

### 3.2.4 Out of band Emission – Radiated

#### - Procedure:

The EUT was placed on a 0.8m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

The spectrum analyzer is set to:

Tested frequency = Low, Middle, High Frequencies

Frequency Range = 30 MHz ~ 10th harmonic.

RBW and VBW = 1. Frequency range: 30MHz ~ 1GHz

RBW = 120KHz / VBW =  $\geq$  RBW

2. Frequency range: 1GHz ~ 10<sup>th</sup> harmonics or 40 GHz

Peak mode: RBW = 1MHz / VBW =  $\geq$  RBW

Average mode: RBW = 1MHz / VBW = 10Hz

Detector function = Peak

Sweep = auto

Trace = max hold

#### - Measurement Data: **Comply**

Note 1: All modes of operation were tested and the worst case data are reported.

#### - Minimum Standard:

##### • FCC Part 15.209(a) and (b)

Frequency (MHz)	Limit (uV/m) @ 3m
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

\*\* Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

##### • FCC Part 15.205 (a): Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	3600 ~ 4400	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	4.5 ~ 5.15	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~	149.9 ~ 150.05	1645.5 ~ 1646.5	5.35 ~ 5.46	17.7 ~ 21.4
4.125 ~ 4.128	12.52025	156.52475 ~	1660 ~ 1710	7.25 ~ 7.75	22.01 ~ 23.12
4.17725 ~ 4.17775	12.57675 ~	156.52525	1718.8 ~ 1722.2	8.025 ~ 8.5	23.6 ~ 24.0
4.20725 ~ 4.20775	12.57725	156.7 ~ 156.9	2200 ~ 2300	9.0 ~ 9.2	31.2 ~ 31.8
6.215 ~ 6.218	13.36 ~ 13.41	162.0125 ~ 167.17	2310 ~ 2390	9.3 ~ 9.5	36.43 ~ 36.5
6.26775 ~ 6.26825	16.42 ~ 16.423	167.72 ~ 173.2	2483.5 ~ 2500	10.6 ~ 12.7	Above 38.6
6.31175 ~ 6.31225	16.69475 ~	240 ~ 285	2655 ~ 2900	13.25 ~ 13.4	
8.291 ~ 8.294	16.69525	322 ~ 335.4	3260 ~ 3267		
8.362 ~ 8.366	16.80425 ~	399.90 ~ 410	3332 ~ 3339		
8.37625 ~ 8.38675	16.80475	608 ~ 614	3345.8 ~ 3358		
	25.5 ~ 25.67	960 ~ 1240			
	37.5 ~ 38.25				
	73 ~ 74.6				
	74.8 ~ 75.2				

• **FCC Part 15.205(b):** The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

**30MHz ~ 1GHz Radiated Spurious Emissions & 802.11b & Chain 1****▪ Ch.1**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
168.538	H	Y axis	37.09	-8.39	28.70	43.50	14.80
-	-	-	-	-	-	-	-

**▪ Ch.6**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
899.985	V	Z axis	32.10	0.47	32.57	46.00	13.43
-	-	-	-	-	-	-	-

**▪ Ch.11**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
167.988	V	X axis	38.20	-8.43	29.77	43.50	13.73
-	-	-	-	-	-	-	-

**Note.**

1. No other spurious and harmonic emissions were detected at a level greater than 20dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.  
 $\text{Margin} = \text{Limit} - \text{Result}$  /  $\text{Result} = \text{Reading} + \text{T.F}$  /  $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$   
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

**30MHz ~ 1GHz Radiated Spurious Emissions & 802.11g & Chain 0****▪ Ch.1**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
168.324	H	Y axis	43.10	-8.41	34.69	43.50	8.81
-	-	-	-	-	-	-	-

**▪ Ch.6**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
168.024	H	X axis	42.12	-8.43	33.69	43.50	9.81
-	-	-	-	-	-	-	-

**▪ Ch.11**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
168.024	H	Y axis	42.30	-8.43	33.87	43.50	9.63
-	-	-	-	-	-	-	-

**Note.**

1. No other spurious and harmonic emissions were detected at a level greater than 10dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.  
 $\text{Margin} = \text{Limit} - \text{Result}$  /  $\text{Result} = \text{Reading} + \text{T.F}$  /  $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$   
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

**30MHz ~ 1GHz Radiated Spurious Emissions & 802.11n HT20****▪ Ch.1**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
273.243	H	Z axis	41.36	-4.86	36.50	46.00	9.50
-	-	-	-	-	-	-	-

**▪ Ch.6**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
273.238	H	Y axis	40.22	-4.86	35.36	46.00	10.64
-	-	-	-	-	-	-	-

**▪ Ch.11**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
273.615	H	X axis	43.04	-4.84	38.20	46.00	7.80
-	-	-	-	-	-	-	-

**Note.**

1. No other spurious and harmonic emissions were detected at a level greater than 15dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.  

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

**30MHz ~ 1GHz Radiated Spurious Emissions & 802.11n HT40****▪ Ch.3**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
168.143	H	X axis	41.44	-8.42	33.02	43.50	10.48
-	-	-	-	-	-	-	-

**▪ Ch.6**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
273.024	H	Z axis	40.19	-4.87	35.32	46.00	10.68
-	-	-	-	-	-	-	-

**▪ Ch.9**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
273.182	H	X axis	40.64	-4.86	35.78	46.00	10.22
-	-	-	-	-	-	-	-

**Note.**

1. No other spurious and harmonic emissions were detected at a level greater than 15dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.  

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

**30MHz ~ 1GHz Radiated Spurious Emissions & 802.11a****▪ Ch.149**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
274.136	H	Z axis	41.63	-4.82	36.81	46.00	9.19
-	-	-	-	-	-	-	-

**▪ Ch.157**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
274.363	H	Z axis	41.93	-4.81	37.12	46.00	8.88
-	-	-	-	-	-	-	-

**▪ Ch.165**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
168.467	H	Z axis	42.72	-8.39	34.33	43.50	9.17
-	-	-	-	-	-	-	-

**Note.**

1. No other spurious and harmonic emissions were detected at a level greater than 10dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.  
 $\text{Margin} = \text{Limit} - \text{Result}$      /      $\text{Result} = \text{Reading} + \text{T.F}$      /      $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$   
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

**30MHz ~ 1GHz Radiated Spurious Emissions & 802.11n HT20**

## ▪ Ch.149

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
273.334	H	Z axis	41.76	-4.85	36.91	46.00	9.09
-	-	-	-	-	-	-	-

## ▪ Ch.157

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
273.146	H	Z axis	41.56	-4.86	36.70	46.00	9.30
-	-	-	-	-	-	-	-

## ▪ Ch.165

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
273.344	H	Z axis	41.59	-4.85	36.74	46.00	9.26
-	-	-	-	-	-	-	-

**Note.**

1. No other spurious and harmonic emissions were detected at a level greater than 10dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.  
 $\text{Margin} = \text{Limit} - \text{Result}$  /  $\text{Result} = \text{Reading} + \text{T.F}$  /  $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$   
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

**30MHz ~ 1GHz Radiated Spurious Emissions & 802.11n HT40****▪ Ch.151**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
273.617	H	X axis	41.45	-4.84	36.61	46.00	9.39
-	-	-	-	-	-	-	-

**▪ Ch.159**

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)	T.F (dB/m)	Result(dBuV/m)	Limit(dBuV/m)	Margin(dB)
			QP		QP	QP	QP
168.001	H	Y axis	41.97	-8.43	33.54	43.50	9.96
-	-	-	-	-	-	-	-

**Note.**

1. No other spurious and harmonic emissions were detected at a level greater than 10dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,



## 1GHz ~ 25GHz Radiated Spurious Emissions

### ▪ 802.11b & Ch.1 & Chain 1

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
2390.000	H	X axis	54.30	43.53	3.14	57.44	46.67	74.00	54.00	16.56	7.33
2390.000	V	X axis	53.37	43.33	3.14	56.51	46.47	74.00	54.00	17.49	7.53
4828.040	H	X axis	53.29	48.04	5.28	58.57	53.32	74.00	54.00	15.43	0.68
4824.000	V	X axis	53.61	47.01	5.28	58.89	52.29	74.00	54.00	15.11	1.71
-	-	-	-	-	-	-	-	-	-	-	-

### ▪ 802.11b & Ch.6 & Chain 1

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
4874.040	H	Y axis	50.27	46.99	5.27	55.54	52.26	74.00	54.00	18.46	1.74
4874.000	V	X axis	52.95	47.64	5.27	58.22	52.91	74.00	54.00	15.78	1.09
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

### ▪ 802.11b & Ch.11 & Chain 1

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
2483.500	H	X axis	51.97	41.36	3.60	55.57	44.96	74.00	54.00	18.43	9.04
2483.500	V	Z axis	53.42	42.75	3.60	57.02	46.35	74.00	54.00	16.98	7.65
4924.080	H	Y axis	50.45	46.45	5.64	56.09	52.09	74.00	54.00	17.91	1.91
4924.040	V	Z axis	50.73	46.57	5.64	56.37	52.21	74.00	54.00	17.63	1.79
-	-	-	-	-	-	-	-	-	-	-	-

#### Note.

1. No other spurious and harmonic emissions were detected at a level greater than 20dB below limit.
2. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

## 1GHz ~ 25GHz Radiated Spurious Emissions

### ▪ 802.11g & Ch.1 & Chain 0

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
2390.000	H	Z axis	49.87	37.42	3.14	53.01	40.56	74.00	54.00	20.99	13.44
2389.760	V	Z axis	54.18	41.93	3.14	57.32	45.07	74.00	54.00	16.68	8.93
4823.880	H	Z axis	44.78	32.77	5.28	50.06	38.05	74.00	54.00	23.94	15.95
4823.960	V	Y axis	45.18	32.87	5.28	50.46	38.15	74.00	54.00	23.54	15.85
-	-	-	-	-	-	-	-	-	-	-	-

### ▪ 802.11g & Ch.6 & Chain 0

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
4873.640	H	Y axis	44.99	32.81	5.27	50.26	38.08	74.00	54.00	23.74	15.92
4873.880	V	Y axis	46.59	33.29	5.27	51.86	38.56	74.00	54.00	22.14	15.44
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

### ▪ 802.11g & Ch.11 & Chain 0

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
2483.580	H	X axis	55.87	42.90	3.6	59.47	46.50	74.00	54.00	14.53	7.50
2483.070	V	Z axis	57.56	44.07	3.6	61.16	47.67	74.00	54.00	12.84	6.33
4924.000	H	Y axis	44.20	32.10	5.64	49.84	37.74	74.00	54.00	24.16	16.26
4921.720	V	Z axis	44.77	31.93	5.64	50.41	37.57	74.00	54.00	23.59	16.43
-	-	-	-	-	-	-	-	-	-	-	-

#### Note.

1. No other spurious and harmonic emissions were detected at a level greater than 25dB below limit.
2. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

## 1GHz ~ 25GHz Radiated Spurious Emissions

### ▪ 802.11n HT20 & Ch.1

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
2390.000	H	X axis	55.83	41.65	3.14	58.97	44.79	74.00	54.00	15.03	9.21
2390.000	V	Z axis	53.27	40.01	3.14	56.41	43.15	74.00	54.00	17.59	10.85
4823.920	H	Z axis	44.72	32.31	5.28	50.00	37.59	74.00	54.00	24.00	16.41
4824.000	V	Y axis	44.62	32.48	5.28	49.90	37.76	74.00	54.00	24.10	16.24
-	-	-	-	-	-	-	-	-	-	-	-

### ▪ 802.11n HT20 & Ch.6

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
4878.760	H	Y axis	44.96	32.60	5.27	50.23	37.87	74.00	54.00	23.77	16.13
4873.960	V	Y axis	44.96	32.87	5.27	50.23	38.14	74.00	54.00	23.77	15.86
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

### ▪ 802.11n HT20 & Ch.11

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
2483.570	H	X axis	54.76	40.39	3.60	58.36	43.99	74.00	54.00	15.64	10.01
2483.580	V	X axis	54.83	40.64	3.60	58.43	44.24	74.00	54.00	15.57	9.76
4924.000	H	Y axis	44.07	31.92	5.64	49.71	37.56	74.00	54.00	24.29	16.44
4924.000	V	Y axis	43.83	31.98	5.64	49.47	37.62	74.00	54.00	24.53	16.38
-	-	-	-	-	-	-	-	-	-	-	-

#### Note.

1. No other spurious and harmonic emissions were detected at a level greater than 25dB below limit.
2. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

## 1GHz ~ 25GHz Radiated Spurious Emissions

### ▪ 802.11n HT40 & Ch.3

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
2390.000	H	X axis	60.82	41.30	3.14	63.96	44.44	74.00	54.00	10.04	9.56
2390.000	V	Z axis	60.47	40.76	3.14	63.61	43.90	74.00	54.00	10.39	10.1
4850.800	H	X axis	44.34	32.31	5.28	49.62	37.59	74.00	54.00	24.38	16.41
4862.300	V	X axis	44.76	32.16	5.28	50.04	37.44	74.00	54.00	23.96	16.56
-	-	-	-	-	-	-	-	-	-	-	-

### ▪ 802.11n HT40 & Ch.6

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
4883.880	H	Y axis	44.20	32.06	5.27	49.47	37.33	74.00	54.00	24.53	16.67
4884.000	V	Y axis	43.51	32.30	5.27	48.78	37.57	74.00	54.00	25.22	16.43
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

### ▪ 802.11n HT40 & Ch.9

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
2483.570	H	X axis	56.71	40.34	3.60	60.31	43.94	74.00	54.00	13.69	10.06
2483.570	V	Z axis	56.82	40.62	3.60	60.42	44.22	74.00	54.00	13.58	9.78
4913.880	H	X axis	43.22	31.88	5.64	48.86	37.52	74.00	54.00	25.14	16.48
4914.040	V	Y axis	43.64	32.40	5.64	49.28	38.04	74.00	54.00	24.72	15.96
-	-	-	-	-	-	-	-	-	-	-	-

#### Note.

1. No other spurious and harmonic emissions were detected at a level greater than 20dB below limit.
2. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

## 1GHz ~ 40GHz Radiated Spurious Emissions

### ▪ 802.11a & Ch.149

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
11490.260	H	X axis	44.25	32.25	16.99	61.24	49.24	74.00	54.00	12.76	4.76
11490.250	V	X axis	45.03	33.03	16.99	62.02	50.02	74.00	54.00	11.98	3.98
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

### ▪ 802.11a & Ch.157

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
11570.880	H	X axis	44.87	32.87	16.94	61.81	49.81	74.00	54.00	12.19	4.19
11570.880	V	X axis	45.87	33.87	16.94	62.81	50.81	74.00	54.00	11.19	3.19
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

### ▪ 802.11a & Ch.165

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
11650.420	H	X axis	44.41	32.41	17.07	61.48	49.48	74.00	54.00	12.52	4.52
11650.250	V	X axis	44.25	33.98	17.07	61.32	51.05	74.00	54.00	12.68	2.95
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

#### Note.

1. No other spurious and harmonic emissions were detected at a level greater than 15dB below limit.
2. Sample Calculation.  
 $\text{Margin} = \text{Limit} - \text{Result}$  /  $\text{Result} = \text{Reading} + \text{T.F}$  /  $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$   
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

## 1GHz ~ 40GHz Radiated Spurious Emissions

### ▪ 802.11n HT20 & Ch.149

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
11490.250	H	X axis	44.85	32.85	16.99	61.84	49.84	74.00	54.00	12.16	4.16
11490.220	V	X axis	45.25	33.25	16.99	62.24	50.24	74.00	54.00	11.76	3.76
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

### ▪ 802.11n HT20 & Ch.157

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
11570.030	H	X axis	44.48	32.48	16.94	61.42	49.42	74.00	54.00	12.58	4.58
11570.020	V	X axis	45.17	33.17	16.94	62.11	50.11	74.00	54.00	11.89	3.89
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

### ▪ 802.11n HT20 & Ch.165

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
11650.200	H	X axis	44.21	32.21	17.07	61.28	49.28	74.00	54.00	12.72	4.72
11650.210	V	X axis	45.44	33.44	17.07	62.51	50.51	74.00	54.00	11.49	3.49
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

#### Note.

1. No other spurious and harmonic emissions were detected at a level greater than 15dB below limit.
2. Sample Calculation.  
 $\text{Margin} = \text{Limit} - \text{Result}$  /  $\text{Result} = \text{Reading} + \text{T.F}$  /  $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$   
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

## 1GHz ~ 40GHz Radiated Spurious Emissions

### ▪ 802.11n HT40 & Ch.151

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
11510.430	H	X axis	44.43	32.43	17.07	61.50	49.50	74.00	54.00	12.50	4.50
11510.440	V	X axis	44.62	33.25	17.07	61.69	50.32	74.00	54.00	12.31	3.68
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

### ▪ 802.11n HT40 & Ch.159

Frequency (MHz)	ANT Pol	The worst case EUT Position	Reading(dBuV)		T.F (dB/m)	Result(dBuV/m)		Limit(dBuV/m)		Margin(dB)	
			PK	AV		PK	AV	PK	AV	PK	AV
11590.500	H	Y axis	44.51	32.88	17.20	61.71	50.08	74.00	54.00	12.29	3.92
11590.460	V	Z axis	45.47	32.53	17.20	62.67	49.73	74.00	54.00	11.33	4.27
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

#### Note.

1. No other spurious and harmonic emissions were detected at a level greater than 20dB below limit.
2. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

### 3.2.5 Transmitter Power Spectral Density

#### - Procedure:

The transmitter output is connected to a spectrum analyzer. Locate and zoom in on emission peak within the pass band. The maximum level in a 3 kHz bandwidth is measured with the spectrum analyzer using RBW = 3 kHz and VBW > RBW, sweep time= (Span/3 kHz). The peak level measured must be no greater than + 8 dBm.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest Frequencies

Span = 100 kHz

RBW = 3 kHz

VBW = ≥ RBW

Trace = max hold

Detector function = peak

Sweep = 100 S

#### - Measurement Data: **Comply**

Mode	Channel	Frequency [MHz]	Test Result [dBm]	
			Chain 0	Chain 1
802.11b	1	2412	-5.85	-3.57
	6	2437	-3.94	-3.74
	11	2462	-3.87	-5.40
802.11g	1	2412	-13.22	-12.22
	6	2437	-13.06	-12.10
	11	2462	-12.63	-11.95
802.11a	149	5745	-11.01	-9.59
	157	5785	-9.87	-10.16
	165	5825	-10.49	-9.13

Mode	Channel	Frequency [MHz]	Chain 0 [dBm]	Chain 1 [dBm]	Aggregate PSD [dBm]
802.11n HT20	1	2412	-17.25	-15.84	-13.48
802.11n HT20	6	2437	-17.73	-15.44	-13.43
802.11n HT20	11	2462	-16.37	-15.56	-12.94
802.11n HT40	3	2422	-20.03	-20.01	-17.01
802.11n HT40	6	2437	-20.06	-19.36	-16.69
802.11n HT40	9	2452	-20.20	-19.22	-16.67
802.11n HT20	149	5745	-10.70	-11.05	-7.86
802.11n HT20	157	5785	-10.94	-10.30	-7.60
802.11n HT20	165	5825	-10.67	-9.93	-7.27
802.11n HT40	151	5755	-13.82	-13.84	-10.82
802.11n HT40	159	5795	-13.50	-13.16	-10.32

Note1: Aggregate power calculation  $= 10 \log \left( 10^{\left(\frac{\text{chain0}}{10}\right)} + 10^{\left(\frac{\text{chain1}}{10}\right)} \right)$

The worst case plots are attached on next pages.

