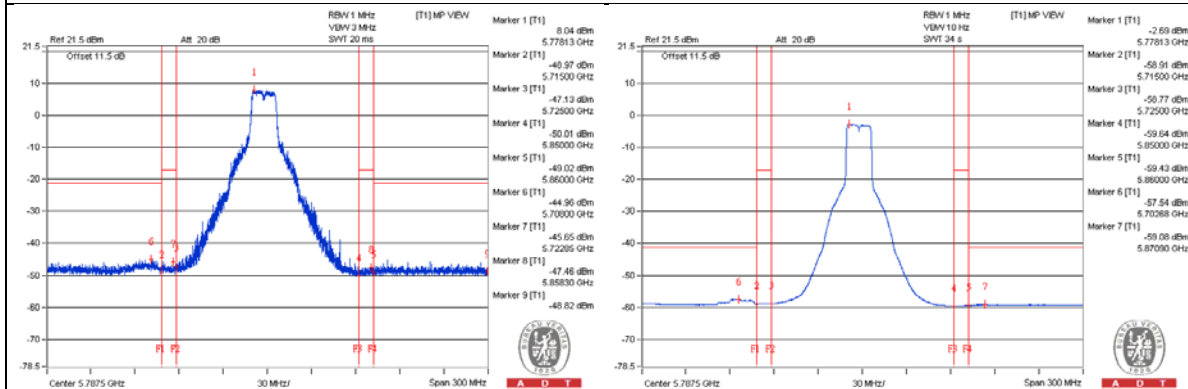
Chain 1

Bandedge table

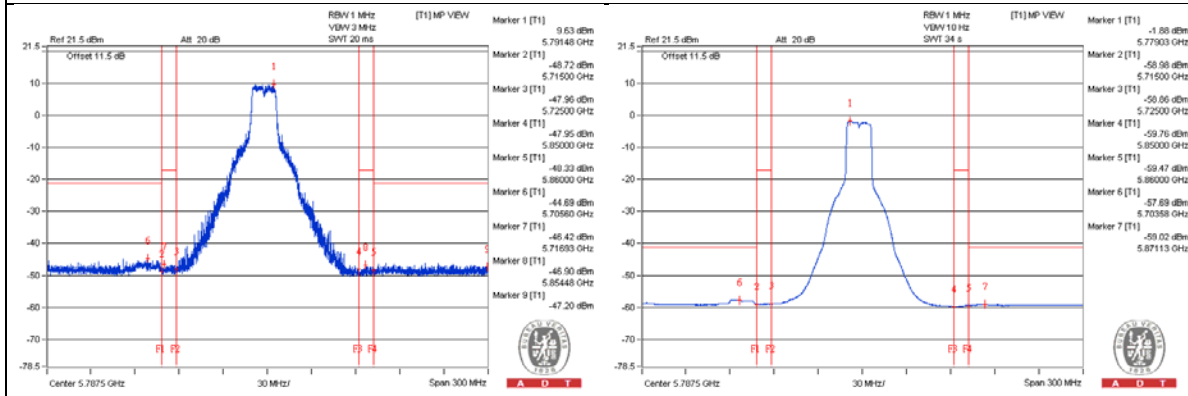
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5713.925 PK	58.97	74	-15.03	-48.49	-46	7.77	-36.29
2	5713.025 AV	47.85	54	-6.15	-58.18	-58.21	7.77	-47.41
3	5722.85 PK	59.51	78.2	-18.69	-45.65	-47.63	7.77	-35.75
4	5855.45 PK	58.24	78.2	-19.96	-48.44	-47.24	7.77	-37.02
5	5860.7 PK	57.97	74	-16.03	-47.09	-49.35	7.77	-37.29
6	5860.775 AV	46.65	54	-7.35	-59.4	-59.39	7.77	-48.61

Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain 0



Chain 1



802.11a - Channel 165

Conducted spurious emission table

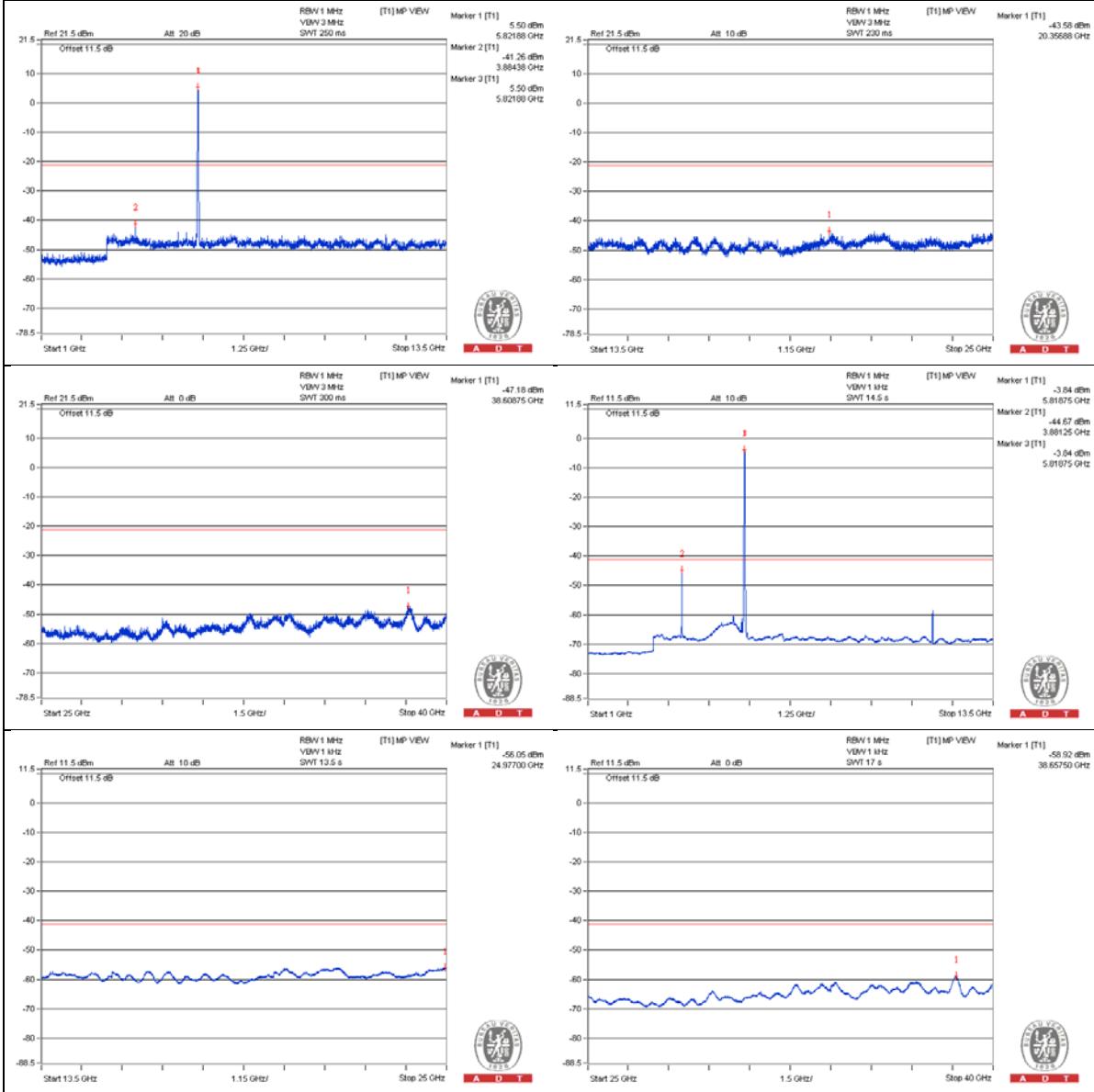
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3884.375 PK	63.51	74	-10.49	-41.26	-44.34	7.77	-31.75
2	3884.375 AV	56.8	54	* 2.8	-47.31	-52.8	7.77	-38.46
3	7765.625 PK	58.33	74	-15.67	-47.8	-47.62	7.77	-36.93
4	7765.625 AV	39.46	54	-14.54	-67.94	-65.55	7.77	-55.8
5	11650 PK	68.01	74	-5.99	-46.59	-35.33	7.77	-27.25
6	11650 AV	56.24	54	* 2.24	-58.67	-47.08	7.77	-39.02

Note :

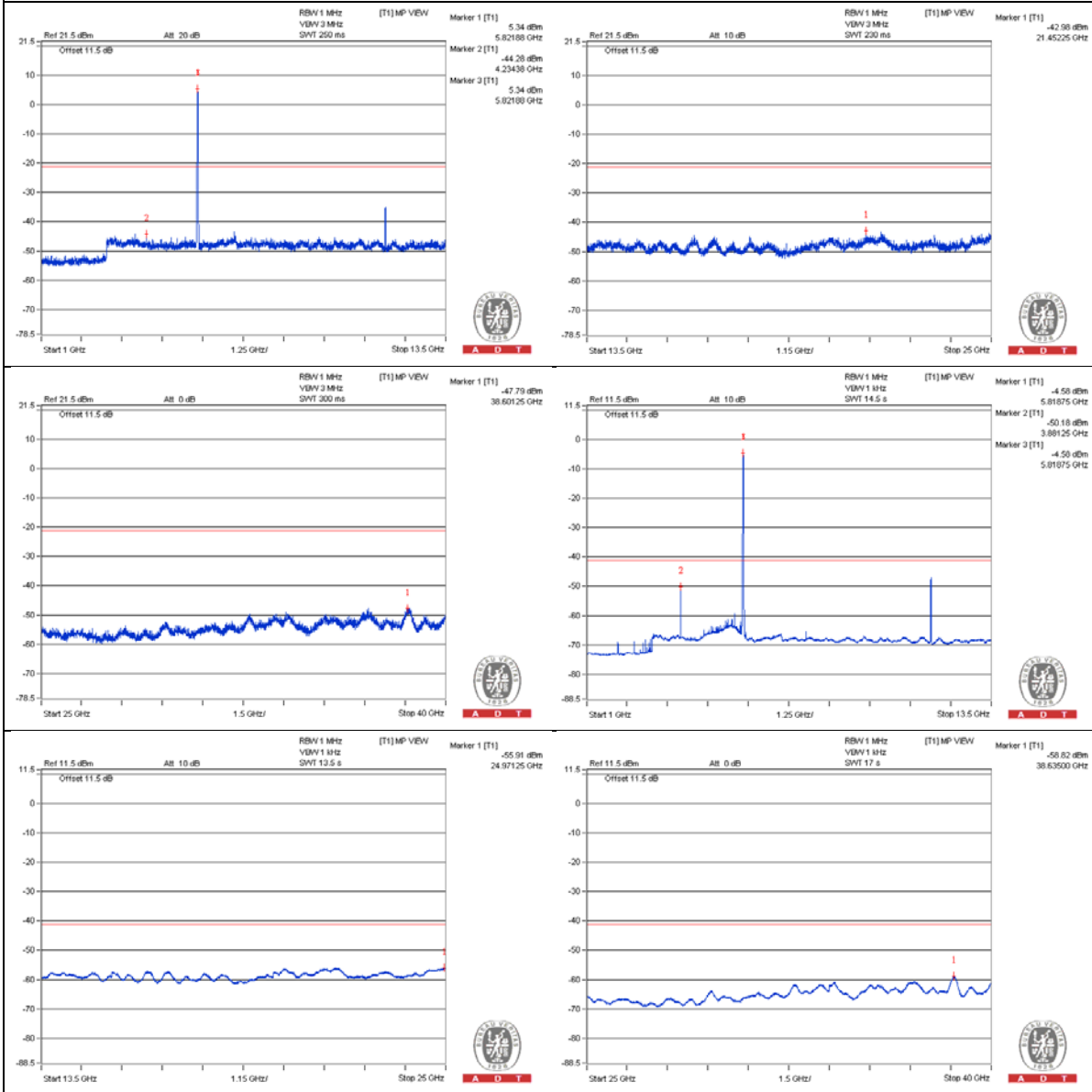
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

