



**FCC 47 CFR PART 15 SUBPART C AND ANSI C63.10:2009
TEST REPORT**

For

HD Pan & Tilt Wi-Fi Day/Night Camera

Model : DCS-5030L,DCS-5030LA1

Data Applies To : DCS-5025L,DCS-5025LA1

Trade Name : D-Link

Issued for

D-Link Corporation

No.289, Sinhu 3rd Rd., Neihu District, Taipei City 114, Taiwan, R.O.C.

Issued by

Compliance Certification Services Inc.

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Issued Date: April 30, 2015



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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	04/21/2015	Initial Issue	All Page 89	Michelle Chiu
01	04/30/2015	Revised	P.7	Michelle Chiu



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**1. TEST REPORT CERTIFICATION**

Applicant : D-Link Corporation
Address : No.289, Sinhu 3rd Rd., Neihu District, Taipei City 114,
Taiwan, R.O.C.
Equipment Under Test : HD Pan & Tilt Wi-Fi Day/Night Camera
Model : DCS-5030L,DCS-5030LA1
Data Applies To : DCS-5025L,DCS-5025LA1
Trade Name : D-Link
Tested Date : January 21 ~ April 07, 2015

APPLICABLE STANDARD	
Standard	Test Result
FCC Part 15 Subpart C AND ANSI C63.10:2009 & ANSI C63.4:2009	PASS

WE HEREBY CERTIFY THAT: The above equipment has been tested by Compliance Certification Services Inc., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by:

Sb. Lu
Sr. Engineer

Reviewed by:

Gundam Lin
Sr. Engineer



2. EUT DESCRIPTION

Product Name	HD Pan & Tilt Wi-Fi Day/Night Camera
Model Number	DCS-5030L,DCS-5030LA1
Data Applies To	DCS-5025L,DCS-5025LA1
Identify Number	T150303S03
Received Date	January 21, 2015
Frequency Range	IEEE 802.11b/g, 802.11n HT20 : 2412MHz ~ 2462MHz
Transmit Power	IEEE 802.11b : 22.59 dBm (0.1816W) IEEE 802.11g : 26.05 dBm (0.4027W) IEEE 802.11n HT20 : 25.83 dBm (0.3828W)
Channel Spacing	IEEE 802.11b/g, 802.11n HT20 : 5MHz
Channel Number	IEEE 802.11b/g, 802.11n HT20 : 11 Channels
Transmit Data Rate	IEEE 802.11b : up to 11 Mbps IEEE 802.11g : up to 54 Mbps IEEE 802.11n (HT20,800ns GI) : up to 65 Mbps IEEE 802.11n (HT20,400ns GI) : up to 72.2 Mbps
Type of Modulation	IEEE 802.11b : DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g : OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20 : OFDM (64QAM, 16QAM, QPSK, BPSK)
Antenna Type	Dipole Antenna, Antenna Gain 1.91 dBi
Power Rating	5Vdc, 1.5A
Test Voltage	120Vac, 60Hz
DC Power Cable Type	Non-shielded cable 3m (Non-detachable)
I/O Port	LAN Port × 1, Micro SD Card Port × 1, Power Port × 1
Signal Cable	Non-shielded RJ-45 cable 1m × 1

Power Adapter :

No.	Manufacturer	Model No.	Power Input	Power Output
1	SHENZHEN FRECOM ELECTRONICS Co., LTD	F12W3-050150SPAU	100-240Vac, 50/60Hz, 0.3A	5Vdc, 1.5A

**The difference of the series model**

Model Number	Product Name	Trade Name	Difference
DCS-5030L,DCS-5030LA1	HD Pan & Tilt Wi-Fi Day/Night Camera	D-Link	With SD Card
DCS-5025L,DCS-5025LA1	HD Pan, Tilt & Zoom Wi-Fi Camera		Without SD Card

Remark :

1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. For more details, please refer to the User's manual of the EUT.
3. This submittal(s) (test report) is intended for FCC ID: KA2CS5030LA1 filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.
4. The model DCS-5030L,DCS-5030LA1 was considered the main model for testing.
5. The only difference between DCS-5030L & DCS-5030LA1 is the market segmentation.
6. The only difference between DCS-5025L & DCS-5025LA1 is the market segmentation.

3. DESCRIPTION OF TEST MODES

The EUT (HD Pan & Tilt Wi-Fi Day/Night Camera) had been tested under operating condition.

IEEE 802.11 b/g, 802.11n HT20 mode : 1TX / 1RX.

Conducted Emission / Radiated Emission Test (Below 1 GHz)

1. The following test modes were scanned during the preliminary test:

No.	Pre-Test Mode
1	Normal Operating (Full Function) / Day Mode
2	Normal Operating (Full Function) / Night Mode

2. After the preliminary scan, the following test mode was found to produce the highest emission level.

Final Test Mode		
Emission	Radiated Emission	Mode 1 Mode 2
	Conducted Emission	Mode 2

Remark : Then, the above highest emission mode of the configuration of the EUT and cable was chosen for all final test items.

**Conducted / Radiated Emission Test (Above 1 GHz)****IEEE 802.11b, 802.11g, 802.11n HT20 mode**

The EUT had been tested under operating condition.

There are three channels have been tested as following :

Channel	Frequency (MHz)
Low	2412
Middle	2437
High	2462

IEEE 802.11b mode : 1Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11g mode : 6Mbps data rate (worst case) were chosen for full testing.

IEEE 802.11n HT20 mode : 6.5Mbps data rate (worst case) were chosen for full testing.

Remark: The product wall mount angle is adjustable. The EUT test range was +45 ~ -45 degree, Horizontal, +45, -45, 3 angles were verified, the worst case is horizontal. The antenna will be vertical set in all wall mount angles.

4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10: 2009 and ANSI C63.4: 2009 and FCC CFR 47, 15.207, 15.209 and 15.247.



5. FACILITIES AND ACCREDITATION

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

No.989-1, Wenshan Rd., Shangshan Village,
Qionglin Township, Hsinchu County 30741, Taiwan (R.O.C.)

The sites are constructed in conformance with the requirements of ANSI C63.10:2009 and ANSI C63.4:2009 and CISPR 22. All receiving equipment conforms to CISPR 16-1-1, CISPR 16-1-2, CISPR 16-1-3, CISPR 16-1-4, CISPR 16-1-5.

5.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

Taiwan	TAF
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The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	INDUSTRY CANADA
Japan	VCCI
Taiwan	BSMI
USA	FCC MRA

Copies of granted accreditation certificates are available for downloading from our web site, <http://www.ccsrf.com>

Remark: FCC Designation Number TW1027.



5.3 MEASUREMENT UNCERTAINTY

The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4-2.

PARAMETER	UNCERTAINTY
Semi Anechoic Chamber (966 Chamber_A) / Radiated Emission, 30 to 1000 MHz	+/- 3.59
Semi Anechoic Chamber (966 Chamber_A) / Radiated Emission, 1 to 18GHz	+/- 3.59
Semi Anechoic Chamber (966 Chamber_A) / Radiated Emission, 18 to 26 GHz	+/- 3.59
Semi Anechoic Chamber (966 Chamber_A) / Radiated Emission, 26 to 40 GHz	+/- 3.82
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 30 to 1000 MHz	+/- 3.97
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 1 to 18GHz	+/- 3.58
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 18 to 26 GHz	+/- 3.59
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 26 to 40 GHz	+/- 3.81
Conducted Emission (Mains Terminals), 9kHz to 30MHz	+/- 2.48

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

Consistent with industry standard (e.g. CISPR 22, clause 11, Measurement Uncertainty) determining compliance with the limits shall be base on the results of the compliance measurement. Consequently the measure emissions being less than the maximum allowed emission result in this be a compliant test or passing test.

The acceptable measurement uncertainty value without requiring revision of the compliance statement is base on conducted and radiated emissions being less than U_{CISPR} which is 3.6dB and 5.2dB respectively. CCS values (called U_{Lab} in CISPR 16-4-2) is less than U_{CISPR} as shown in the table above. Therefore, MU need not be considered for compliance.



6. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

No.	Product	Manufacturer	Model No.	Serial No.
1	Notebook PC	DELL	INSPIRON 640m PP19L	CN-0MG532-70166-71 G-03EC
2	Notebook PC	HP	ProBook 4421s	CNF03242PJ
3	Wireless Gigabit Router	SMC	SMCWGBR14S-N	U193600496
4	Micro SD Card	Kingston	31516-003.A00LF	---

No.	Signal Cable Description
1	Non-shielded RJ-45 cable, 12m × 1

SETUP DIAGRAM FOR TESTS

EUT & peripherals setup diagram is shown in appendix setup photos.

EUT OPERATING CONDITION

RF Mode :

1. EUT & peripherals setup diagram is shown in appendix setup photos.

2. TX Mode :

- ⇒ **Tx Data Rate:** 1Mbps Bandwidth 20 (IEEE 802.11b mode)
6Mbps Bandwidth 20 (IEEE 802.11g mode)
6.5Mbps Bandwidth 20 (IEEE 802.11n HT20 mode)

⇒ **Power control**

IEEE 802.11b Channel Low (2412MHz) TX Power set 1F
IEEE 802.11b Channel Mid (2437MHz) TX Power set 21
IEEE 802.11b Channel High (2462MHz) TX Power set 22
IEEE 802.11g Channel Low (2412MHz) TX Power set 1E
IEEE 802.11g Channel Mid (2437MHz) TX Power set 25
IEEE 802.11g Channel High (2462MHz) TX Power set 1F
IEEE 802.11n HT20 Channel Low (2412MHz) TX Power set 1D
IEEE 802.11n HT20 Channel Mid (2437MHz) TX Power set 24
IEEE 802.11n HT20 Channel High (2462MHz) TX Power set 1F

3. All of the functions are under run.

4. Start test.



Normal Mode :

All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

1. EUT & peripherals setup diagram is shown in appendix setup photos.
2. Notebook PC via a router connected to the EUT.
3. All of the functions are under run.
4. Start test.



7. FCC PART 15.247 REQUIREMENTS

7.1 6dB BANDWIDTH

LIMITS

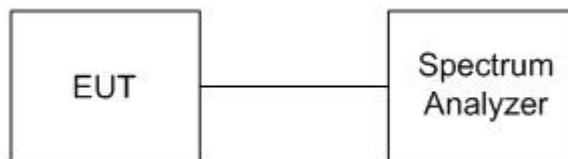
§ 15.247(a) (2) For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY43360132	06/10/2015

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

1. The transmitter output was connected to a spectrum analyzer.
2. Set RBW = 100 kHz.
3. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

**TEST RESULTS****IEEE 802.11b Mode**

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (kHz)	Pass / Fail
Low	2412	9.5600	500	PASS
Middle	2437	9.5700	500	PASS
High	2462	10.0050	500	PASS

IEEE 802.11g Mode

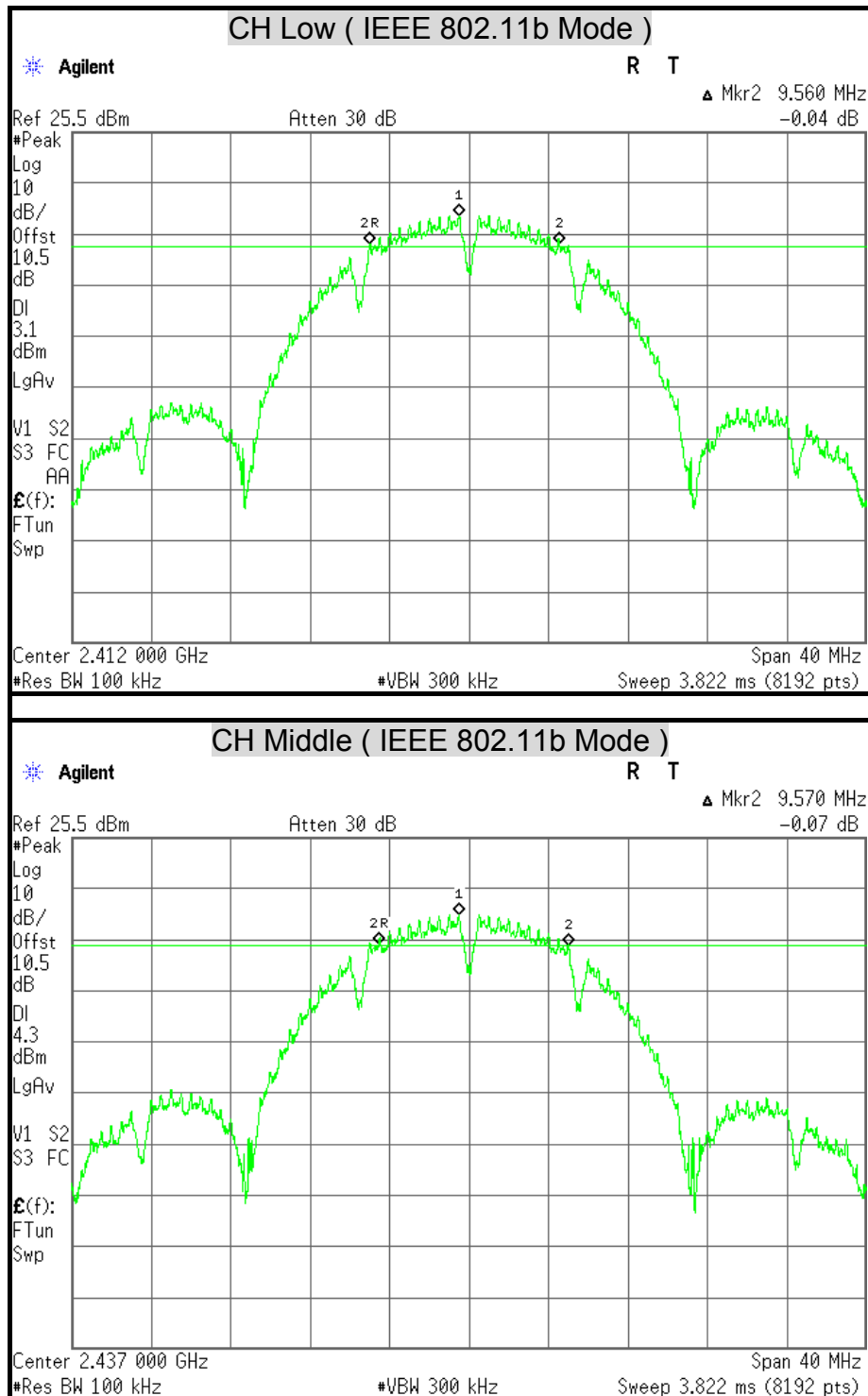
Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (kHz)	Pass / Fail
Low	2412	15.0100	500	PASS
Middle	2437	15.0250	500	PASS
High	2462	15.0850	500	PASS

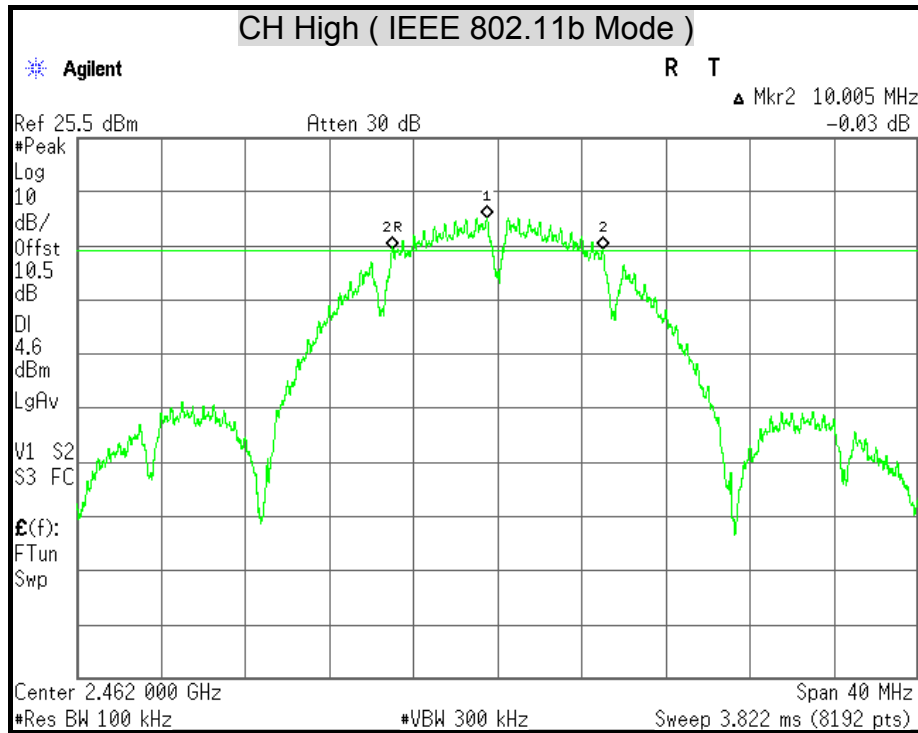
IEEE 802.11n HT20 Mode

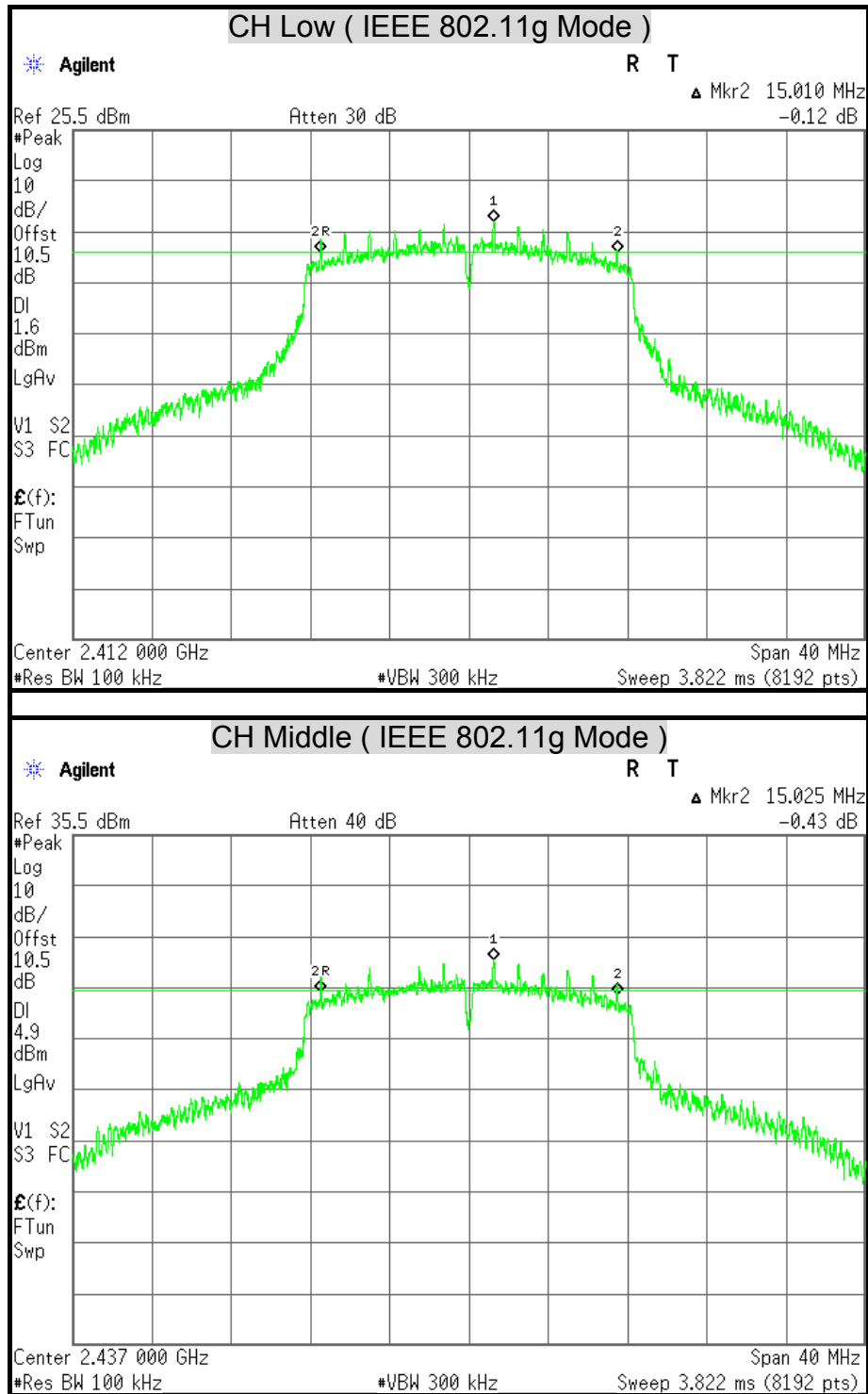
Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (kHz)	Pass / Fail
Low	2412	15.1100	500	PASS
Middle	2437	15.1150	500	PASS
High	2462	15.1150	500	PASS