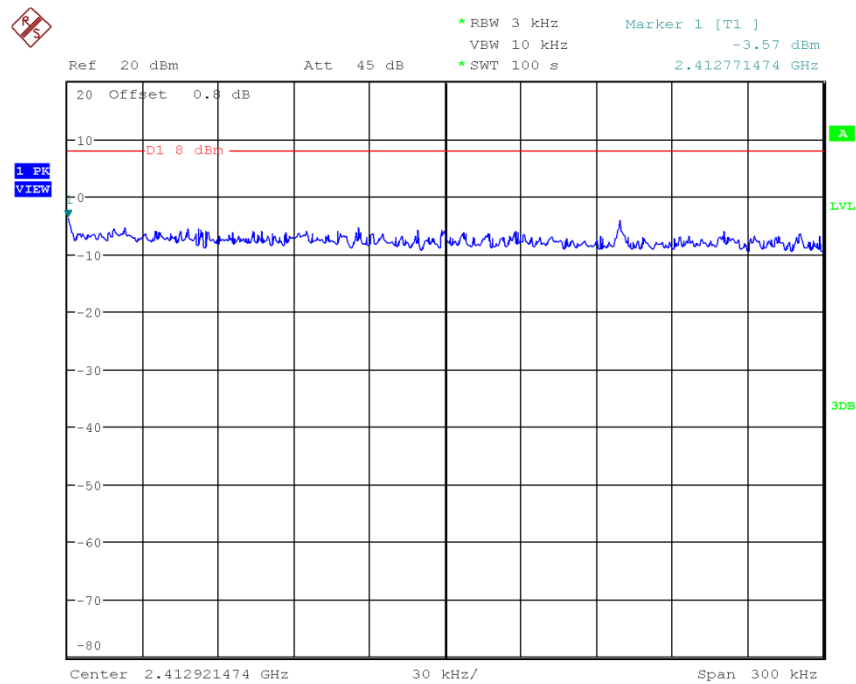
#### - Minimum Standard:

The transmitter power density average over 1-second interval shall not be greater than 8 dBm in any 3kHz BW.