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

Chain 0



Chain 1

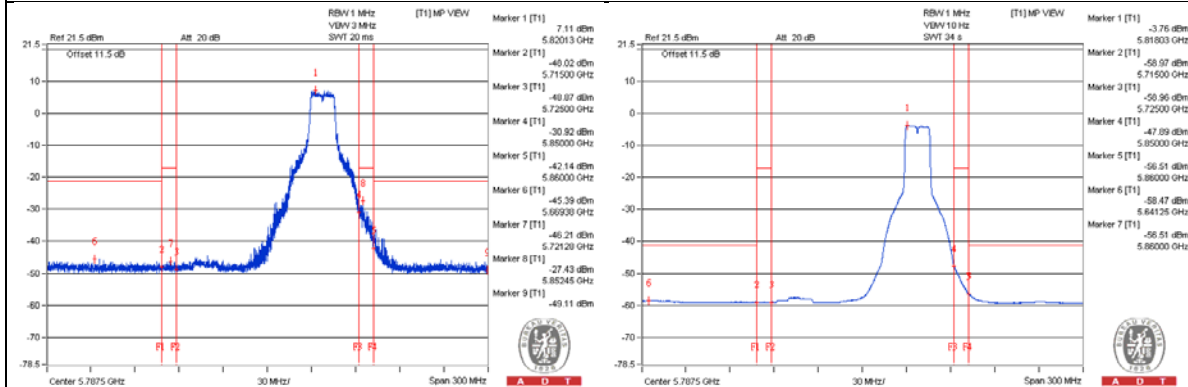


Bandedge table

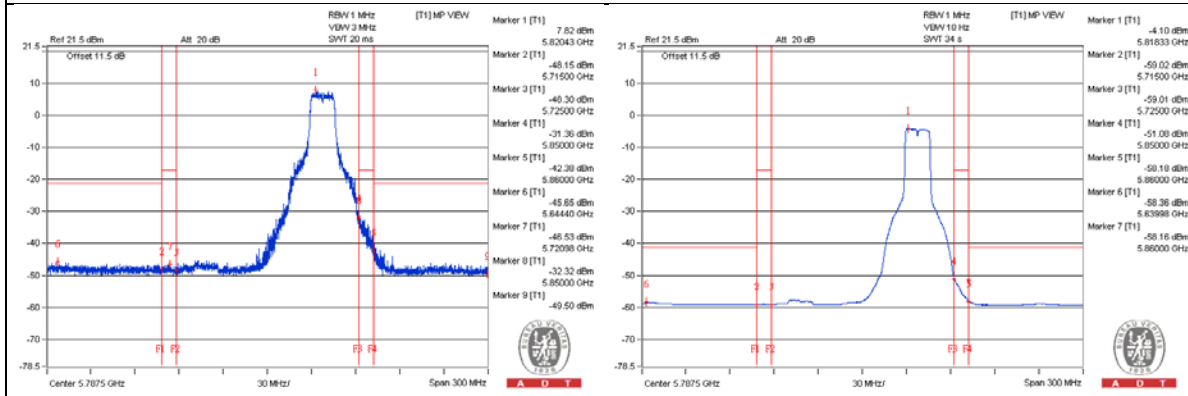
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5683.475 PK	58.97	74	-15.03	-46.95	-47.2	7.77	-36.29
2	5683.7 AV	46.98	54	-7.02	-59.01	-59.12	7.77	-48.28
3	5721.275 PK	58.98	78.2	-19.22	-46.21	-48.13	7.77	-36.28
4	5852.45 PK	76.22	78.2	-1.98	-27.43	-35.6	7.77	-19.04
5	5865.95 PK	64.57	74	-9.43	-39.09	-47.13	7.77	-30.69
6	5865.95 AV	47.38	54	-6.62	-58.31	-59.05	7.77	-47.88

Note :
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain 0



Chain 1



802.11n (HT20) - Channel 149

Conducted spurious emission table

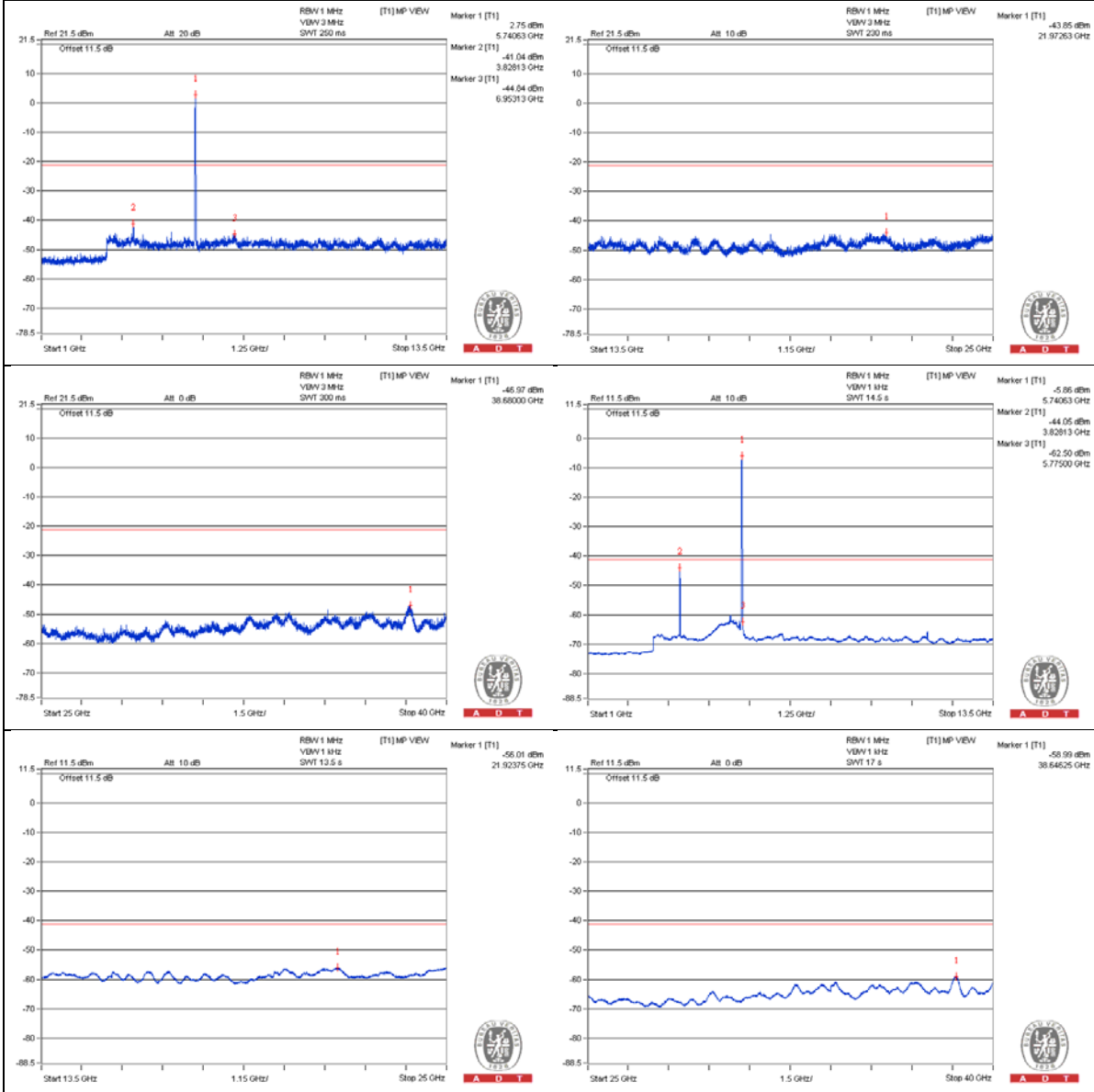
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3828.125 PK	64.09	74	-9.91	-40.76	-43.61	7.77	-31.17
2	3828.125 AV	59.44	54	* 5.44	-44.69	-50.11	7.77	-35.82
3	7659.375 PK	58.38	74	-15.62	-47.44	-47.89	7.77	-36.88
4	7659.375 AV	39.77	54	-14.23	-67.82	-65.13	7.77	-55.49
5	11490.625 PK	64.89	74	-9.11	-46.98	-38.75	7.77	-30.37
6	11490.625 AV	52.42	54	-1.58	-62.81	-50.88	7.77	-42.84

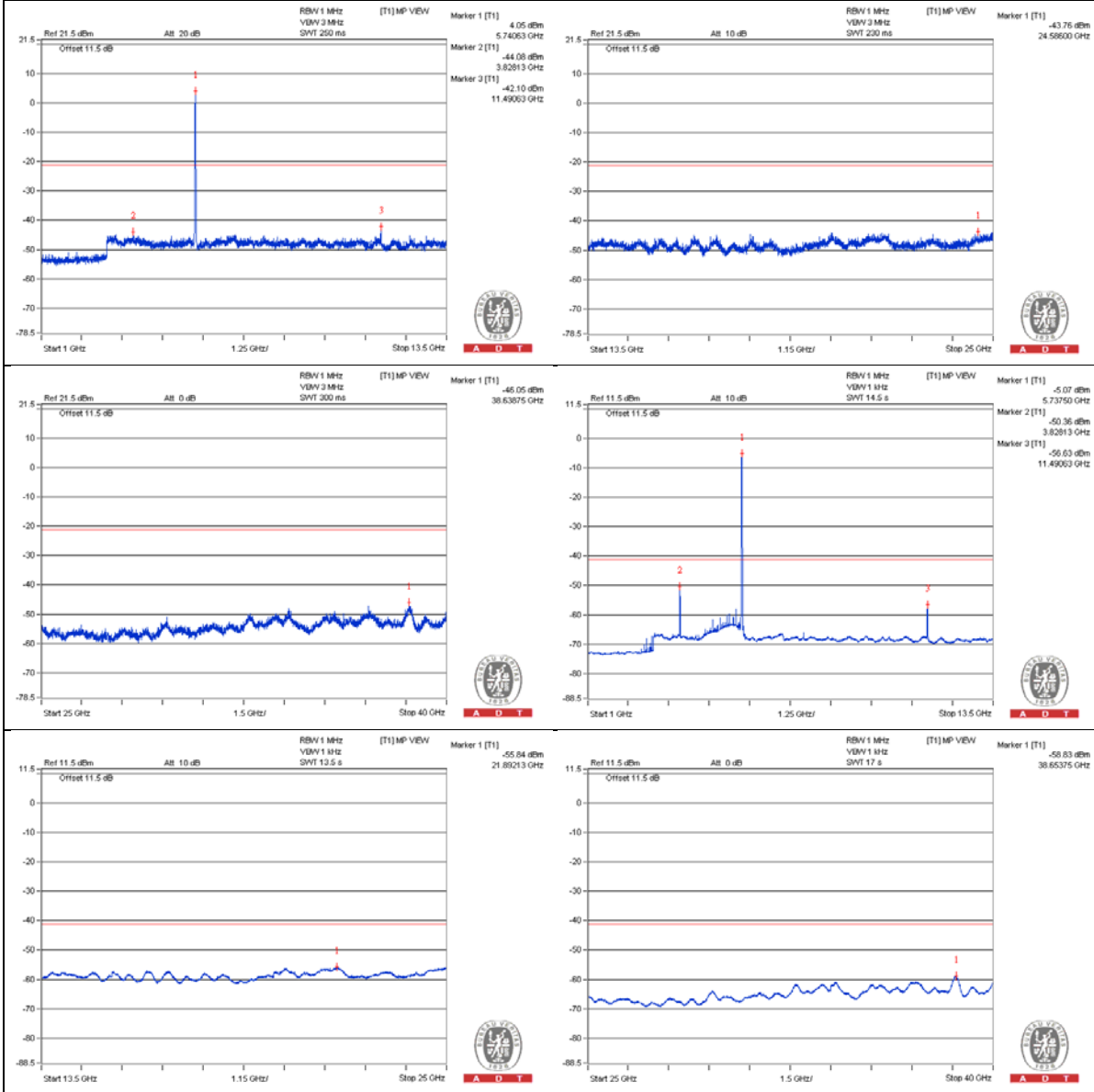
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

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

Chain 0



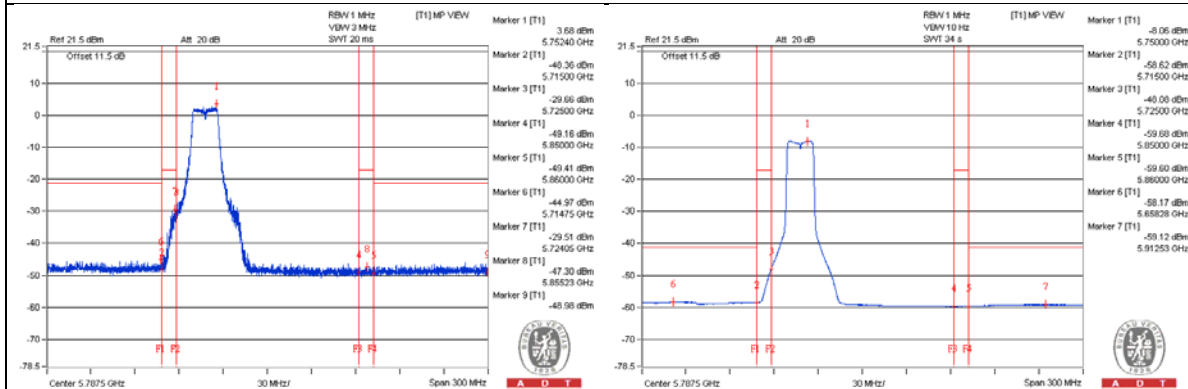
Chain 1

Bandedge table

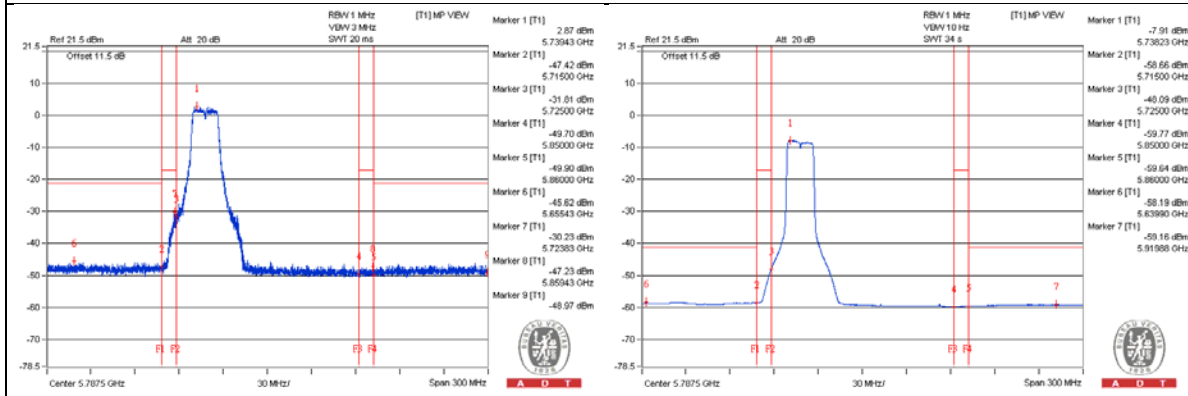
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5714.75 PK	59.93	74	-14.07	-44.97	-47.66	7.77	-35.33
2	5713.025 AV	47.45	54	-6.55	-58.56	-58.62	7.77	-47.81
3	5724.05 PK	75.39	78.2	-2.81	-29.51	-32.21	7.77	-19.87
4	5859.425 PK	58.61	78.2	-19.59	-47.65	-47.23	7.77	-36.65
5	5861.825 PK	57.82	74	-16.18	-47.93	-48.53	7.77	-37.44
6	5860.4 AV	46.46	54	-7.54	-59.55	-59.62	7.77	-48.8

Note :
 Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
 d = measurement distance in 3 meters.