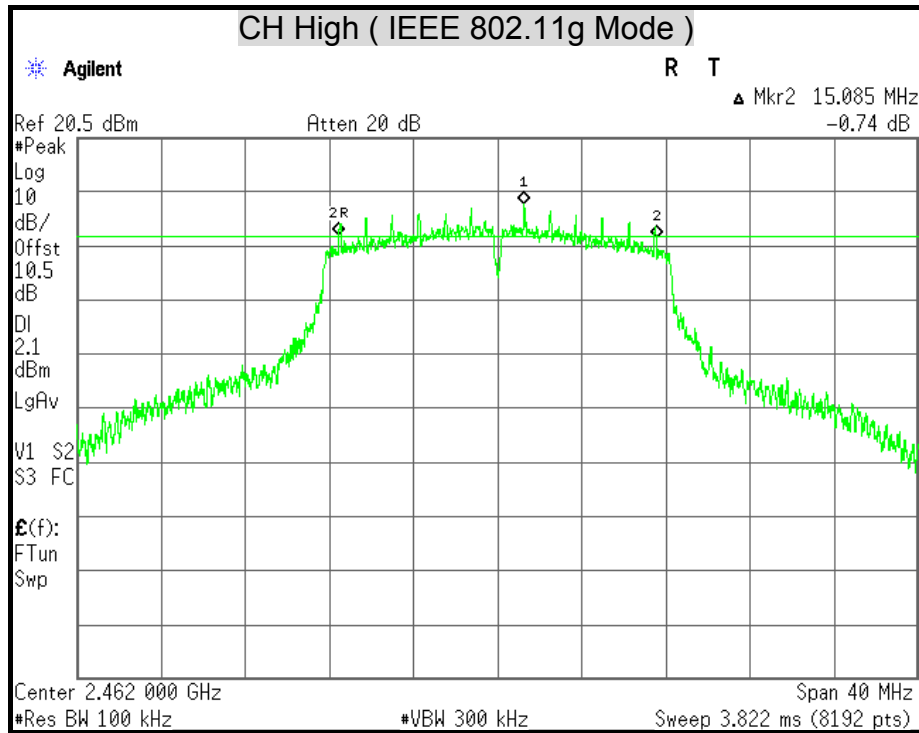


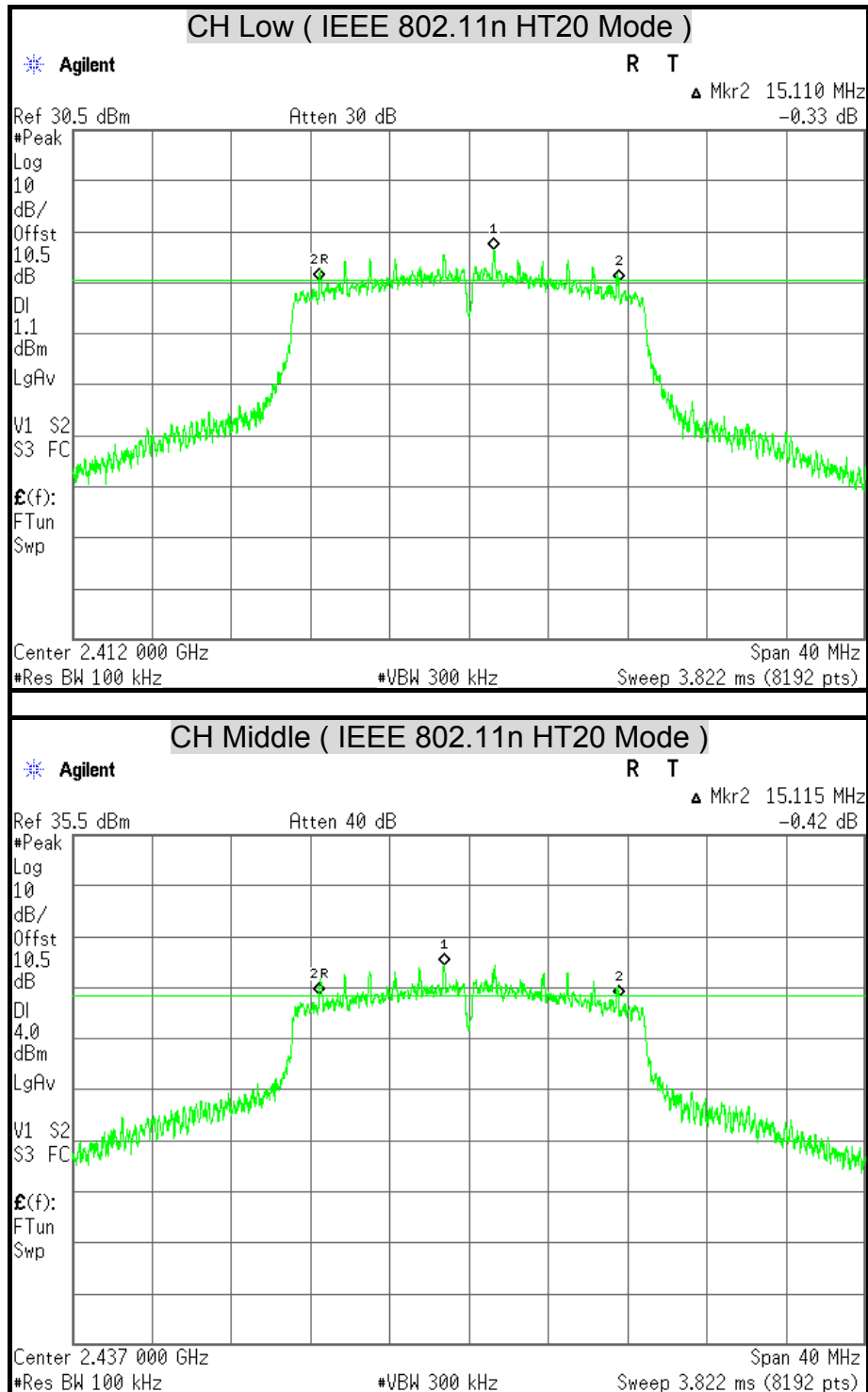
6dB BANDWIDTH

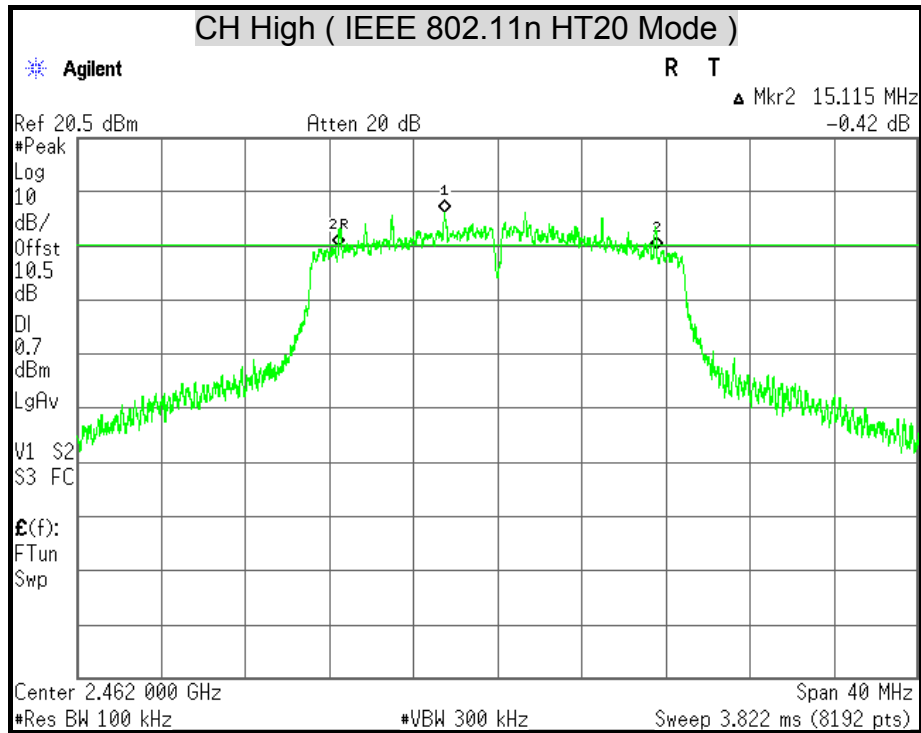














7.2 MAXIMUM PEAK OUTPUT POWER

LIMITS

§ 15.247(b) The maximum peak output power of the intentional radiator shall not exceed the following :

§ 15.247(b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands : 1 watt.

§ 15.247(b) (4) Except as shown in paragraphs (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

§ KDB 662911 : For power measurements 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 $N_{ANT} \geq 5$.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Power Meter	Anritsu	ML2495A	1149001	12/11/2015
Power Sensor	Anritsu	MA2411B	1126148	12/11/2015

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the power meter. The power meter is set to the peak power detection.

**TEST RESULTS****IEEE 802.11b Mode**

Channel	Channel Frequency (MHz)	Peak Power		Peak Power Limit		Pass / Fail
		(dBm)	(W)	(dBm)	(W)	
Low	2412	21.28	0.1343	30	1	PASS
Middle	2437	22.14	0.1637	30	1	PASS
High	2462	22.59	0.1816	30	1	PASS

Remark:

1. At final test to get the worst-case emission at 1Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was Entered as an offset in the power meter to allow for direct reading of power.

IEEE 802.11g Mode

Channel	Channel Frequency (MHz)	Peak Power		Peak Power Limit		Pass / Fail
		(dBm)	(W)	(dBm)	(W)	
Low	2412	25.06	0.3206	30	1	PASS
Middle	2437	26.05	0.4027	30	1	PASS
High	2462	25.26	0.3357	30	1	PASS

Remark:

1. At final test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was Entered as an offset in the power meter to allow for direct reading of power.

IEEE 802.11n HT20 Mode

Channel	Channel Frequency (MHz)	Peak Power		Peak Power Limit		Pass / Fail
		(dBm)	(W)	(dBm)	(W)	
Low	2412	24.92	0.3105	30	1	PASS
Middle	2437	25.52	0.3565	30	1	PASS
High	2462	25.83	0.3828	30	1	PASS

Remark:

1. At final test to get the worst-case emission at 6.5Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was Entered as an offset in the power meter to allow for direct reading of power.



7.3 AVERAGE POWER

LIMITS

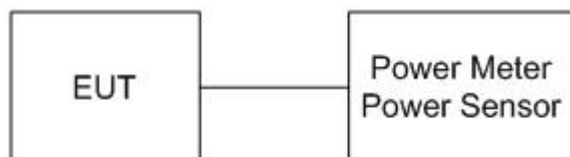
None; for reporting purposes only.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Power Meter	ANRITSU	ML2495A	1149001	12/11/2015
Power Sensor	ANRITSU	MA2411B	1126148	12/11/2015

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the power meter. The power meter is set to the average power detection.

**TEST RESULTS****IEEE 802.11b Mode**

Channel	Channel Frequency (MHz)	Average Power (dBm)
Low	2412	19.07
Middle	2437	20.04
High	2462	20.42

Remark:

1. At final test to get the worst-case emission at 1Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was Entered as an offset in the power meter to allow for direct reading of power.

IEEE 802.11g Mode

Channel	Channel Frequency (MHz)	Average Power (dBm)
Low	2412	17.63
Middle	2437	20.86
High	2462	18.25

Remark:

1. At final test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was Entered as an offset in the power meter to allow for direct reading of power.

IEEE 802.11n HT20 Mode

Channel	Channel Frequency (MHz)	Average Power (dBm)
Low	2412	17.13
Middle	2437	20.24
High	2462	17.64

Remark:

1. At final test to get the worst-case emission at 6.5Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was Entered as an offset in the power meter to allow for direct reading of power.



7.4 POWER SPECTRAL DENSITY

LIMITS

§ 15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY43360132	06/10/2015

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer.
2. Set analyzer center frequency to DTS channel center frequency.
3. Set the span to 1.5 times the DTS channel bandwidth.
4. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
5. Set the VBW $\geq 3 \times \text{RBW}$.
6. Detector = peak.
7. Sweep time = auto couple.
8. Trace mode = max hold.
9. Allow trace to fully stabilize.
10. Use the peak marker function to determine the maximum amplitude level within the RBW.
11. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

**TEST RESULTS****IEEE 802.11b Mode**

Channel	Channel Frequency (MHz)	Final RF Power Level in 3kHz BW (dBm)	Minimum Limit (dBm)	Pass / Fail
Low	2412	6.43	8	PASS
Middle	2437	7.00	8	PASS
High	2462	7.48	8	PASS

Remark:

1. At final test to get the worst-case emission at 1Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11g Mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3kHz BW (dBm)	Minimum Limit (dBm)	Pass / Fail
Low	2412	-9.90	8	PASS
Middle	2437	-6.32	8	PASS
High	2462	-9.34	8	PASS

Remark:

1. At final test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

IEEE 802.11n HT20 Mode

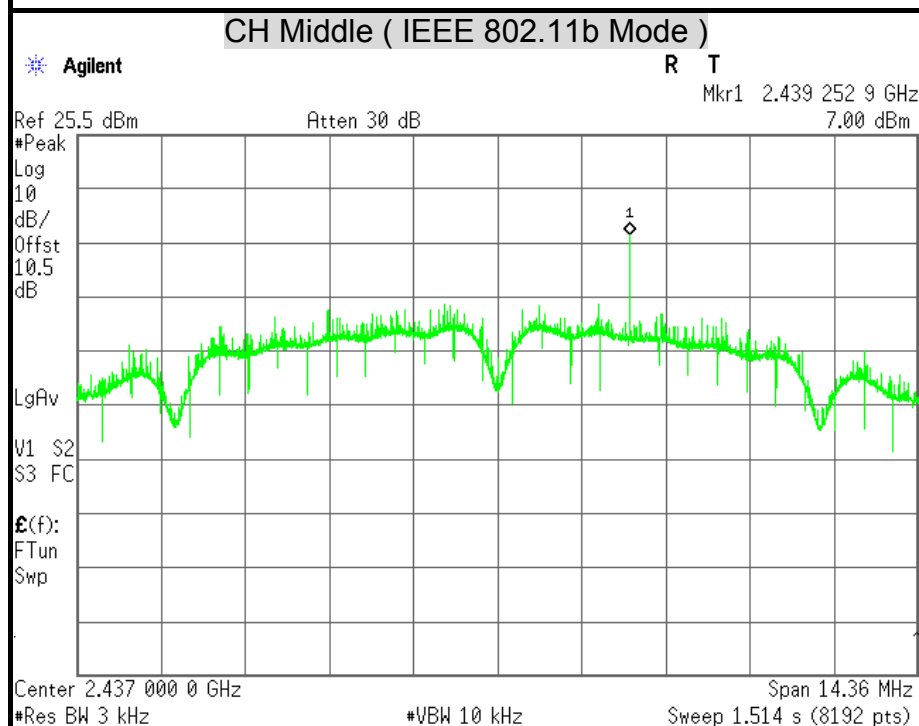
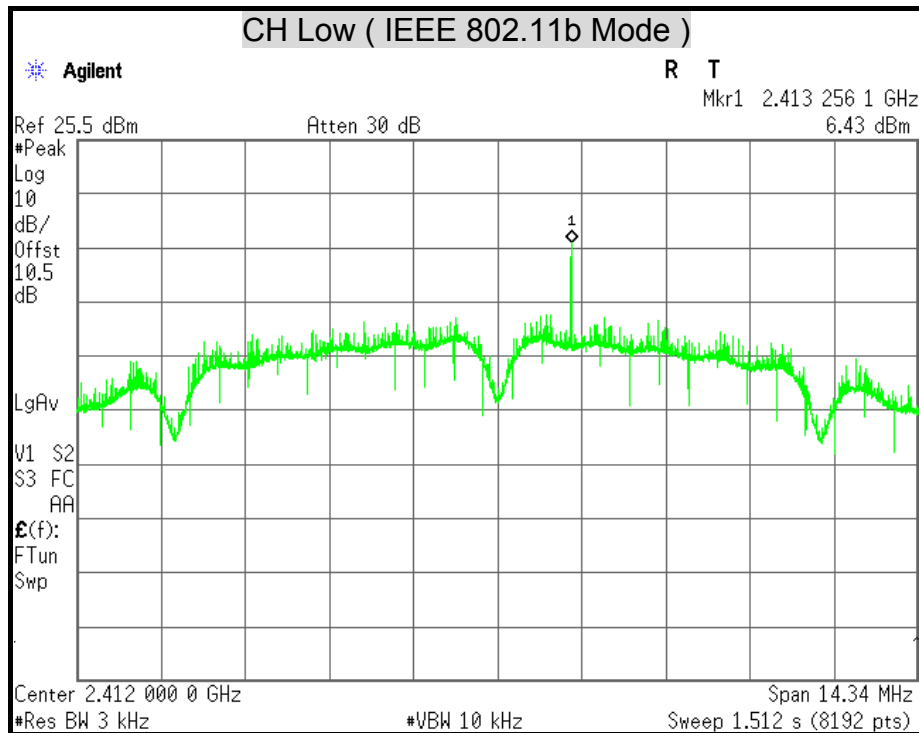
Channel	Channel Frequency (MHz)	Final RF Power Level in 3kHz BW (dBm)	Minimum Limit (dBm)	Pass / Fail
Low	2412	-9.78	8	PASS
Middle	2437	-7.02	8	PASS
High	2462	-7.37	8	PASS

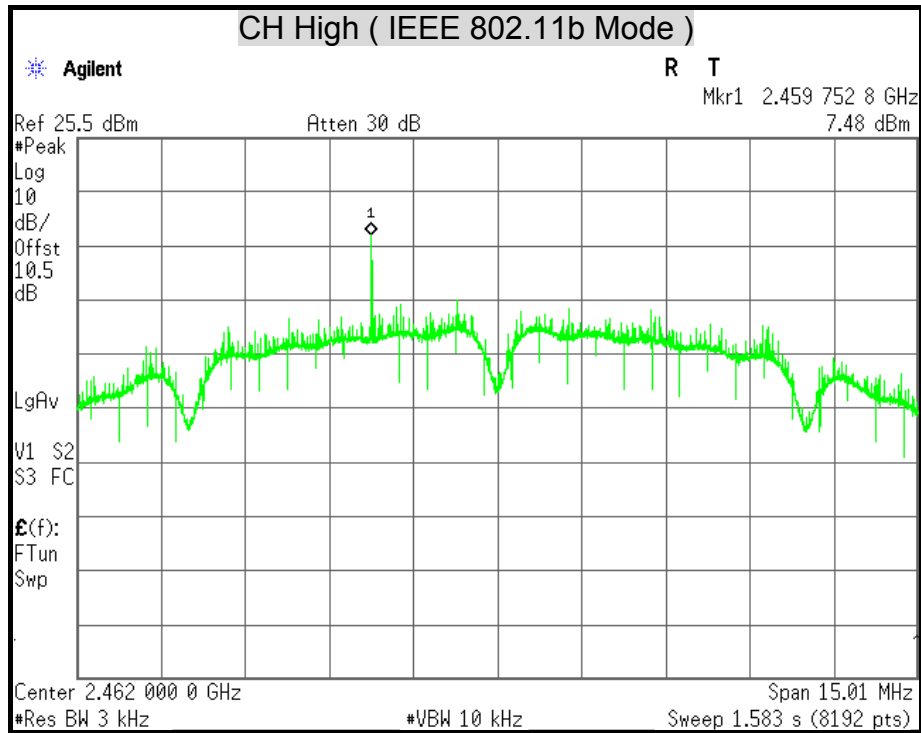
Remark:

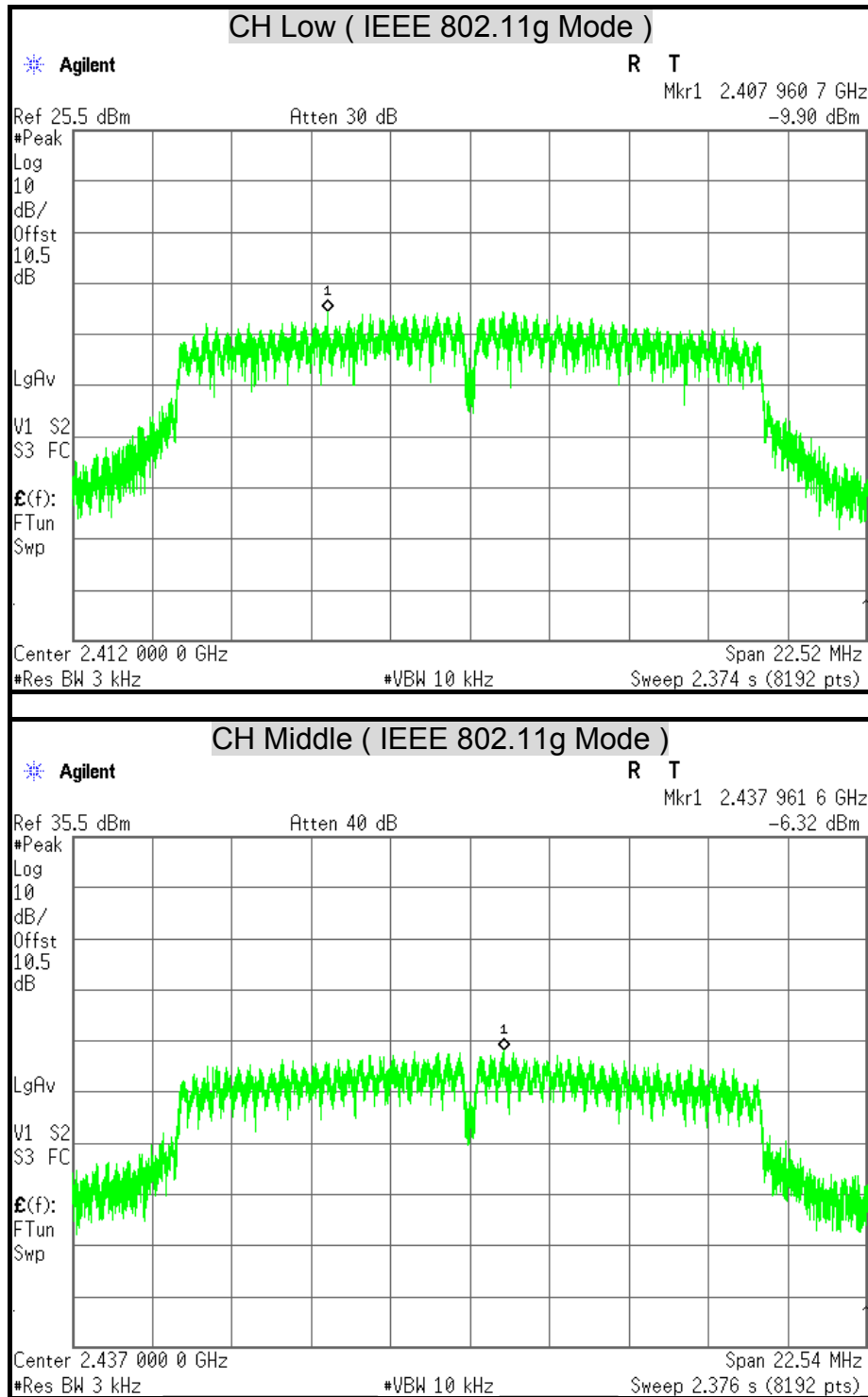
1. At final test to get the worst-case emission at 6.5Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