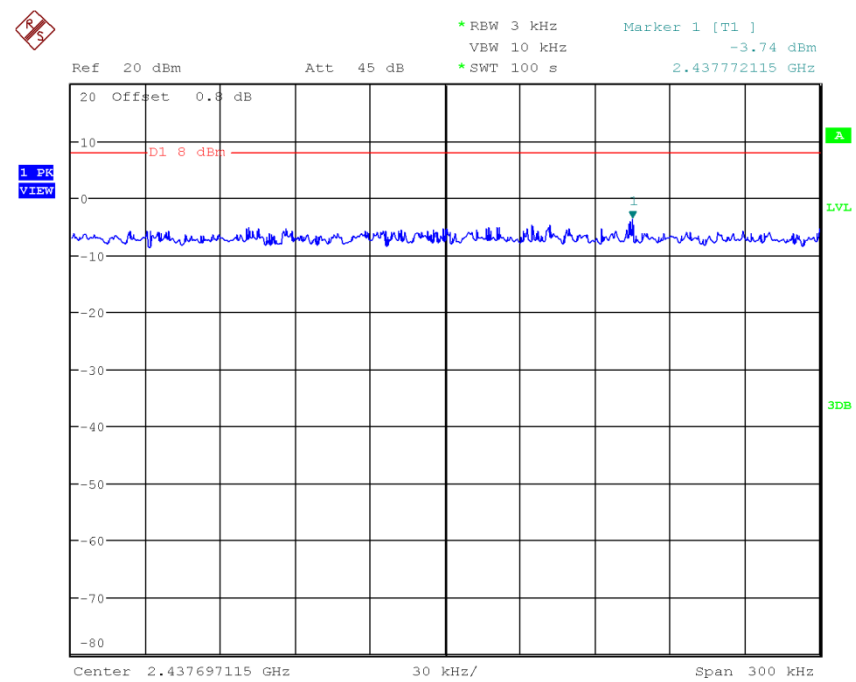
Transmitter Power Spectral Density

Test Mode: 802.11b & Ch.1 & Chain 1



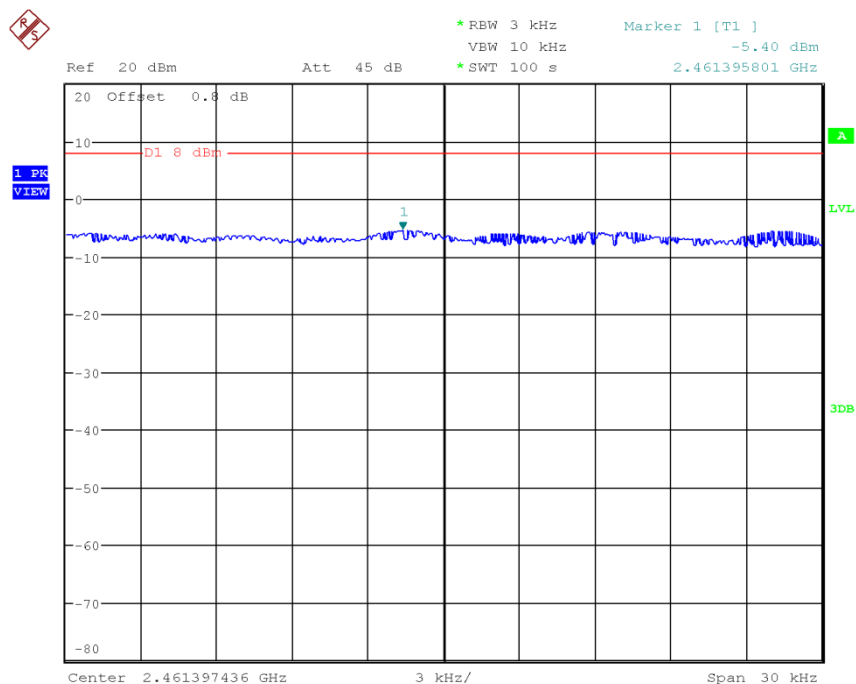
Transmitter Power Spectral Density

Test Mode: 802.11b & Ch.6 & Chain 1



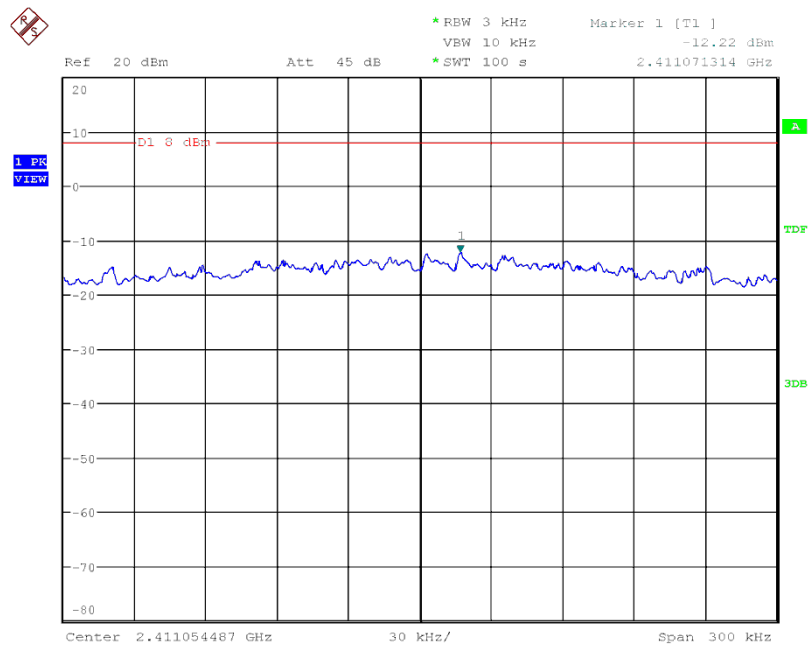
## Transmitter Power Spectral Density

Test Mode: 802.11b & Ch.11 & Chain 1



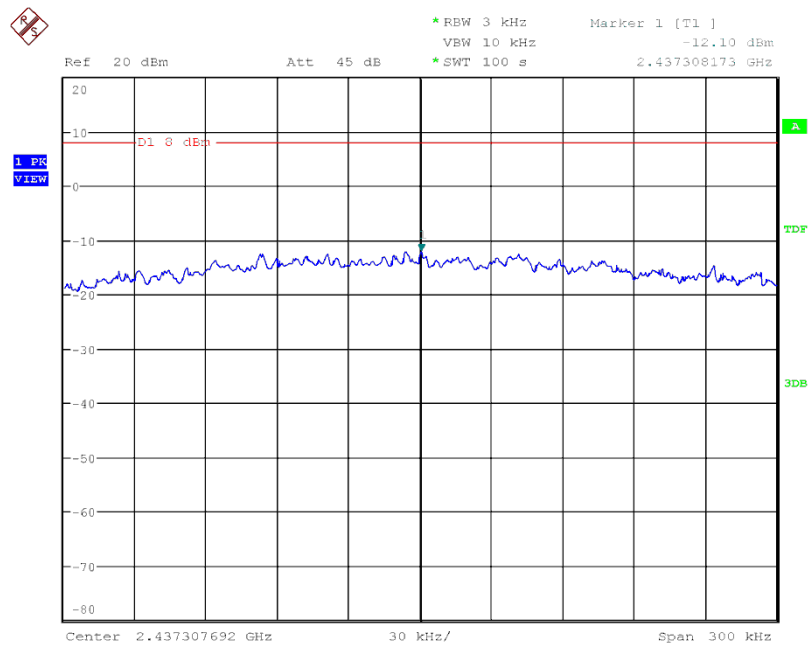
Transmitter Power Spectral Density

Test Mode: 802.11g & Ch.1 & Chain 1

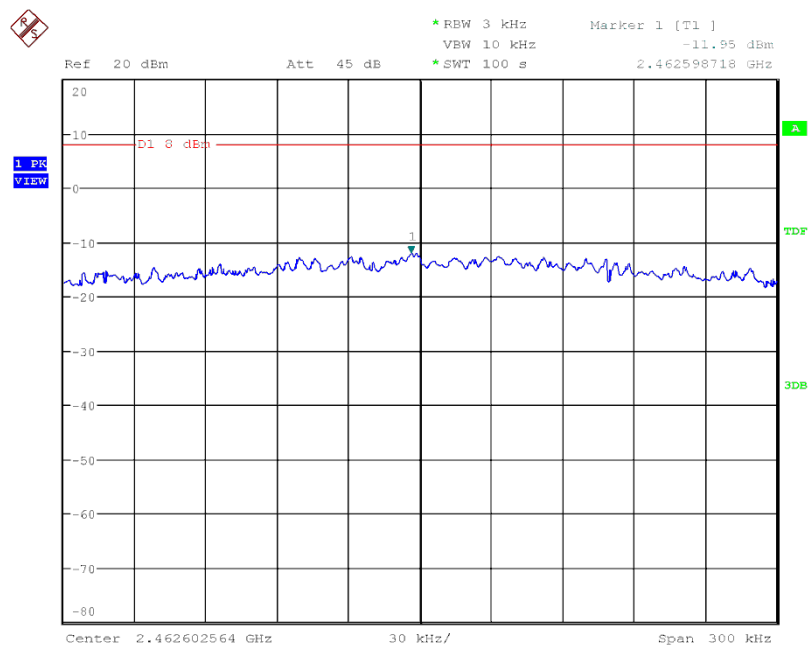


Transmitter Power Spectral Density

Test Mode: 802.11g & Ch.6 & Chain 1

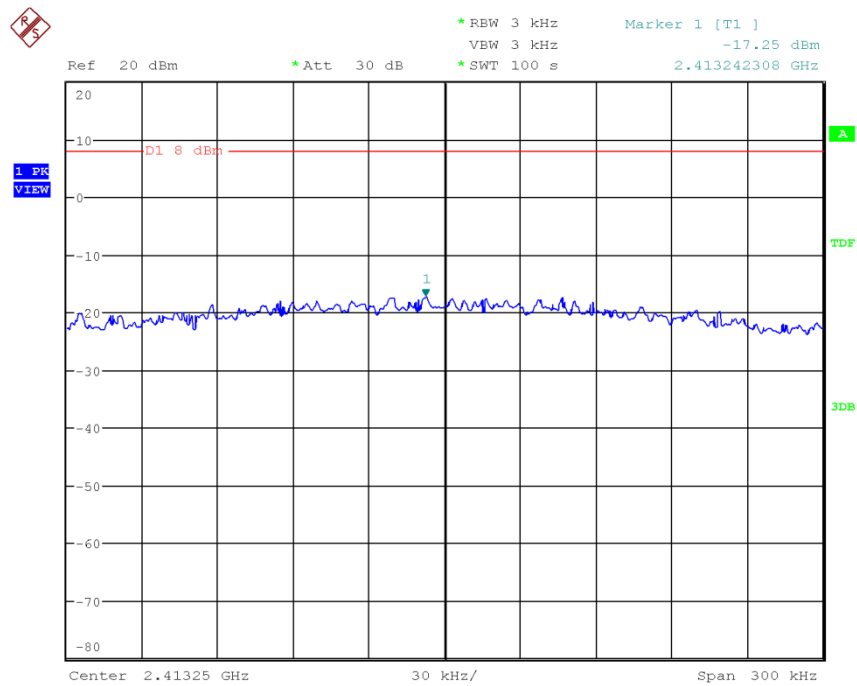


## Test Mode: 802.11g &amp; Ch.11 &amp; Chain 1



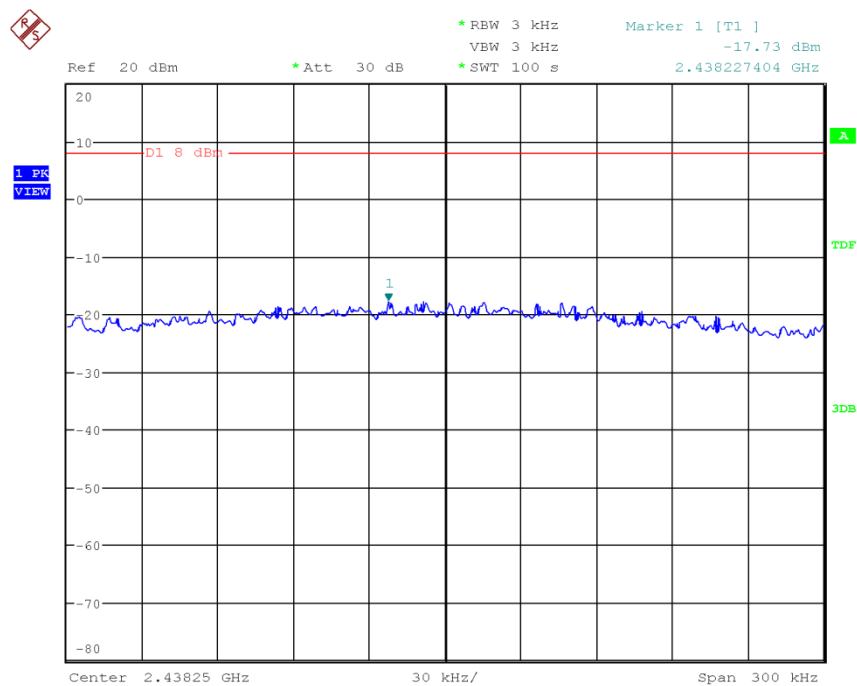
Transmitter Power Spectral Density

Test Mode: 802.11n HT20 & Ch.1 & Chain 0



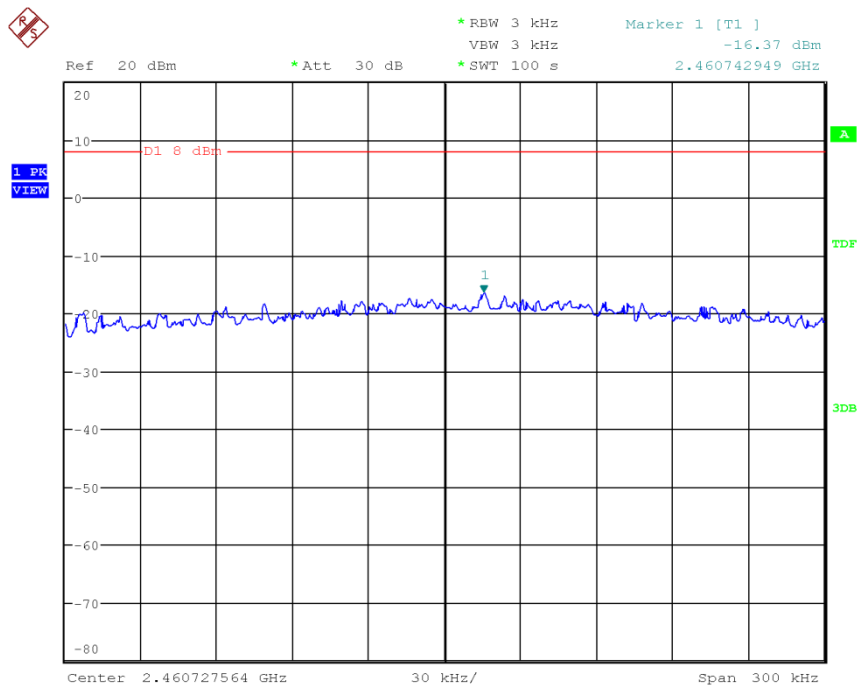
Transmitter Power Spectral Density

Test Mode: 802.11n HT20 & Ch.6 & Chain 0



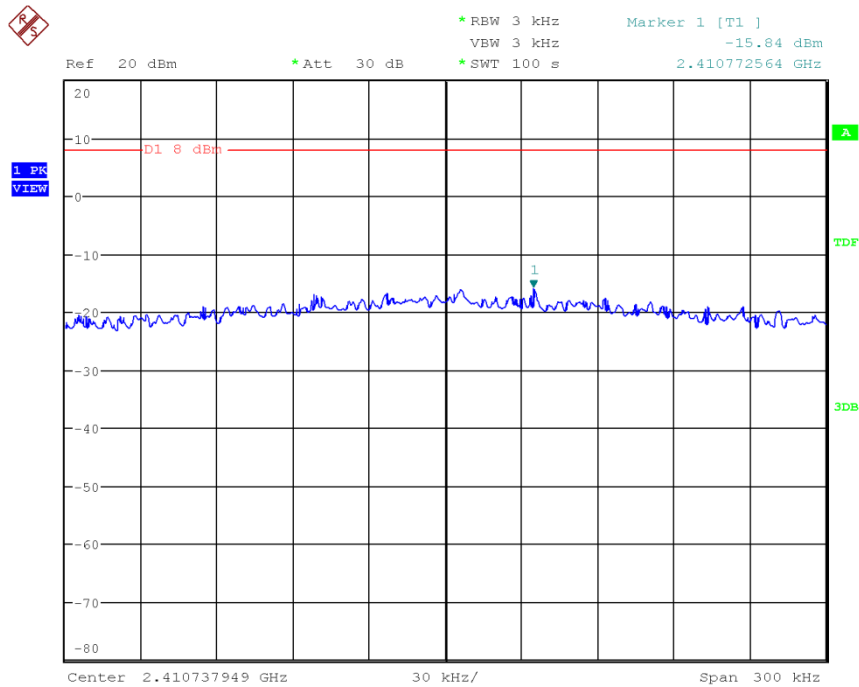
Transmitter Power Spectral Density

Test Mode: 802.11n HT20 & Ch.11 & Chain 0



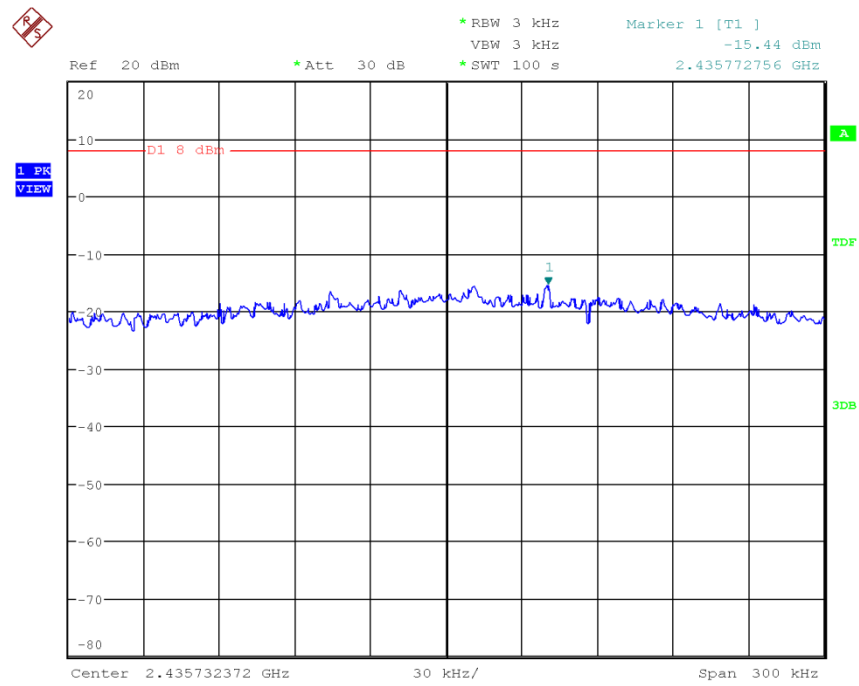
Transmitter Power Spectral Density

Test Mode: 802.11n HT20 & Ch.1 & Chain 1



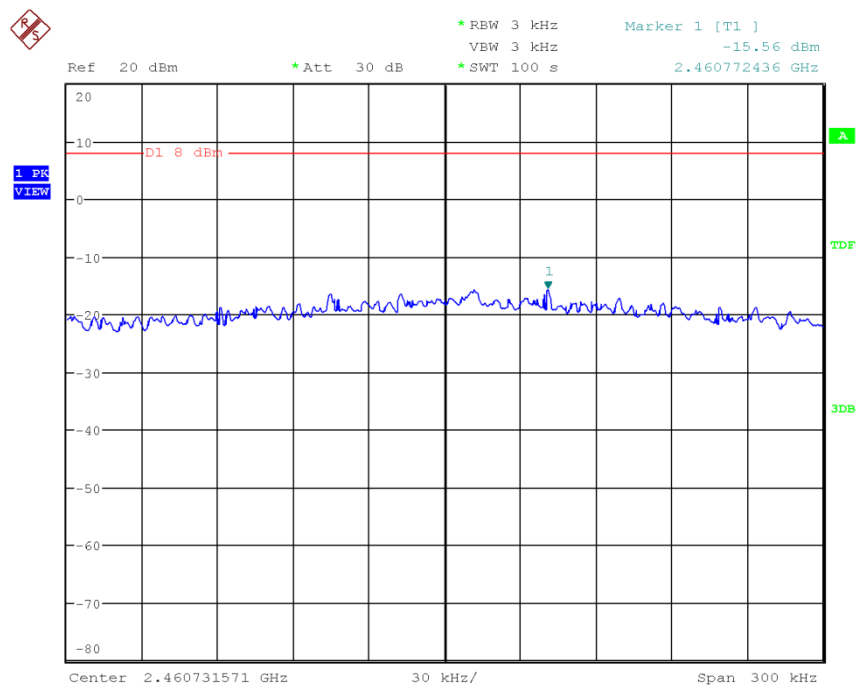
Transmitter Power Spectral Density

Test Mode: 802.11n HT20 & Ch.6 & Chain 1



Transmitter Power Spectral Density

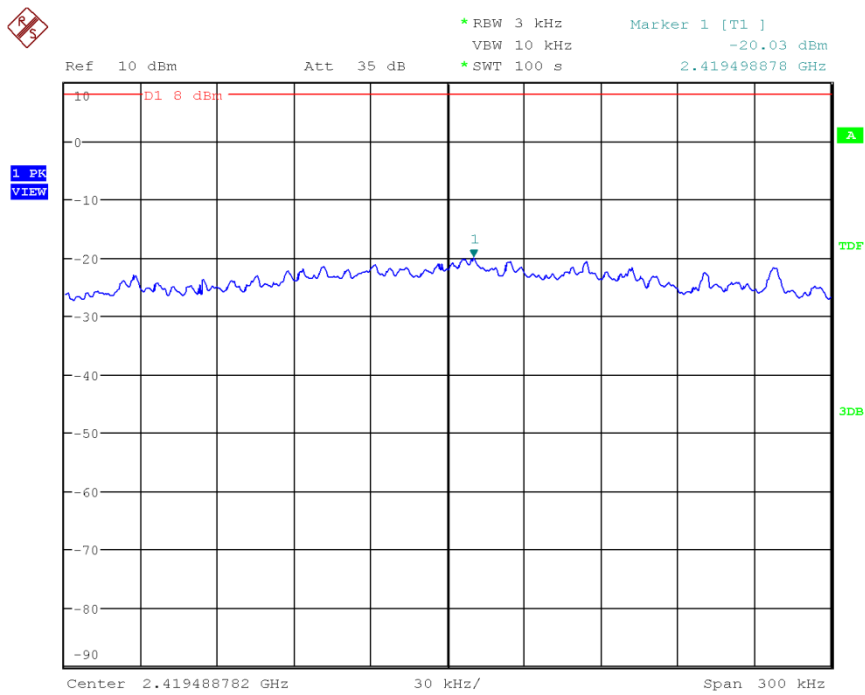
Test Mode: 802.11n HT20 & Ch.11 & Chain 1