Chain 0



Chain 1



802.11n (HT20) - Channel 157
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3856.25 PK	63.64	74	-10.36	-40.97	-44.54	7.77	-31.62
2	3856.25 AV	59.35	54	* 5.35	-44.87	-49.87	7.77	-35.91
3	7712.5 PK	58.23	74	-15.77	-47.75	-47.88	7.77	-37.03
4	7712.5 AV	39.71	54	-14.29	-68.42	-64.92	7.77	-55.55
5	11571.875 PK	68.19	74	-5.81	-45.63	-35.22	7.77	-27.07
6	11571.875 AV	56.95	54	* 2.95	-59.15	-46.3	7.77	-38.31

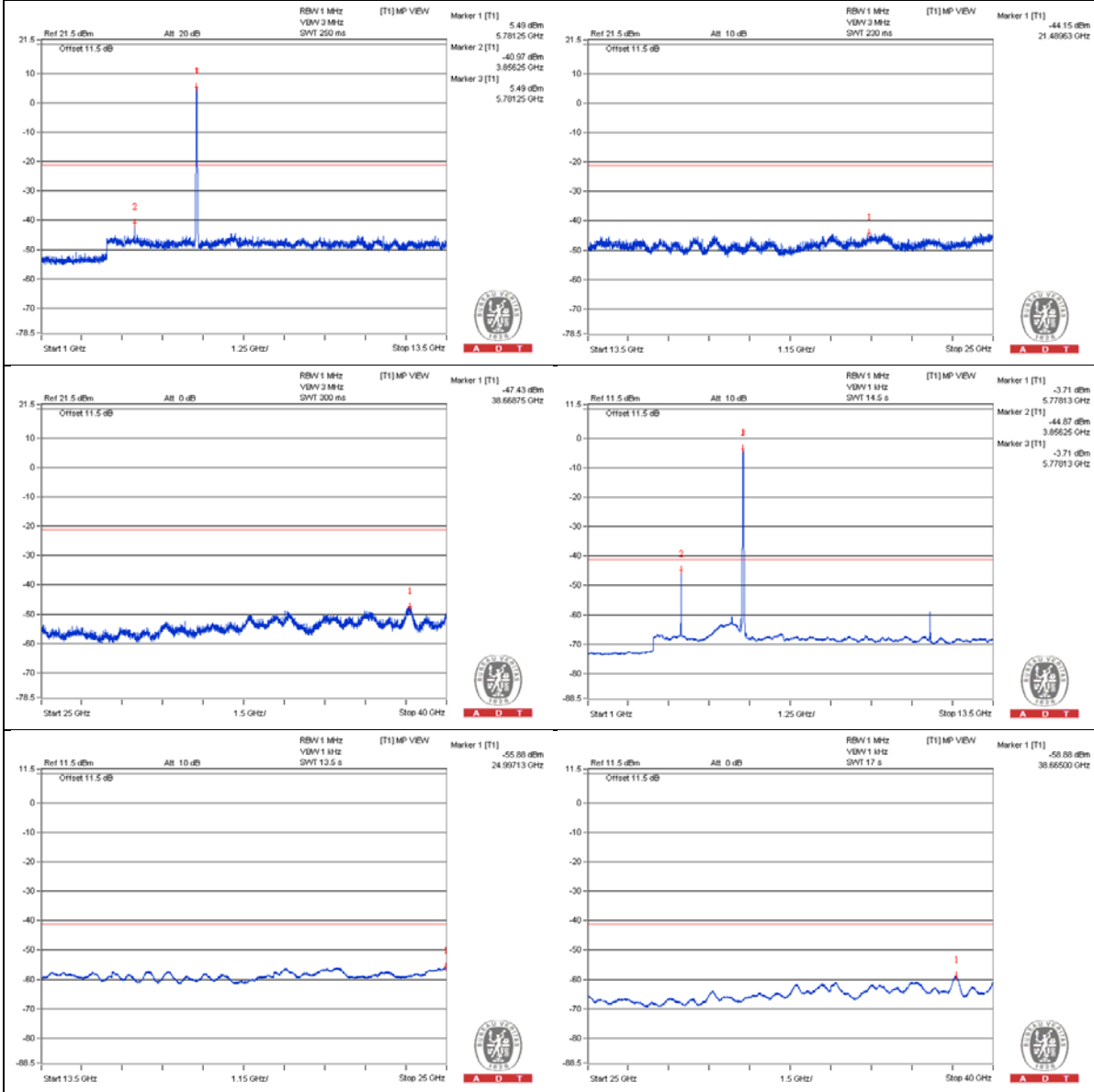
Note :

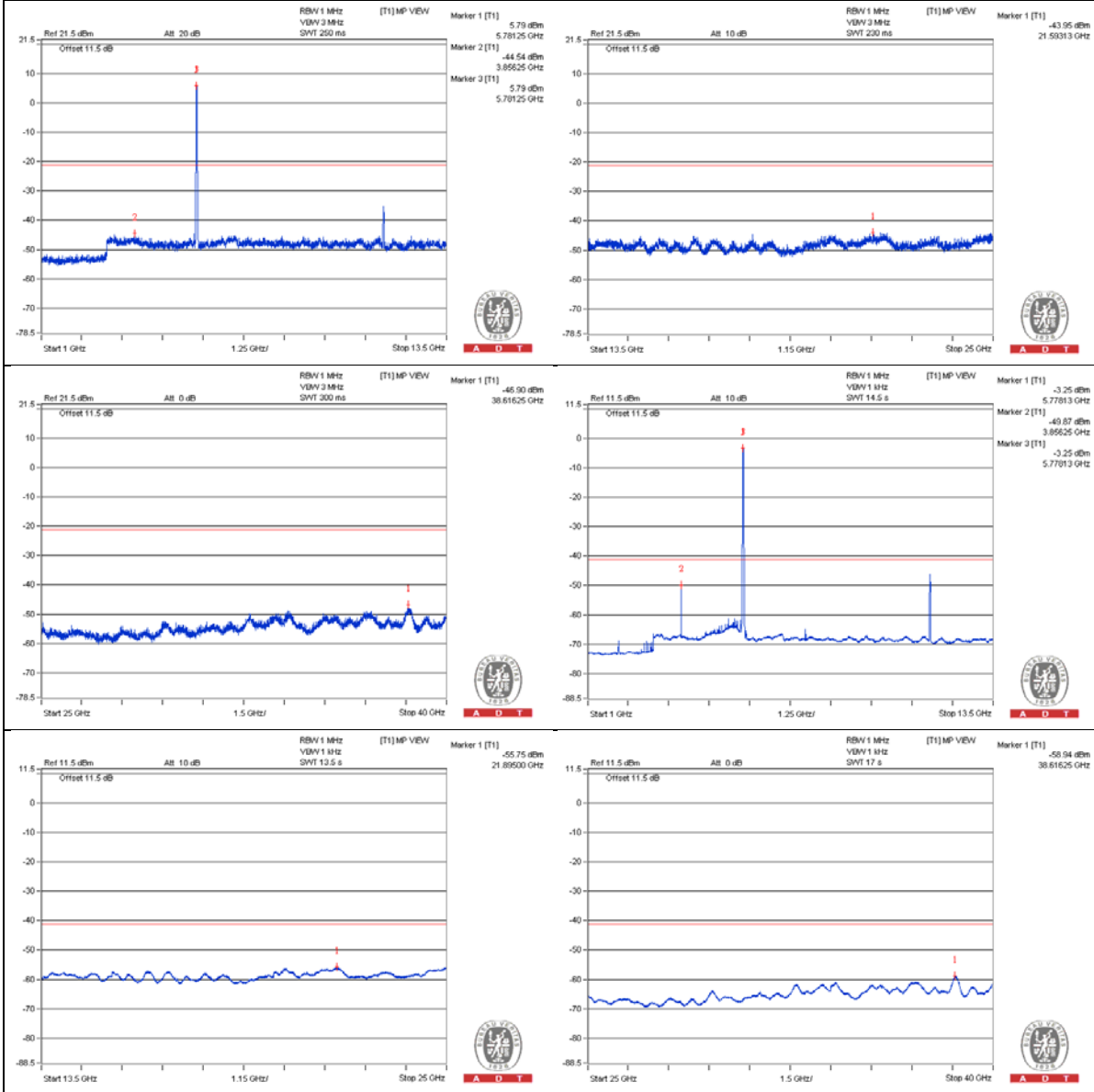
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

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

Chain 0



Chain 1

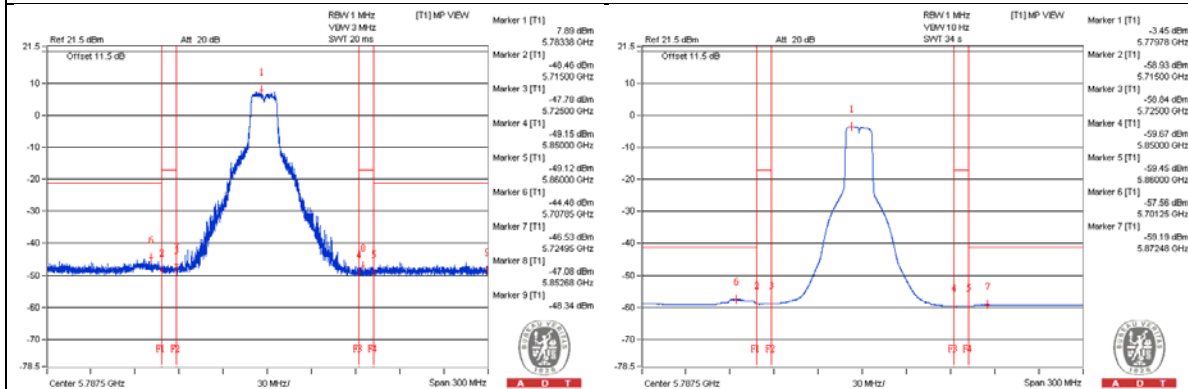
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5713.4 PK	59.16	74	-14.84	-47	-46.76	7.77	-36.1
2	5713.025 AV	47.98	54	-6.02	-58.07	-58.06	7.77	-47.28
3	5719.85 PK	59	78.2	-19.2	-48.39	-46.01	7.77	-36.26
4	5859.2 PK	58.37	78.2	-19.83	-47.81	-47.54	7.77	-36.89
5	5861.15 PK	57.82	74	-16.18	-48.04	-48.41	7.77	-37.44
6	5861.9 AV	46.57	54	-7.43	-59.48	-59.46	7.77	-48.69

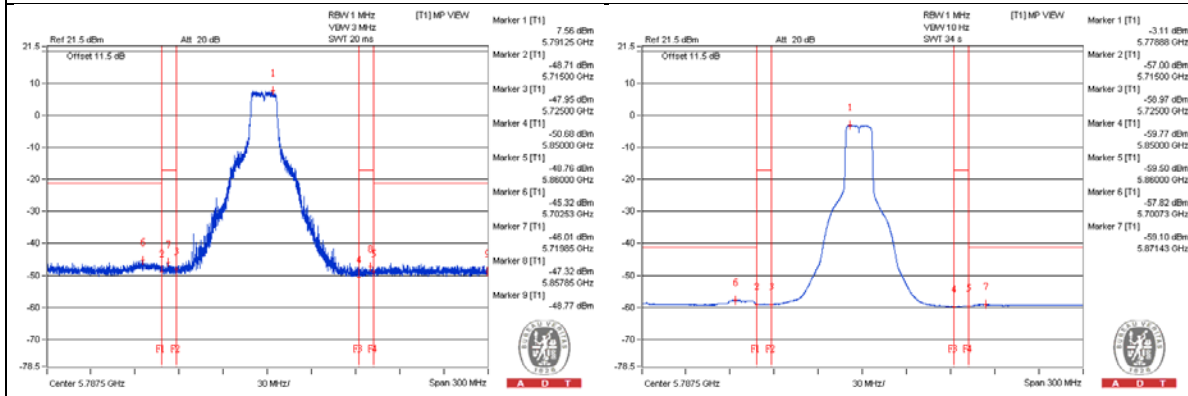
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

Chain 0



Chain 1



802.11n (HT20) - Channel 165
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3884.375 PK	64.17	74	-9.83	-40.42	-44.05	7.77	-31.09
2	3884.375 AV	57.23	54	* 3.23	-47.05	-51.83	7.77	-38.03
3	7765.625 PK	58.54	74	-15.46	-46.75	-48.4	7.77	-36.72
4	7765.625 AV	39.3	54	-14.7	-67.88	-65.84	7.77	-55.96
5	11650 PK	72.18	74	-1.82	-47.32	-30.95	7.77	-23.08
6	11650 AV	59.24	54	* 5.24	-61.77	-43.86	7.77	-36.02