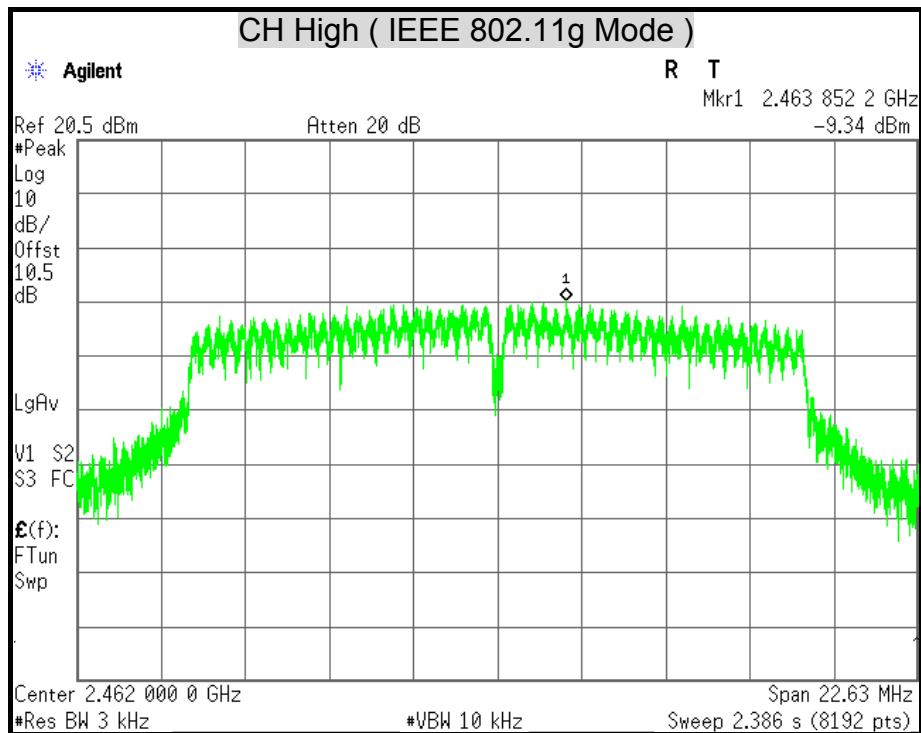


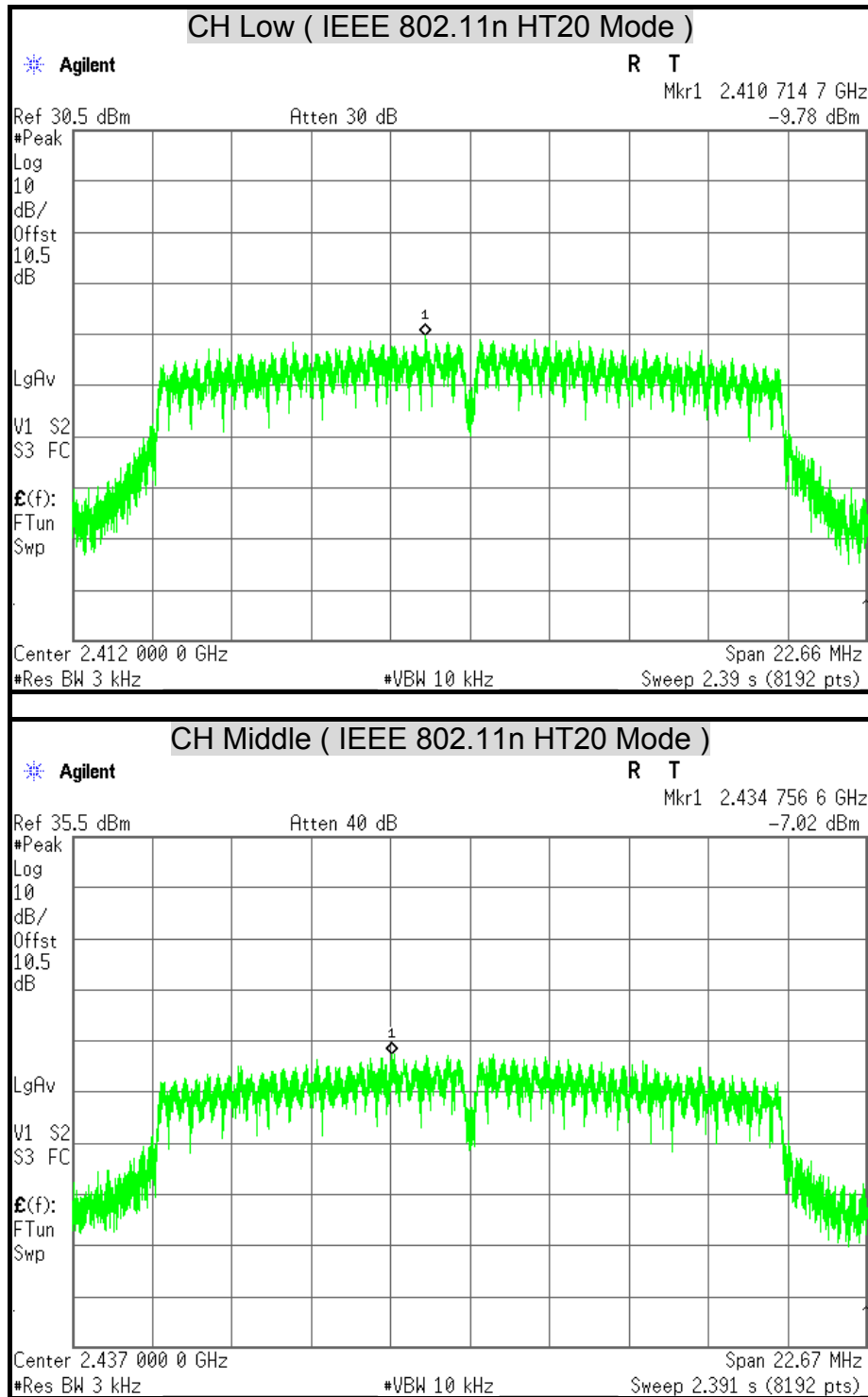
POWER SPECTRAL DENSITY

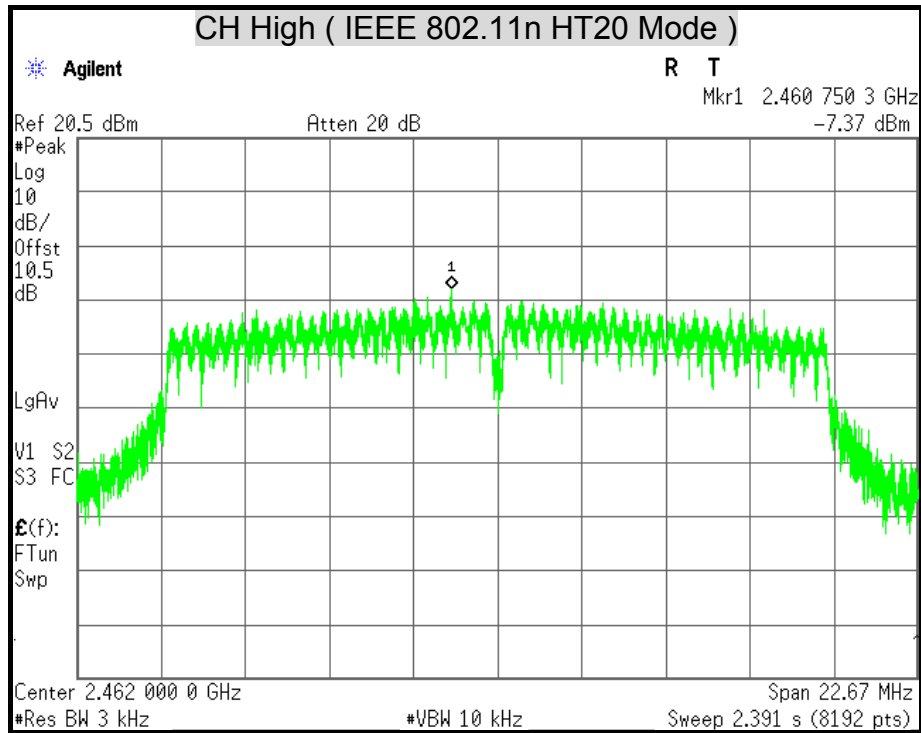














7.5 CONDUCTED SPURIOUS EMISSION

LIMITS

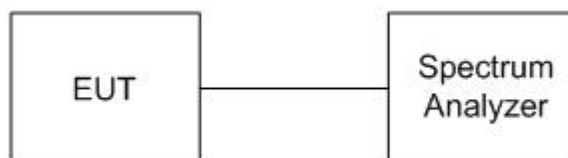
§ 15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY43360132	06/10/2015

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

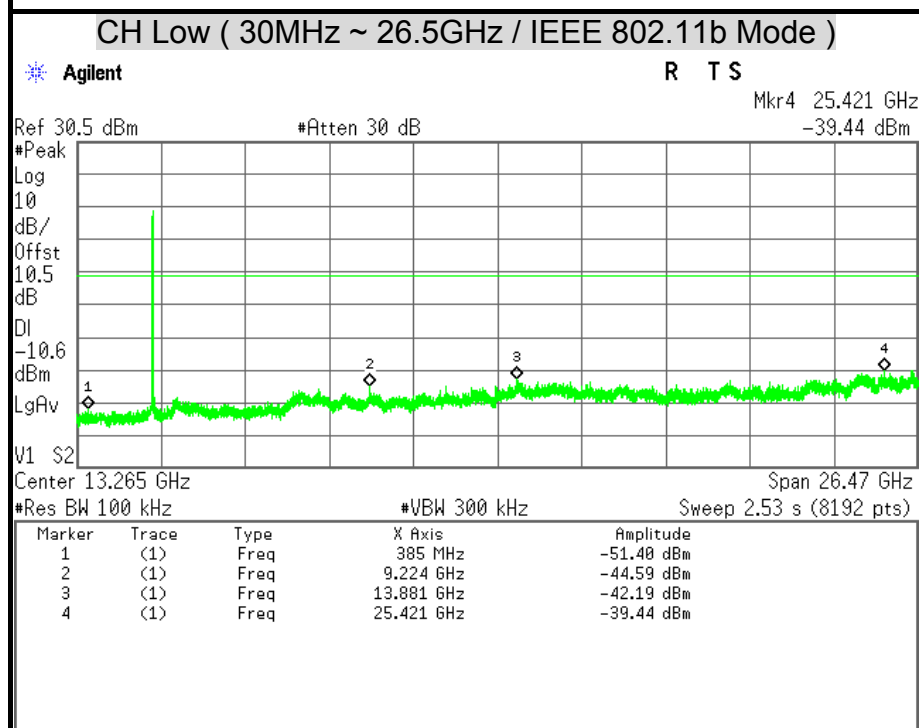
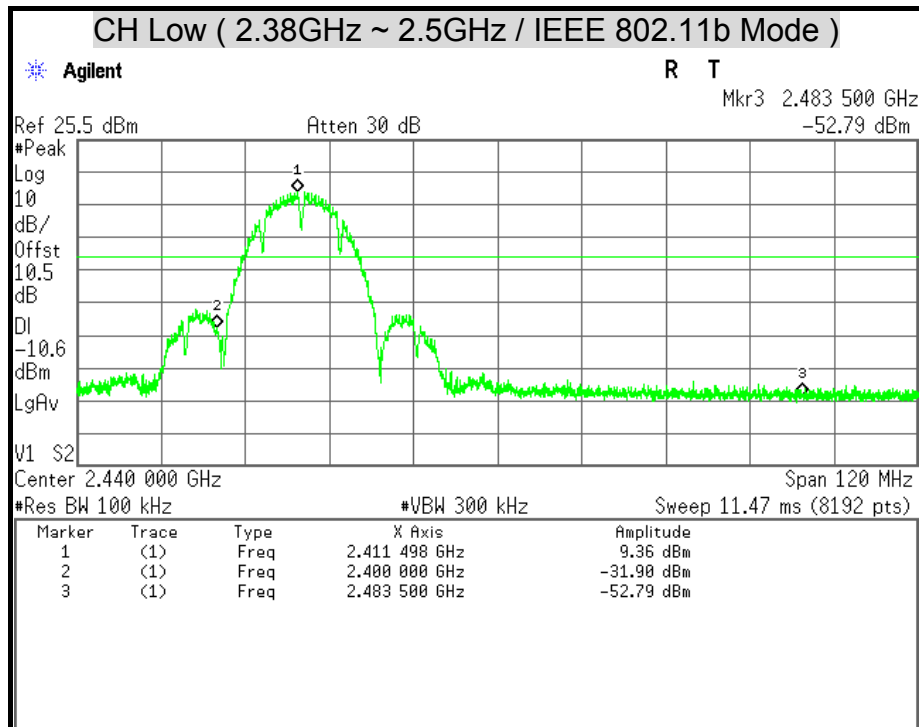
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

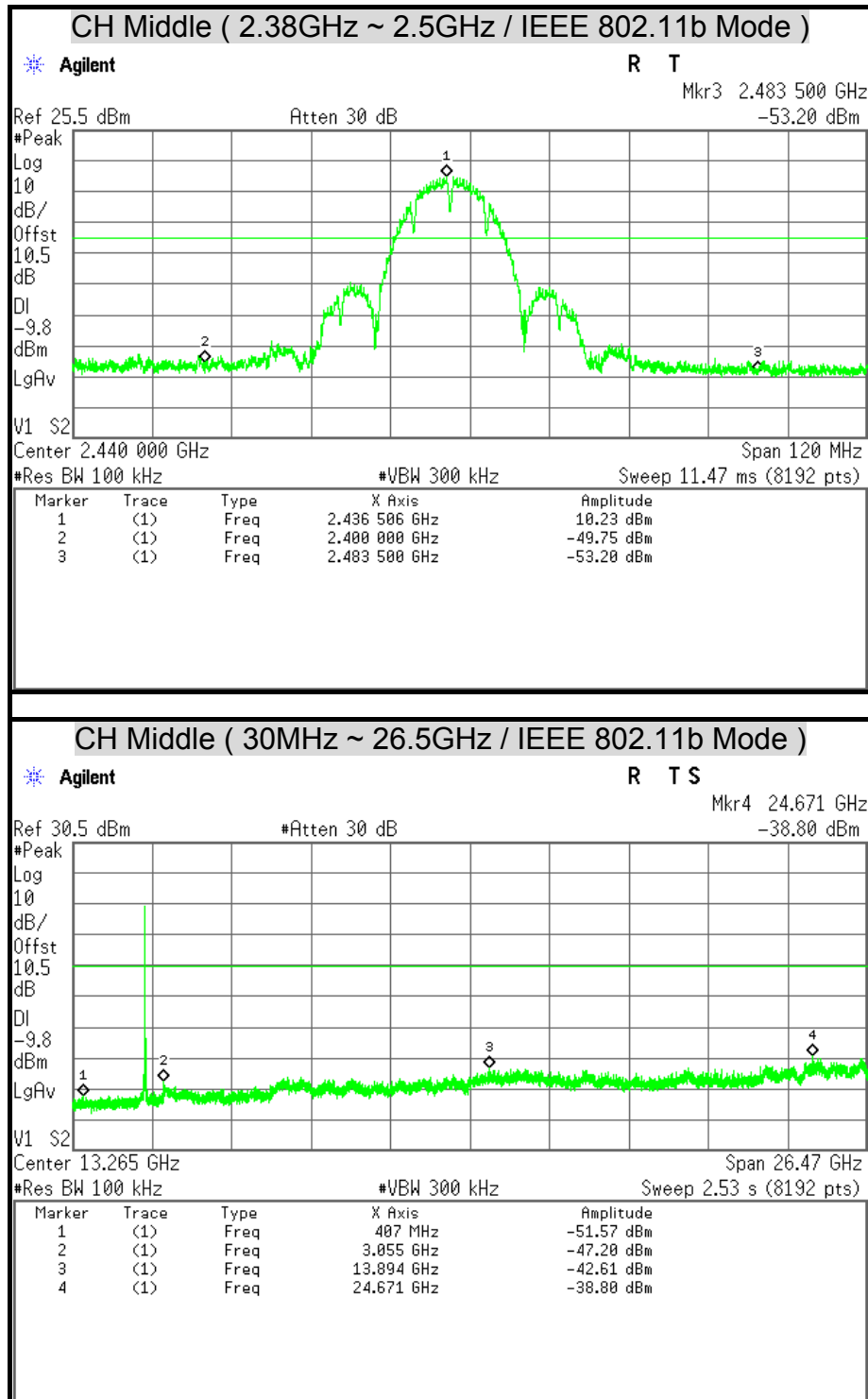
The spectrum from 30 MHz to 26.5 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