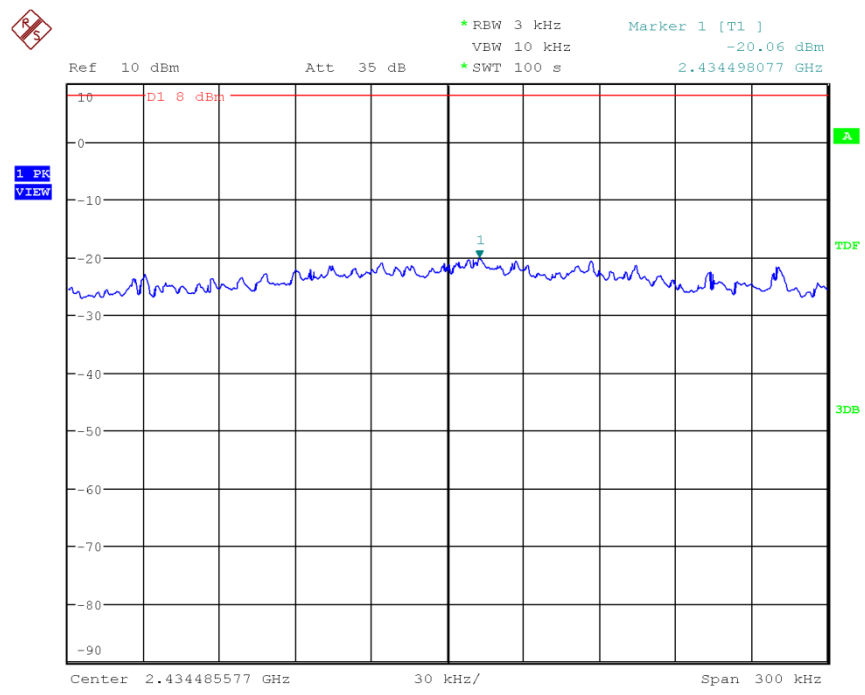
Transmitter Power Spectral Density

Test Mode: 802.11n HT40 & Ch.3 & Chain 0



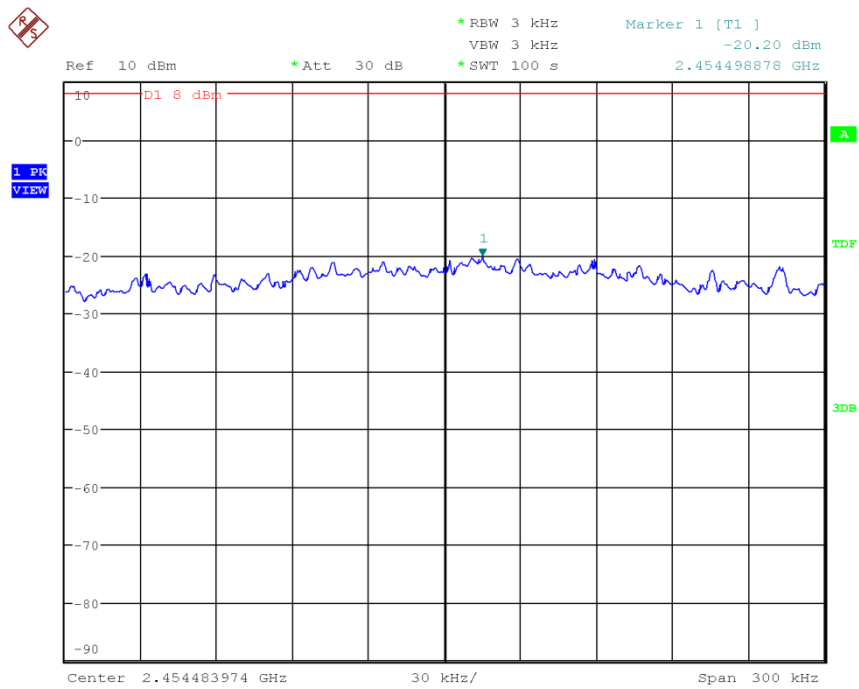
Transmitter Power Spectral Density

Test Mode: 802.11n HT40 & Ch.6 & Chain 0



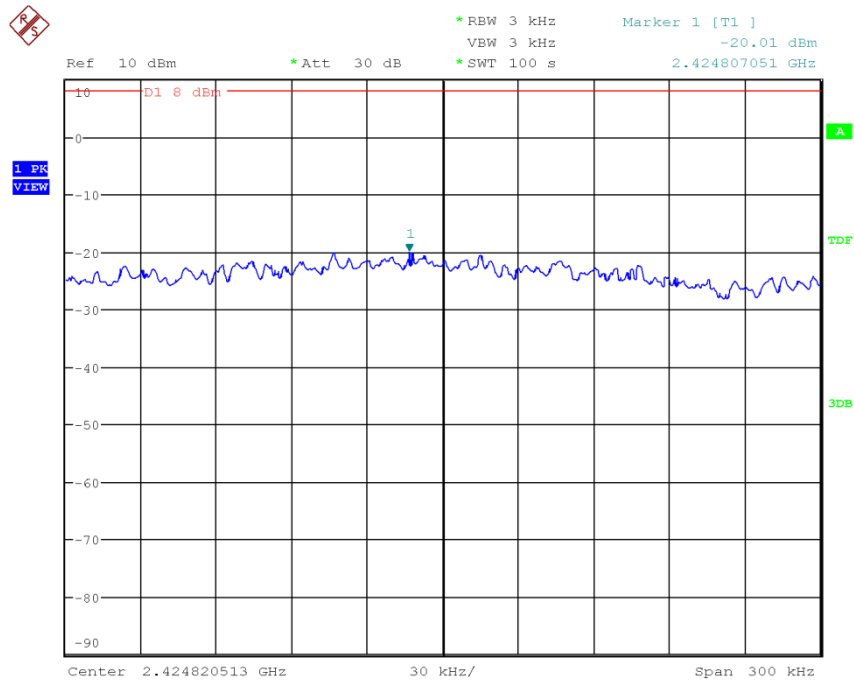
Transmitter Power Spectral Density

Test Mode: 802.11n HT40 & Ch.9 & Chain 0



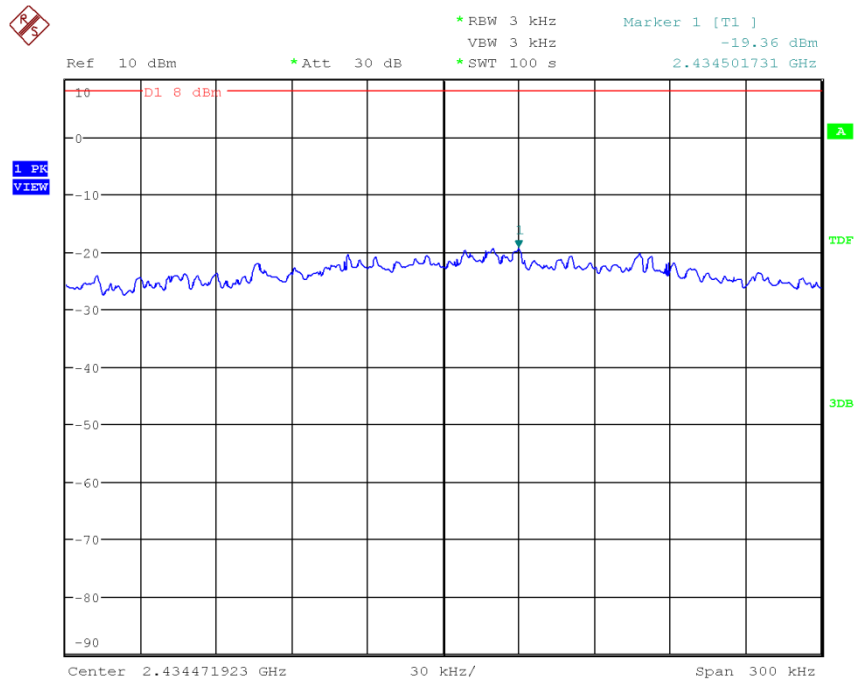
## Transmitter Power Spectral Density

Test Mode: 802.11n HT40 &amp; Ch.3 &amp; Chain 1



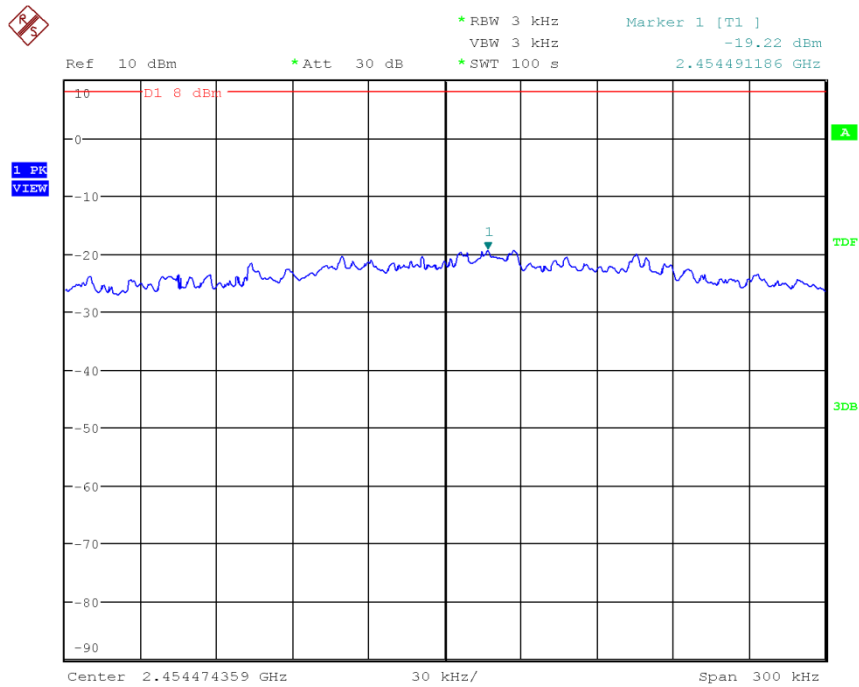
## Transmitter Power Spectral Density

Test Mode: 802.11n HT40 &amp; Ch.6 &amp; Chain 1



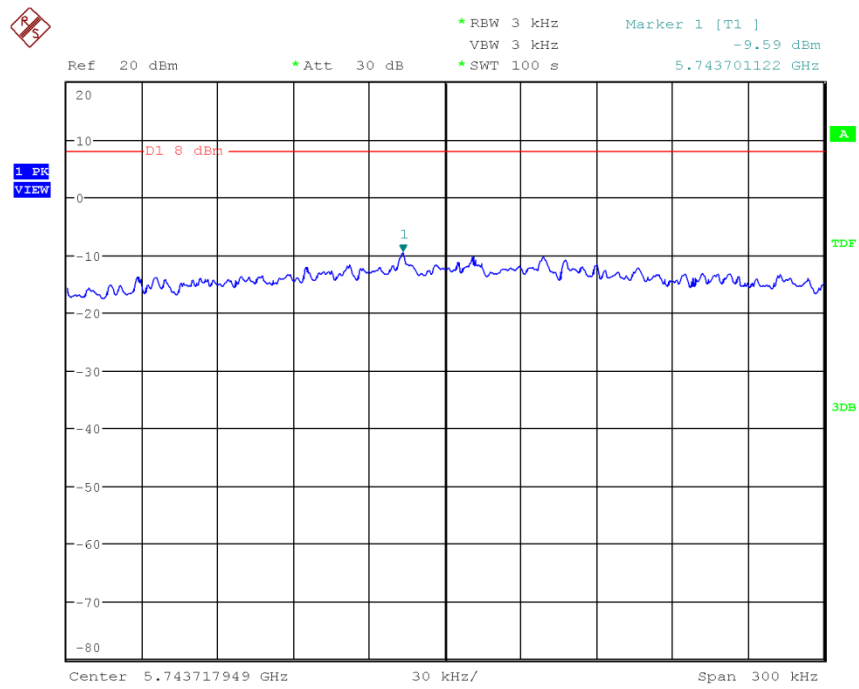
Transmitter Power Spectral Density

Test Mode: 802.11n HT40 & Ch.9 & Chain 1



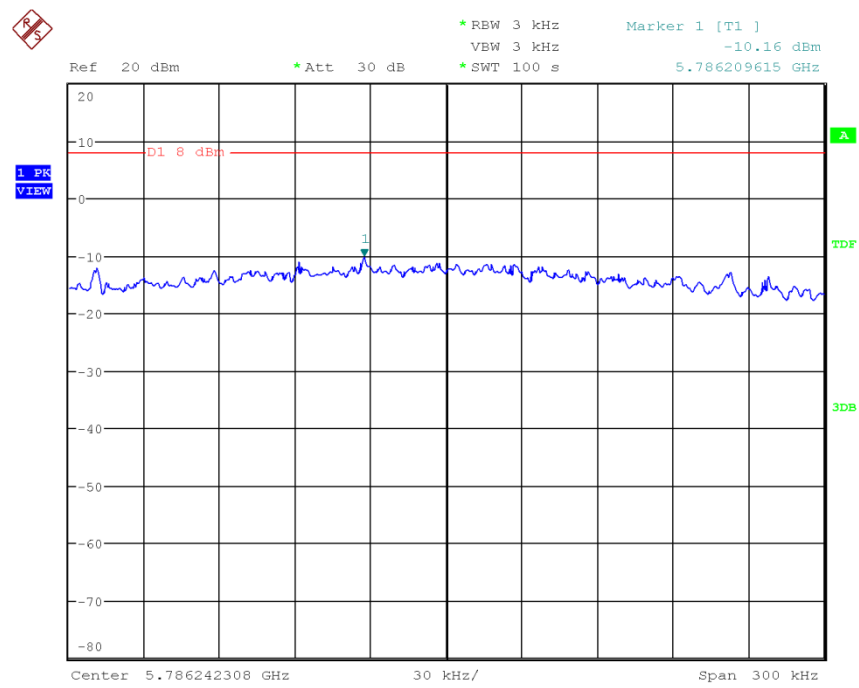
Transmitter Power Spectral Density

Test Mode: 802.11a & Ch.149 & Chain 1



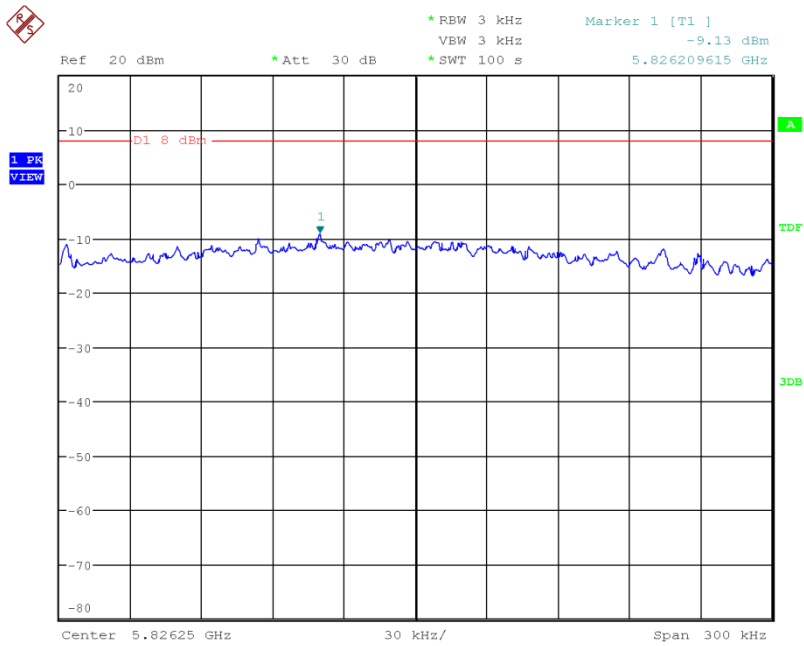
Transmitter Power Spectral Density

Test Mode: 802.11a & Ch.157 & Chain 1



Transmitter Power Spectral Density

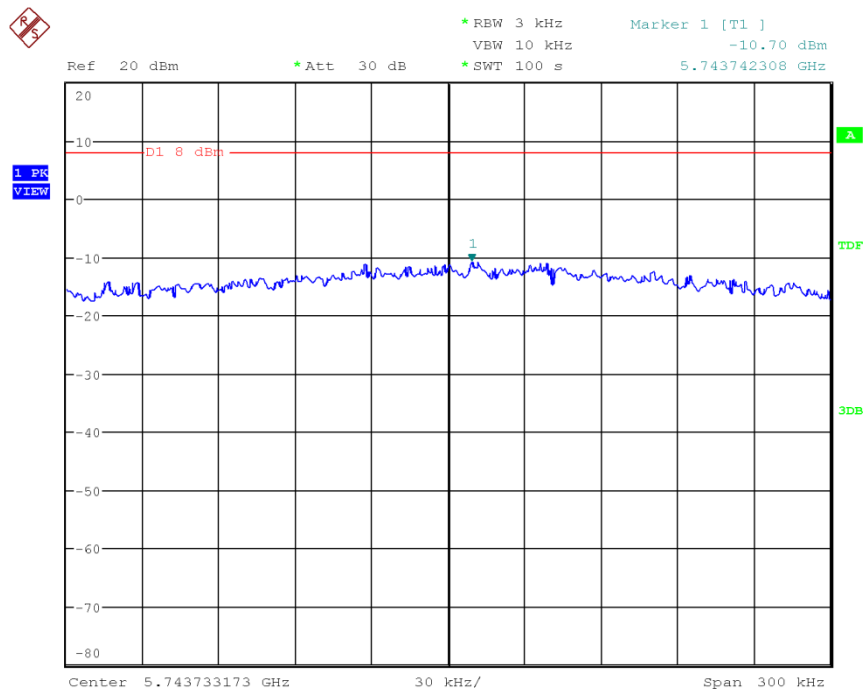
Test Mode: 802.11a & Ch.165 & Chain 1



Date: 2.DEC.2010 18:40:25

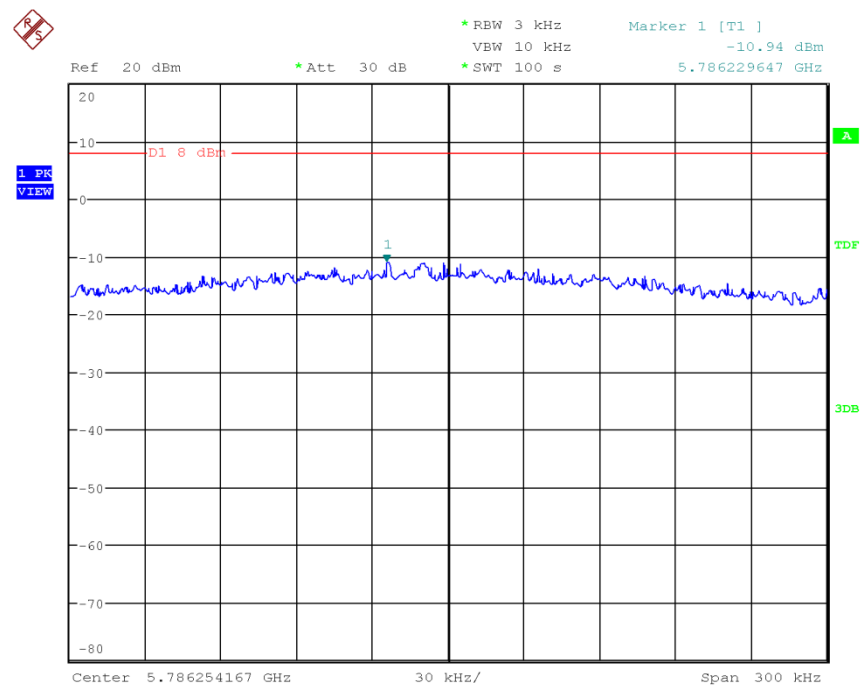
Transmitter Power Spectral Density

Test Mode: 802.11n HT20 & Ch.149 & Chain 0



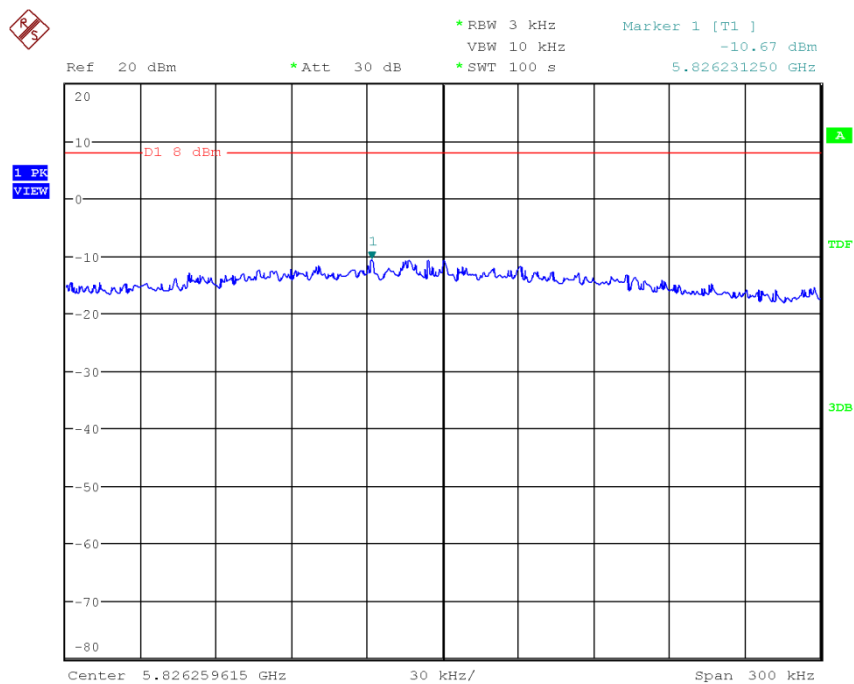
Transmitter Power Spectral Density

Test Mode: 802.11n HT20 & Ch.157 & Chain 0



## Transmitter Power Spectral Density

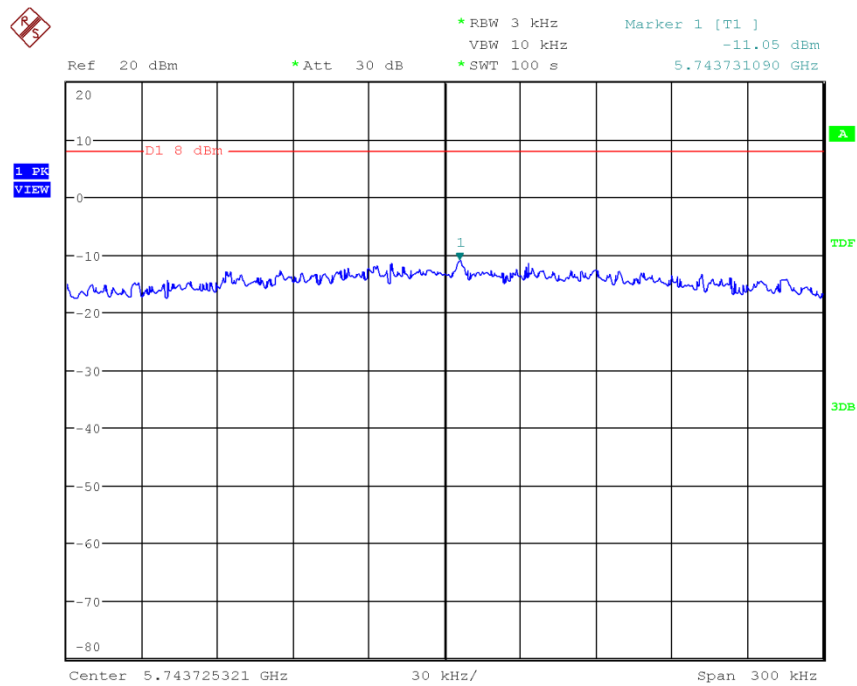
Test Mode: 802.11n HT20 &amp; Ch.165 &amp; Chain 0