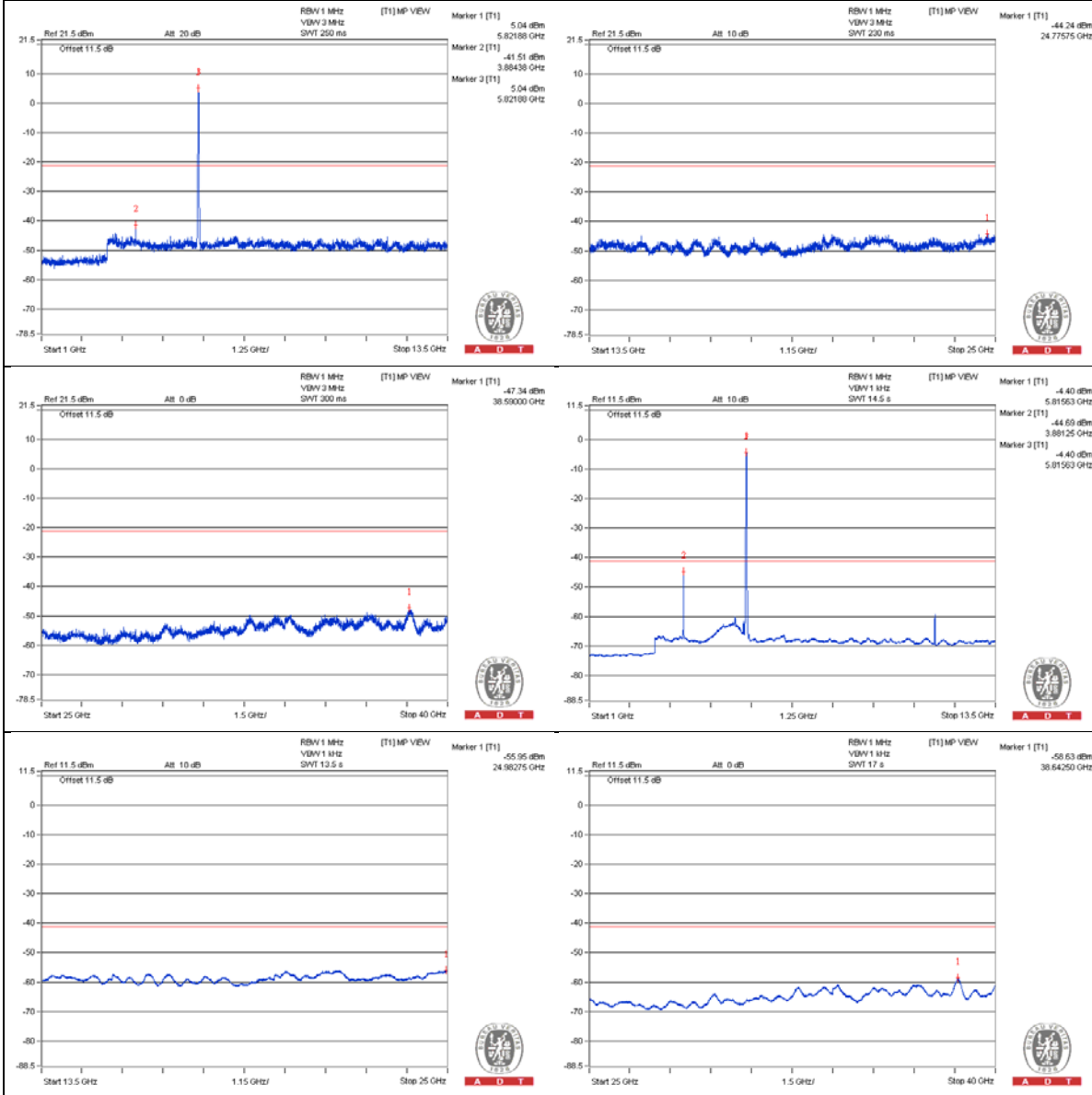
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

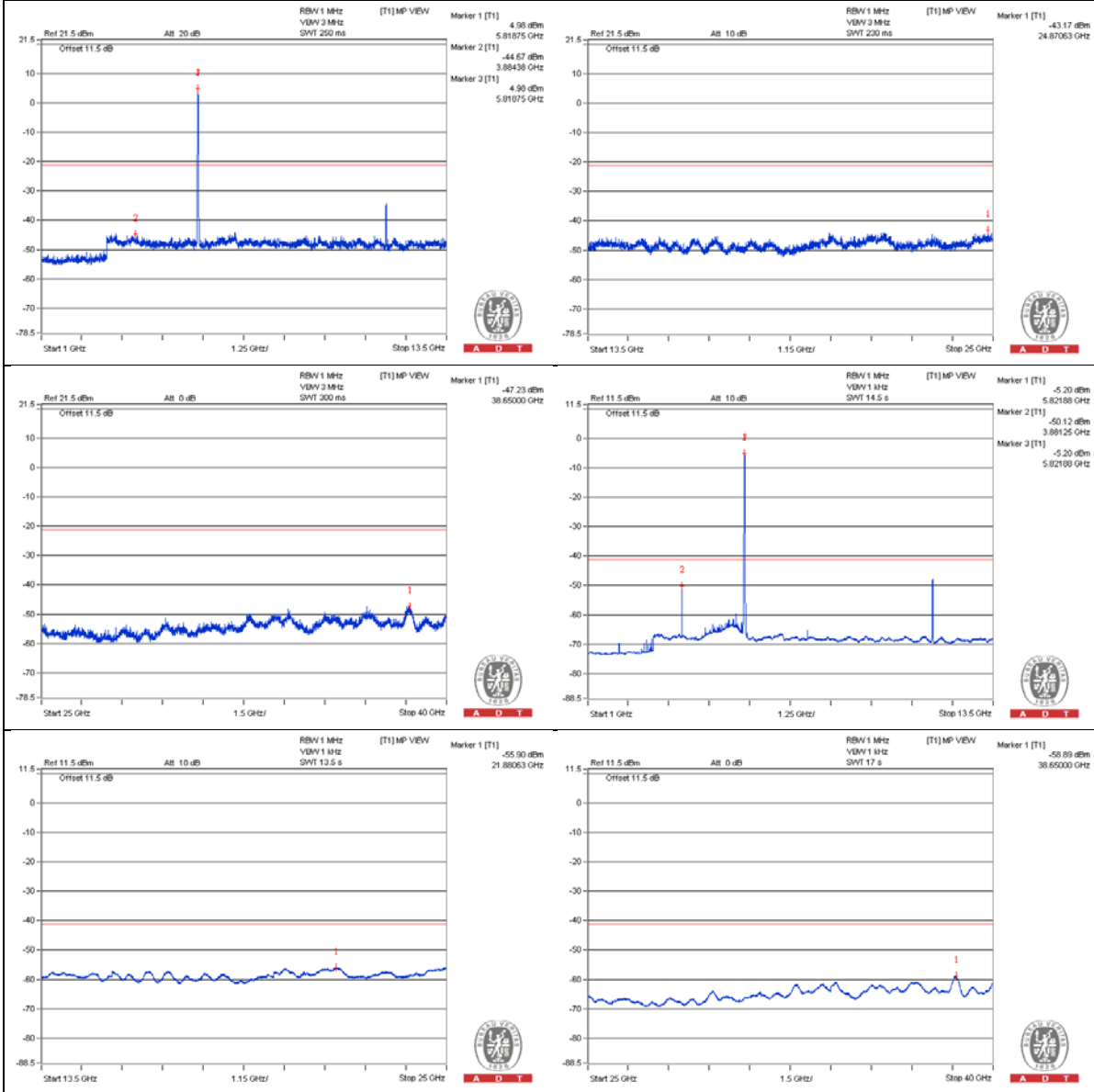
d = measurement distance in 3 meters.

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

Chain 0



Chain 1

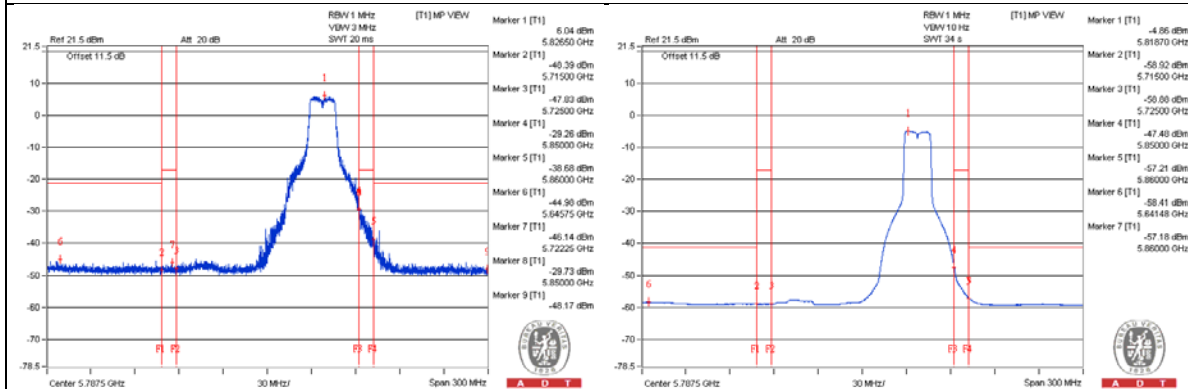


Bandedge table

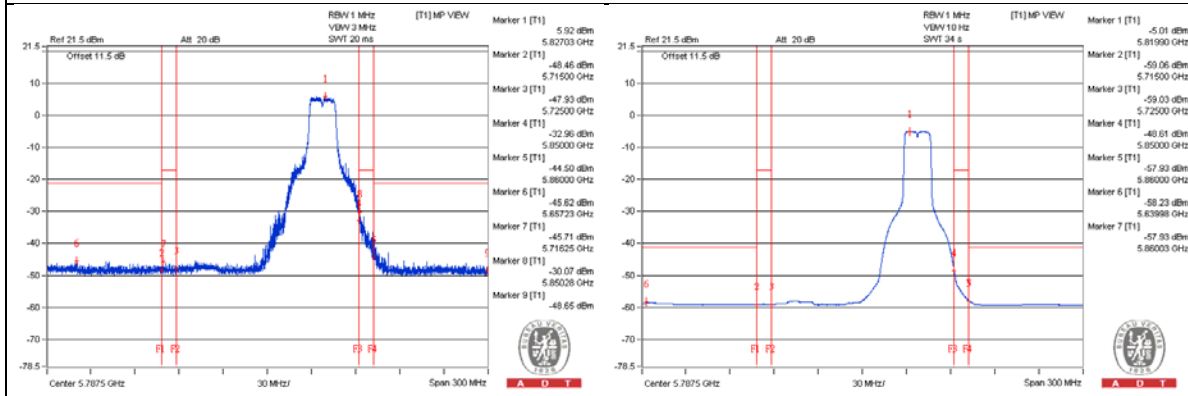
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5694.425 PK	58.42	74	-15.58	-47.03	-48.31	7.77	-36.84
2	5695.325 AV	47.06	54	-6.94	-58.91	-59.05	7.77	-48.2
3	5716.25 PK	59.34	78.2	-18.86	-47.98	-45.71	7.77	-35.92
4	5850.125 PK	75.61	78.2	-2.59	-29.42	-31.74	7.77	-19.65
5	5860.325 PK	66.61	74	-7.39	-38.88	-40.05	7.77	-28.65
6	5860.1 AV	48.49	54	-5.51	-57.19	-57.95	7.77	-46.77

Note :
 Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
 d = measurement distance in 3 meters.