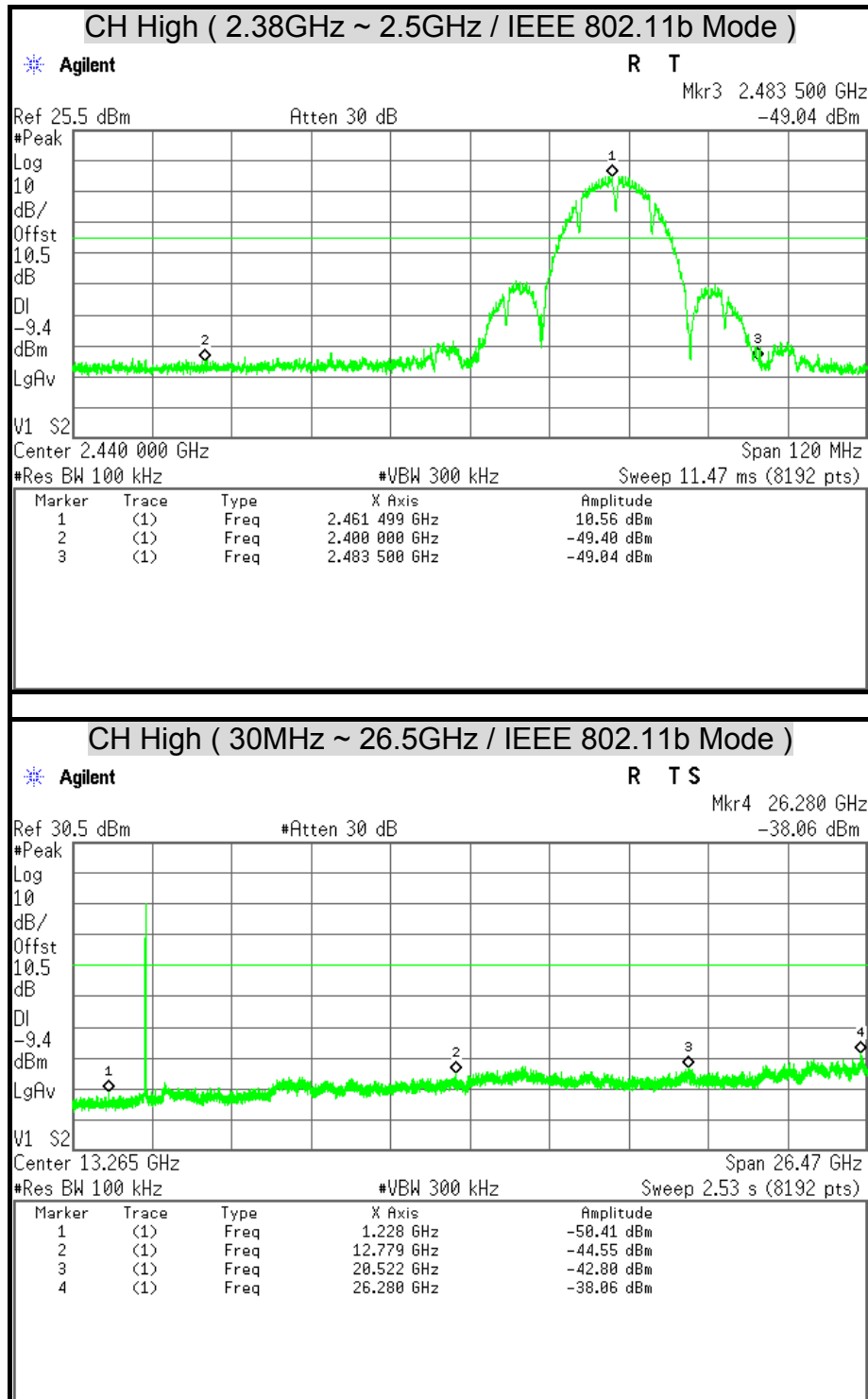


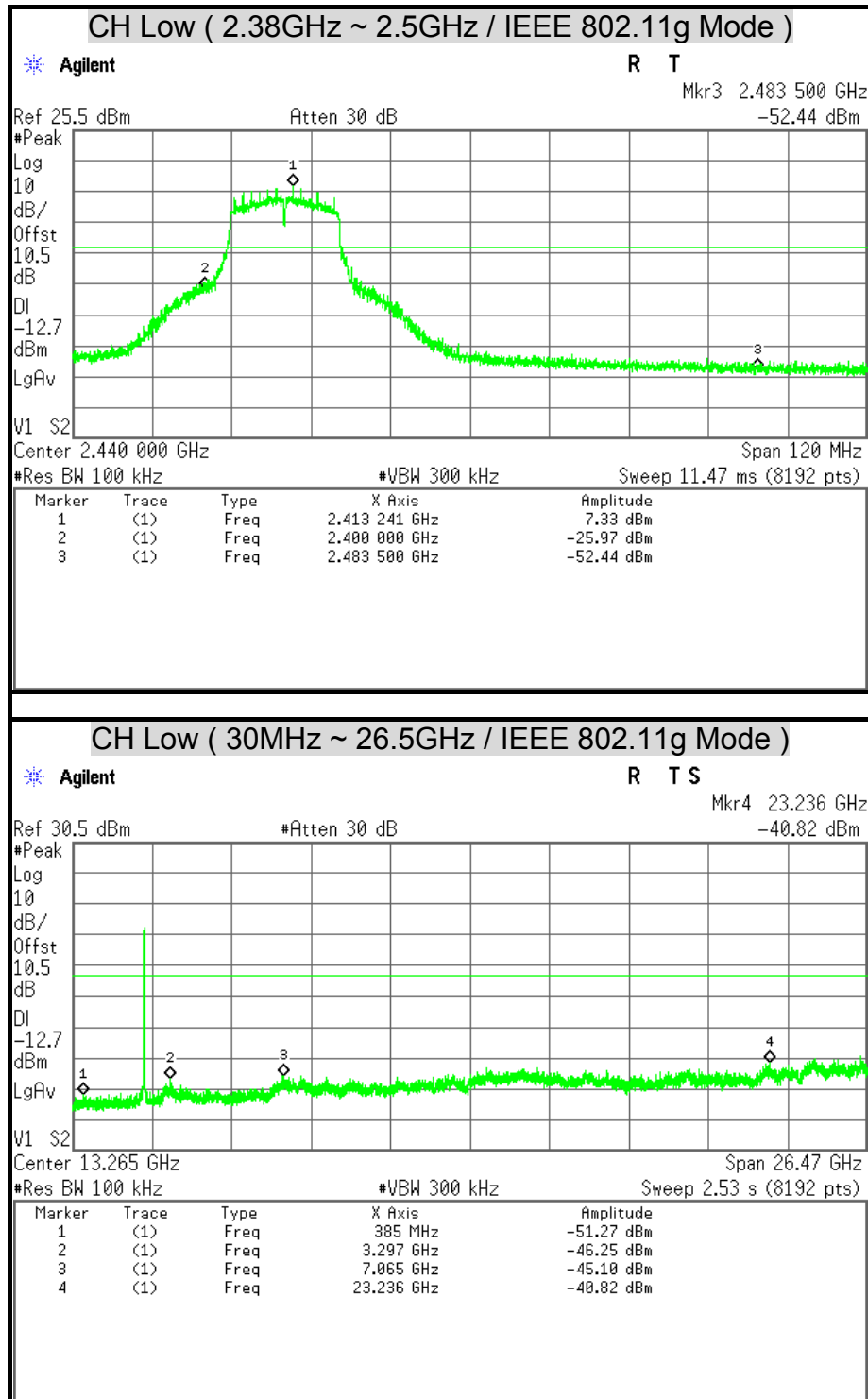
TEST RESULTS

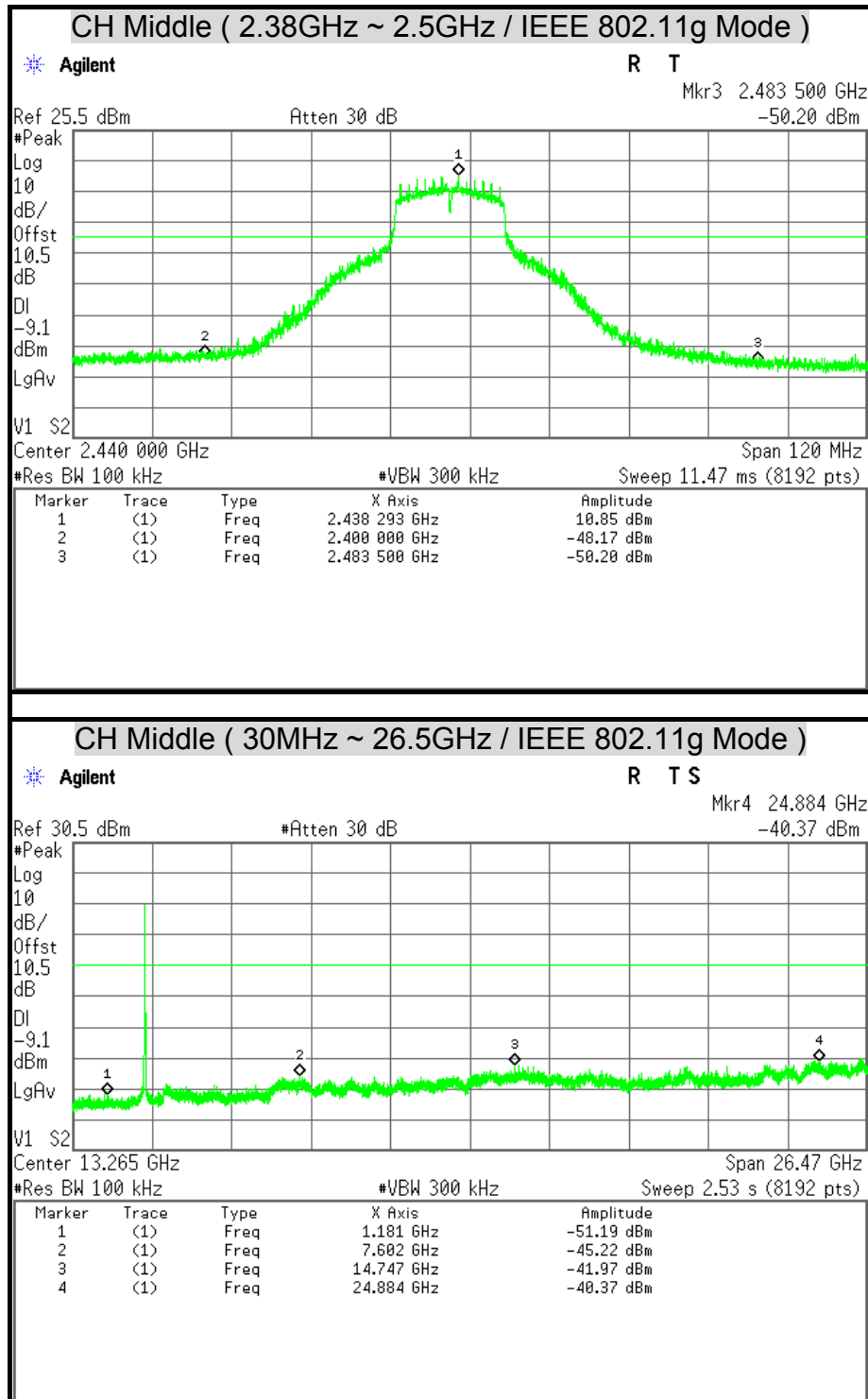
OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

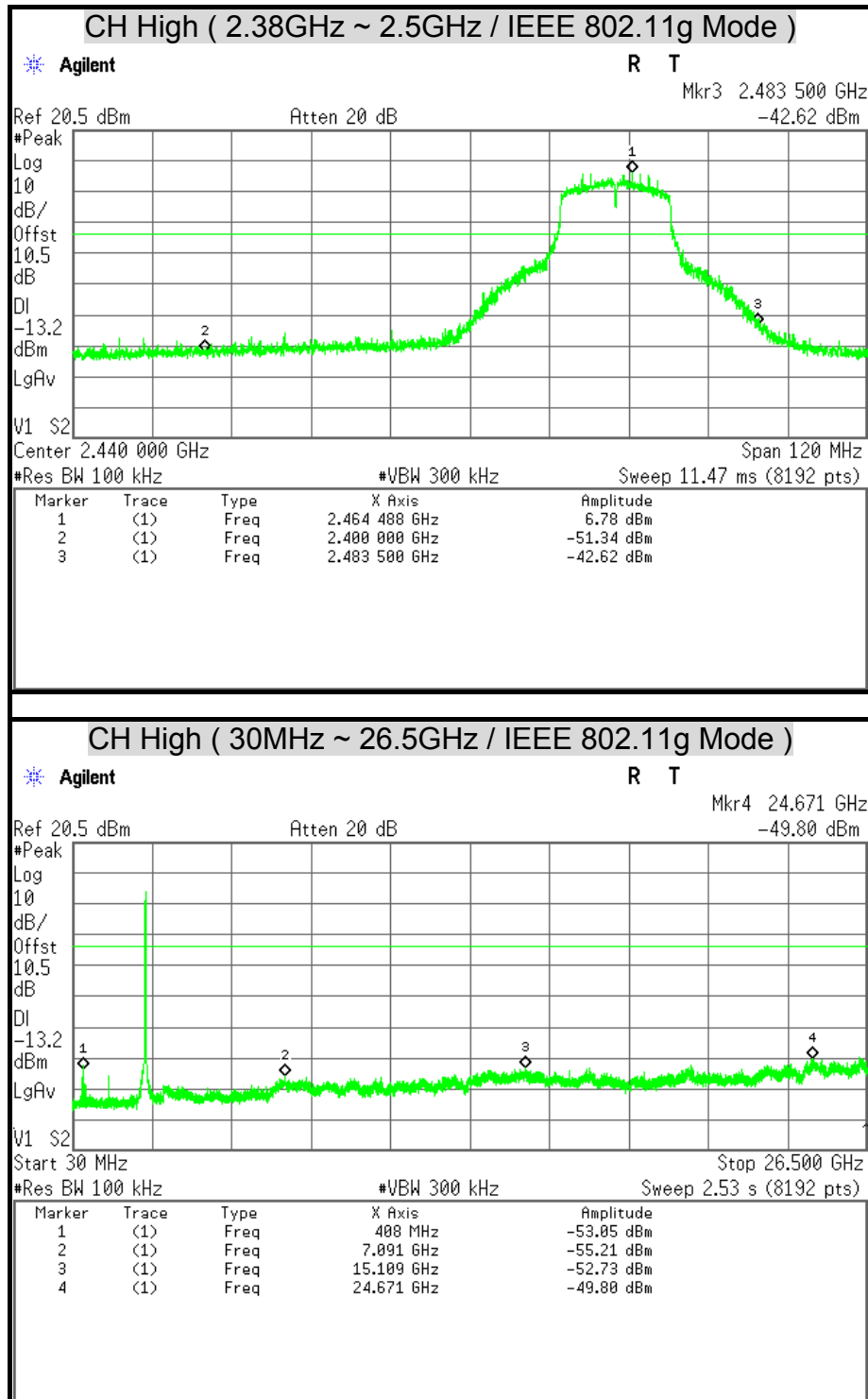


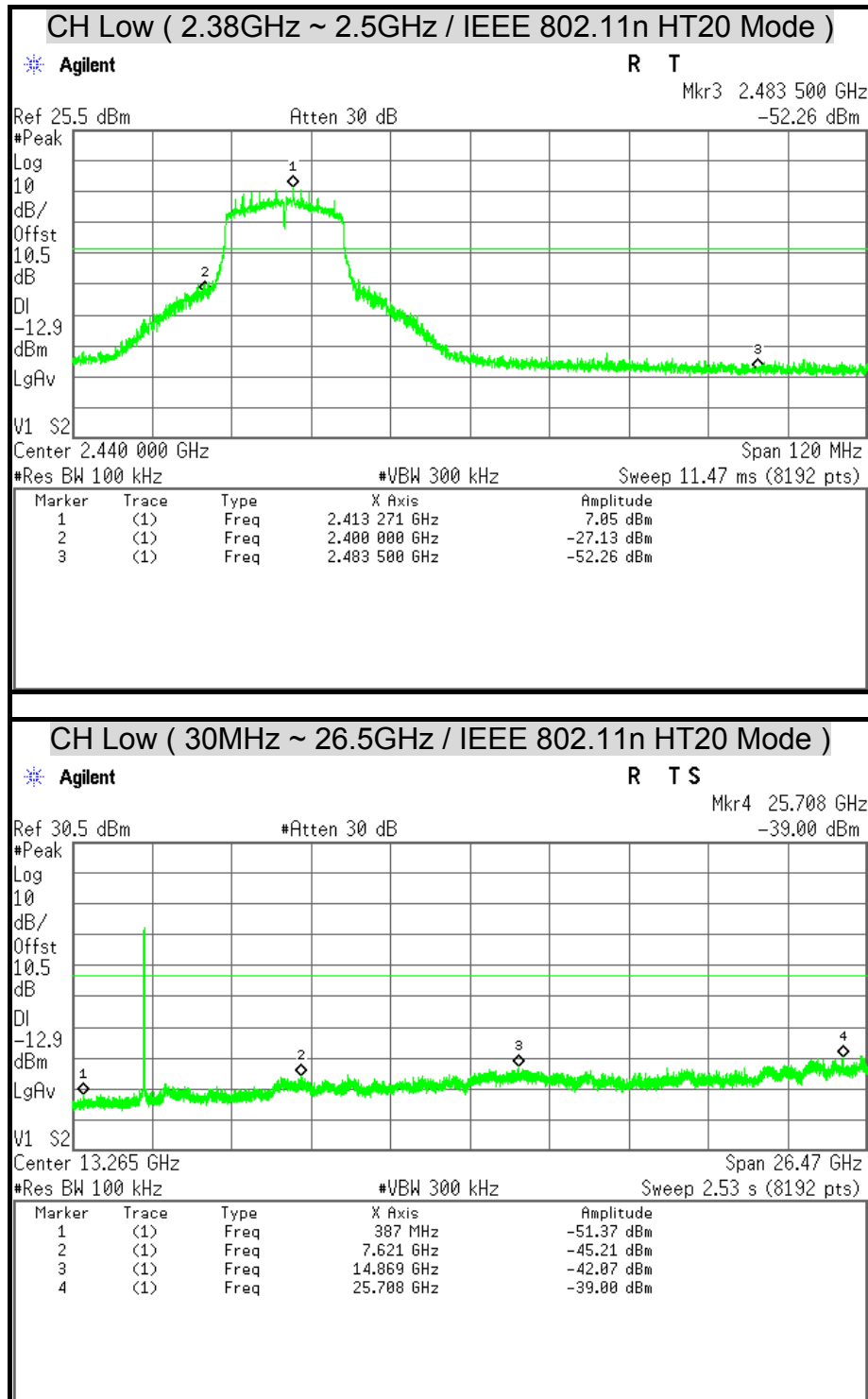


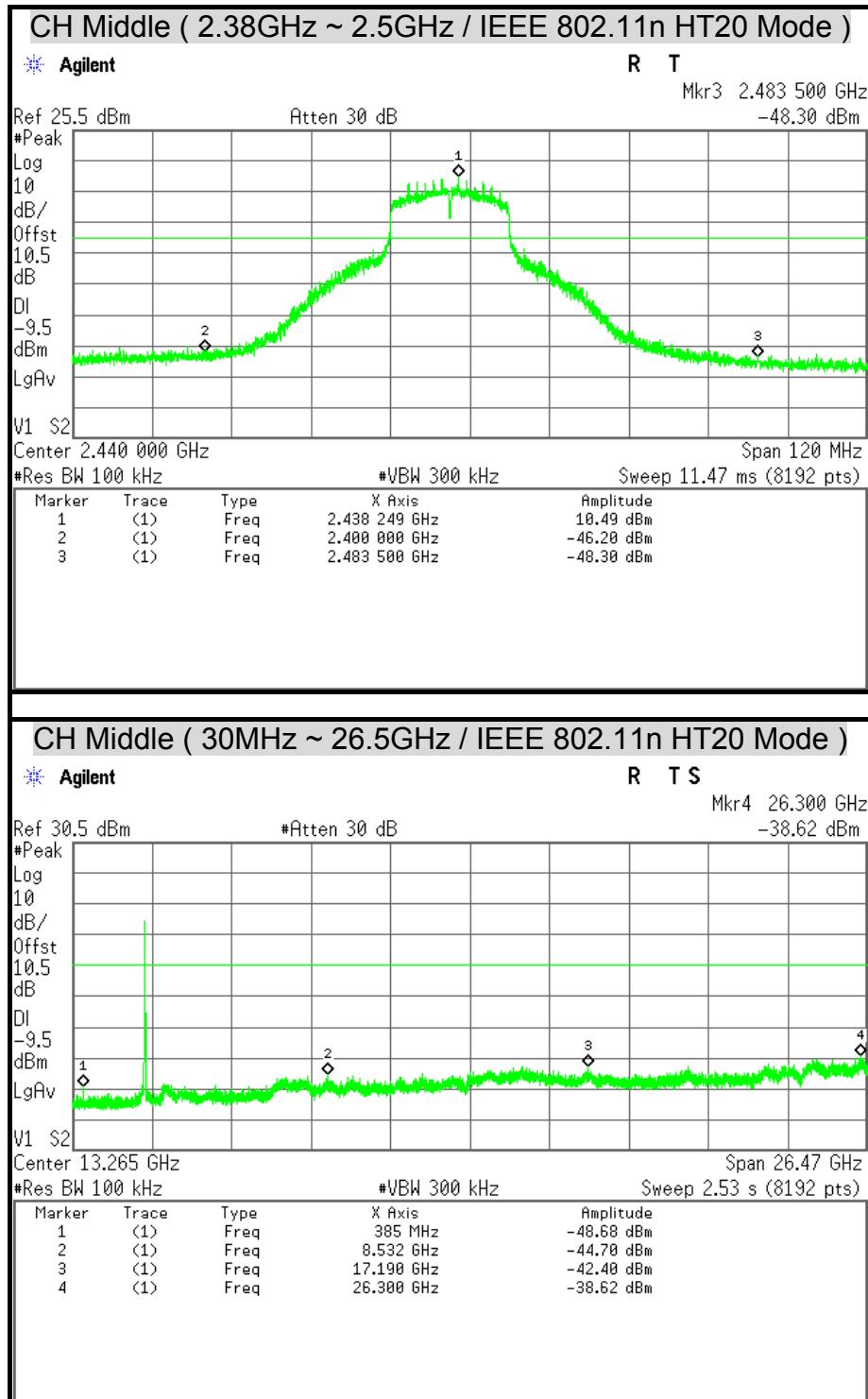


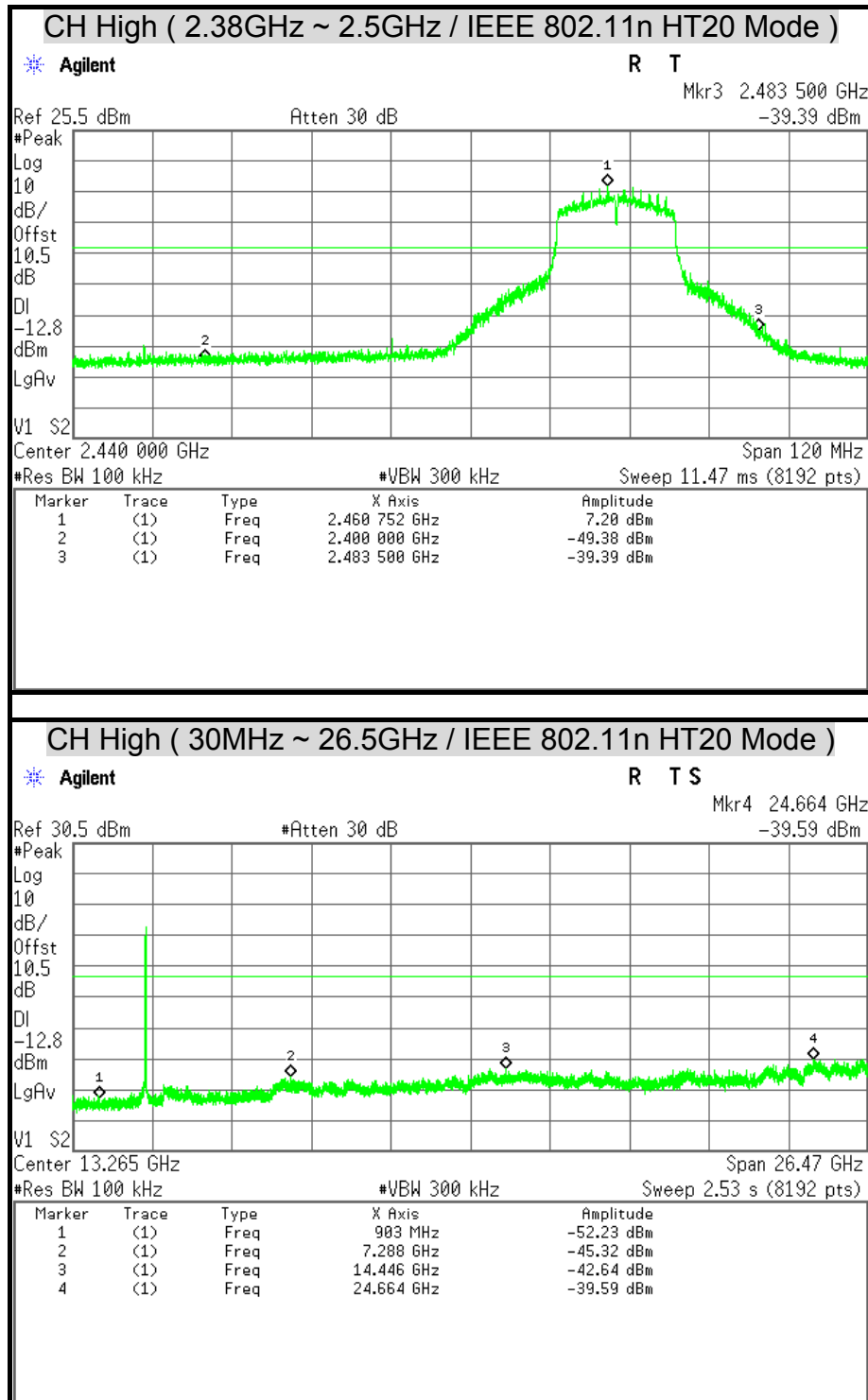














7.6 RADIATED EMISSION

LIMITS

- (1) According to § 15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3338	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

Remark:

1. ¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
2. ² Above 38.6

- (2) According to § 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.



- (3) According to § 15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table :

Frequency (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

Remark: **Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

- (4) According to § 15.209 (b) In the emission table above, the tighter limit applies at the band edges.

TEST EQUIPMENT

Radiated Emission / 966Chamber_A

Name of Equipment	Manufacture	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY43360132	06/10/2015
EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100221	04/28/2015
Bi-log Antenna	SCHWARZBECK	VULB 9168	9168-249	08/21/2015
Broad-Band Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-778	08/19/2015
Pre-Amplifier	Agilent	8449B	3008A01471	07/15/2015
Pre-Amplifier	HP	8447F	2944A03748	07/15/2015
Band Reject Notch Filter	Micro-Tronics	BRM05702-01	009	N.C.R

Remark: 1. Each piece of equipment is scheduled for calibration once a year.

2. N.C.R = No Calibration Request.

**Radiated Emission / 966Chamber_B**

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY46180323	04/15/2015
EMI Test Receiver	ROHDE & SCHWARZ	ESCS 30	835418/008	10/14/2015
Bi-log Antenna	SCHWARZBECK	VULB 9168	9168-250	08/21/2015
Double-Ridged Waveguide Horn	ETS-LINDGREN	3117	00078733	12/02/2015
Horn Antenna	COM-POWER	AH-840	03077	12/17/2015
Pre-Amplifier	Agilent	8447D	2944A10052	07/15/2015
Pre-Amplifier	Agilent	8449B	3008A01916	07/15/2015
LOOP Antenna	EMCO	6502	8905-2356	09/23/2015
Notch Filters Band Reject	Micro-Tronics	BRM05702-01	026	N.C.R

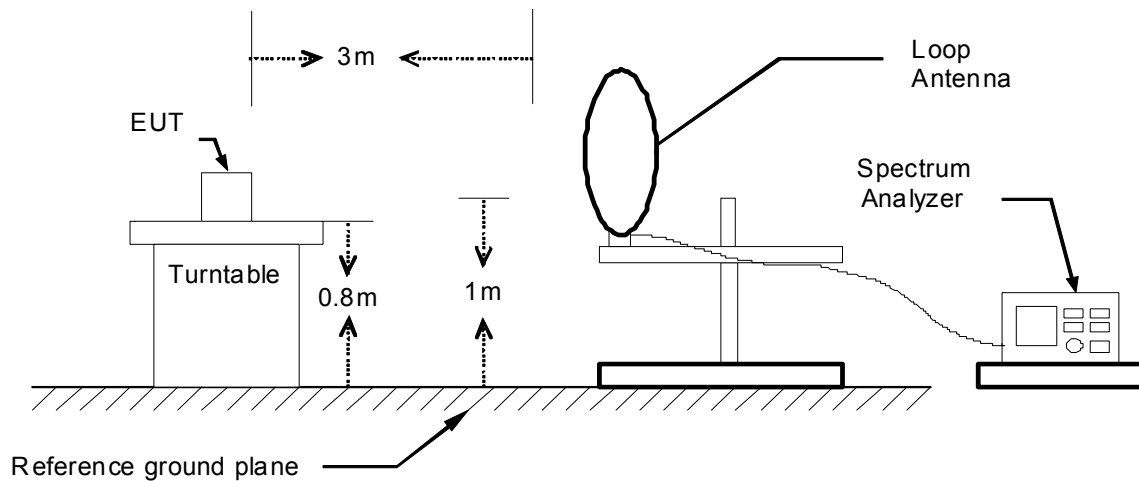
Remark: 1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R = No Calibration Request.