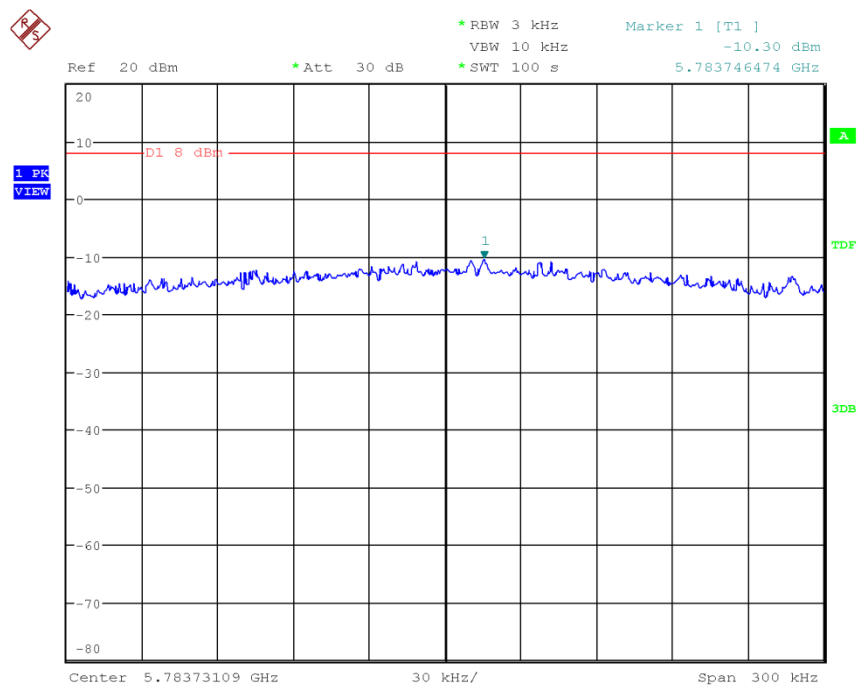
Transmitter Power Spectral Density

Test Mode: 802.11n HT20 & Ch.149 & Chain 1



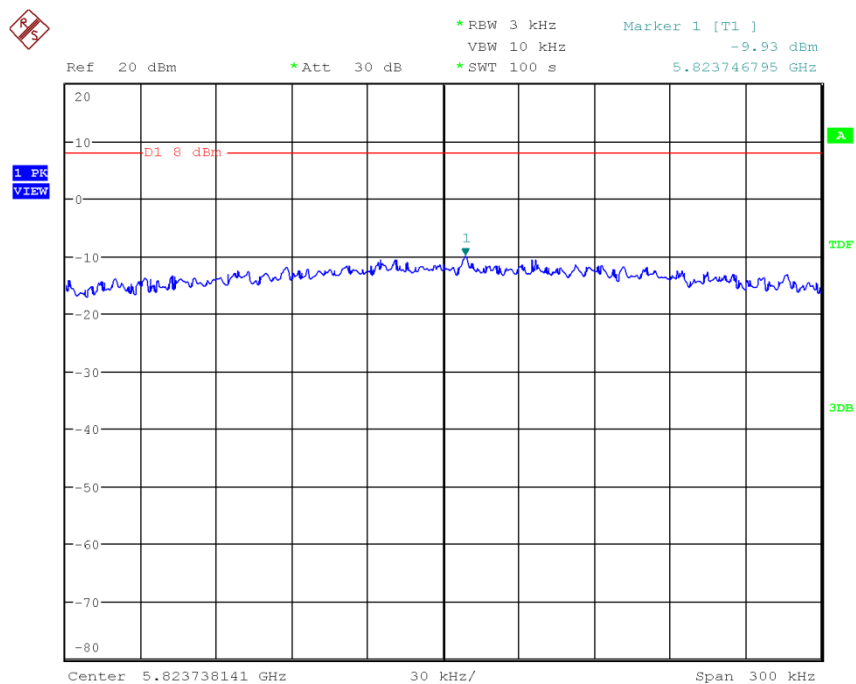
Transmitter Power Spectral Density

Test Mode: 802.11n HT20 & Ch.157 & Chain 1



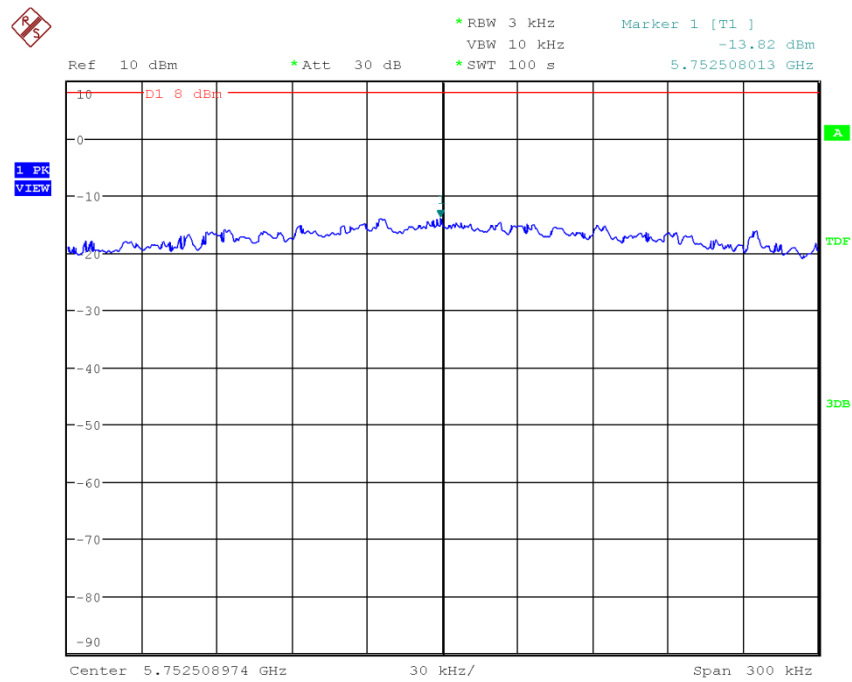
## Transmitter Power Spectral Density

Test Mode: 802.11n HT20 &amp; Ch.165 &amp; Chain 1



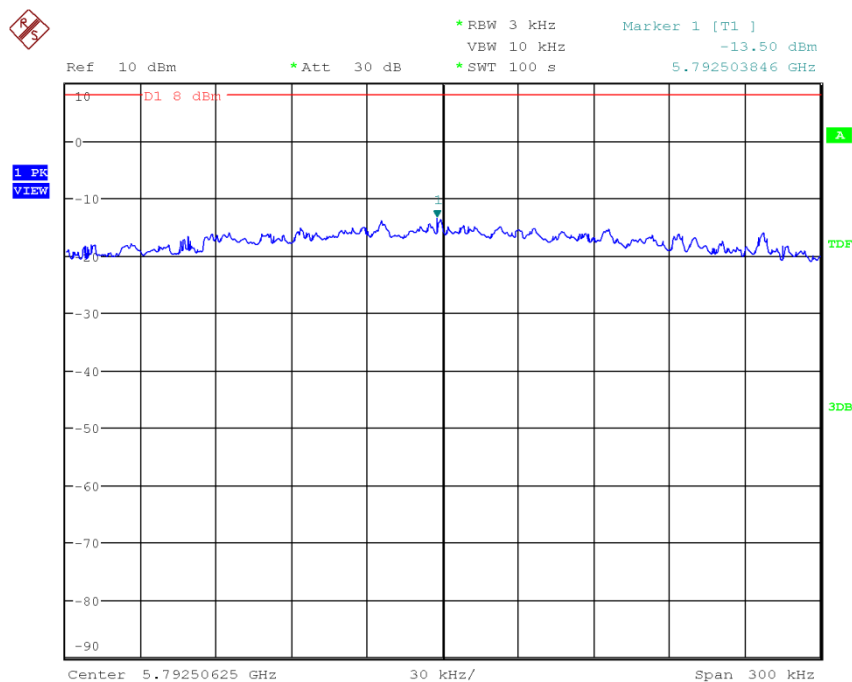
Transmitter Power Spectral Density

Test Mode: 802.11n HT40 & Ch.151 & Chain 0



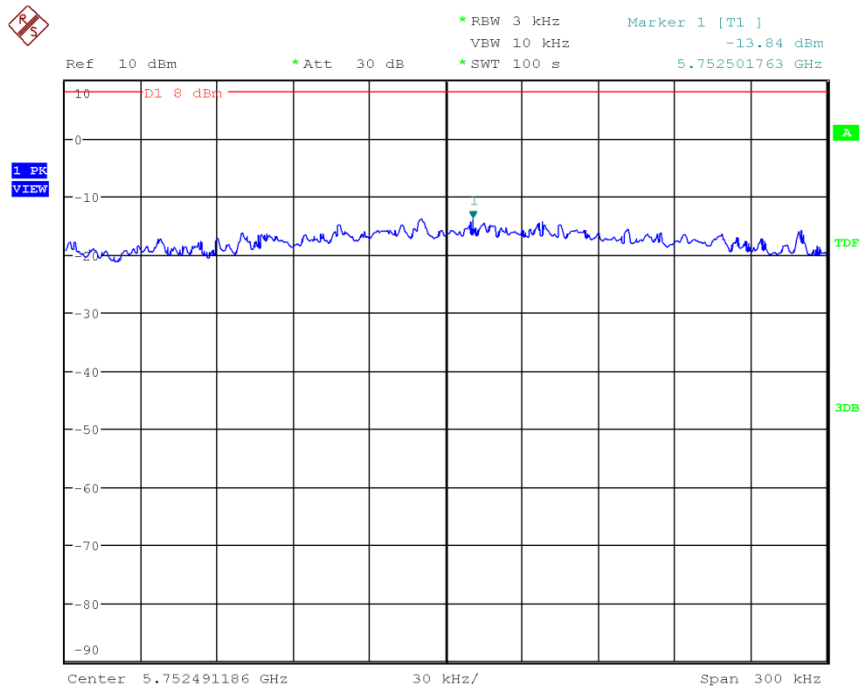
Transmitter Power Spectral Density

Test Mode: 802.11n HT40 & Ch.159 & Chain 0



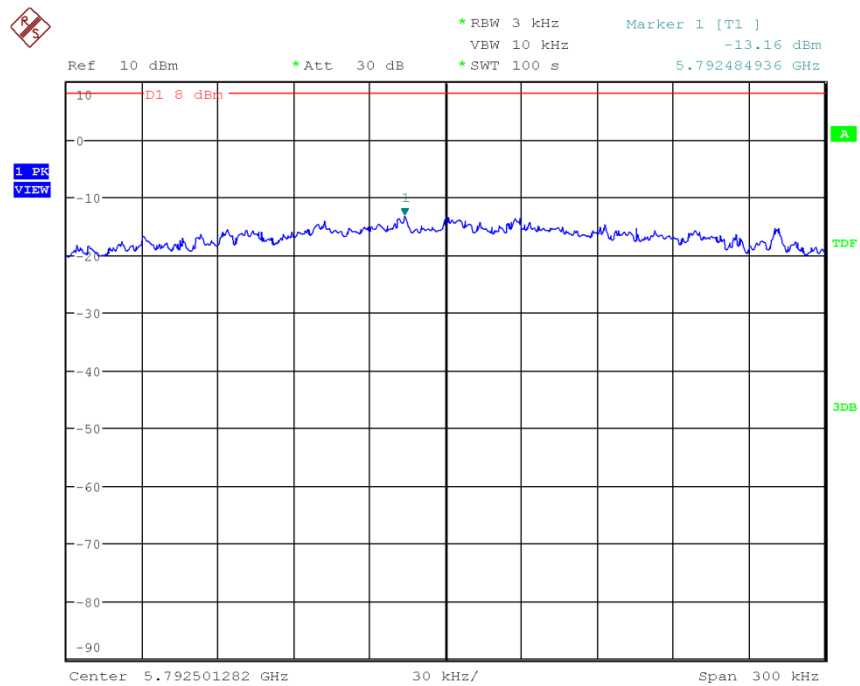
Transmitter Power Spectral Density

Test Mode: 802.11n HT40 & Ch.151 & Chain 1



Transmitter Power Spectral Density

Test Mode: 802.11n HT40 & Ch.159 & Chain 1



### 3.2.6 AC Conducted Emissions

**- Procedure:**

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. Emissions closest to the limit are measured in the quasi-peak mode (QP) and average mode (AV) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

**- Measurement Data: Comply**

Note 1: See next pages for actual measured spectrum plots and data.

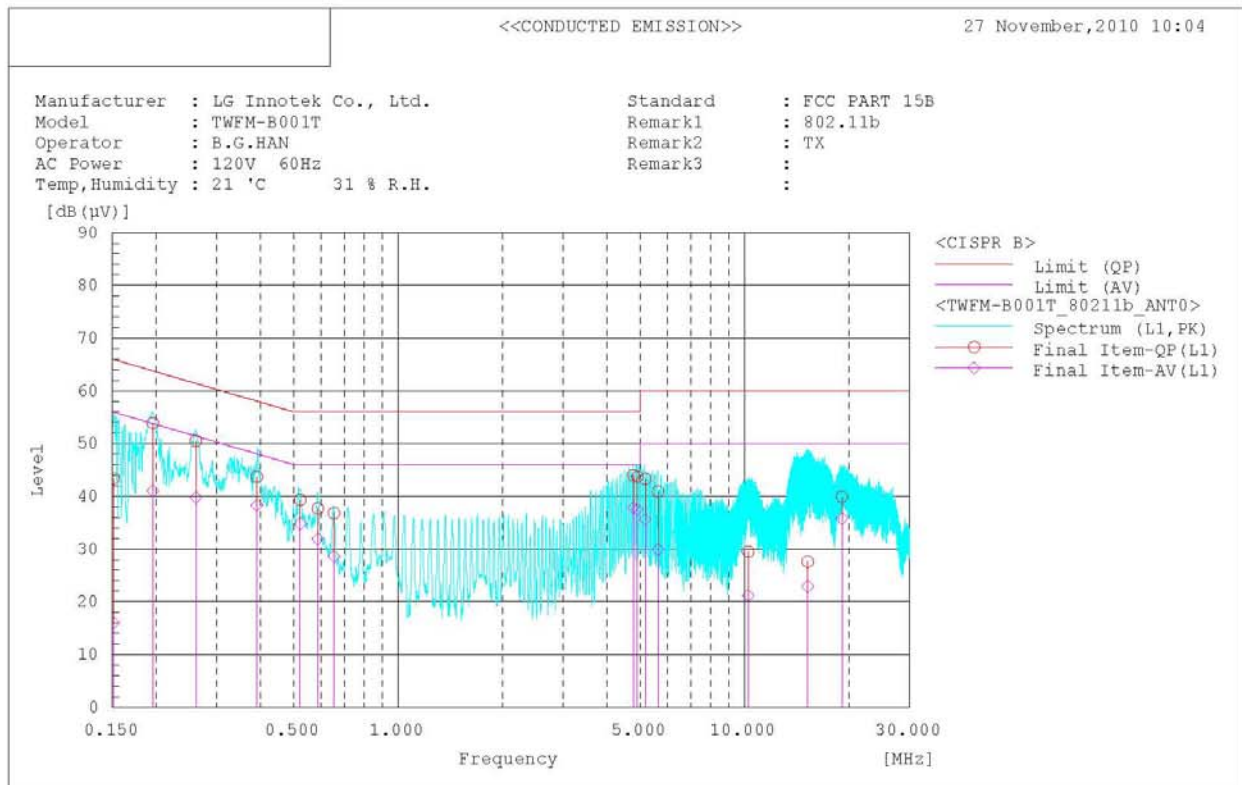
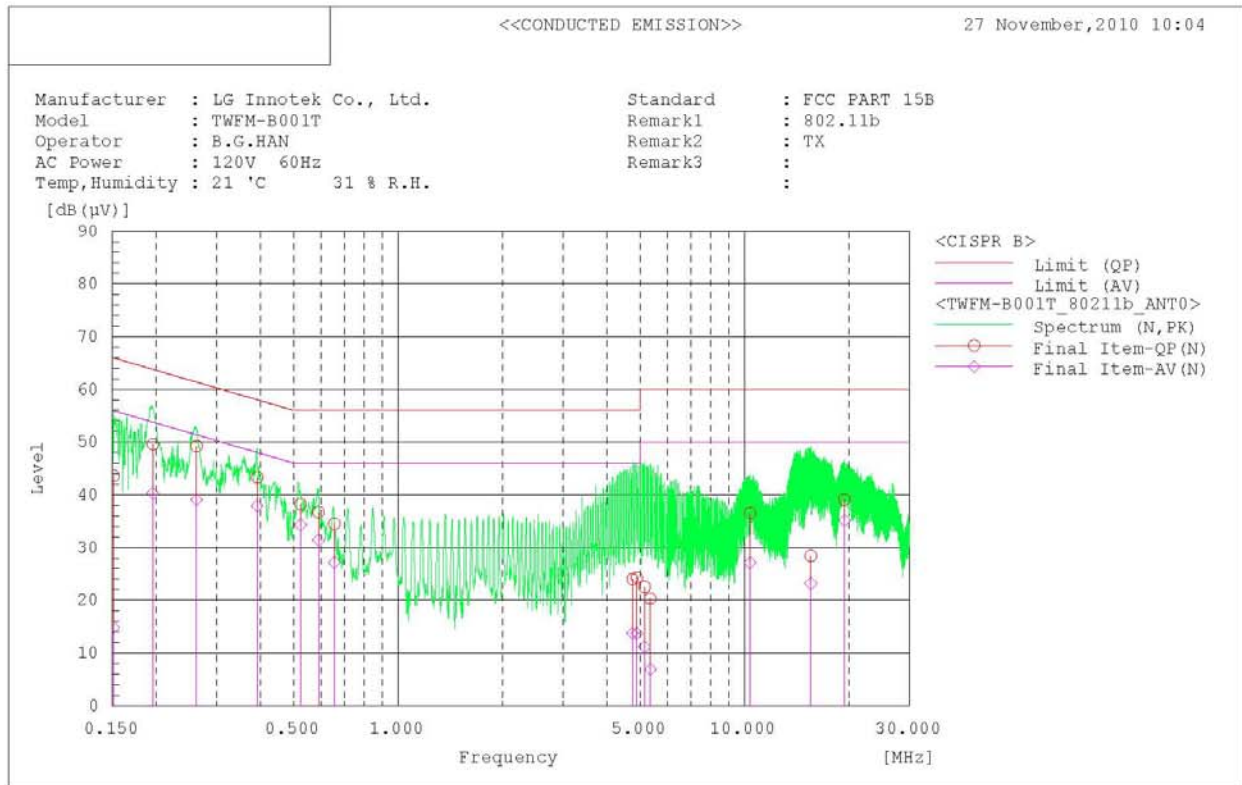
**- Minimum Standard: FCC Part 15.207(a)/EN 55022**