Chain 0



Chain 1



802.11n (HT40) - Channel 151
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3837.5 PK	63.06	74	-10.94	-41.42	-45.43	7.77	-32.2
2	3837.5 AV	58.84	54	* 4.84	-45.32	-50.59	7.77	-36.42
3	7671.875 PK	58.51	74	-15.49	-47.58	-47.49	7.77	-36.75
4	7675 AV	39.25	54	-14.75	-67.76	-66	7.77	-56.01
5	11509.375 PK	62.98	74	-11.02	-47.83	-40.84	7.77	-32.28
6	11509.375 AV	49.89	54	-4.11	-63.11	-53.6	7.77	-45.37

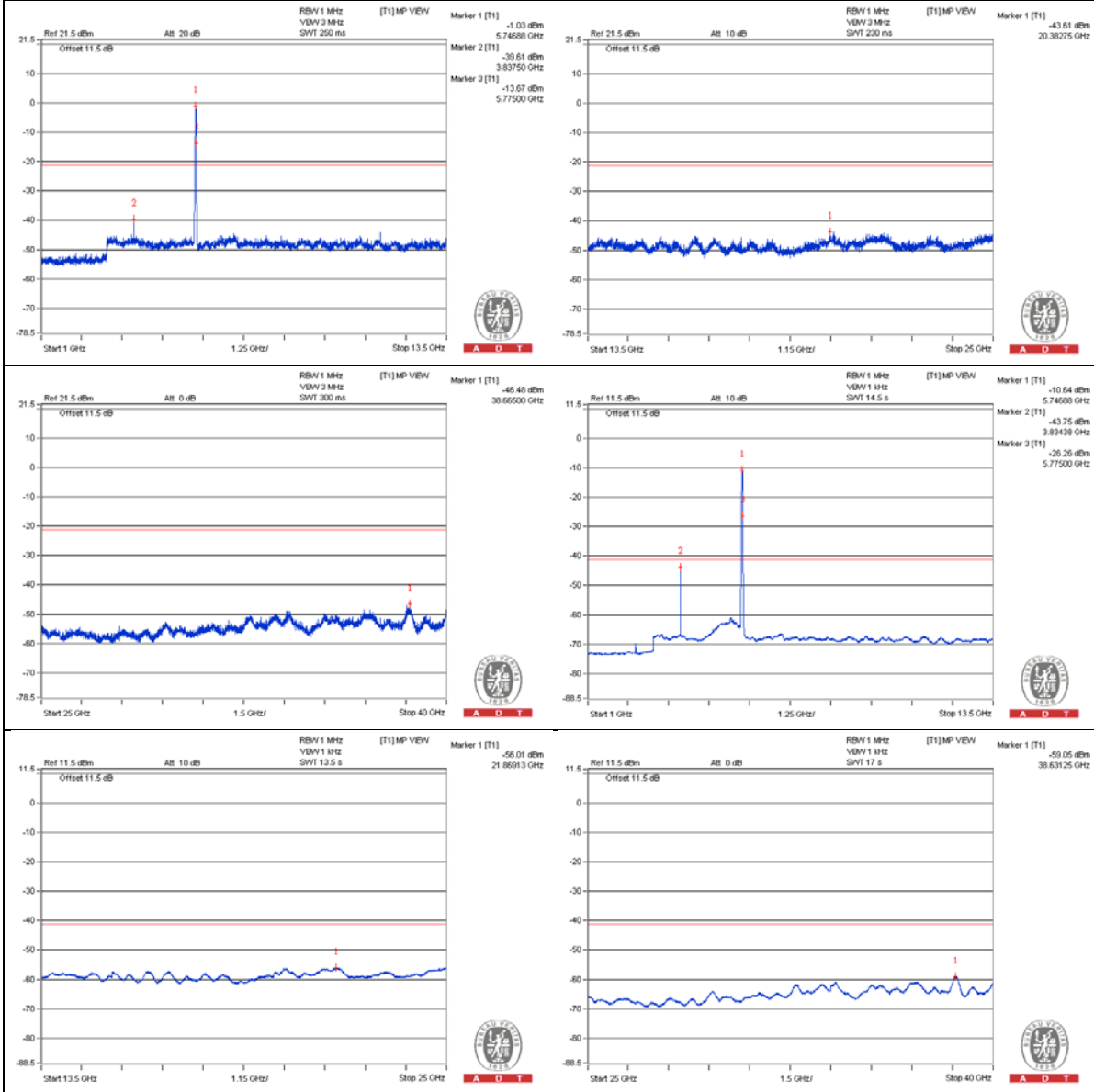
Note :

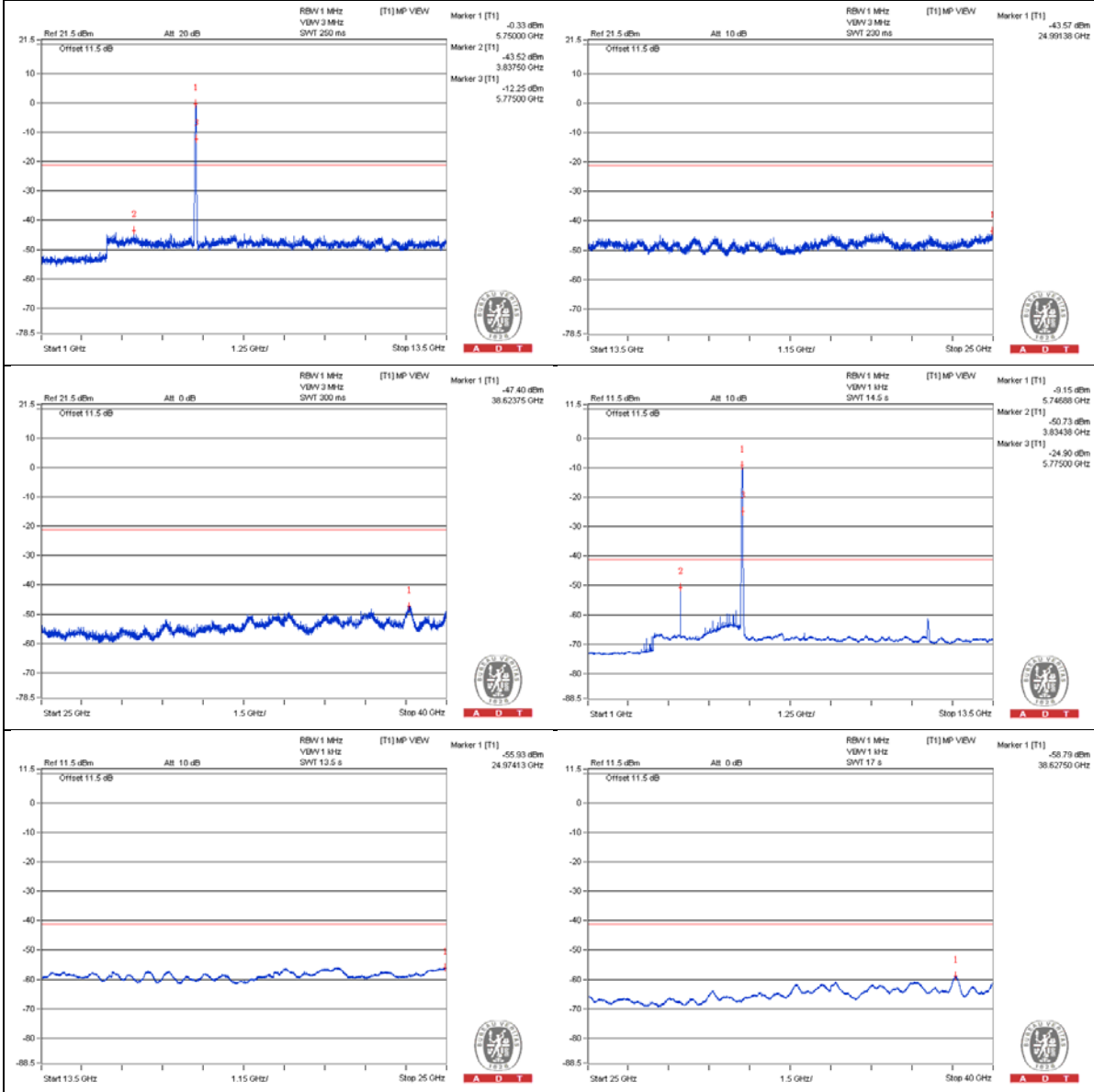
Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

* The unwanted emission was verified and the test result was passed by radiated measurement.

(Please refer APPENDIX A)

Chain 0

Chain 1

Bandedge table

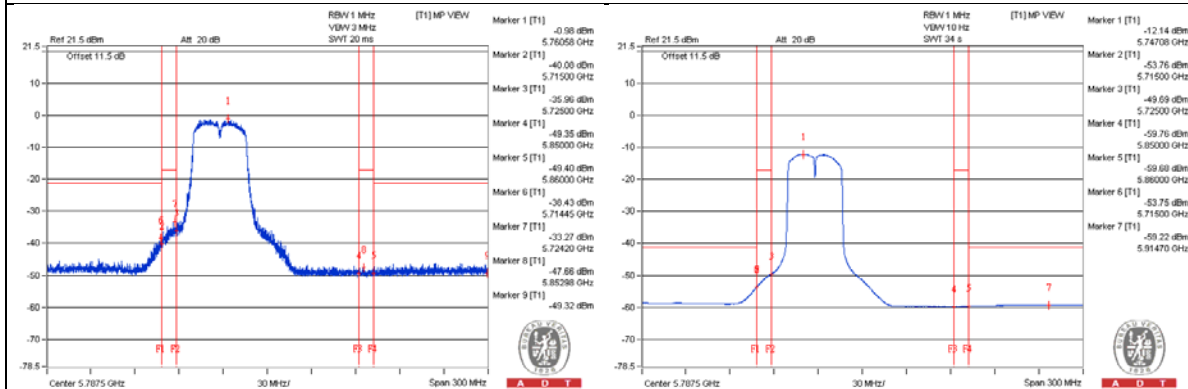
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5714.825 PK	67.39	74	-6.61	-40.59	-37.31	7.77	-27.87
2	5714.975 AV	52.14	54	-1.86	-53.76	-54.05	7.77	-43.12
3	5723.975 PK	71.67	78.2	-6.53	-33.76	-35.08	7.77	-23.59
4	5856.725 PK	58.28	78.2	-19.92	-48.78	-46.93	7.77	-36.98
5	5860.4 PK	57.83	74	-16.17	-47.35	-49.28	7.77	-37.43
6	5861.15 AV	46.39	54	-7.61	-59.63	-59.67	7.77	-48.87

Note :

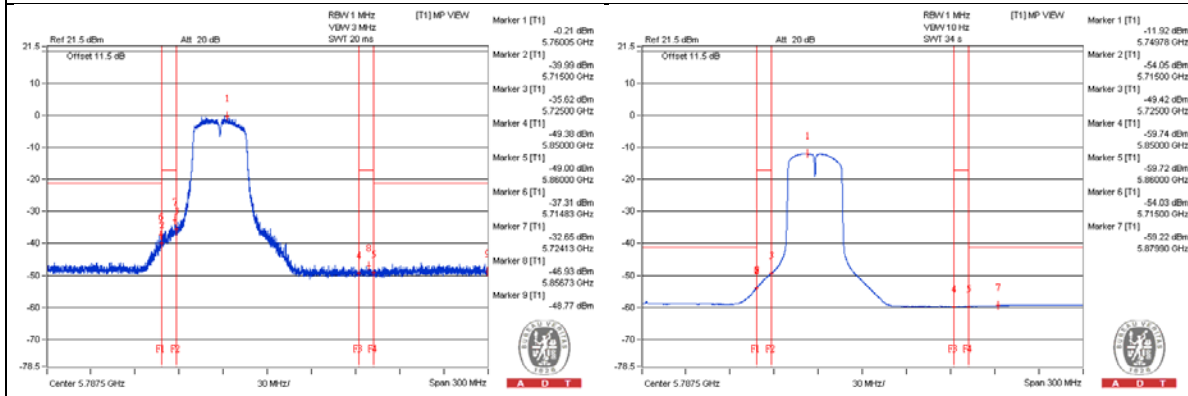
$$\text{Emission Level (dBuV/m)} = \text{EIRP Level (dBm)} - 20\log(d) + 104.8$$

d = measurement distance in 3 meters.

Chain 0



Chain 1



802.11n (HT40) - Channel 159

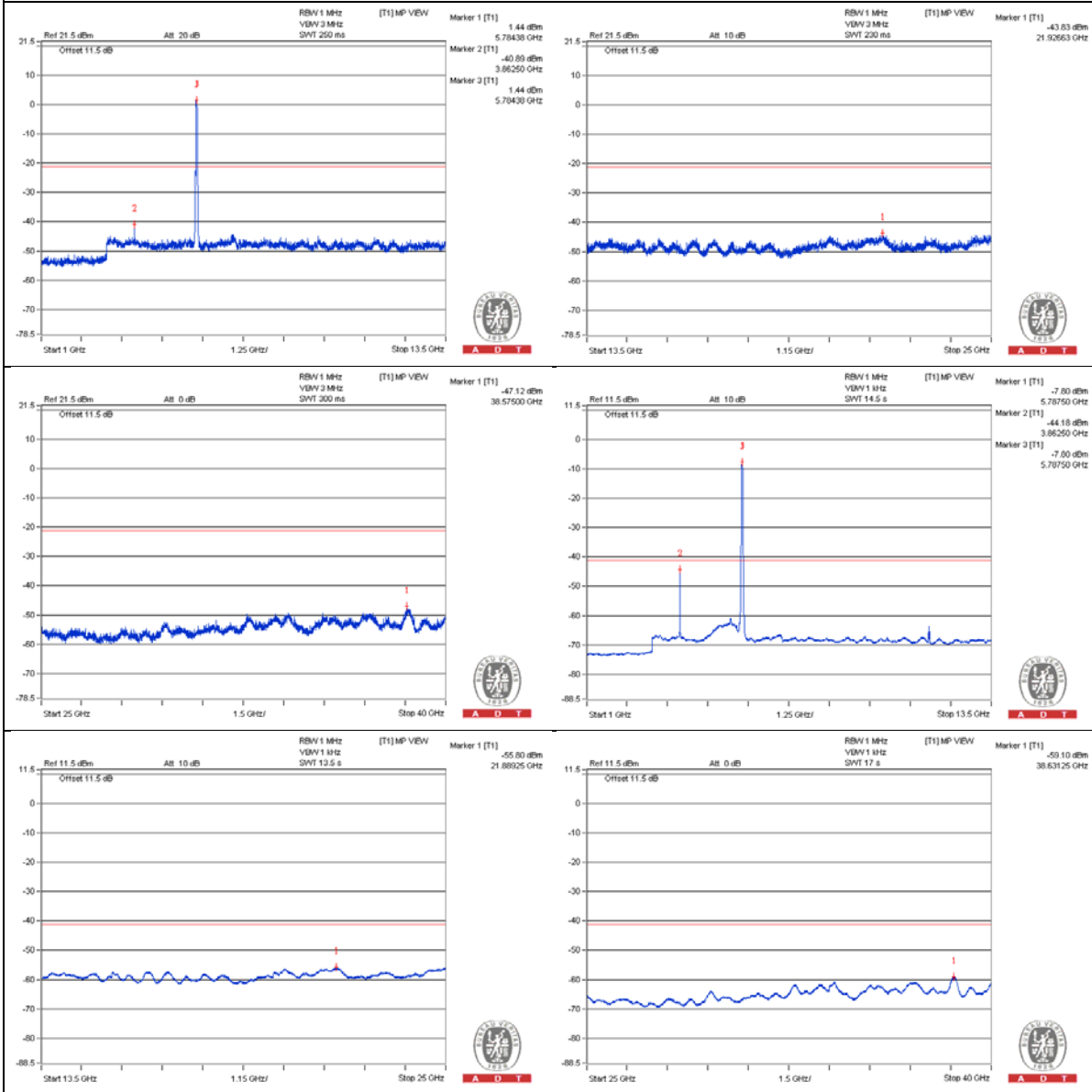
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	3862.5 PK	63.21	74	-10.79	-40.89	-46.42	7.77	-32.05
2	3862.5 AV	60.11	54	* 6.11	-44.18	-48.91	7.77	-35.15
3	7728.125 PK	57.67	74	-16.33	-47.13	-50.1	7.77	-37.59
4	7728.125 AV	39.15	54	-14.85	-68.48	-65.73	7.77	-56.11
5	11590.625 PK	66.68	74	-7.32	-48.86	-36.6	7.77	-28.58
6	11590.625 AV	56.18	54	* 2.18	-63.76	-46.94	7.77	-39.08