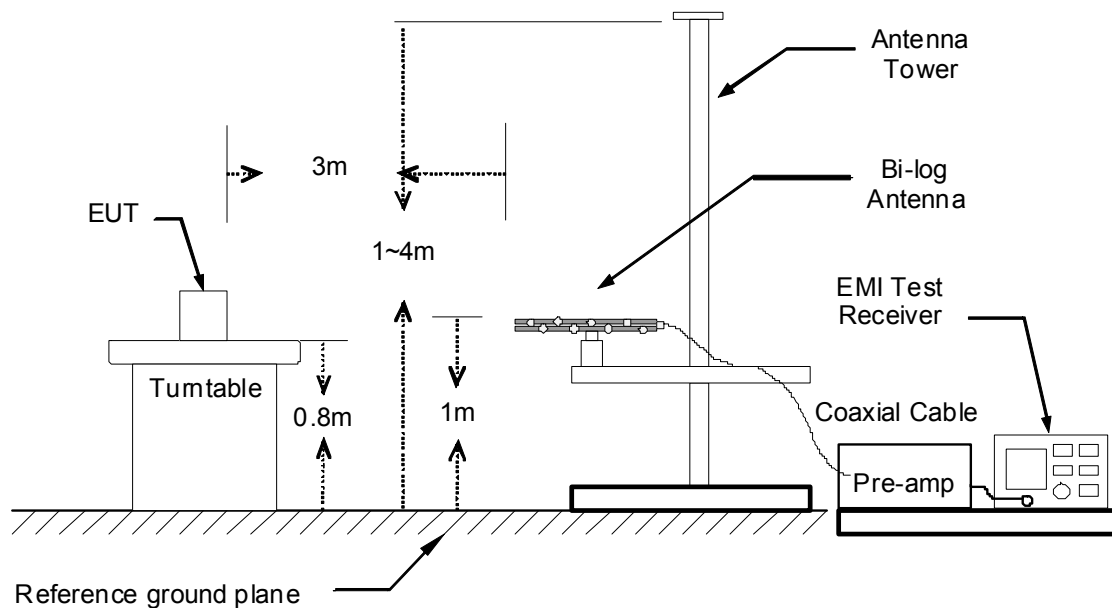
TEST SETUP

The diagram below shows the test setup that is utilized to make the measurements for emission below 1GHz.

9kHz ~ 30MHz

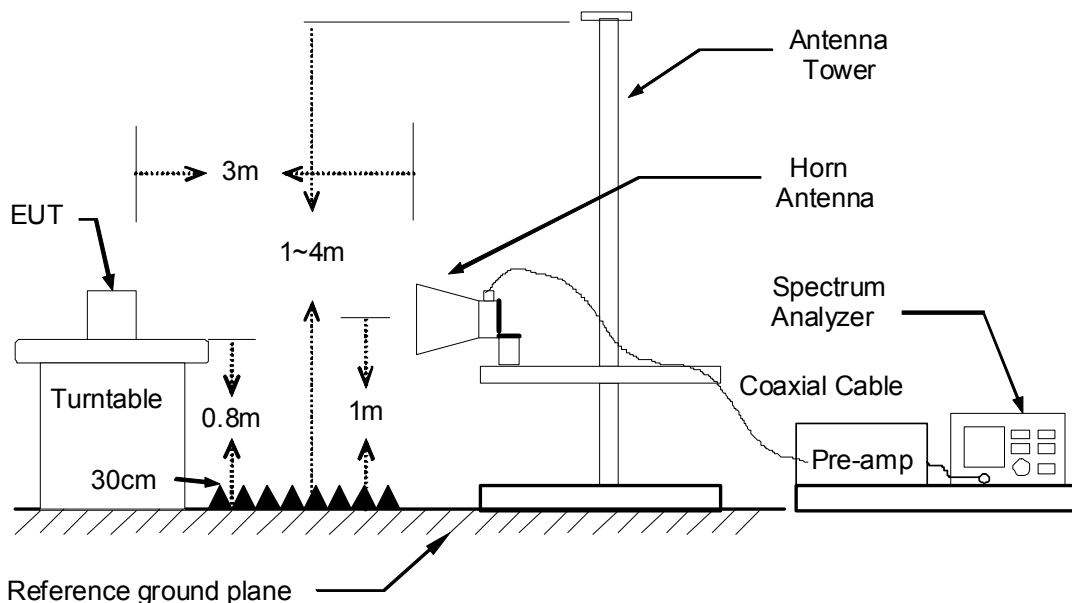


30MHz ~ 1GHz





The diagram below shows the test setup that is utilized to make the measurements for emission above 1GHz.



TEST PROCEDURE

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground. The table was rotated 360 degrees to determine the position of the highest radiation.
2. While measuring the radiated emission below 1GHz, the EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. While measuring the radiated emission above 1GHz, the EUT was set 3 meters away from the interference-receiving antenna.
3. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarization of the antenna are set to make the measurement.
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 table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10 dB 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 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Remark :

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection and frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

**TEST RESULTS****Below 1 GHz (9kHz ~ 30MHz)**

No emission found between lowest internal used/generated frequency to 30MHz.

Below 1 GHz (30MHz ~ 1GHz)

Product Name	HD Pan & Tilt Wi-Fi Day/Night Camera	Test By	Davis Tseng
Test Model	DCS-5030L,DCS-5030LA1	Test Date	2015/03/02
Test Mode	Mode 1	Temp. & Humidity	23°C, 50%

966 Chamber_A at 3Meter / Horizontal						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
53.28	36.81	-9.98	26.83	40.00	-13.17	Peak
90.14	51.78	-16.19	35.59	43.50	-7.91	Peak
97.90	48.19	-15.06	33.14	43.50	-10.36	Peak
156.10	42.24	-9.92	32.32	43.50	-11.18	Peak
249.22	39.63	-10.69	28.93	46.00	-17.07	Peak
480.08	34.20	-4.31	29.89	46.00	-16.11	Peak
959.26	28.93	4.17	33.10	46.00	-12.90	Peak
966 Chamber_A at 3Meter / Vertical						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
47.46	46.63	-9.83	36.80	40.00	-3.20	QP
53.28	46.80	-9.98	36.82	40.00	-3.18	QP
68.80	44.34	-12.20	32.14	40.00	-7.86	QP
97.90	53.84	-15.06	38.79	43.50	-4.71	Peak
156.10	47.25	-9.92	37.32	43.50	-6.18	Peak
249.22	40.66	-10.69	29.96	46.00	-16.04	Peak
575.14	38.11	-2.40	35.71	46.00	-10.29	Peak
959.26	30.79	4.17	34.96	46.00	-11.04	Peak

Remark:

1. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit.
2. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
4. Result (dBμV/m) = Reading (dBμV) + Correction Factor (dB/m)
5. Margin (dB) = Remark result (dBμV/m) - Quasi-peak limit (dBμV/m).



Product Name	HD Pan & Tilt Wi-Fi Day/Night Camera	Test By	Davis Tseng
Test Model	DCS-5030L,DCS-5030LA1	Test Date	2015/03/02
Test Mode	Mode 2	Temp. & Humidity	23°C, 50%

966 Chamber_A at 3Meter / Horizontal						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
90.14	49.78	-16.19	33.59	43.50	-9.91	Peak
97.90	48.20	-15.06	33.14	43.50	-10.36	Peak
142.52	41.70	-10.18	31.51	43.50	-11.99	Peak
156.10	45.12	-9.92	35.20	43.50	-8.30	Peak
249.22	40.27	-10.69	29.58	46.00	-16.42	Peak
480.08	33.01	-4.31	28.70	46.00	-17.30	Peak
959.26	28.61	4.17	32.78	46.00	-13.22	Peak
966 Chamber_A at 3Meter / Vertical						
Frequency (MHz)	Reading (dBμV)	Correction Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
47.46	46.66	-9.83	36.83	40.00	-3.17	QP
55.22	46.69	-10.14	36.55	40.00	-3.45	QP
68.80	45.14	-12.20	32.94	40.00	-7.06	QP
90.14	53.27	-16.19	37.08	43.50	-6.42	Peak
97.90	48.17	-15.06	33.11	43.50	-10.39	QP
154.16	45.64	-9.96	35.68	43.50	-7.82	QP
575.14	40.08	-2.40	37.69	46.00	-8.31	Peak
959.26	32.62	4.17	36.79	46.00	-9.21	Peak

Remark:

1. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit.
2. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
4. Result (dBμV/m) = Reading (dBμV) + Correction Factor (dB/m)
5. Margin (dB) = Remark result (dBμV/m) - Quasi-peak limit (dBμV/m).



Above 1 GHz

Product Name	HD Pan & Tilt Wi-Fi Day/Night Camera	Test By	Davis Tseng
Test Model	DCS-5030L,DCS-5030LA1	Test Date	2015/01/21
Test Mode	IEEE 802.11b TX / CH Low	Temp. & Humidity	24°C, 52%

966 Chamber_B at 3Meter / Horizontal									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
1844.00	48.54	---	0.33	48.87	---	74.00	54.00	-5.13	Peak
2282.00	48.60	---	2.47	51.08	---	74.00	54.00	-2.92	Peak
2498.00	46.86	---	3.01	49.87	---	74.00	54.00	-4.13	Peak
5565.00	40.17	---	10.28	50.45	---	74.00	54.00	-3.55	Peak
7140.00	39.18	---	11.99	51.16	---	74.00	54.00	-2.84	Peak
9600.00	38.80	---	14.08	52.88	---	74.00	54.00	-1.12	Peak
966 Chamber_B at 3Meter / Vertical									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
1202.00	52.28	---	-3.18	49.10	---	74.00	54.00	-4.90	Peak
2030.00	49.19	---	1.85	51.05	---	74.00	54.00	-2.95	Peak
2296.00	50.01	---	2.51	52.52	---	74.00	54.00	-1.48	Peak
2486.00	49.80	---	2.98	52.77	---	74.00	54.00	-1.23	Peak
4710.00	40.65	---	7.91	48.56	---	74.00	54.00	-5.44	Peak
7020.00	39.75	---	12.26	52.02	---	74.00	54.00	-1.98	Peak
9480.00	38.85	---	13.88	52.72	---	74.00	54.00	-1.28	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



Product Name	HD Pan & Tilt Wi-Fi Day/Night Camera	Test By	Rex Chiu
Test Model	DCS-5030L,DCS-5030LA1	Test Date	2015/01/22
Test Mode	IEEE 802.11b TX / CH Middle	Temp. & Humidity	22°C, 56%

966 Chamber_B at 3Meter / Horizontal									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
2018.00	43.94	---	1.82	45.77	---	74.00	54.00	-8.23	Peak
2366.00	45.25	---	2.68	47.93	---	74.00	54.00	-6.07	Peak
2520.00	43.61	---	3.05	46.66	---	74.00	54.00	-7.34	Peak
3495.00	42.61	---	5.02	47.63	---	74.00	54.00	-6.37	Peak
4875.00	44.57	---	8.04	52.61	---	74.00	54.00	-1.39	Peak
7080.00	39.47	---	12.13	51.59	---	74.00	54.00	-2.41	Peak
966 Chamber_B at 3Meter / Vertical									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
2108.00	43.61	---	2.05	45.66	---	74.00	54.00	-8.34	Peak
2390.00	52.23	41.98	2.74	54.97	44.72	74.00	54.00	-9.28	AVG
2484.00	48.54	---	2.97	51.51	---	74.00	54.00	-2.49	Peak
3240.00	43.00	---	4.51	47.51	---	74.00	54.00	-6.49	Peak
4875.00	44.55	---	8.04	52.59	---	74.00	54.00	-1.41	Peak
7305.00	41.59	33.66	11.61	53.20	45.27	74.00	54.00	-8.73	AVG

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(AV)
Remark AVG = Result(AV) – Limit(AV)



Product Name	HD Pan & Tilt Wi-Fi Day/Night Camera	Test By	Davis Tseng
Test Model	DCS-5030L, DCS-5030LA1	Test Date	2015/01/21
Test Mode	IEEE 802.11b TX / CH High	Temp. & Humidity	24°C, 52%

966 Chamber_B at 3Meter / Horizontal									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
1198.00	51.47	---	-3.18	48.29	---	74.00	54.00	-5.71	Peak
2242.00	47.71	---	2.38	50.08	---	74.00	54.00	-3.92	Peak
2384.00	47.59	---	2.72	50.31	---	74.00	54.00	-3.69	Peak
4920.00	46.77	42.65	8.08	54.85	50.73	74.00	54.00	-3.27	AVG
6990.00	39.96	---	12.30	52.26	---	74.00	54.00	-1.74	Peak
8595.00	39.15	---	12.68	51.83	---	74.00	54.00	-2.17	Peak
966 Chamber_B at 3Meter / Vertical									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
1828.00	47.87	---	0.18	48.05	---	74.00	54.00	-5.95	Peak
2254.00	47.68	---	2.40	50.09	---	74.00	54.00	-3.91	Peak
2384.00	51.29	39.31	2.72	54.02	42.03	74.00	54.00	-11.97	AVG
4920.00	45.27	41.87	8.08	53.35	49.95	74.00	54.00	-4.05	AVG
7380.00	40.50	---	11.44	51.94	---	74.00	54.00	-2.06	Peak
8610.00	38.91	---	12.67	51.57	---	74.00	54.00	-2.43	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



Product Name	HD Pan & Tilt Wi-Fi Day/Night Camera	Test By	Rex Chiu
Test Model	DCS-5030L, DCS-5030LA1	Test Date	2015/01/22
Test Mode	IEEE 802.11g TX / CH Low	Temp. & Humidity	22°C, 56%

966 Chamber_B at 3Meter / Horizontal									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
1202.00	50.36	---	-3.18	47.18	---	74.00	54.00	-6.82	Peak
2040.00	45.26	---	1.88	47.14	---	74.00	54.00	-6.86	Peak
2624.00	45.43	---	3.26	48.69	---	74.00	54.00	-5.31	Peak
3210.00	42.30	---	4.45	46.75	---	74.00	54.00	-7.25	Peak
4830.00	40.57	---	8.00	48.57	---	74.00	54.00	-5.43	Peak
7020.00	39.36	---	12.26	51.62	---	74.00	54.00	-2.38	Peak
966 Chamber_B at 3Meter / Vertical									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
1880.00	46.06	---	0.67	46.72	---	74.00	54.00	-7.28	Peak
2308.00	49.80	---	2.54	52.33	---	74.00	54.00	-1.67	Peak
2484.00	49.69	---	2.97	52.66	---	74.00	54.00	-1.34	Peak
3180.00	43.27	---	4.39	47.66	---	74.00	54.00	-6.34	Peak
4770.00	41.39	---	7.96	49.35	---	74.00	54.00	-4.65	Peak
6630.00	40.24	---	11.82	52.06	---	74.00	54.00	-1.94	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



Product Name	HD Pan & Tilt Wi-Fi Day/Night Camera	Test By	Rex Chiu
Test Model	DCS-5030L, DCS-5030LA1	Test Date	2015/01/22
Test Mode	IEEE 802.11g TX / CH Middle	Temp. & Humidity	22°C, 56%

966 Chamber_B at 3Meter / Horizontal									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
1202.00	50.37	---	-3.18	47.20	---	74.00	54.00	-6.80	Peak
2384.00	50.16	36.56	2.72	52.89	39.28	74.00	54.00	-14.72	AVG
2484.00	47.54	---	2.97	50.51	---	74.00	54.00	-3.49	Peak
3210.00	41.88	---	4.45	46.33	---	74.00	54.00	-7.67	Peak
4875.00	42.00	---	8.04	50.04	---	74.00	54.00	-3.96	Peak
6930.00	39.01	---	12.22	51.23	---	74.00	54.00	-2.77	Peak
966 Chamber_B at 3Meter / Vertical									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
2060.00	45.58	---	1.93	47.51	---	74.00	54.00	-6.49	Peak
2388.00	55.72	42.36	2.73	58.46	45.09	74.00	54.00	-8.91	AVG
2484.00	54.37	39.06	2.97	57.34	42.03	74.00	54.00	-11.97	AVG
3150.00	42.04	---	4.33	46.37	---	74.00	54.00	-7.63	Peak
4875.00	41.81	---	8.04	49.85	---	74.00	54.00	-4.15	Peak
7305.00	40.74	---	11.61	52.35	---	74.00	54.00	-1.65	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



Product Name	HD Pan & Tilt Wi-Fi Day/Night Camera	Test By	Rex Chiu
Test Model	DCS-5030L,DCS-5030LA1	Test Date	2015/01/22
Test Mode	IEEE 802.11g TX / CH High	Temp. & Humidity	22°C, 56%

966 Chamber_B at 3Meter / Horizontal									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
1202.00	50.71	---	-3.18	47.53	---	74.00	54.00	-6.47	Peak
2352.00	49.33	---	2.65	51.98	---	74.00	54.00	-2.02	Peak
2388.00	49.47	---	2.73	52.21	---	74.00	54.00	-1.79	Peak
3150.00	42.59	---	4.33	46.92	---	74.00	54.00	-7.08	Peak
4920.00	40.64	---	8.08	48.71	---	74.00	54.00	-5.29	Peak
7095.00	39.14	---	12.09	51.23	---	74.00	54.00	-2.77	Peak
966 Chamber_B at 3Meter / Vertical									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
1198.00	51.14	---	-3.18	47.96	---	74.00	54.00	-6.04	Peak
2384.00	55.69	42.51	2.72	58.42	45.23	74.00	54.00	-8.77	AVG
2502.00	52.82	40.90	3.01	55.83	43.91	74.00	54.00	-10.09	AVG
3270.00	43.06	---	4.57	47.63	---	74.00	54.00	-6.37	Peak
4920.00	41.58	---	8.08	49.66	---	74.00	54.00	-4.34	Peak
7110.00	40.13	---	12.06	52.19	---	74.00	54.00	-1.81	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



Product Name	HD Pan & Tilt Wi-Fi Day/Night Camera	Test By	Rex Chiu
Test Model	DCS-5030L, DCS-5030LA1	Test Date	2015/01/22
Test Mode	IEEE 802.11n HT20 TX / CH Low	Temp. & Humidity	22°C, 56%

966 Chamber_B at 3Meter / Horizontal									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
1852.00	48.77	---	0.41	49.18	---	74.00	54.00	-4.82	Peak
2050.00	47.37	---	1.90	49.27	---	74.00	54.00	-4.73	Peak
2494.00	47.88	---	3.00	50.87	---	74.00	54.00	-3.13	Peak
4620.00	40.51	---	7.84	48.35	---	74.00	54.00	-5.65	Peak
7035.00	39.00	---	12.23	51.23	---	74.00	54.00	-2.77	Peak
8760.00	39.04	---	12.54	51.58	---	74.00	54.00	-2.42	Peak
966 Chamber_B at 3Meter / Vertical									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
1626.00	49.36	---	-1.69	47.67	---	74.00	54.00	-6.33	Peak
2224.00	49.07	---	2.33	51.40	---	74.00	54.00	-2.60	Peak
2484.00	52.14	38.36	2.97	55.11	41.33	74.00	54.00	-12.67	AVG
5655.00	39.42	---	10.54	49.96	---	74.00	54.00	-4.04	Peak
6930.00	39.19	---	12.22	51.40	---	74.00	54.00	-2.60	Peak
9525.00	37.90	---	13.97	51.88	---	74.00	54.00	-2.12	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
 Margin = Result - Limit
 Remark Peak = Result(PK) - Limit(AV)
 Remark AVG = Result(AV) - Limit(AV)



Product Name	HD Pan & Tilt Wi-Fi Day/Night Camera	Test By	Davis Tseng
Test Model	DCS-5030L,DCS-5030LA1	Test Date	2015/01/21
Test Mode	IEEE 802.11n HT20 TX / CH Middle	Temp. & Humidity	24°C, 52%

966 Chamber_B at 3Meter / Horizontal									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
1202.00	50.98	---	-3.18	47.80	---	74.00	54.00	-6.20	Peak
2024.00	44.16	---	1.84	46.00	---	74.00	54.00	-8.00	Peak
2390.00	49.22	---	2.74	51.96	---	74.00	54.00	-2.04	Peak
3675.00	41.84	---	5.36	47.19	---	74.00	54.00	-6.81	Peak
4875.00	42.18	---	8.04	50.22	---	74.00	54.00	-3.78	Peak
6735.00	39.55	---	11.96	51.51	---	74.00	54.00	-2.49	Peak
966 Chamber_B at 3Meter / Vertical									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
2076.00	44.21	---	1.97	46.18	---	74.00	54.00	-7.82	Peak
2390.00	56.98	42.31	2.74	59.72	45.05	74.00	54.00	-8.95	AVG
2484.00	53.94	40.04	2.97	56.92	43.01	74.00	54.00	-10.99	AVG
3420.00	42.00	---	4.87	46.87	---	74.00	54.00	-7.13	Peak
4875.00	41.14	---	8.04	49.18	---	74.00	54.00	-4.82	Peak
7305.00	41.21	32.23	11.61	52.82	43.84	74.00	54.00	-10.16	AVG

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



Product Name	HD Pan & Tilt Wi-Fi Day/Night Camera	Test By	Davis Tseng
Test Model	DCS-5030L,DCS-5030LA1	Test Date	2015/01/21
Test Mode	IEEE 802.11n HT20 TX / CH High	Temp. & Humidity	24°C, 52%