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

\* Decreases with the logarithm of the frequency

## AC Line Conducted Emissions (Graph)

Test Mode: 802.11b



## AC Line Conducted Emissions (Data List)

Test Mode: 802.11b

<<CONDUCTED EMISSION>>

27 November, 2010 10:04

Standard	: FCC PART 15B
Manufacturer	: LG Innotek Co., Ltd.
Model	: TWFM-B001T
Operator	: B.G.HAN
AC Power	: 120V 60Hz
Temp, Humidity	: 21 °C 31 % R.H.
Remark1	: 802.11b
Remark2	: TX
Remark3	:
	:

Final Result

--- N Phase ---

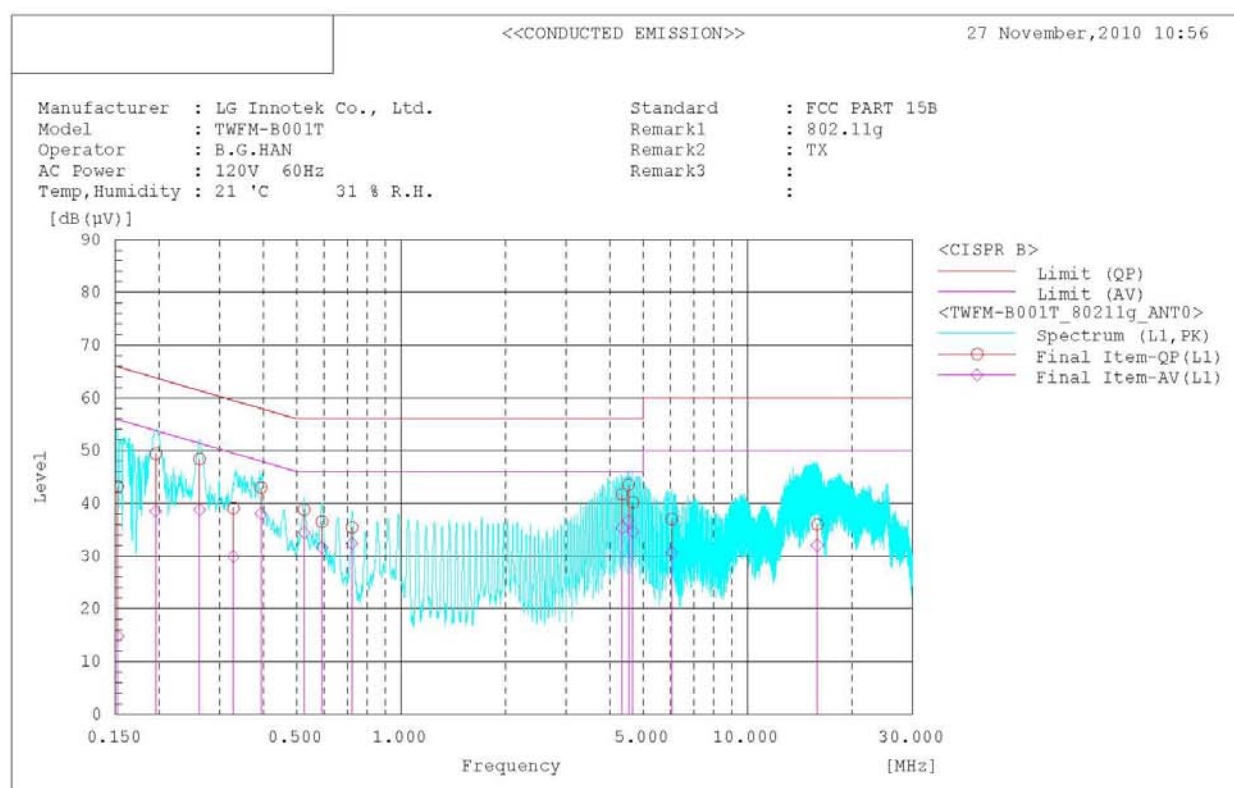
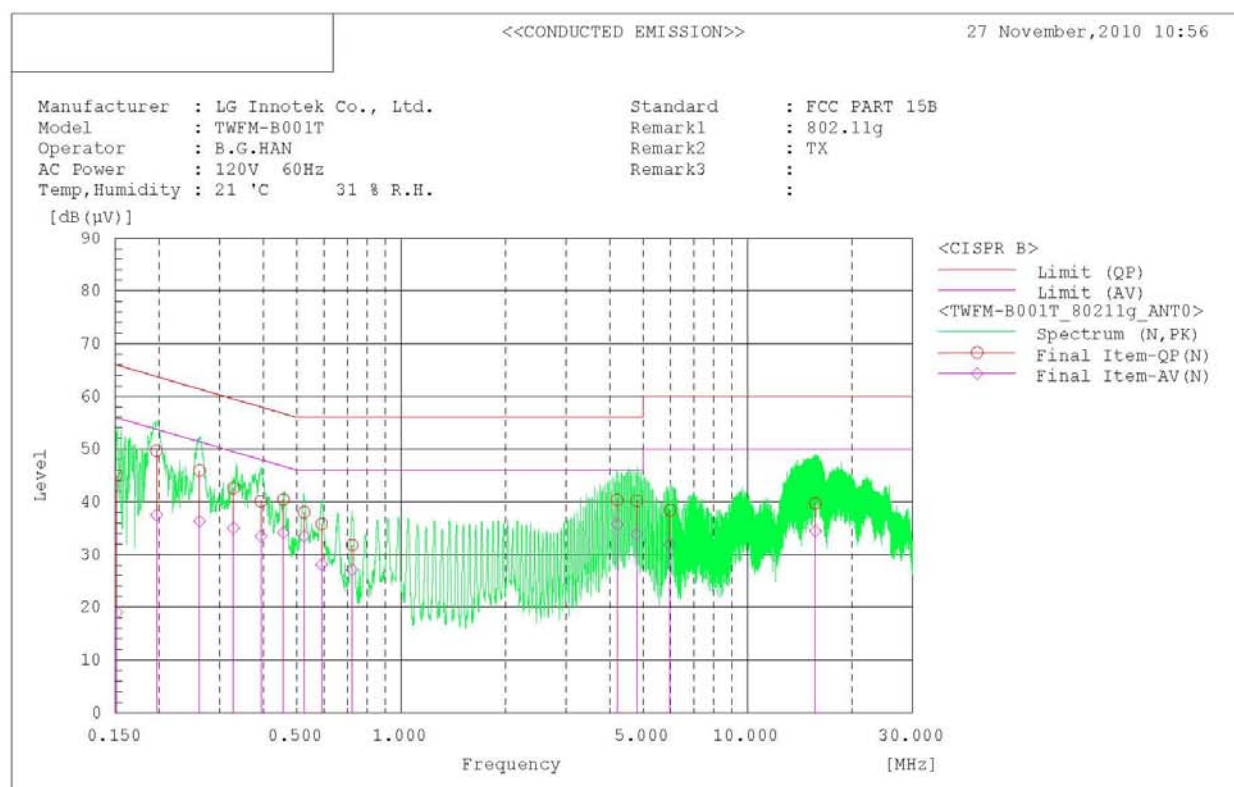
No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]	[dB (μV)]	[dB (μV)]	[dB]	[dB (μV)]	[dB (μV)]	[dB (μV)]	[dB (μV)]	[dB]	[dB]	
1	0.151	43.4	14.7	0.2	43.6	14.9	65.9	55.9	22.3	41.0	
2	0.196	49.5	40.2	0.1	49.6	40.3	63.8	53.8	14.2	13.5	
3	0.262	49.1	39.0	0.1	49.2	39.1	61.4	51.4	12.2	12.3	
4	0.392	43.2	37.8	0.1	43.3	37.9	58.0	48.0	14.7	10.1	
5	0.523	38.1	34.2	0.1	38.2	34.3	56.0	46.0	17.8	11.7	
6	0.589	36.6	31.3	0.1	36.7	31.4	56.0	46.0	19.3	14.6	
7	0.655	34.4	27.1	0.1	34.5	27.2	56.0	46.0	21.5	18.8	
8	4.753	23.7	13.4	0.3	24.0	13.7	56.0	46.0	32.0	32.3	
9	4.887	24.0	13.4	0.3	24.3	13.7	56.0	46.0	31.7	32.3	
10	5.148	22.2	10.9	0.3	22.5	11.2	60.0	50.0	37.5	38.8	
11	5.347	20.0	6.6	0.3	20.3	6.9	60.0	50.0	39.7	43.1	
12	10.367	36.0	26.6	0.5	36.5	27.1	60.0	50.0	23.5	22.9	
13	15.525	27.7	22.5	0.7	28.4	23.2	60.0	50.0	31.6	26.8	
14	19.414	38.2	34.2	0.9	39.1	35.1	60.0	50.0	20.9	14.9	

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]	[dB (μV)]	[dB (μV)]	[dB]	[dB (μV)]	[dB (μV)]	[dB (μV)]	[dB (μV)]	[dB]	[dB]	
1	0.151	43.2	15.8	0.2	43.4	16.0	65.9	55.9	22.5	39.9	
2	0.196	53.7	40.8	0.2	53.9	41.0	63.8	53.8	9.9	12.8	
3	0.261	50.3	39.6	0.2	50.5	39.8	61.4	51.4	10.9	11.6	
4	0.391	43.5	38.1	0.2	43.7	38.3	58.0	48.0	14.3	9.7	
5	0.522	39.0	34.5	0.3	39.3	34.8	56.0	46.0	16.7	11.2	
6	0.587	37.4	31.6	0.3	37.7	31.9	56.0	46.0	18.3	14.1	
7	0.653	36.5	28.3	0.3	36.8	28.6	56.0	46.0	19.2	17.4	
8	4.905	43.3	37.1	0.4	43.7	37.5	56.0	46.0	12.3	8.5	
9	4.776	43.6	37.4	0.4	44.0	37.8	56.0	46.0	12.0	8.2	
10	5.169	42.9	35.2	0.4	43.3	35.6	60.0	50.0	16.7	14.4	
11	5.629	40.5	29.5	0.4	40.9	29.9	60.0	50.0	19.1	20.1	
12	10.245	28.9	20.6	0.6	29.5	21.2	60.0	50.0	30.5	28.8	
13	15.224	26.8	22.1	0.8	27.6	22.9	60.0	50.0	32.4	27.1	
14	19.121	39.0	34.9	0.9	39.9	35.8	60.0	50.0	20.1	14.2	

## AC Line Conducted Emissions (Graph)

Test Mode: 802.11g





## AC Line Conducted Emissions (Data List)

Test Mode: 802.11g

<<CONDUCTED EMISSION>>

27 November, 2010 10:56

Standard : FCC PART 15B  
Manufacturer : LG Innotek Co., Ltd.  
Model : TWFM-B001T  
Operator : B.G.HAN  
AC Power : 120V 60Hz  
Temp, Humidity : 21 °C 31 % R.H.  
Remark1 : 802.11g  
Remark2 : TX  
Remark3 :  
:

Final Result

--- N Phase ---

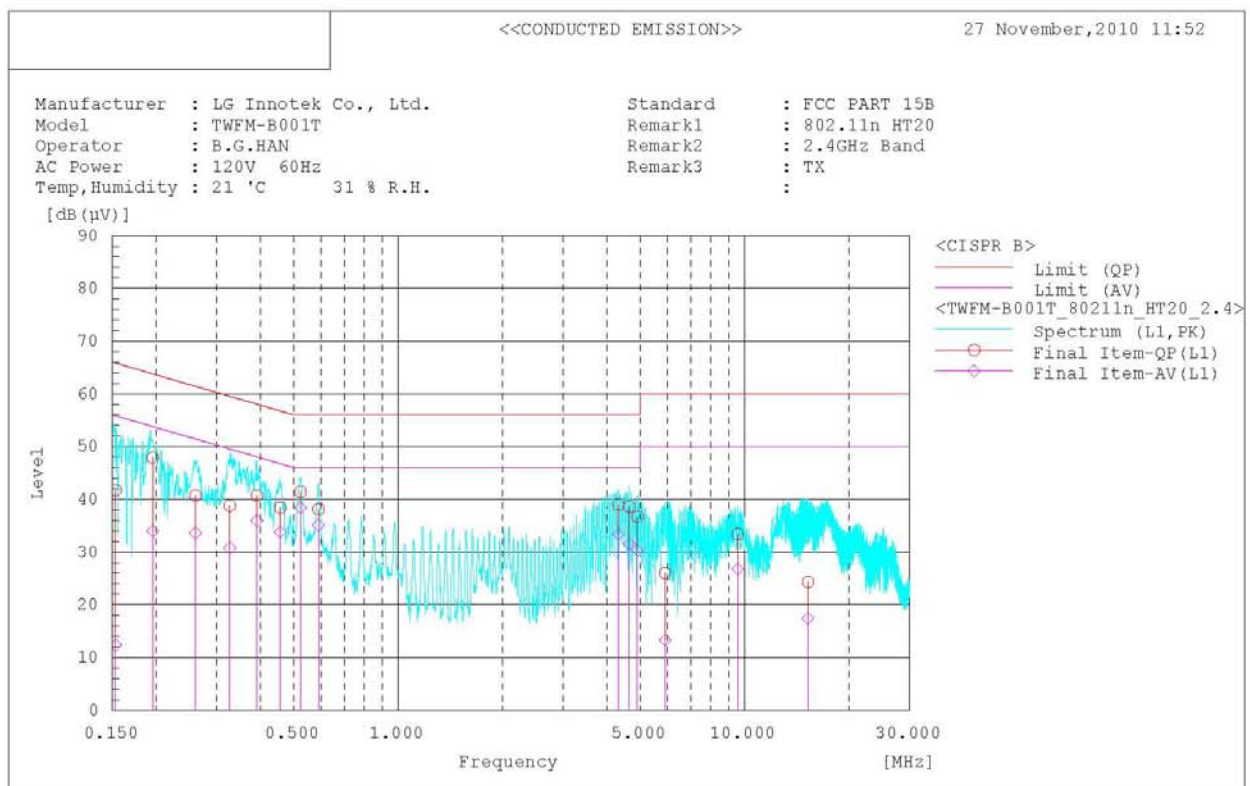
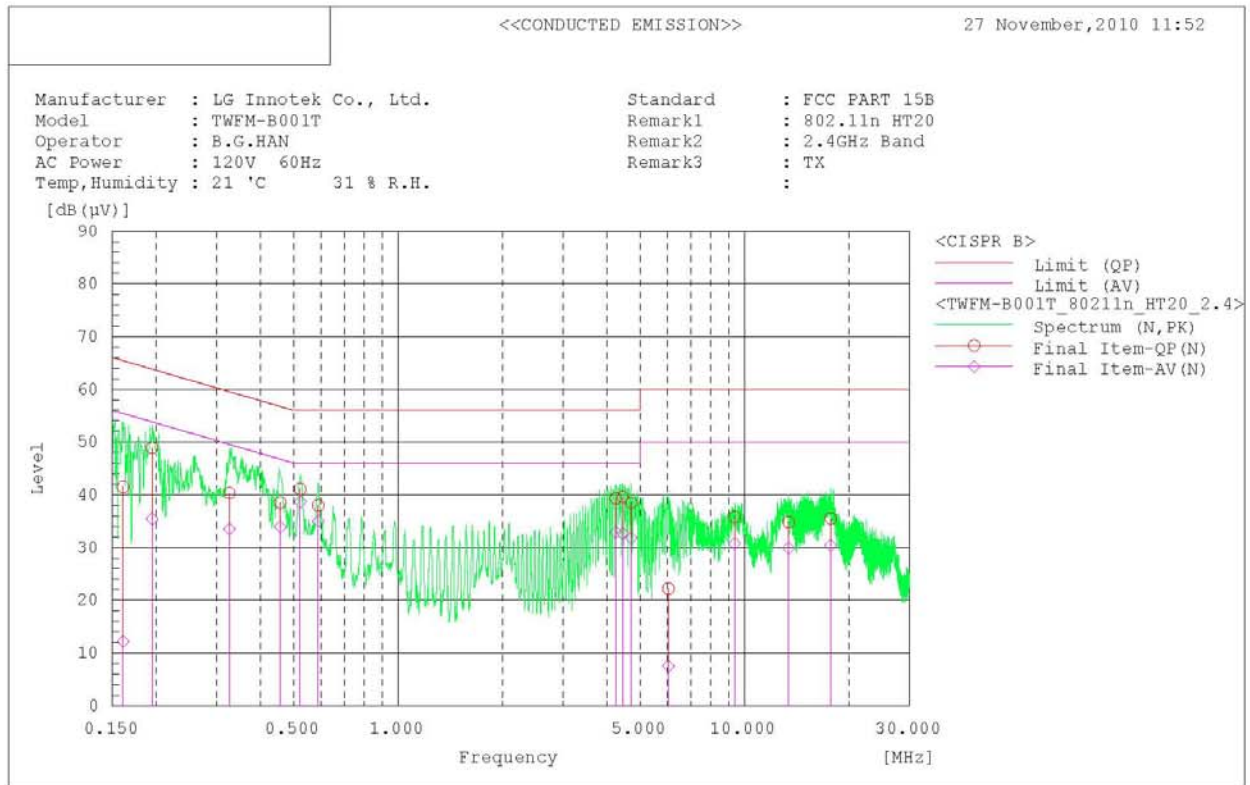
No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]	[dB (μV)]	[dB (μV)]	[dB]	[dB (μV)]	[dB (μV)]	[dB (μV)]	[dB (μV)]	[dB]	[dB]	
1	0.151	44.8	18.9	0.2	45.0	19.1	65.9	55.9	20.9	36.8	
2	0.197	49.6	37.4	0.1	49.7	37.5	63.7	53.7	14.0	16.2	
3	0.262	45.8	36.2	0.1	45.9	36.3	61.4	51.4	15.5	15.1	
4	0.328	42.5	34.9	0.1	42.6	35.0	59.5	49.5	16.9	14.5	
5	0.394	40.0	33.4	0.1	40.1	33.5	58.0	48.0	17.9	14.5	
6	0.458	40.3	34.1	0.1	40.4	34.2	56.7	46.7	16.3	12.5	
7	0.525	37.9	33.4	0.1	38.0	33.5	56.0	46.0	18.0	12.5	
8	0.590	35.7	28.0	0.1	35.8	28.1	56.0	46.0	20.2	17.9	
9	0.722	31.7	27.0	0.1	31.8	27.1	56.0	46.0	24.2	18.9	
10	4.205	40.0	35.4	0.3	40.3	35.7	56.0	46.0	15.7	10.3	
11	4.794	39.9	33.6	0.3	40.2	33.9	56.0	46.0	15.8	12.1	
12	5.973	38.1	31.5	0.3	38.4	31.8	60.0	50.0	21.6	18.2	
13	15.687	39.0	33.8	0.7	39.7	34.5	60.0	50.0	20.3	15.5	