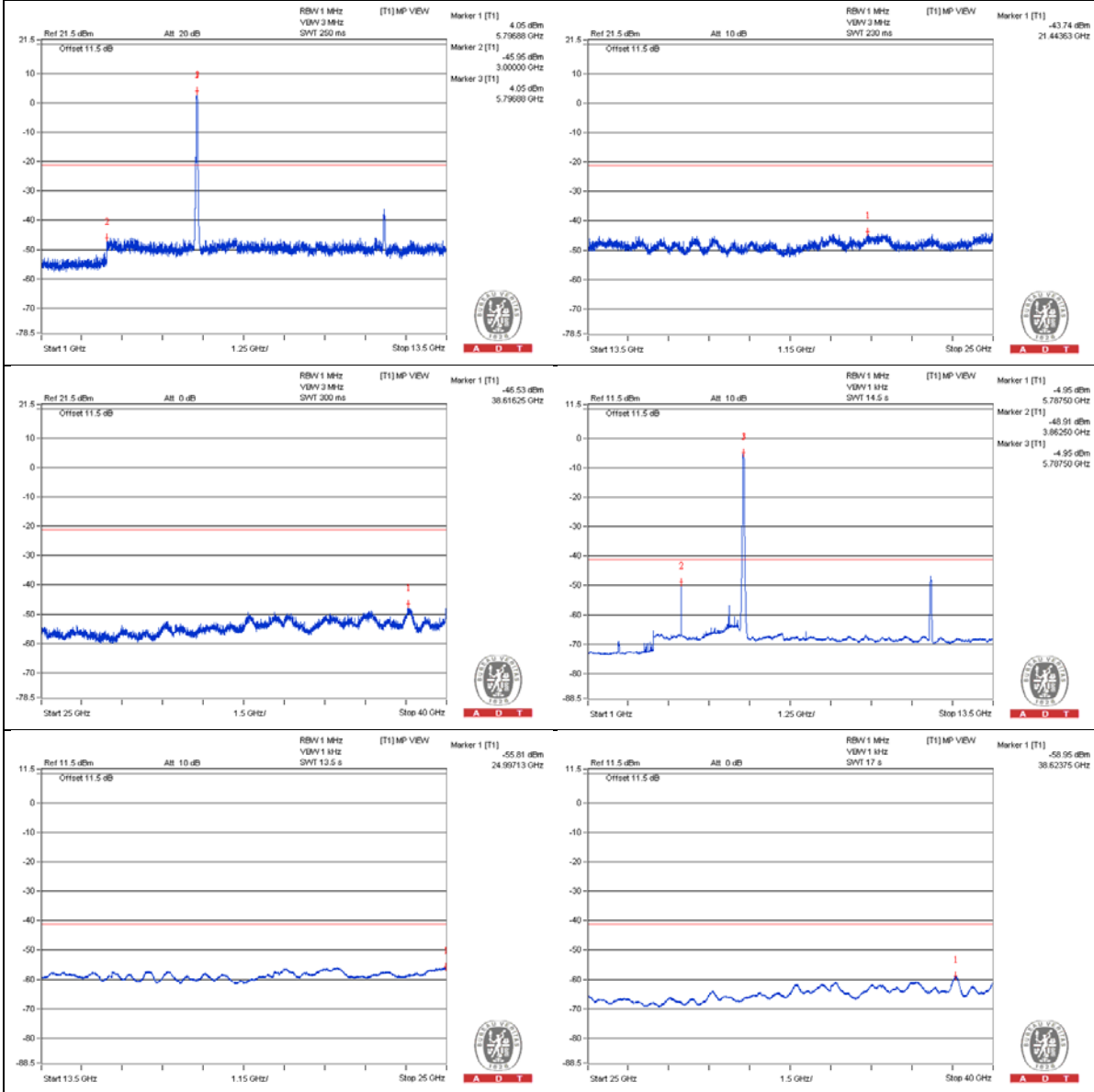
Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.

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

Chain 0

Chain 1



Bandedge table

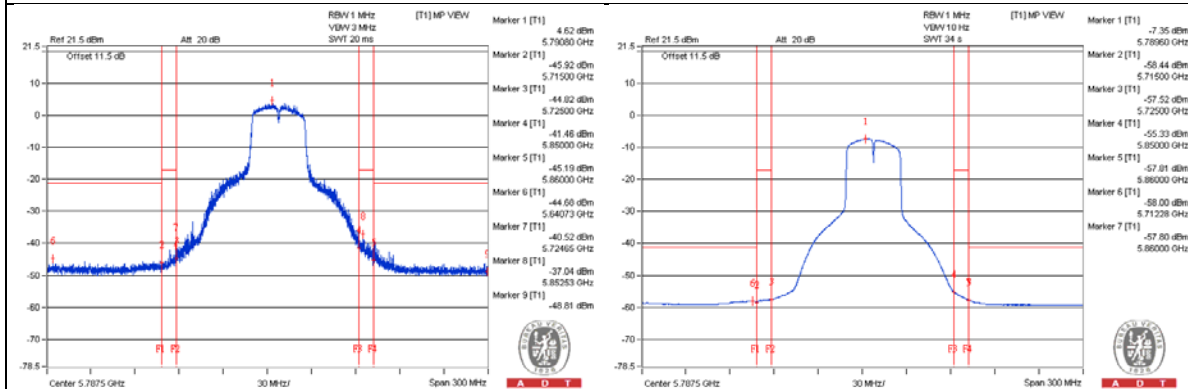
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	5714.075 PK	59.67	74	-14.33	-45.44	-47.55	7.77	-35.59
2	5713.625 AV	48.03	54	-5.97	-58.01	-58.02	7.77	-47.23
3	5724.575 PK	65.33	78.2	-12.87	-41.7	-39.91	7.77	-29.93
4	5852.525 PK	67.53	78.2	-10.67	-37.04	-40.74	7.77	-25.34
5	5860.25 PK	64.52	74	-9.48	-39.52	-45.34	7.77	-27.73
6	5860.025 AV	48.47	54	-5.53	-57.81	-57.34	7.77	-27.73

Note :

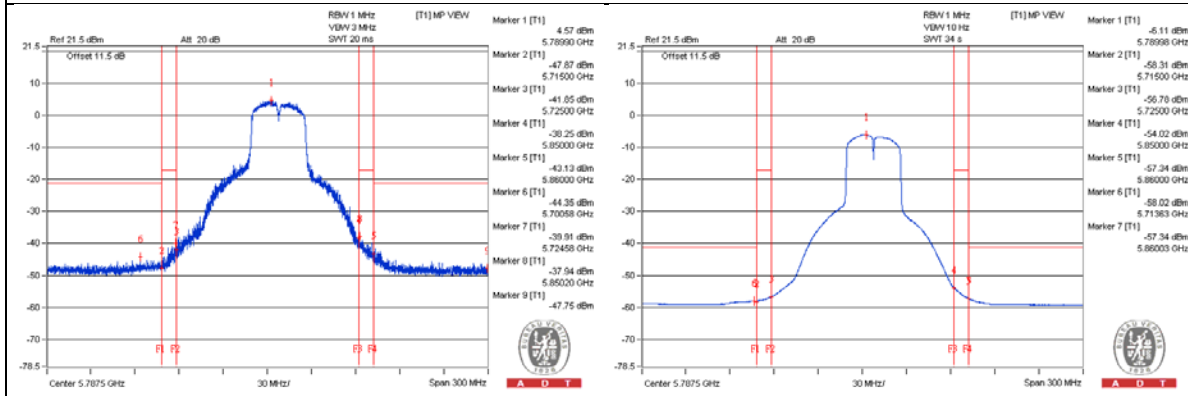
$$\text{Emission Level (dBuV/m)} = \text{EIRP Level (dBm)} - 20\log(d) + 104.8$$

d = measurement distance in 3 meters.

Chain 0



Chain 1



Below 1GHz Data
802.11n (HT20) - Channel 157
Conducted spurious emission table

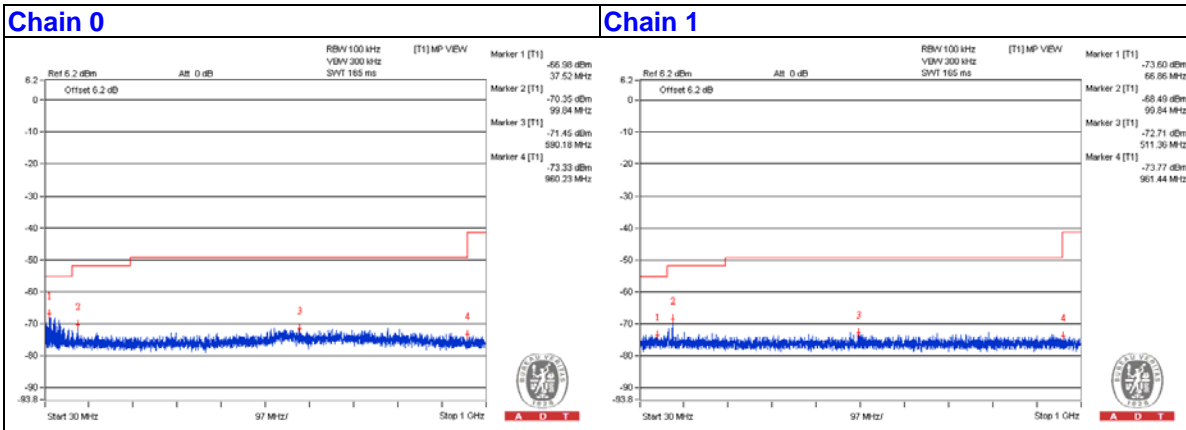
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	37.5175	36.54	40	-3.46	-66.98	-76.25	7.77	-58.72
2	99.84	36.72	43.5	-6.78	-70.35	-68.49	7.77	-58.54
3	306.935	32.11	46	-13.89	-72.76	-75.54	7.77	-63.15
4	557.4375	32.91	46	-13.09	-71.78	-75.09	7.77	-62.35
5	652.74	32.84	46	-13.16	-71.95	-74.97	7.77	-62.42
6	855.955	32	46	-14	-73.07	-75.29	7.77	-63.26

Note :

Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

Emission levels include upper bound on ground plane reflection (4.7dB) for below 1GHz emission.