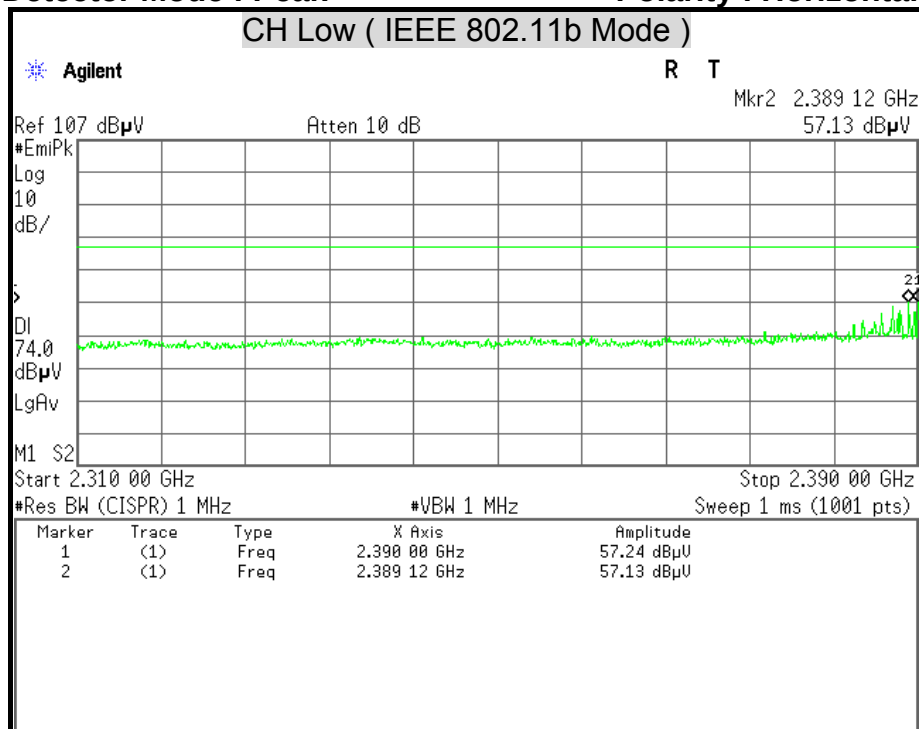
966 Chamber_B at 3Meter / Horizontal									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
1376.00	49.58	---	-2.99	46.59	---	74.00	54.00	-7.41	Peak
1862.00	49.58	---	0.50	50.08	---	74.00	54.00	-3.92	Peak
2128.00	47.80	---	2.09	49.90	---	74.00	54.00	-4.10	Peak
2390.00	50.92	38.63	2.75	53.67	41.38	74.00	54.00	-12.62	AVG
4920.00	40.85	---	8.08	48.93	---	74.00	54.00	-5.07	Peak
6900.00	39.07	---	12.18	51.25	---	74.00	54.00	-2.75	Peak
8340.00	38.47	---	12.66	51.12	---	74.00	54.00	-2.88	Peak
966 Chamber_B at 3Meter / Vertical									
Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Remark
1356.00	49.89	---	-3.01	46.87	---	74.00	54.00	-7.13	Peak
1778.00	48.33	---	-0.28	48.05	---	74.00	54.00	-5.95	Peak
2002.00	48.08	---	1.78	49.86	---	74.00	54.00	-4.14	Peak
2382.00	55.92	41.75	2.72	58.64	44.47	74.00	54.00	-9.53	AVG
4920.00	41.28	---	8.08	49.36	---	74.00	54.00	-4.64	Peak
7110.00	39.40	---	12.06	51.46	---	74.00	54.00	-2.54	Peak
8025.00	38.55	---	12.46	51.00	---	74.00	54.00	-3.00	Peak

Remark:

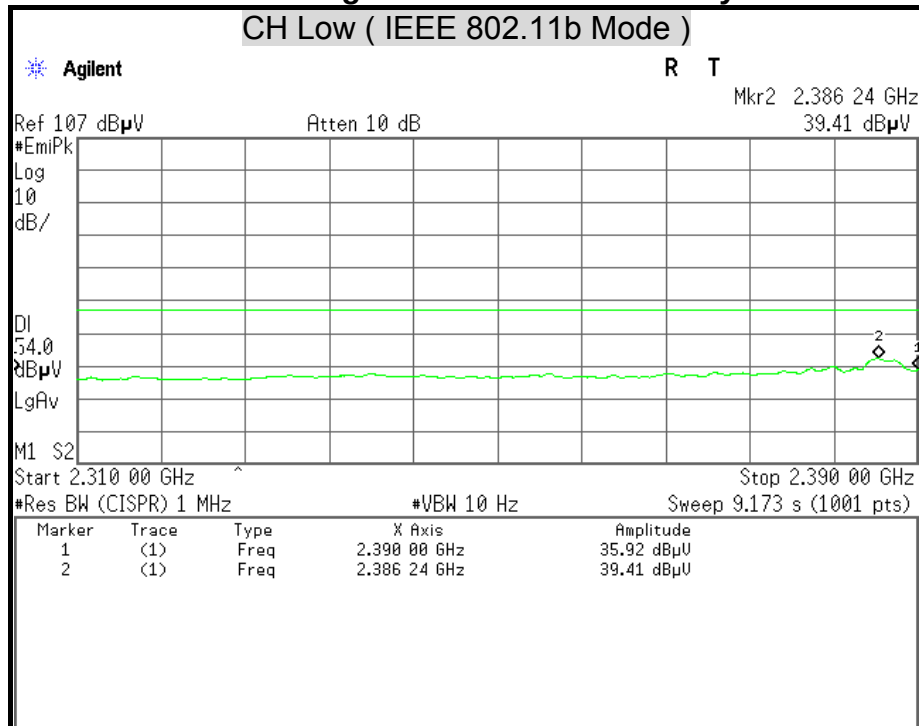
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Result = Reading + Correction Factor
Margin = Result - Limit
Remark Peak = Result(PK) - Limit(AV)
Remark AVG = Result(AV) - Limit(AV)



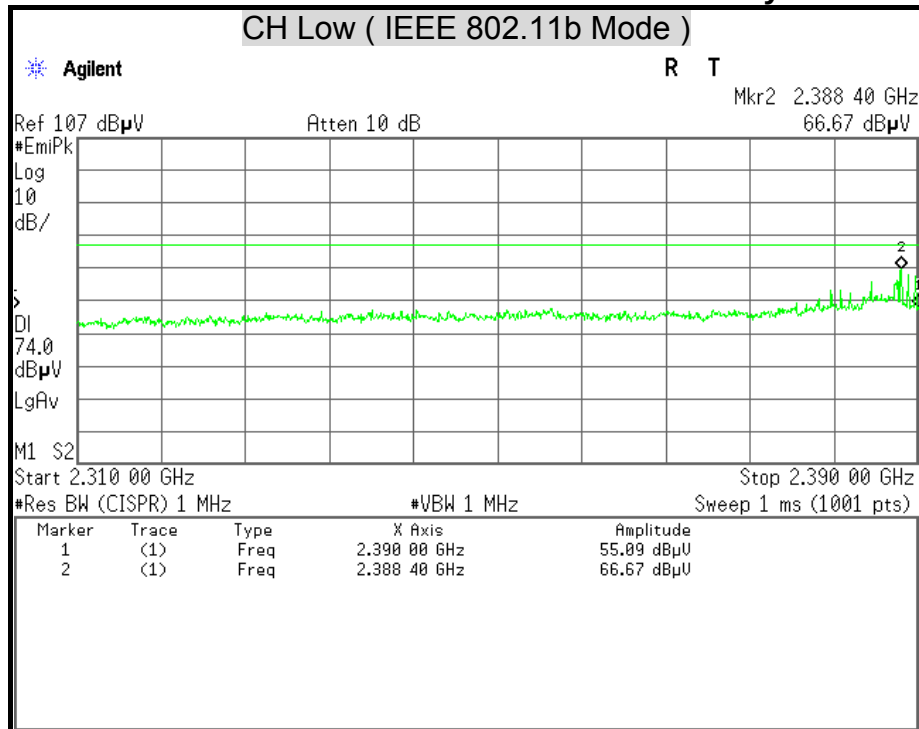
Restricted Band Edges

Detector Mode : Peak**Polarity : Horizontal**

Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

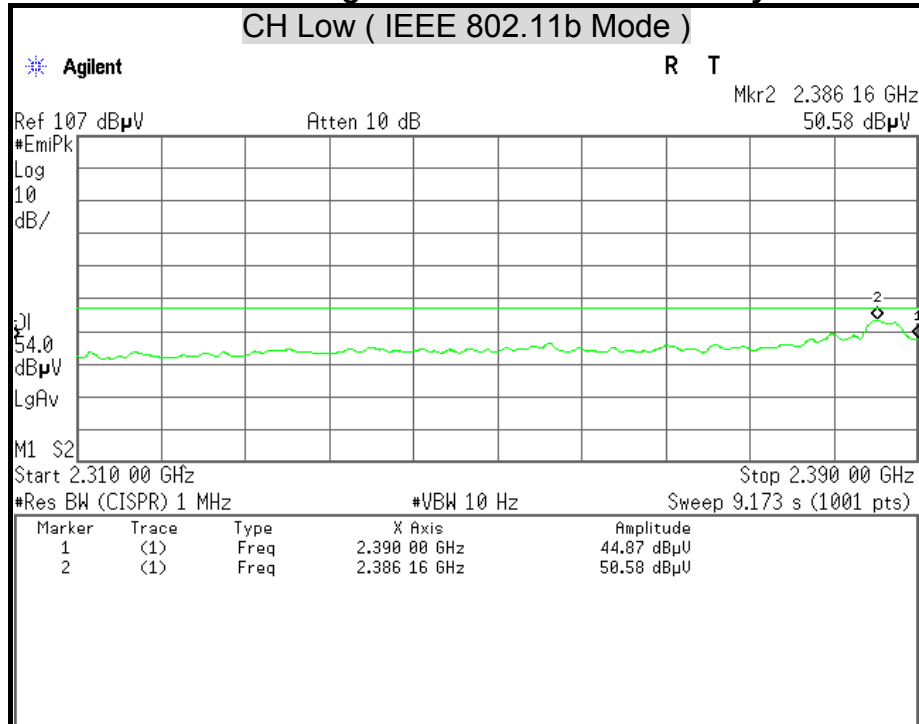
Detector Mode : Average**Polarity : Horizontal**

Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

**Detector Mode : Peak****Polarity : Vertical**

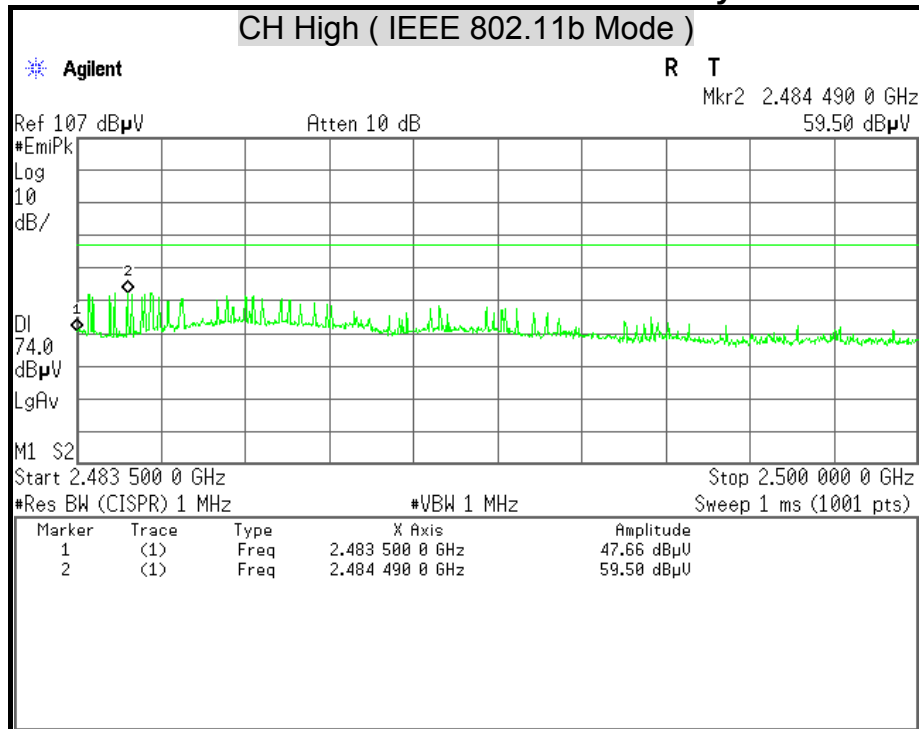
Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

Detector Mode : Average**Polarity : Vertical**

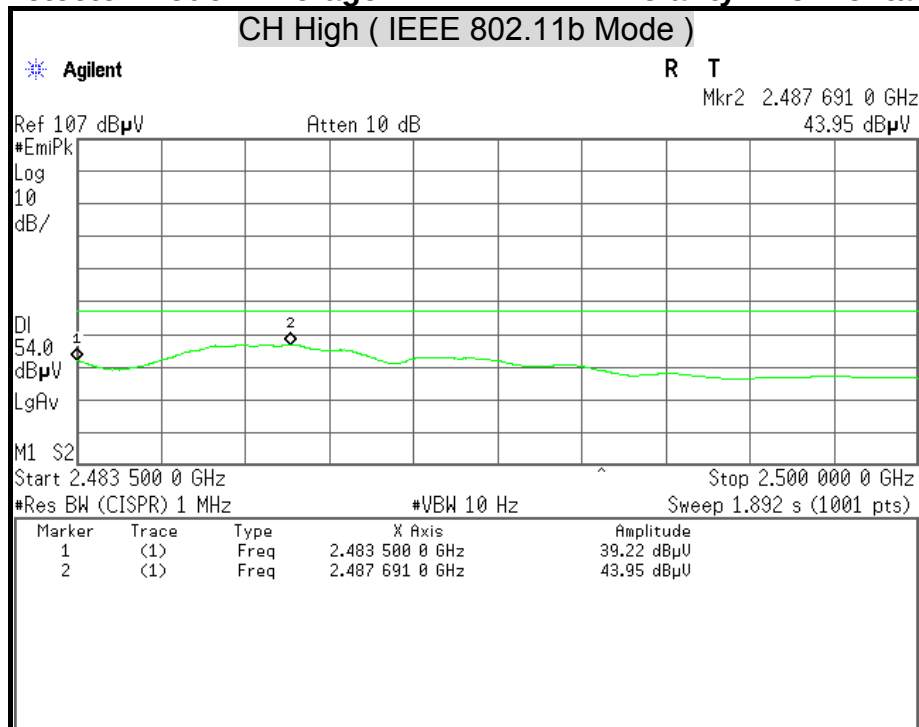
Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

**Detector Mode : Peak****Polarity : Horizontal**

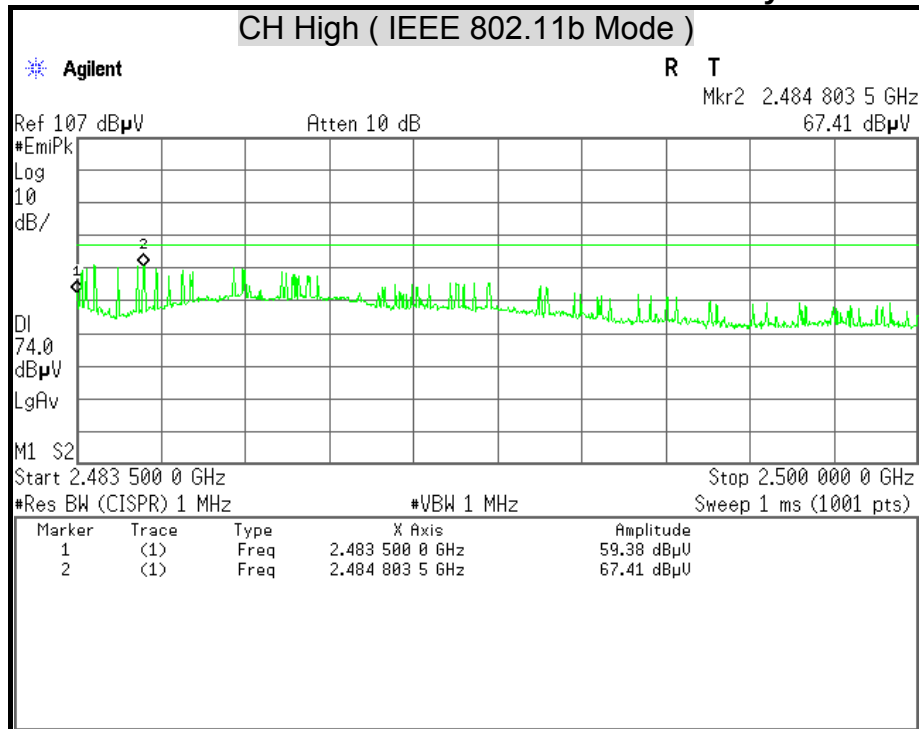
Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

Detector Mode : Average**Polarity : Horizontal**

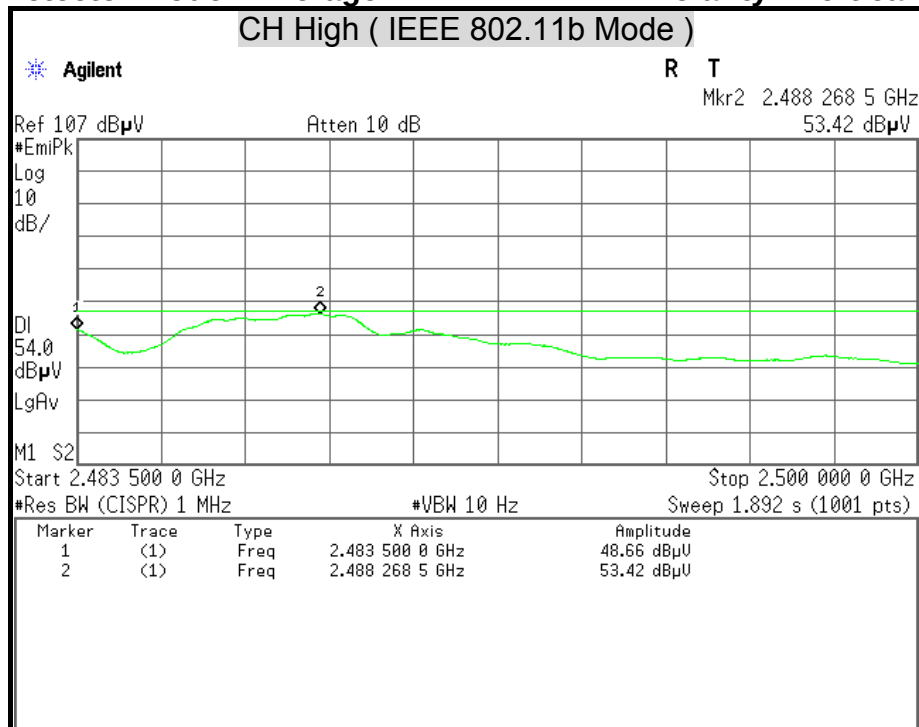
Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

**Detector Mode : Peak****Polarity : Vertical**

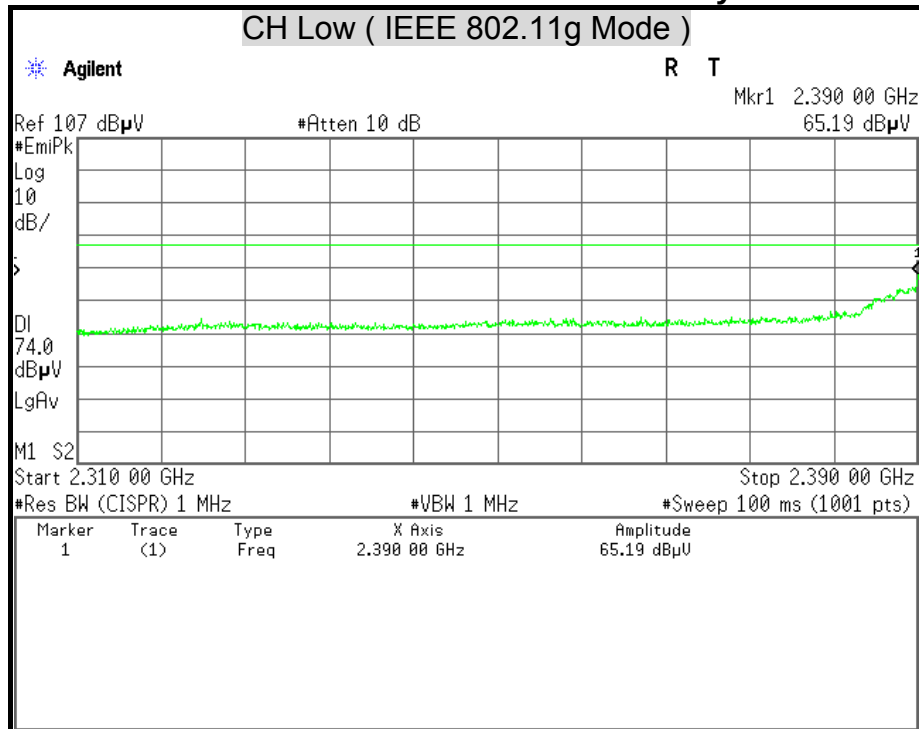
Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

Detector Mode : Average**Polarity : Vertical**

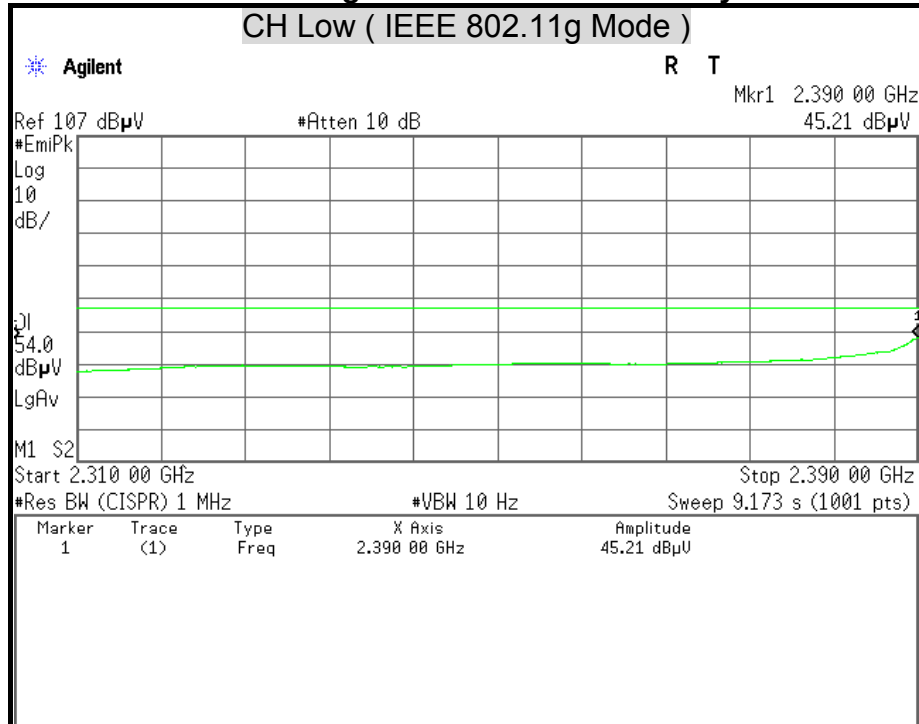
Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