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]	[dB (μV)]	[dB (μV)]	[dB]	[dB (μV)]	[dB (μV)]	[dB (μV)]	[dB (μV)]	[dB]	[dB]	
1	0.152	43.0	14.6	0.2	43.2	14.8	65.9	55.9	22.7	41.1	
2	0.196	49.2	38.3	0.2	49.4	38.5	63.8	53.8	14.4	15.3	
3	0.262	48.2	38.6	0.2	48.4	38.8	61.4	51.4	13.0	12.6	
4	0.328	38.9	29.7	0.2	39.1	29.9	59.5	49.5	20.4	19.6	
5	0.394	42.8	37.8	0.2	43.0	38.0	58.0	48.0	15.0	10.0	
6	0.525	38.5	34.1	0.3	38.8	34.4	56.0	46.0	17.2	11.6	
7	0.591	36.2	31.3	0.3	36.5	31.6	56.0	46.0	19.5	14.4	
8	0.722	35.1	32.1	0.3	35.4	32.4	56.0	46.0	20.6	13.6	
9	4.341	41.3	34.9	0.4	41.7	35.3	56.0	46.0	14.3	10.7	
10	4.536	43.1	36.3	0.4	43.5	36.7	56.0	46.0	12.5	9.3	
11	4.666	39.8	34.2	0.4	40.2	34.6	56.0	46.0	15.8	11.4	
12	6.044	36.6	30.2	0.4	37.0	30.6	60.0	50.0	23.0	19.4	
13	15.899	35.2	31.2	0.8	36.0	32.0	60.0	50.0	24.0	18.0	

# AC Line Conducted Emissions (Graph)

Test Mode: 802.11n HT20 (2.4GHz Band)



## AC Line Conducted Emissions (Data List)

Test Mode: 802.11n HT20 (2.4GHz Band)

<<CONDUCTED EMISSION>>

27 November, 2010 11:52

Standard : FCC PART 15B  
Manufacturer : LG Innotek Co., Ltd.  
Model : TWFM-B001T  
Operator : B.G.HAN  
AC Power : 120V 60Hz  
Temp, Humidity : 21 °C 31 % R.H.  
Remark1 : 802.11n HT20  
Remark2 : 2.4GHz Band  
Remark3 : TX  
:

Final Result

--- N Phase ---

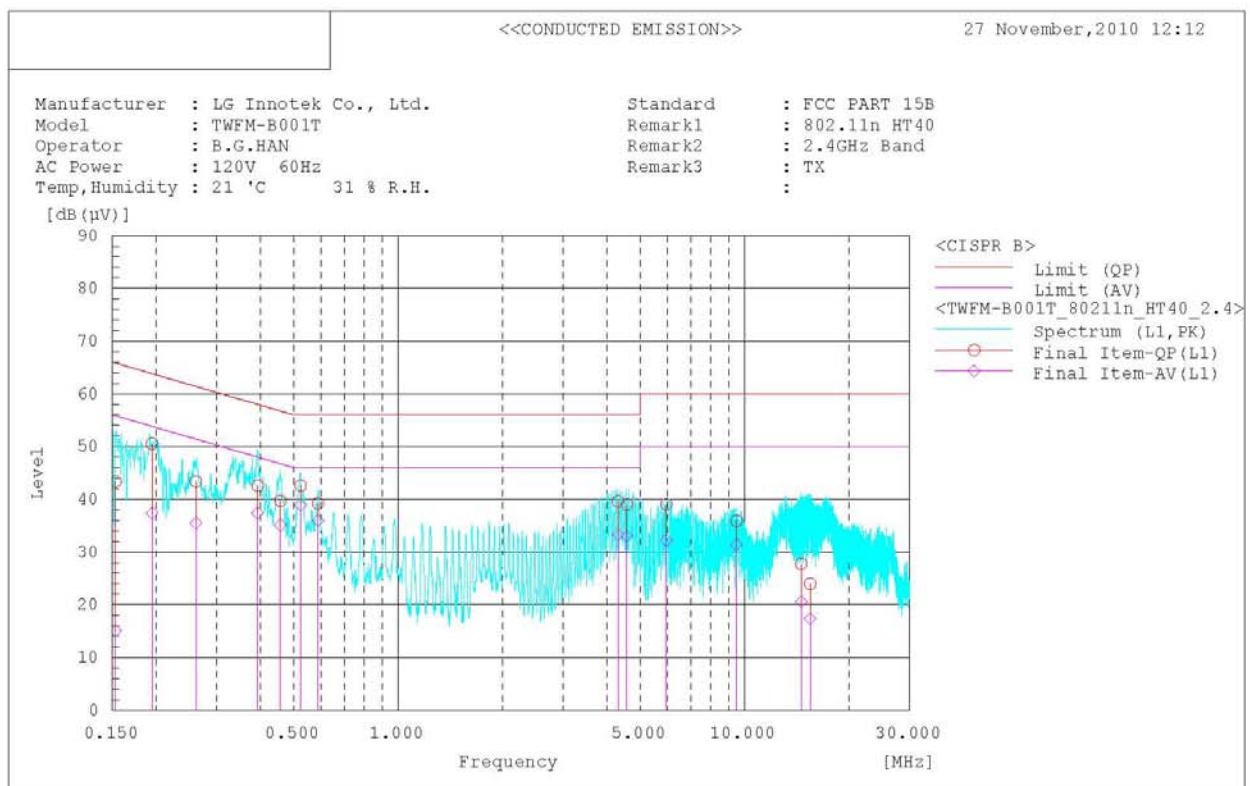
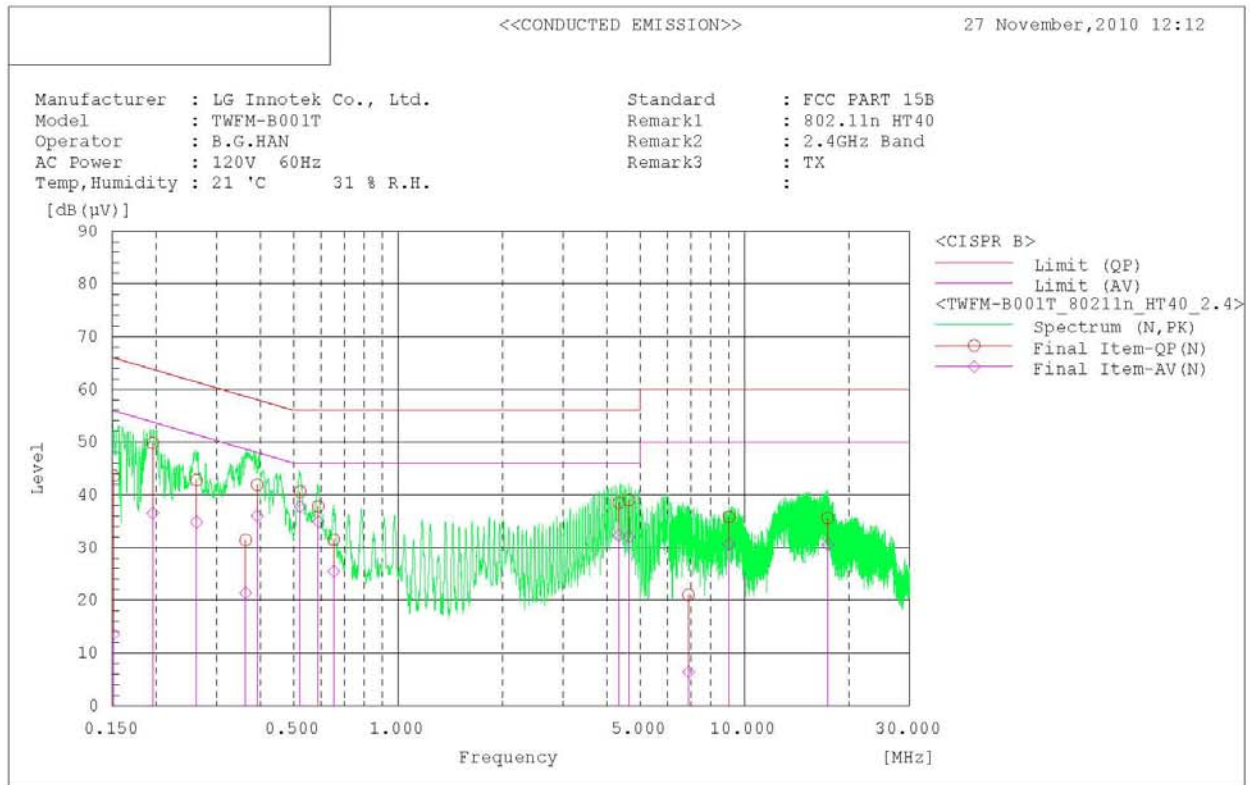
No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]	
1	0.161	41.3	12.0	0.2	41.5	12.2	65.4	55.4	23.9	43.2	
2	0.195	48.8	35.3	0.1	48.9	35.4	63.8	53.8	14.9	18.4	
3	0.326	40.2	33.4	0.1	40.3	33.5	59.6	49.6	19.3	16.1	
4	0.457	38.4	33.8	0.1	38.5	33.9	56.7	46.7	18.2	12.8	
5	0.522	41.0	38.6	0.1	41.1	38.7	56.0	46.0	14.9	7.3	
6	0.588	37.9	34.9	0.1	38.0	35.0	56.0	46.0	18.0	11.0	
7	4.448	39.3	32.3	0.3	39.6	32.6	56.0	46.0	16.4	13.4	
8	4.252	39.0	32.6	0.3	39.3	32.9	56.0	46.0	16.7	13.1	
9	4.710	38.2	31.5	0.3	38.5	31.8	56.0	46.0	17.5	14.2	
10	6.030	21.9	7.2	0.3	22.2	7.5	60.0	50.0	37.8	42.5	
11	9.352	35.4	30.4	0.4	35.8	30.8	60.0	50.0	24.2	19.2	
12	13.405	34.2	29.3	0.6	34.8	29.9	60.0	50.0	25.2	20.1	
13	17.725	34.7	29.6	0.8	35.5	30.4	60.0	50.0	24.5	19.6	

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]	
1	0.153	41.5	12.2	0.2	41.7	12.4	65.8	55.8	24.1	43.4	
2	0.196	47.7	33.8	0.2	47.9	34.0	63.8	53.8	15.9	19.8	
3	0.260	40.5	33.4	0.2	40.7	33.6	61.4	51.4	20.7	17.8	
4	0.327	38.6	30.6	0.2	38.8	30.8	59.5	49.5	20.7	18.7	
5	0.391	40.5	35.7	0.2	40.7	35.9	58.0	48.0	17.3	12.1	
6	0.457	38.2	33.6	0.2	38.4	33.8	56.7	46.7	18.3	12.9	
7	0.523	41.1	38.1	0.3	41.4	38.4	56.0	46.0	14.6	7.6	
8	0.589	37.8	34.8	0.3	38.1	35.1	56.0	46.0	17.9	10.9	
9	4.319	38.6	33.0	0.4	39.0	33.4	56.0	46.0	17.0	12.6	
10	4.647	38.2	31.2	0.4	38.6	31.6	56.0	46.0	17.4	14.4	
11	4.906	36.3	29.9	0.4	36.7	30.3	56.0	46.0	19.3	15.7	
12	5.900	25.6	12.9	0.4	26.0	13.3	60.0	50.0	34.0	36.7	
13	9.559	32.9	26.3	0.5	33.4	26.8	60.0	50.0	26.6	23.2	
14	15.264	23.5	16.6	0.8	24.3	17.4	60.0	50.0	35.7	32.6	

## AC Line Conducted Emissions (Graph)

Test Mode: 802.11n HT40 (2.4GHz Band)



## AC Line Conducted Emissions (Data List)

Test Mode: 802.11n HT40 (2.4GHz Band)

<<CONDUCTED EMISSION>>

27 November, 2010 12:12

Standard : FCC PART 15B

Manufacturer : LG Innotek Co., Ltd.

Model : TWFM-B001T

Operator : B.G.HAN

AC Power : 120V 60Hz

Temp, Humidity : 21 °C 31 % R.H.