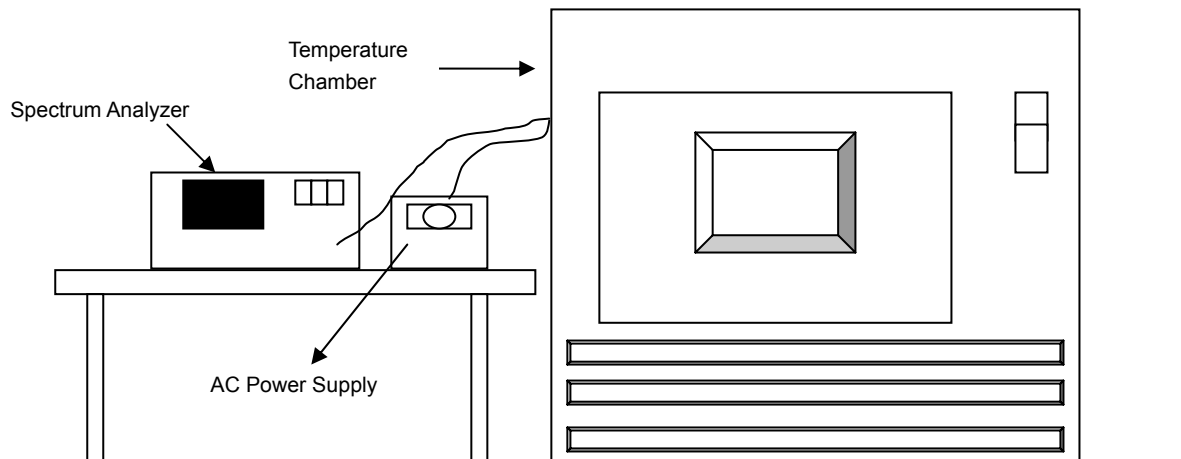


4.5 Frequency Stability Measurement

4.5.1 Limits of Frequency Stability Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2015	May 07, 2016
Temperature & Humidity Chamber GIANTFORCE	GTH-150-40-S P-AR	MAA0812-008	Jan. 12, 2015	Jan. 11, 2016

- NOTE:**
1. The test was performed in Oven room 2.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: Oct. 13, 2015

4.5.4 Test Procedures

- a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- b. Turn the EUT on and couple its output to a spectrum analyzer.
- c. Turn the EUT off and set the chamber to the highest temperature specified.
- d. 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.
- e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- f. 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.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

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

4.5.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5745MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	120	5744.9815	-0.00032	5744.9784	-0.00038	5744.9795	-0.00036	5744.9814	-0.00032
40	120	5744.9724	-0.00048	5744.9743	-0.00045	5744.9688	-0.00054	5744.9725	-0.00048
30	120	5744.999	-0.00002	5745.0037	0.00006	5745.0011	0.00002	5745.0038	0.00007
20	120	5745.0055	0.00010	5745.0034	0.00006	5745.0051	0.00009	5745.0048	0.00008
10	120	5744.9782	-0.00038	5744.9805	-0.00034	5744.9801	-0.00035	5744.9771	-0.00040
0	120	5744.978	-0.00038	5744.9763	-0.00041	5744.9783	-0.00038	5744.9758	-0.00042
-10	120	5745.012	0.00021	5745.0138	0.00024	5745.0168	0.00029	5745.0129	0.00022
-20	120	5744.982	-0.00031	5744.9815	-0.00032	5744.9822	-0.00031	5744.9792	-0.00036
-30	120	5745.03	0.00052	5745.0253	0.00044	5745.0285	0.00050	5745.0265	0.00046

Frequency Stability Versus Temp.									
Operating Frequency: 5745MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5745.0051	0.00009	5745.0025	0.00004	5745.0057	0.00010	5745.0039	0.00007
	120	5745.0055	0.00010	5745.0034	0.00006	5745.0051	0.00009	5745.0048	0.00008
	102	5745.0059	0.00010	5745.0028	0.00005	5745.0049	0.00009	5745.0058	0.00010

5 Pictures of Test Arrangements

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

6 Appendix A – Radiated Emission Measurement

6.1.1 Limits of Radiated Emission Measurement

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

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.

6.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY54450088	July 24, 2015	July 23, 2016
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Feb. 06, 2015	Feb. 05, 2016
Pre-Amplifier Agilent	8449B	3008A01922	Sep. 19, 2015	Sep. 18, 2016
RF Cable	EMC104-SM- SM-2000 EMC104-SM- SM-5000 EMC104-SM- SM-5000	150318 150323 150324	Mar. 31, 2015	Mar. 30, 2016
Spectrum Analyzer R&S	FSV40	100964	June 26, 2015	June 25, 2016
Pre-Amplifier EMCI	EMC184045	980143	Jan. 16, 2015	Jan. 15, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Feb. 05, 2015	Feb. 04, 2016
RF Cable	SUCOFLEX 104	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated _V8.7.07	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. 4.
4. The FCC Site Registration No. is 292998
5. The CANADA Site Registration No. is 20331-2
6. Tested Date: Oct. 12, 2015

6.1.3 Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) 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 quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. 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.

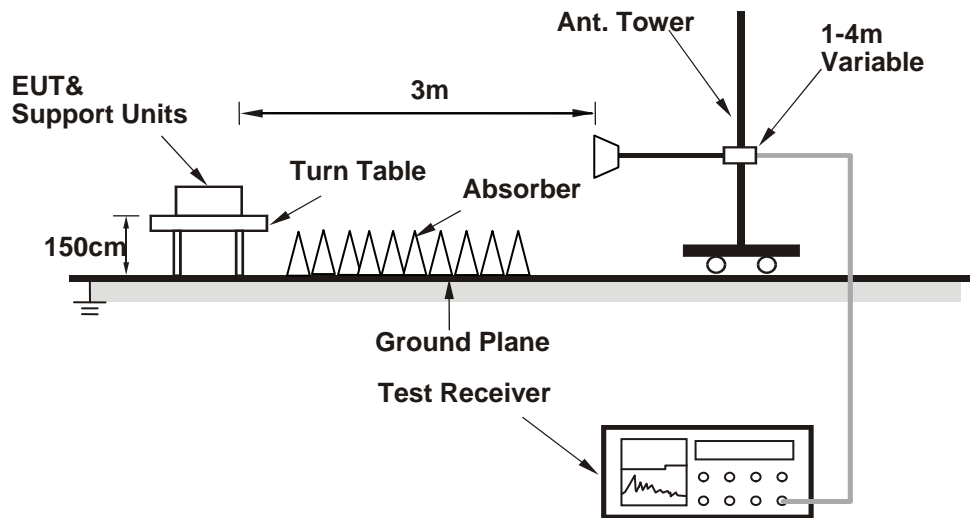
NOTE:

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 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

6.1.4 Deviation from Test Standard

No deviation

6.1.5 Test Setup



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

6.1.6 EUT Operating Conditions

Same as 4.4.6.

6.1.7 Test Results

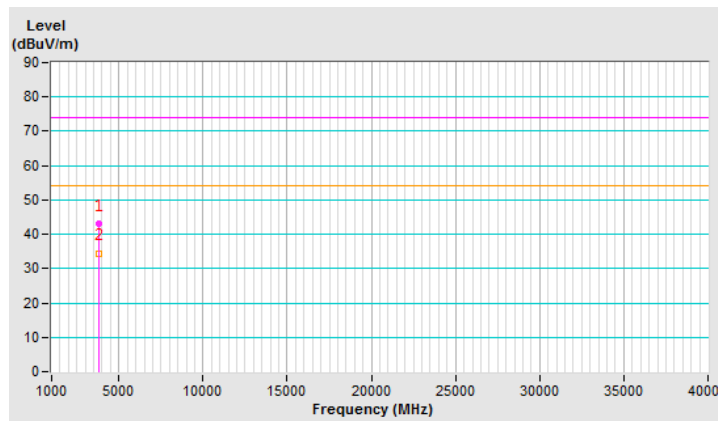
802.11a

CHANNEL	TX Channel 149	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	3830.00	43.0 PK	74.0	-31.0	2.00 H	125	44.63	-1.63
2	3830.00	34.5 AV	54.0	-19.5	2.00 H	125	36.13	-1.63

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

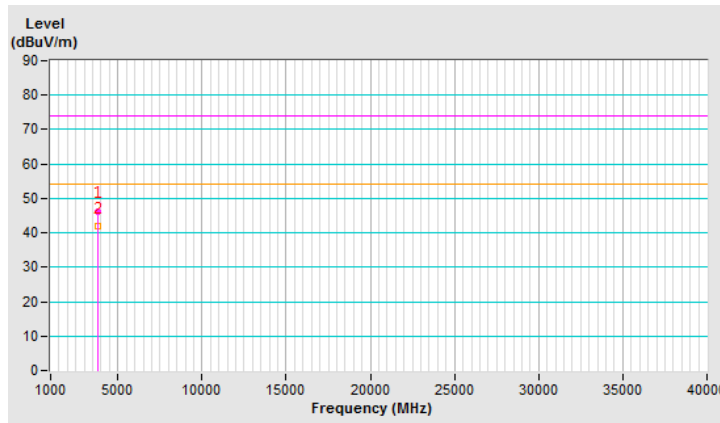


CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3830.00	46.3 PK	74.0	-27.7	2.29 V	81	47.93	-1.63
2	3830.00	41.9 AV	54.0	-12.1	2.29 V	81	43.53	-1.63

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

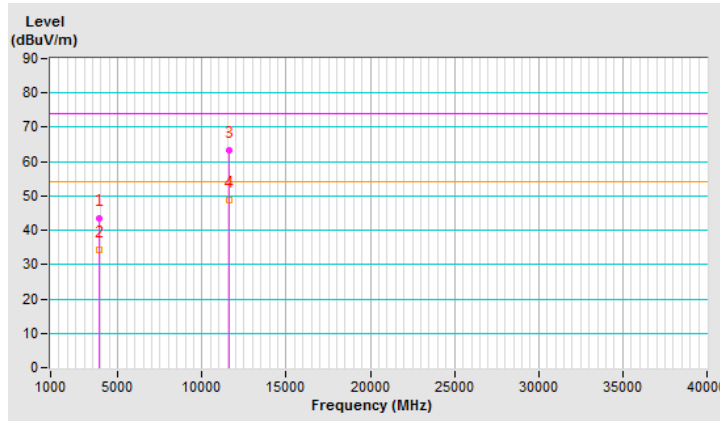


CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3856.67	43.4 PK	74.0	-30.6	2.01 H	97	45.00	-1.60
2	3856.67	34.3 AV	54.0	-19.7	2.01 H	97	35.90	-1.60
3	11570.00	63.3 PK	74.0	-10.7	1.10 H	245	49.20	14.10
4	11570.00	48.7 AV	54.0	-5.3	1.10 H	245	34.60	14.10

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

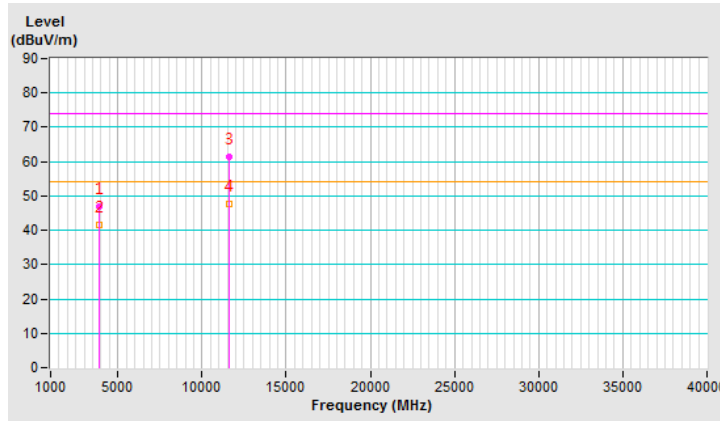


CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3856.67	47.0 PK	74.0	-27.0	2.29 V	83	48.60	-1.60
2	3856.67	41.5 AV	54.0	-12.5	2.29 V	83	43.10	-1.60
3	11570.00	61.4 PK	74.0	-12.6	1.10 V	244	47.30	14.10
4	11570.00	47.6 AV	54.0	-6.4	1.10 V	244	33.50	14.10

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

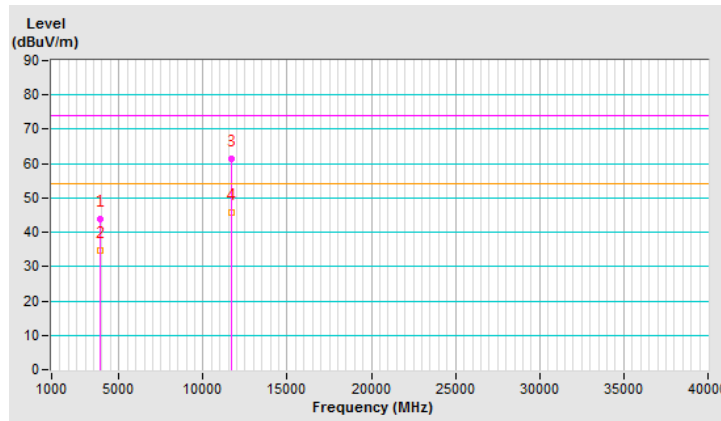


CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3883.33	43.7 PK	74.0	-30.3	1.95 H	96	45.28	-1.58
2	3883.33	34.8 AV	54.0	-19.2	1.95 H	96	36.38	-1.58
3	11650.00	61.5 PK	74.0	-12.5	1.19 H	244	47.54	13.96
4	11650.00	45.9 AV	54.0	-8.1	1.19 H	244	31.94	13.96

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

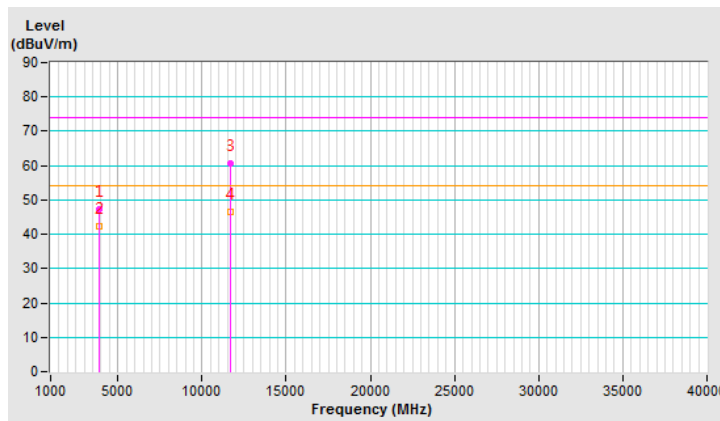


CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3883.33	47.1 PK	74.0	-26.9	2.22 V	83	48.68	-1.58
2	3883.33	42.4 AV	54.0	-11.6	2.22 V	83	43.98	-1.58
3	11650.00	60.7 PK	74.0	-13.3	1.13 V	245	46.74	13.96
4	11650.00	46.4 AV	54.0	-7.6	1.13 V	245	32.44	13.96