**Detector Mode : Peak****Polarity : Horizontal**

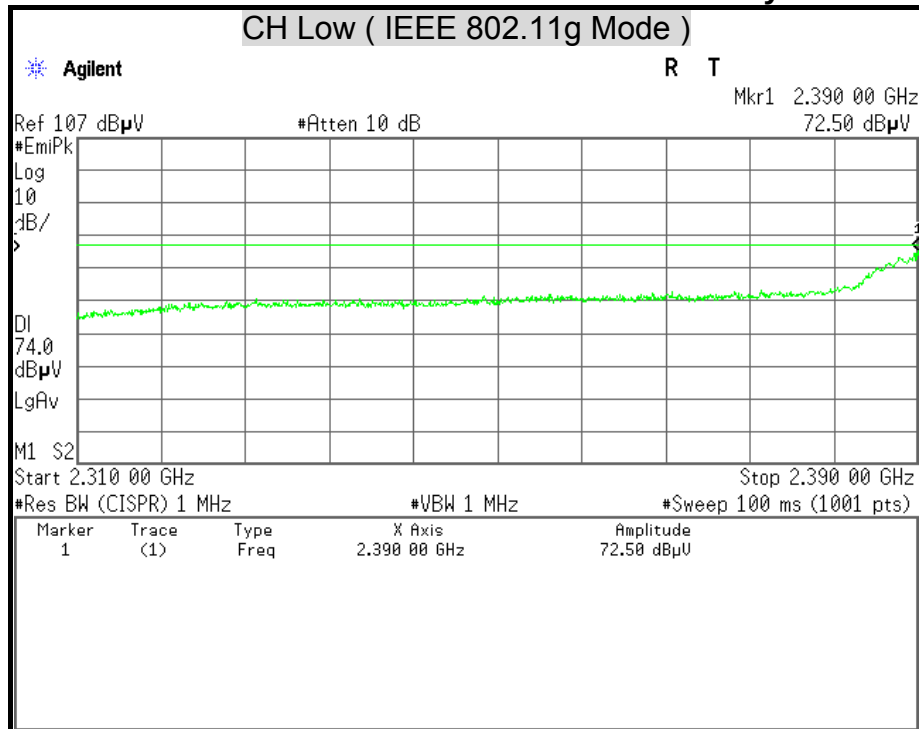
Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

Detector Mode : Average**Polarity : Horizontal**

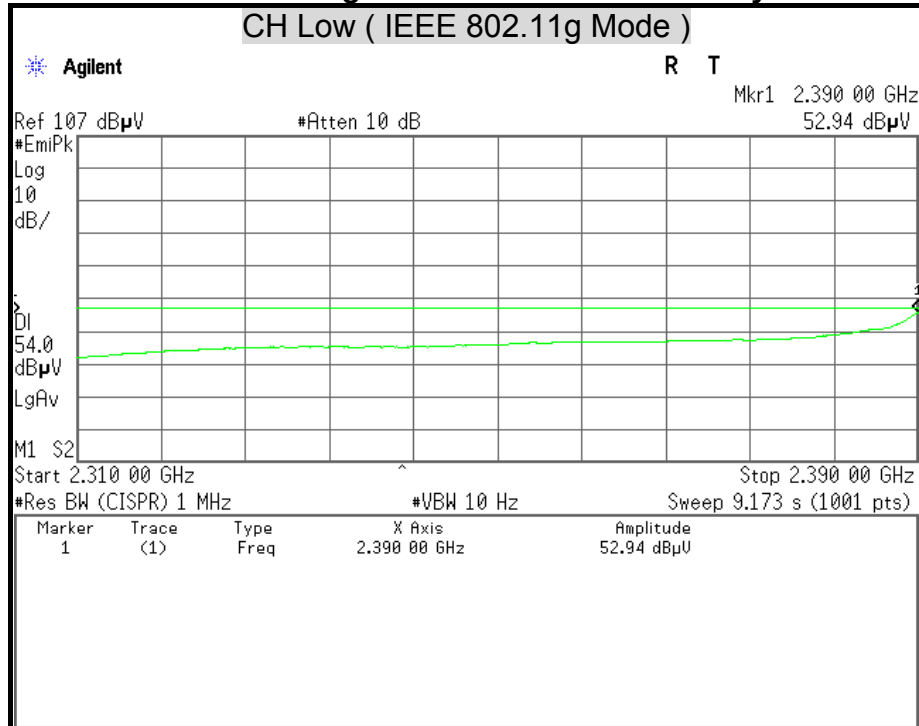
Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

**Detector Mode : Peak****Polarity : Vertical**

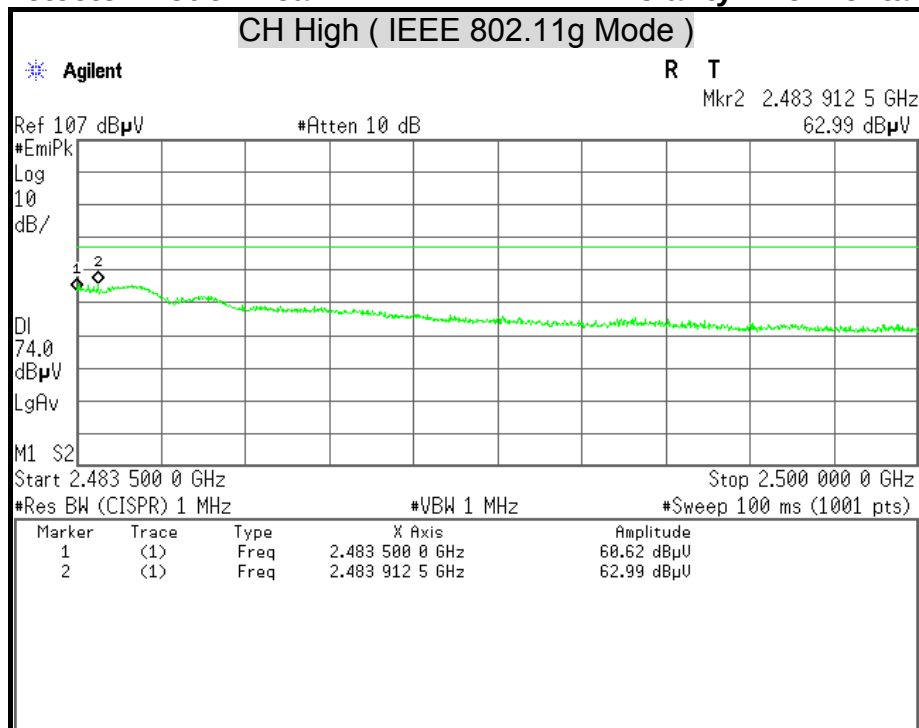
Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

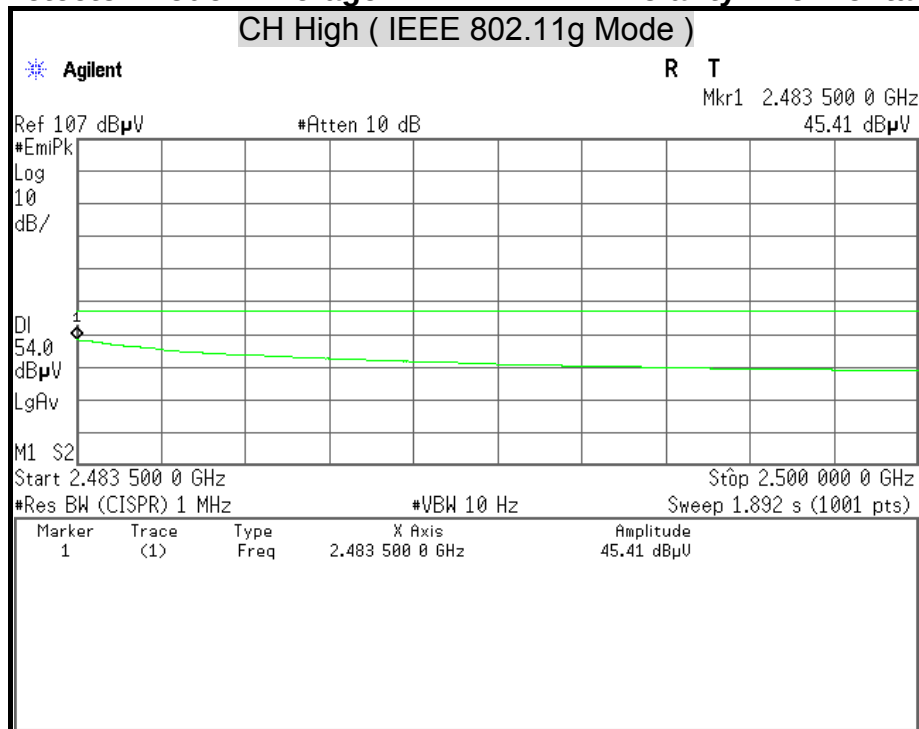
Detector Mode : Average**Polarity : Vertical**

Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

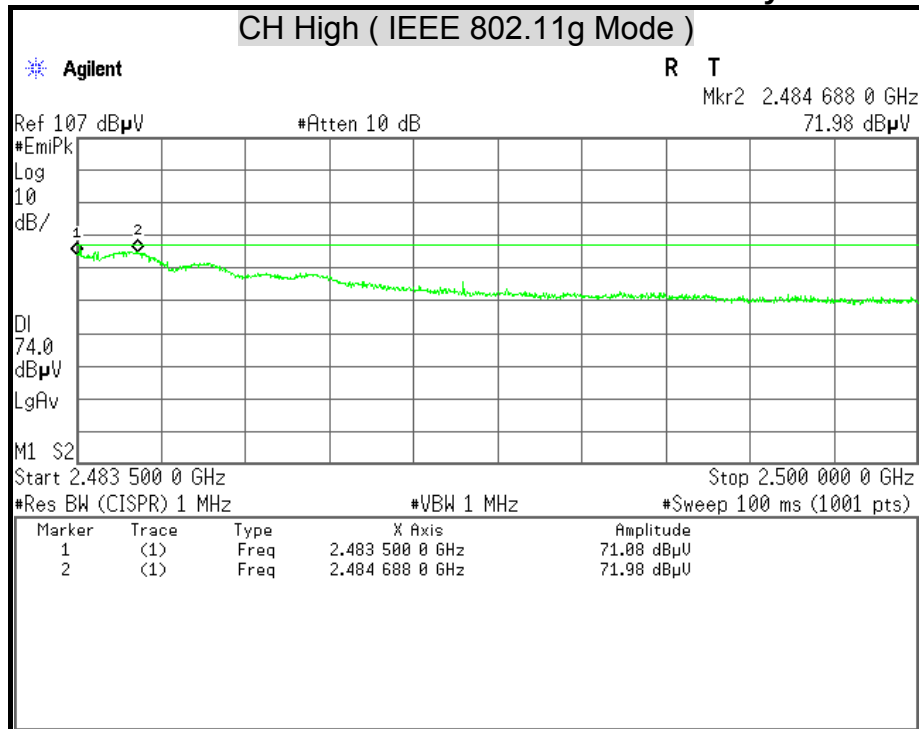
2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

**Detector Mode : Peak****Polarity : Horizontal**

Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

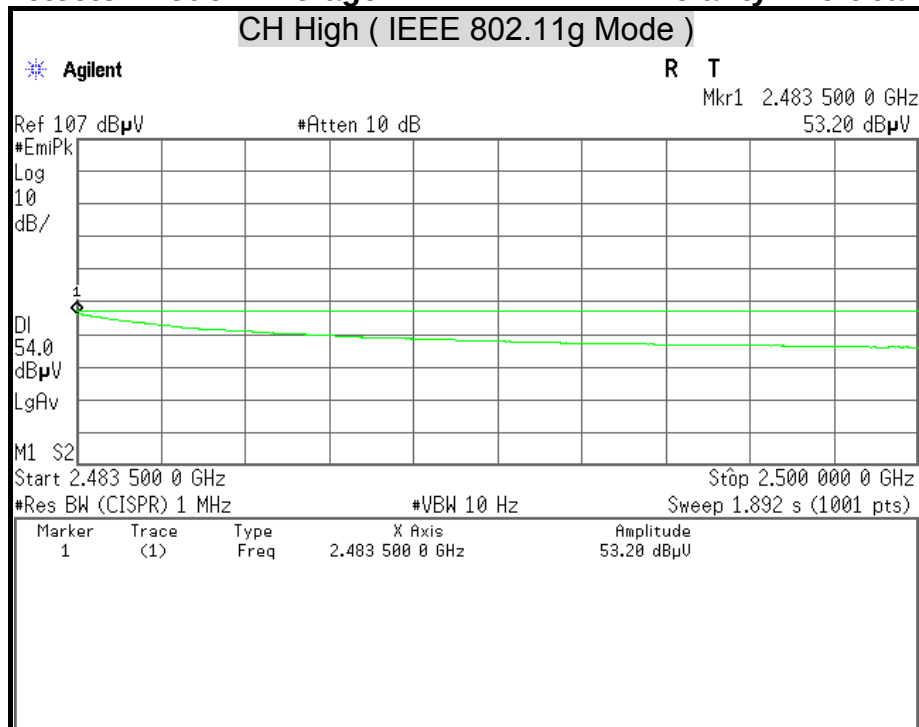
Detector Mode : Average**Polarity : Horizontal**

Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

**Detector Mode : Peak****Polarity : Vertical**

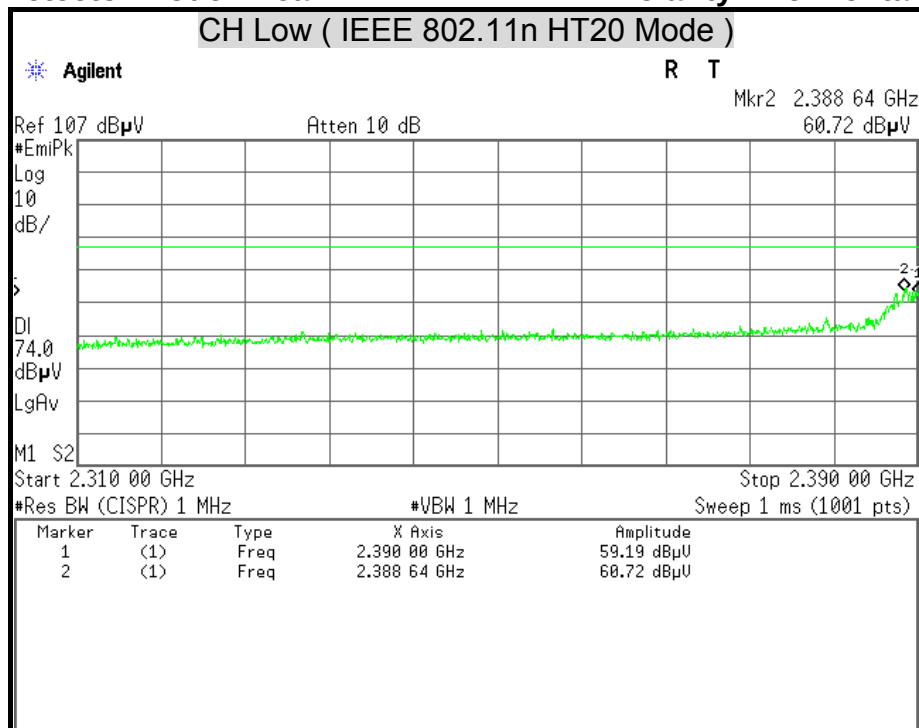
Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

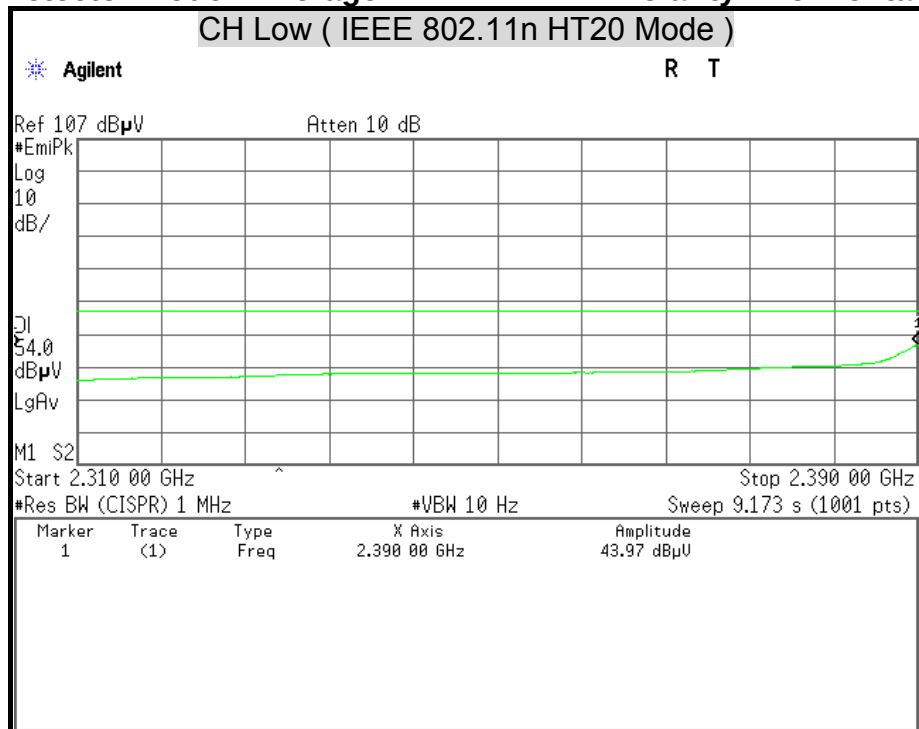
Detector Mode : Average**Polarity : Vertical**

Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

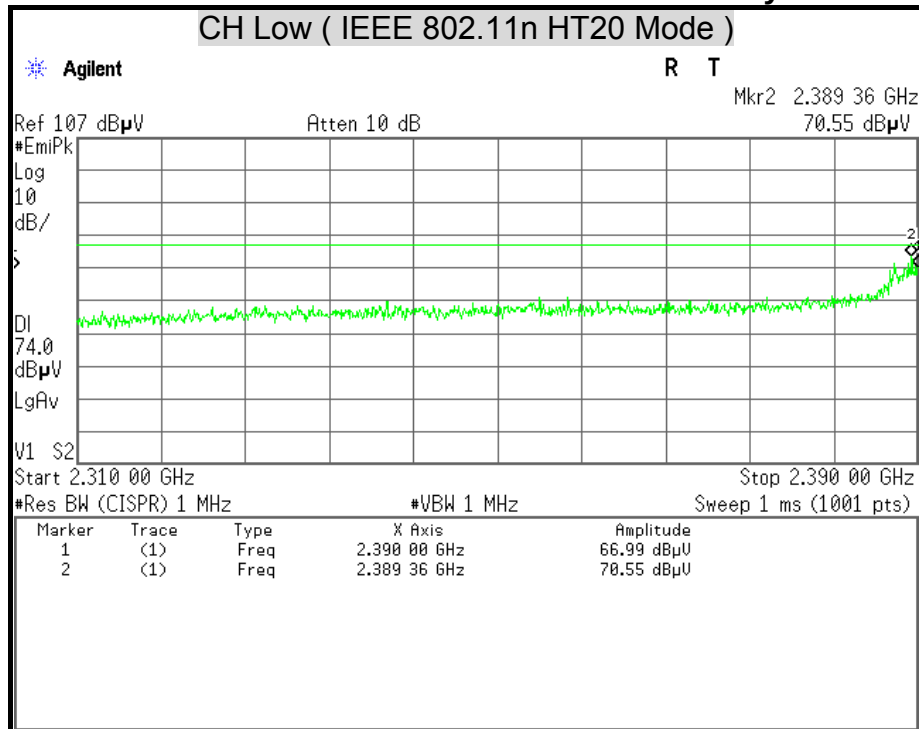
2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

**Detector Mode : Peak****Polarity : Horizontal**

- Remark:** 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

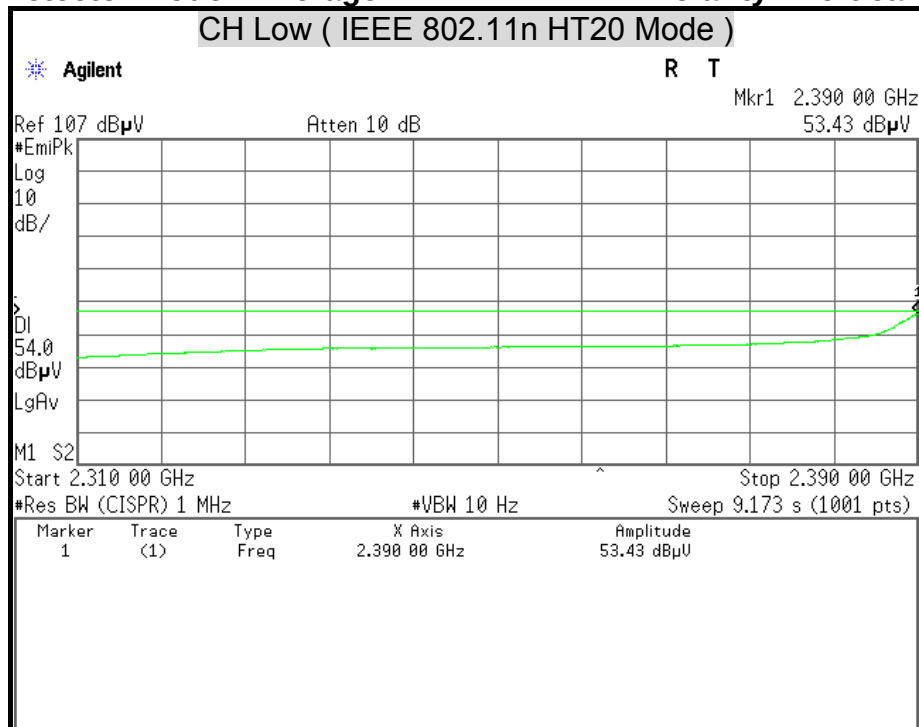
Detector Mode : Average**Polarity : Horizontal**

- Remark:** 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

**Detector Mode : Peak****Polarity : Vertical**

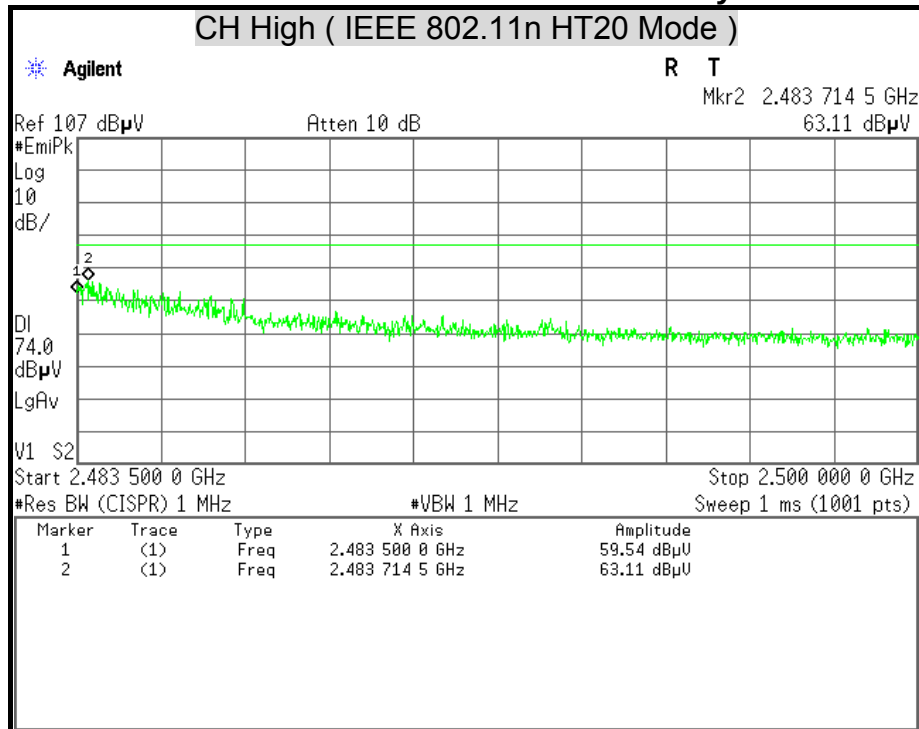
Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

Detector Mode : Average**Polarity : Vertical**

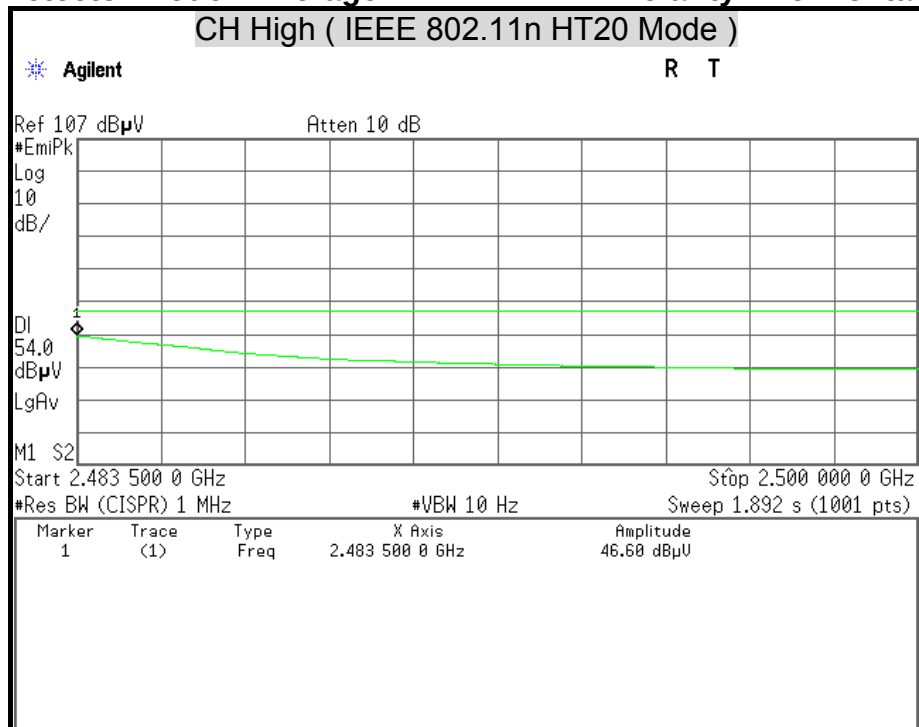
Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

**Detector Mode : Peak****Polarity : Horizontal**

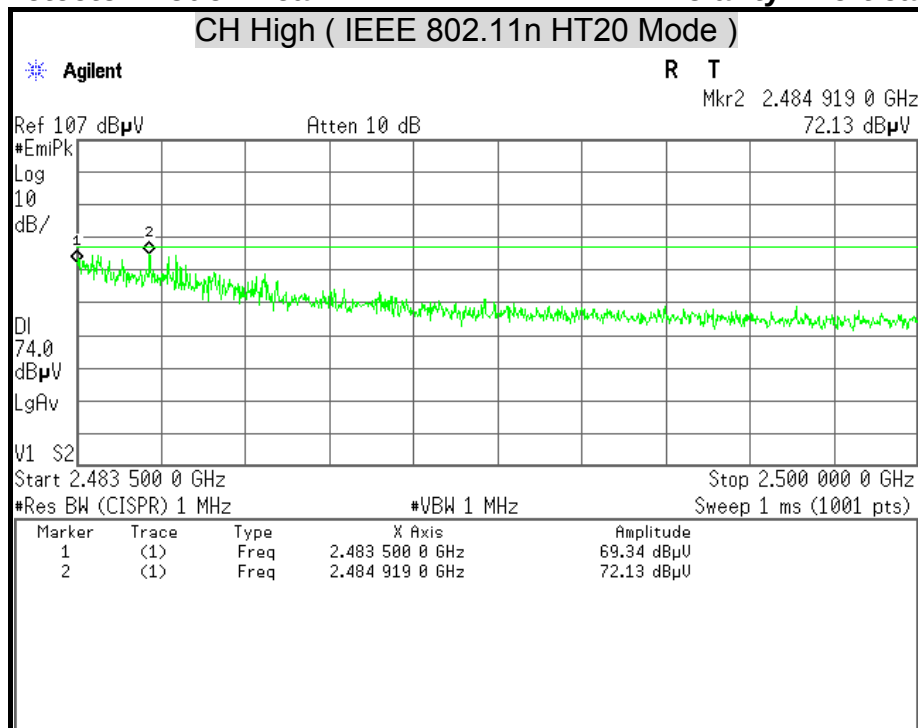
Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

Detector Mode : Average**Polarity : Horizontal**

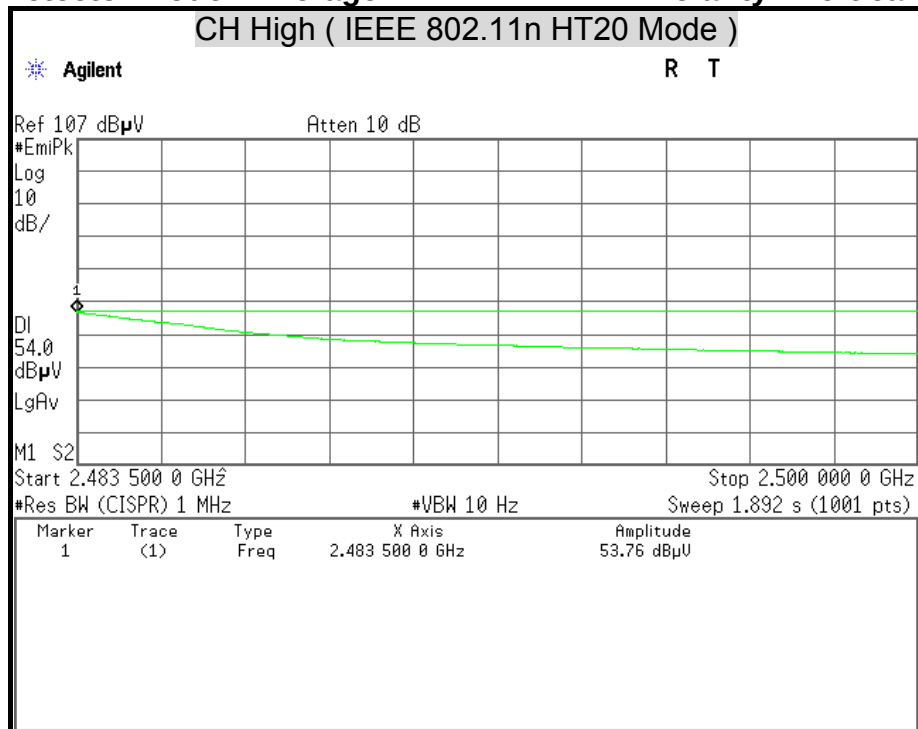
Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

**Detector Mode : Peak****Polarity : Vertical**

Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.

Detector Mode : Average**Polarity : Vertical**

Remark: 1. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)

2. The correction factor was entered as an offset in the spectrum analyzer to allow for direct reading of power.



7.7 CONDUCTED EMISSION

LIMITS

§ 15.207 (a) Except as shown in paragraph (b) and (c) this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Conducted Limit (dB μ v)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5.00	56	46
5.00 - 30.0	60	50

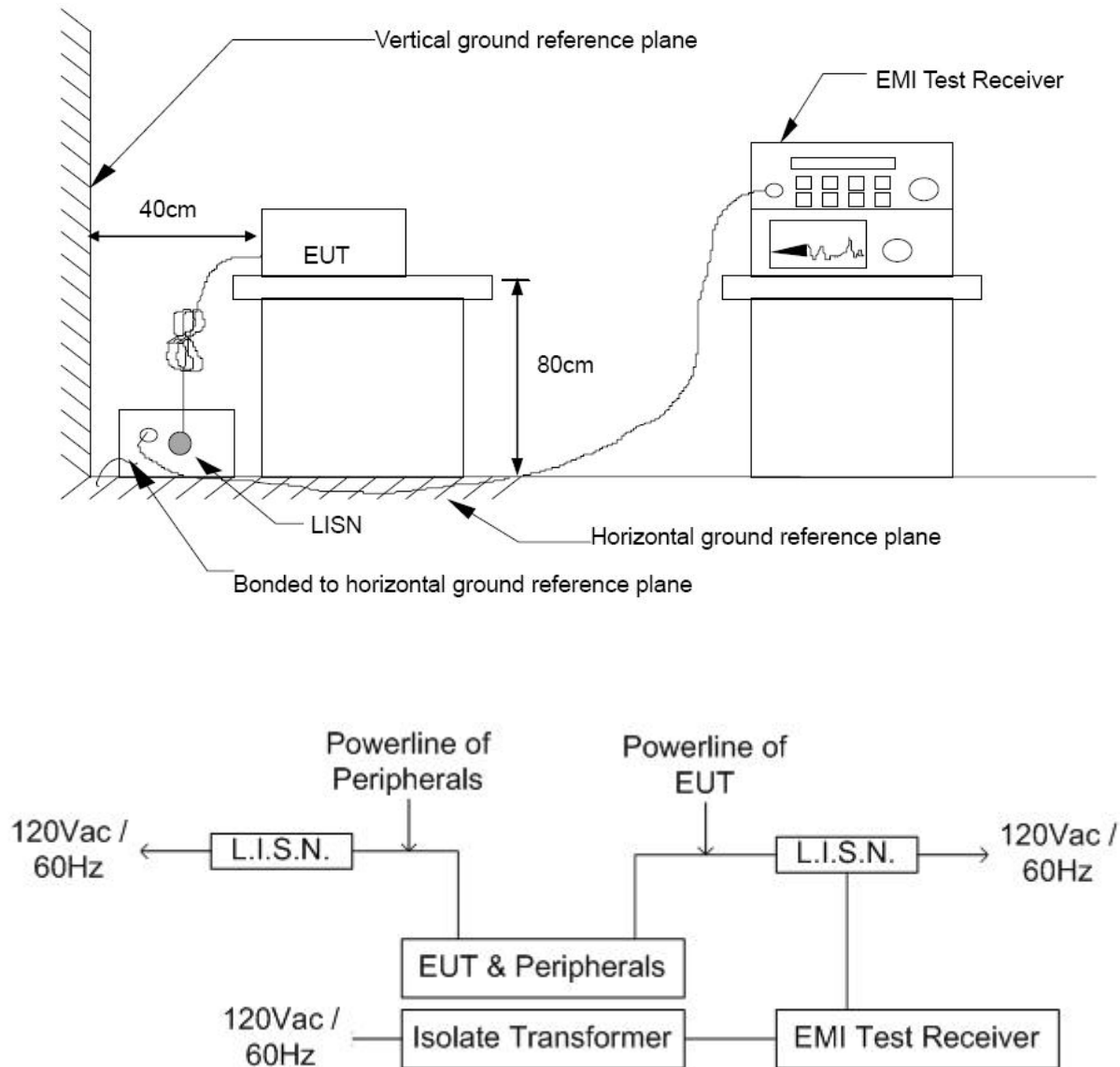
TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
L.I.S.N	SCHWARZBECK	NSLK 8127	8127465	08/06/2015
L.I.S.N	SCHWARZBECK	NSLK 8127	8127473	03/09/2016
EMI Test Receiver	ROHDE & SCHWARZ	ESHS 30	838550/003	11/02/2015
Pulse Limiter	ROHDE & SCHWARZ	ESH3-Z2	100111	06/30/2015

Remark: Each piece of equipment is scheduled for calibration once a year.



TEST SETUP





TEST PROCEDURE

The basic test procedure was in accordance with ANSI C63.10:2009 and ANSI C63.4:2009.

The test procedure is performed in a 4m × 3m × 2.4m (L×W×H) shielded room.

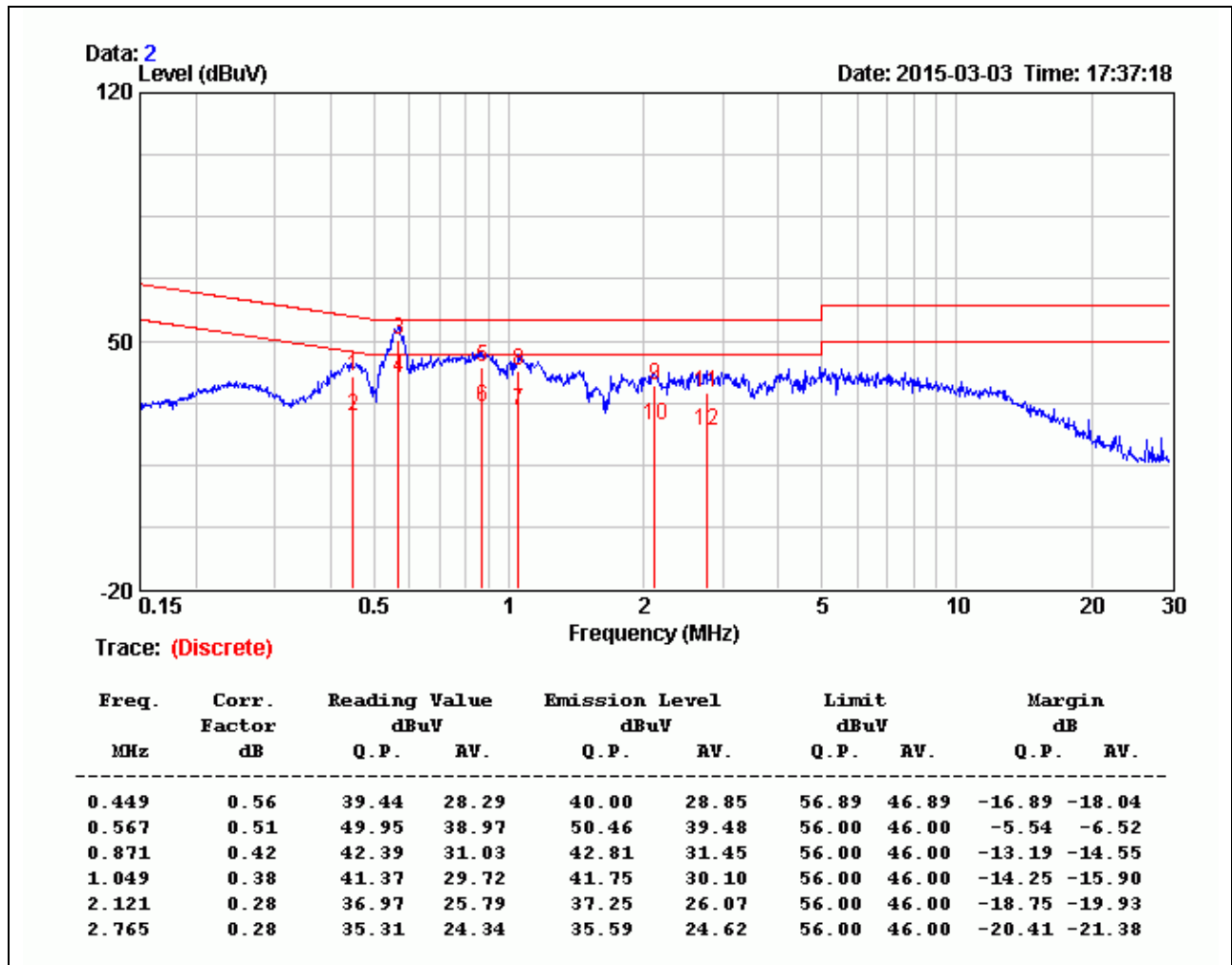
The EUT along with its peripherals were placed on a 1.0m (W) × 1.5m (L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.

The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room.

The EUT was located so that the distance between the boundary of the EUT and the closest surface of the LISN is 0.8 m. Where a mains flexible cord was provided by the manufacturer shall be 1 m long, or if in excess of 1 m, the excess cable was folded back and forth as far as possible so as to form a bundle not exceeding 0.4 m in length.

**TEST RESULTS**

Product Name	HD Pan & Tilt Wi-Fi Day/Night Camera	Test By	Jey Li
Test Model	DCS-5030L,DCS-5030LA1	Test Date	2015/03/03
Test Mode	Mode 2	Temp. & Humidity	20 °C, 43%

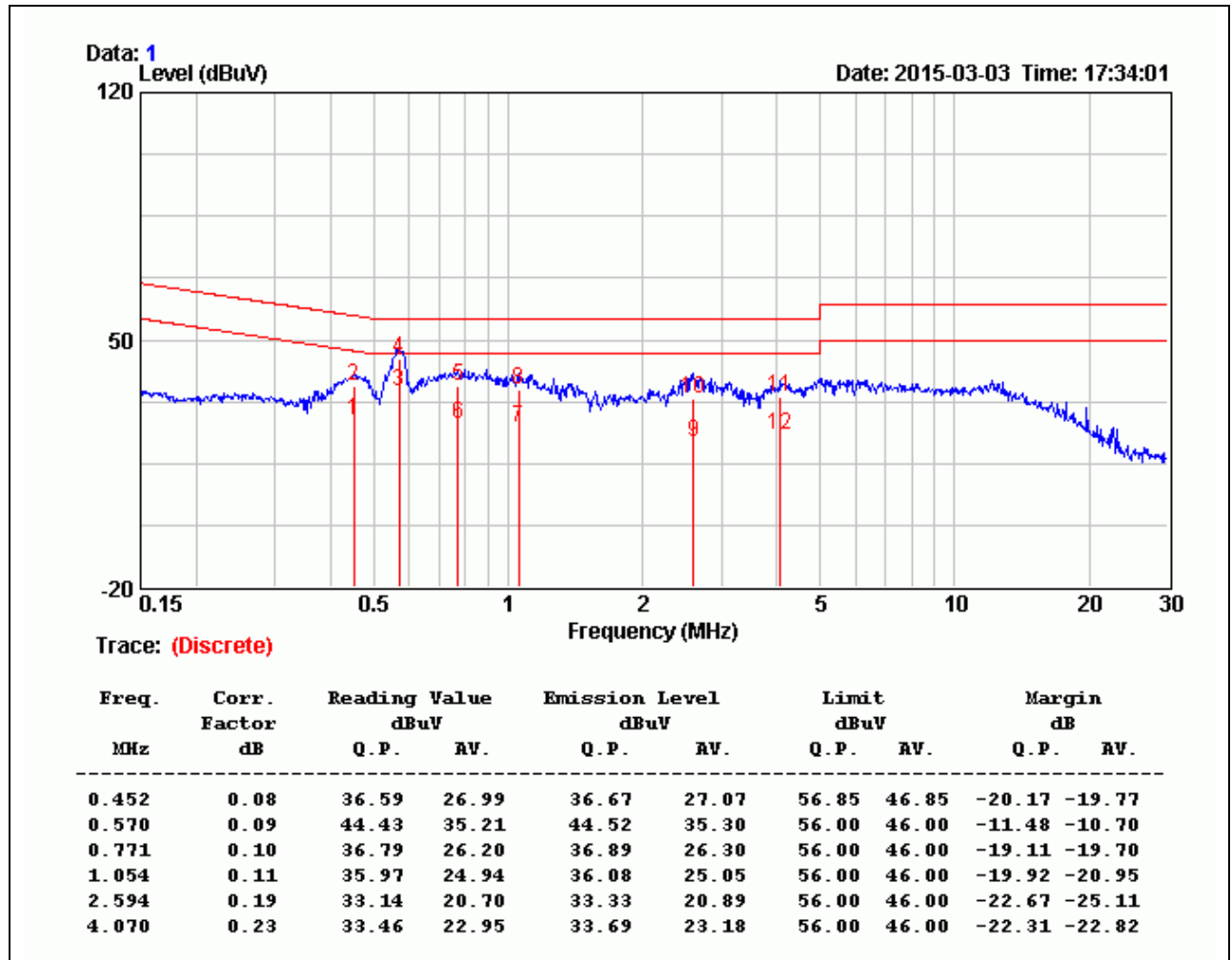
LINE**Remark:**

1. Correction Factor = Insertion loss + Cable loss
2. Emission level = Reading Value + Correction factor
3. Margin value = Emission level – Limit value



Product Name	HD Pan & Tilt Wi-Fi Day/Night Camera	Test By	Jey Li
Test Model	DCS-5030L,DCS-5030LA1	Test Date	2015/03/03
Test Mode	Mode 2	Temp. & Humidity	20 °C, 43%

NEUTRAL



Remark:

1. Correction Factor = Insertion loss + Cable loss
2. Emission level = Reading Value + Correction factor
3. Margin value = Emission level – Limit value