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



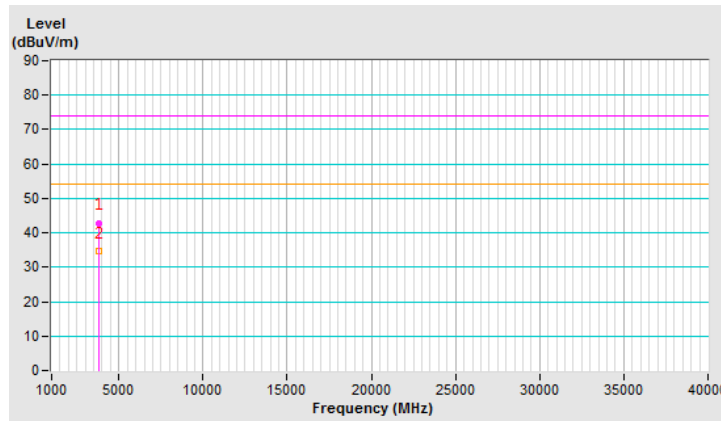
802.11n (HT20)

CHANNEL	TX Channel 149	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	3830.00	42.9 PK	74.0	-31.1	1.81 H	106	44.53	-1.63
2	3830.00	34.8 AV	54.0	-19.2	1.81 H	106	36.43	-1.63

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

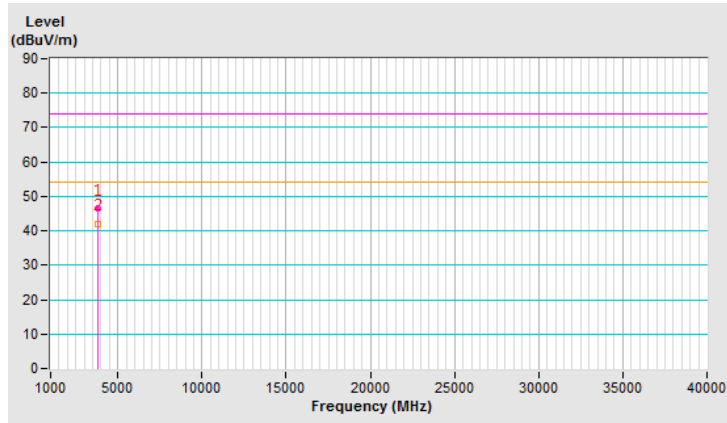


CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3830.00	46.5 PK	74.0	-27.5	2.21 V	79	48.13	-1.63
2	3830.00	42.1 AV	54.0	-11.9	2.21 V	79	43.73	-1.63

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

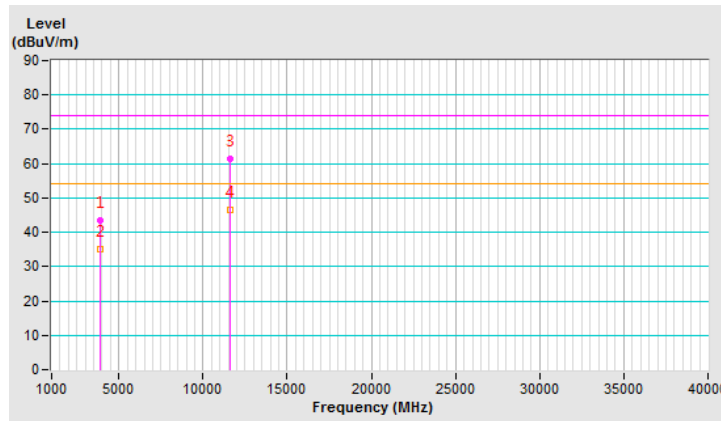


CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3856.67	43.6 PK	74.0	-30.4	1.76 H	110	45.20	-1.60
2	3856.67	34.9 AV	54.0	-19.1	1.76 H	110	36.50	-1.60
3	11570.00	61.4 PK	74.0	-12.6	1.19 H	245	47.30	14.10
4	11570.00	46.6 AV	54.0	-7.4	1.19 H	245	32.50	14.10

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

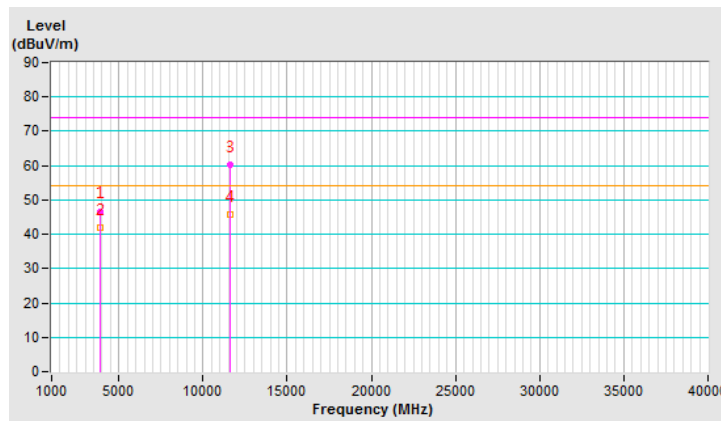


CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3856.67	46.7 PK	74.0	-27.3	2.09 V	83	48.30	-1.60
2	3856.67	42.0 AV	54.0	-12.0	2.09 V	83	43.60	-1.60
3	11570.00	60.3 PK	74.0	-13.7	1.11 V	242	46.20	14.10
4	11570.00	45.7 AV	54.0	-8.3	1.11 V	242	31.60	14.10

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



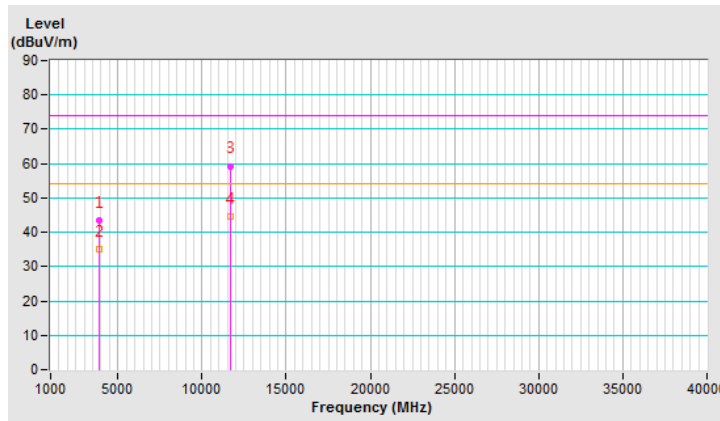
CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3883.33	43.6 PK	74.0	-30.4	1.78 H	108	45.18	-1.58
2	3883.33	34.9 AV	54.0	-19.1	1.78 H	108	36.48	-1.58
3	11650.00	59.3 PK	74.0	-14.7	1.18 H	245	45.34	13.96
4	11650.00	44.5 AV	54.0	-9.5	1.18 H	245	30.54	13.96

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



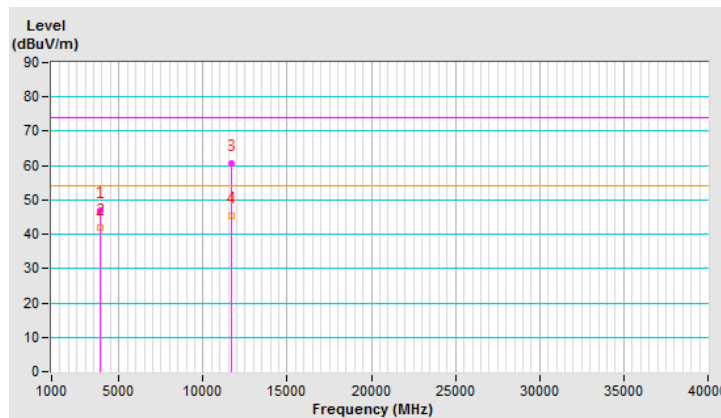
CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3883.33	46.8 PK	74.0	-27.2	2.09 V	80	48.38	-1.58
2	3883.33	41.9 AV	54.0	-12.1	2.09 V	80	43.48	-1.58
3	11650.00	60.6 PK	74.0	-13.4	1.16 V	245	46.64	13.96
4	11650.00	45.5 AV	54.0	-8.5	1.16 V	245	31.54	13.96

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



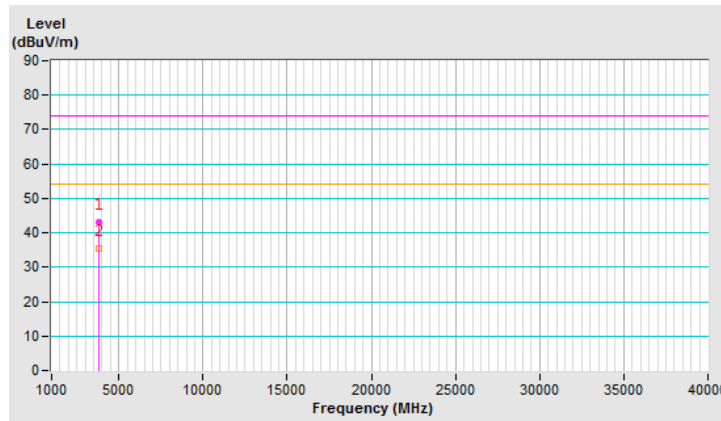
802.11n (HT40)

CHANNEL	TX Channel 151	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	3836.67	43.1 PK	74.0	-30.9	1.76 H	110	44.72	-1.62
2	3836.67	35.4 AV	54.0	-18.6	1.76 H	110	37.02	-1.62

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

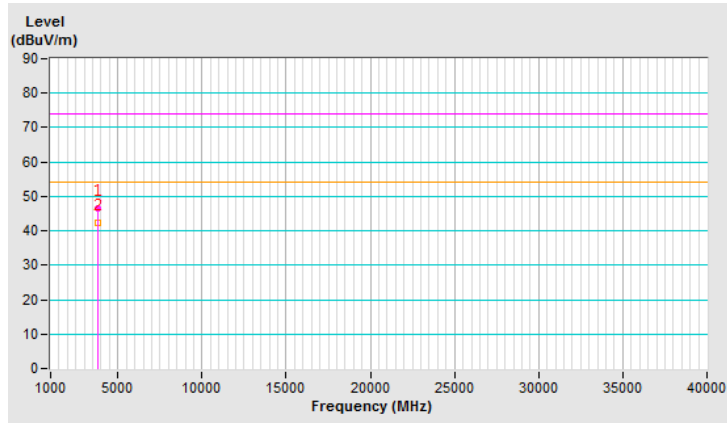


CHANNEL	TX Channel 151	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3836.67	46.6 PK	74.0	-27.4	2.19 V	78	48.22	-1.62
2	3836.67	42.4 AV	54.0	-11.6	2.19 V	78	44.02	-1.62

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

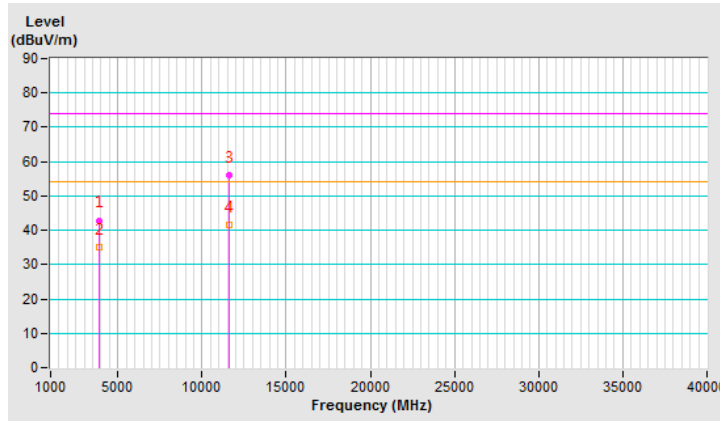


CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3863.33	42.9 PK	74.0	-31.1	1.72 H	97	44.50	-1.60
2	3863.33	35.1 AV	54.0	-18.9	1.72 H	97	36.70	-1.60
3	11590.00	56.0 PK	74.0	-18.0	1.10 H	293	41.98	14.02
4	11590.00	41.6 AV	54.0	-12.4	1.10 H	293	27.58	14.02

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

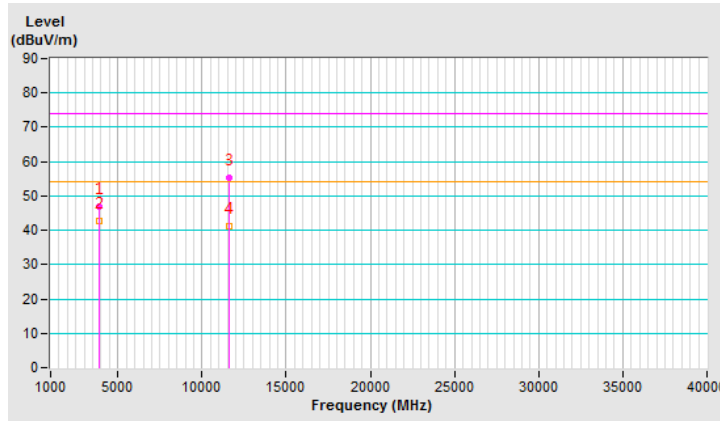


CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

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	3863.33	46.8 PK	74.0	-27.2	2.20 V	83	48.40	-1.60
2	3863.33	42.6 AV	54.0	-11.4	2.20 V	83	44.20	-1.60
3	11590.00	55.4 PK	74.0	-18.6	1.08 V	243	41.38	14.02
4	11590.00	41.1 AV	54.0	-12.9	1.08 V	243	27.08	14.02

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





7 Appendix B – 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: 886-2-26051924

Hsin Chu EMC/RF Lab/Telecom Lab

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

--- END ---