Remark1 : 802.11n HT40

Remark2 : 2.4GHz Band

Remark3 : TX

Final Result

--- N Phase ---

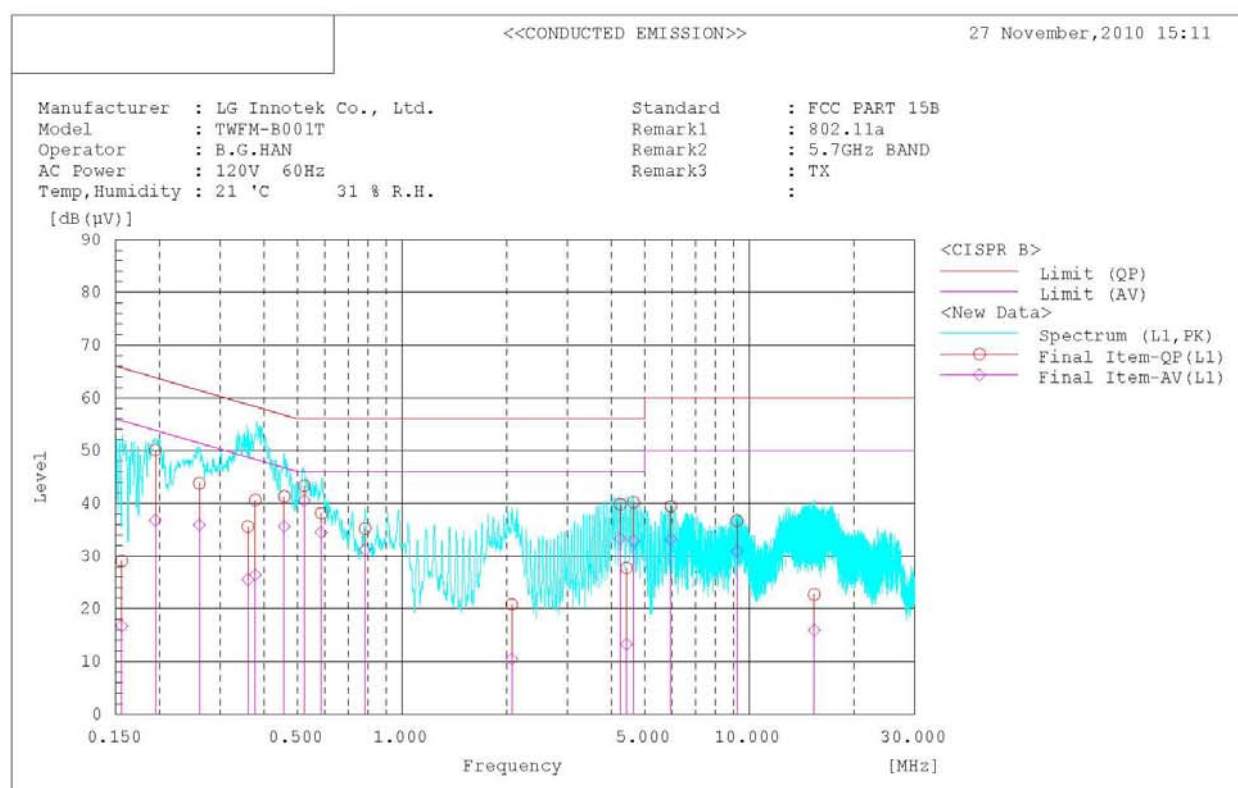
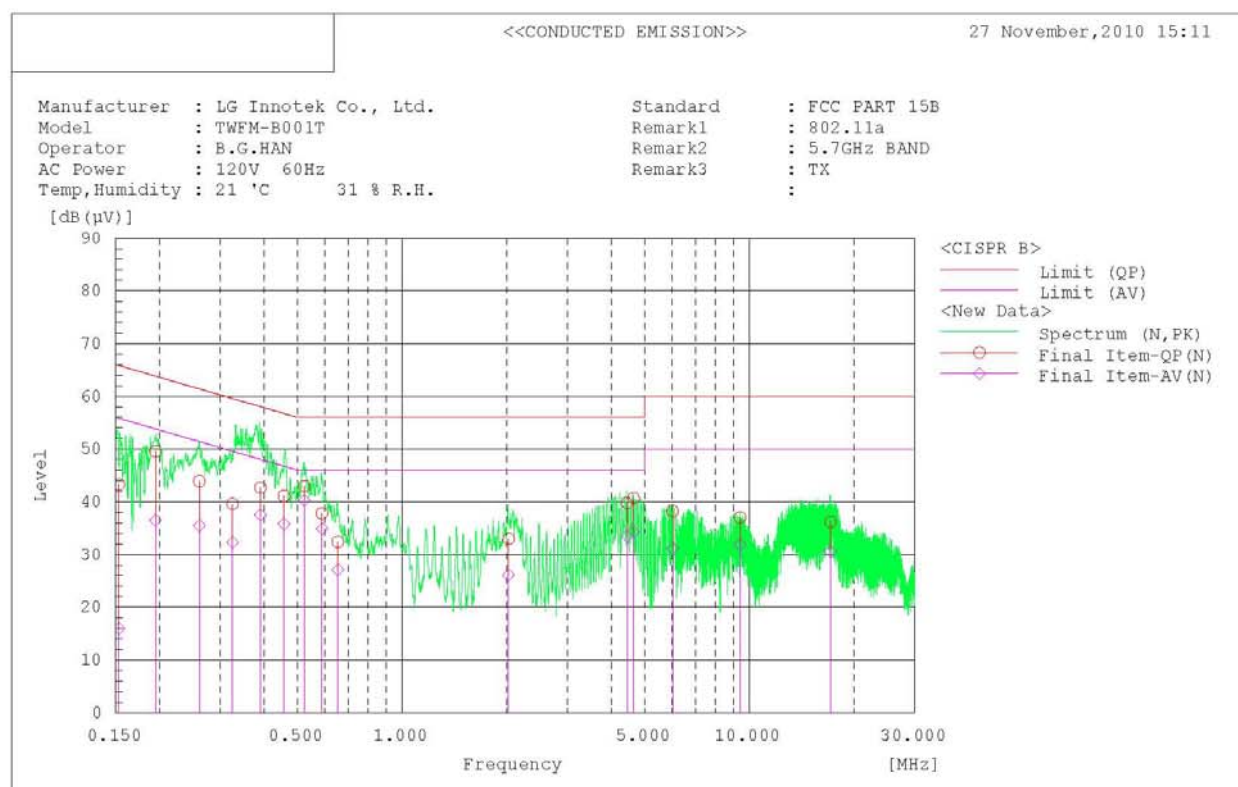
No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]	[dB (μV)]	[dB (μV)]	[dB]	[dB (μV)]	[dB (μV)]	[dB (μV)]	[dB (μV)]	[dB]	[dB]	
1	0.151	43.4	13.4	0.2	43.6	13.6	65.9	55.9	22.3	42.3	
2	0.196	49.7	36.4	0.1	49.8	36.5	63.8	53.8	14.0	17.3	
3	0.262	42.7	34.7	0.1	42.8	34.8	61.4	51.4	18.6	16.6	
4	0.363	31.3	21.3	0.1	31.4	21.4	58.7	48.7	27.3	27.3	
5	0.392	41.8	35.9	0.1	41.9	36.0	58.0	48.0	16.1	12.0	
6	0.522	40.5	37.7	0.1	40.6	37.8	56.0	46.0	15.4	8.2	
7	0.588	37.7	34.8	0.1	37.8	34.9	56.0	46.0	18.2	11.1	
8	0.652	31.4	25.4	0.1	31.5	25.5	56.0	46.0	24.5	20.5	
9	4.338	38.2	32.0	0.3	38.5	32.3	56.0	46.0	17.5	13.7	
10	4.639	38.7	31.7	0.3	39.0	32.0	56.0	46.0	17.0	14.0	
11	6.889	20.6	6.0	0.4	21.0	6.4	60.0	50.0	39.0	43.6	
12	9.016	35.4	30.3	0.4	35.8	30.7	60.0	50.0	24.2	19.3	
13	17.380	34.8	29.7	0.8	35.6	30.5	60.0	50.0	24.4	19.5	

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]	[dB (μV)]	[dB (μV)]	[dB]	[dB (μV)]	[dB (μV)]	[dB (μV)]	[dB (μV)]	[dB]	[dB]	
1	0.153	43.2	14.9	0.2	43.4	15.1	65.8	55.8	22.4	40.7	
2	0.195	50.3	37.2	0.2	50.5	37.4	63.8	53.8	13.3	16.4	
3	0.261	43.2	35.3	0.2	43.4	35.5	61.4	51.4	18.0	15.9	
4	0.393	42.4	37.2	0.2	42.6	37.4	58.0	48.0	15.4	10.6	
5	0.458	39.5	34.9	0.2	39.7	35.1	56.7	46.7	17.0	11.6	
6	0.523	42.3	38.6	0.3	42.6	38.9	56.0	46.0	13.4	7.1	
7	0.587	38.9	35.7	0.3	39.2	36.0	56.0	46.0	16.8	10.0	
8	4.315	39.2	32.9	0.4	39.6	33.3	56.0	46.0	16.4	12.7	
9	4.576	38.6	32.6	0.4	39.0	33.0	56.0	46.0	17.0	13.0	
10	5.947	38.6	31.8	0.4	39.0	32.2	60.0	50.0	21.0	17.8	
11	9.480	35.4	30.9	0.5	35.9	31.4	60.0	50.0	24.1	18.6	
12	14.587	27.0	19.9	0.7	27.7	20.6	60.0	50.0	32.3	29.4	
13	15.460	23.2	16.6	0.8	24.0	17.4	60.0	50.0	36.0	32.6	

## AC Line Conducted Emissions (Graph)

Test Mode: 802.11a



## AC Line Conducted Emissions (Data List)

Test Mode: 802.11a

<<CONDUCTED EMISSION>>

27 November, 2010 15:11

Standard : FCC PART 15B  
Manufacturer : LG Innotek Co., Ltd.  
Model : TWFM-B001T  
Operator : B.G.HAN  
AC Power : 120V 60Hz  
Temp, Humidity : 21 °C 31 % R.H.  
Remark1 : 802.11a  
Remark2 : 5.7GHz BAND  
Remark3 : TX  
:

Final Result

--- N Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]	
1	0.153	43.1	15.7	0.2	43.3	15.9	65.8	55.8	22.5	39.9	
2	0.195	49.5	36.4	0.1	49.6	36.5	63.8	53.8	14.2	17.3	
3	0.261	43.8	35.4	0.1	43.9	35.5	61.4	51.4	17.5	15.9	
4	0.325	39.5	32.2	0.1	39.6	32.3	59.6	49.6	20.0	17.3	
5	0.391	42.6	37.4	0.1	42.7	37.5	58.0	48.0	15.3	10.5	
6	0.457	41.0	35.7	0.1	41.1	35.8	56.8	46.8	15.7	11.0	
7	0.523	42.9	40.2	0.1	43.0	40.3	56.0	46.0	13.0	5.7	
8	0.588	37.7	34.8	0.1	37.8	34.9	56.0	46.0	18.2	11.1	
9	0.653	32.3	27.0	0.1	32.4	27.1	56.0	46.0	23.6	18.9	
10	2.026	32.8	25.9	0.2	33.0	26.1	56.0	46.0	23.0	19.9	
11	4.444	39.5	33.1	0.3	39.8	33.4	56.0	46.0	16.2	12.6	
12	4.639	40.4	34.0	0.3	40.7	34.3	56.0	46.0	15.3	11.7	
13	6.013	37.9	30.9	0.3	38.2	31.2	60.0	50.0	21.8	18.8	
14	9.410	36.6	31.5	0.4	37.0	31.9	60.0	50.0	23.0	18.1	
15	17.121	35.4	29.8	0.8	36.2	30.6	60.0	50.0	23.8	19.4	

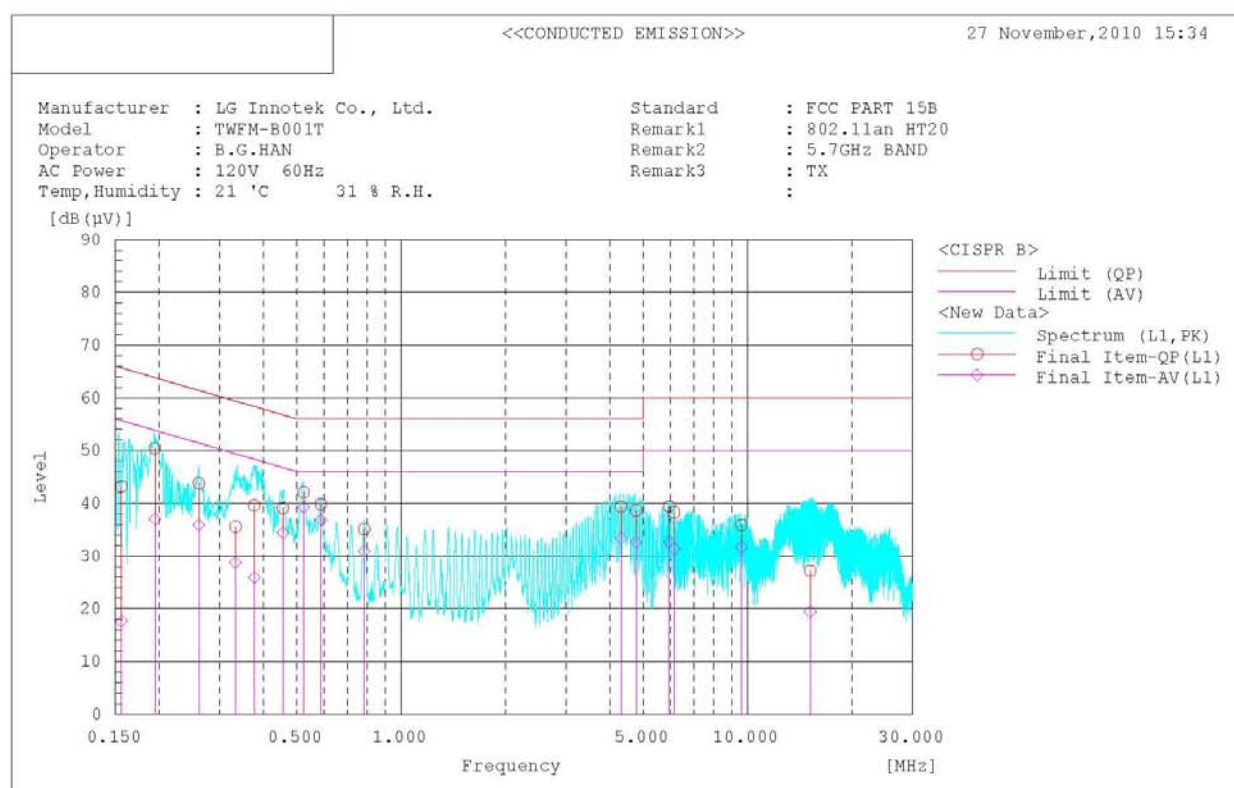
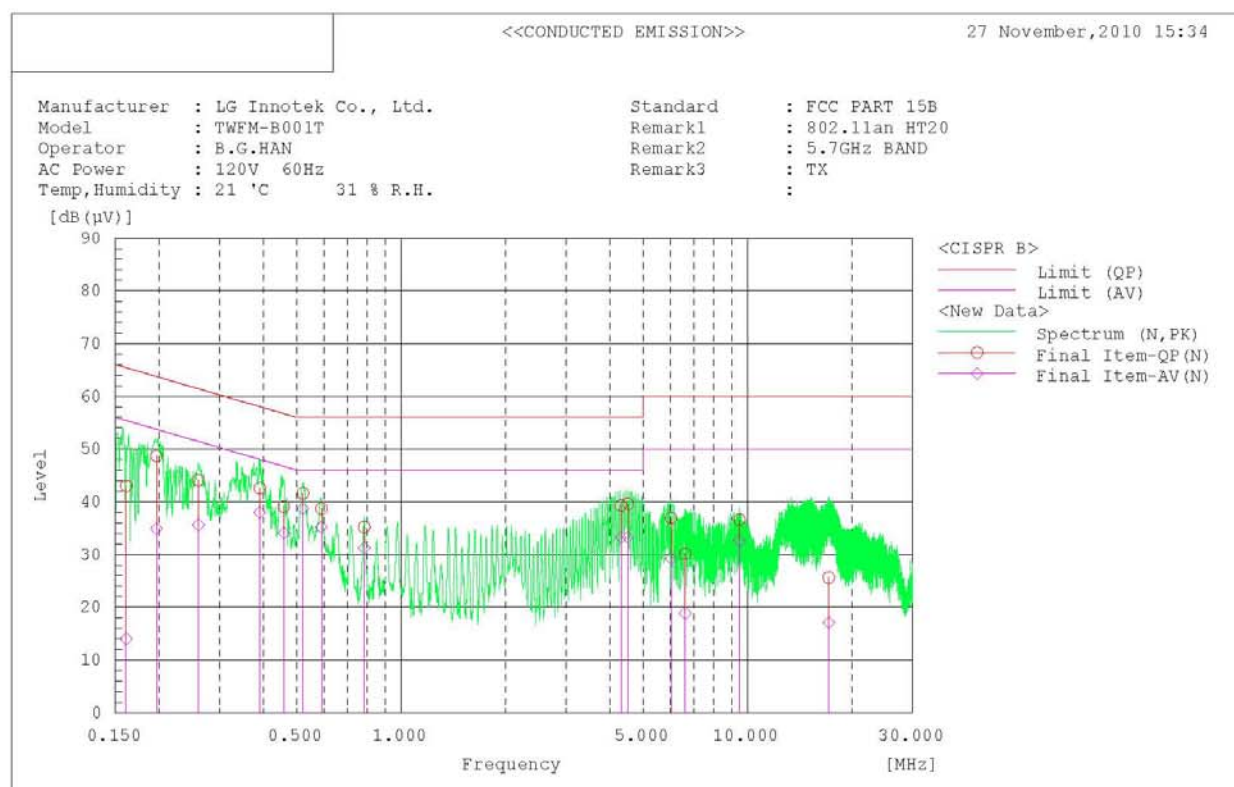
--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]	
1	0.156	28.9	16.5	0.2	29.1	16.7	65.7	55.7	36.6	39.0	
2	0.195	49.9	36.6	0.2	50.1	36.8	63.8	53.8	13.7	17.0	
3	0.261	43.6	35.7	0.2	43.8	35.9	61.4	51.4	17.6	15.5	
4	0.360	35.4	25.3	0.2	35.6	25.5	58.7	48.7	23.1	23.2	
5	0.378	40.4	26.2	0.2	40.6	26.4	58.3	48.3	17.7	21.9	
6	0.458	41.1	35.4	0.2	41.3	35.6	56.7	46.7	15.4	11.1	
7	0.523	43.0	40.2	0.3	43.3	40.5	56.0	46.0	12.7	5.5	
8	0.586	37.8	34.2	0.3	38.1	34.5	56.0	46.0	17.9	11.5	
9	0.783	34.9	30.9	0.3	35.2	31.2	56.0	46.0	20.8	14.8	
10	2.070	20.5	10.2	0.3	20.8	10.5	56.0	46.0	35.2	35.5	
11	4.248	39.4	32.9	0.4	39.8	33.3	56.0	46.0	16.2	12.7	
12	4.432	27.3	12.9	0.4	27.7	13.3	56.0	46.0	28.3	32.7	
13	4.640	39.8	32.5	0.4	40.2	32.9	56.0	46.0	15.8	13.1	
14	5.945	39.0	32.7	0.4	39.4	33.1	60.0	50.0	20.6	16.9	
15	9.215	36.2	30.4	0.5	36.7	30.9	60.0	50.0	23.3	19.1	
16	15.379	21.9	15.1	0.8	22.7	15.9	60.0	50.0	37.3	34.1	



## AC Line Conducted Emissions (Graph)

Test Mode: 802.11n HT20 (5.7GHz Band)





## AC Line Conducted Emissions (Data List)

Test Mode: 802.11n HT20 (5.7GHz Band)

<<CONDUCTED EMISSION>>

27 November, 2010 15:34

Standard : FCC PART 15B  
Manufacturer : LG Innotek Co., Ltd.  
Model : TWFM-B001T  
Operator : B.G.HAN  
AC Power : 120V 60Hz  
Temp, Humidity : 21 °C 31 % R.H.  
Remark1 : 802.11n HT20  
Remark2 : 5.7GHz BAND  
Remark3 : TX

Final Result

--- N Phase ---

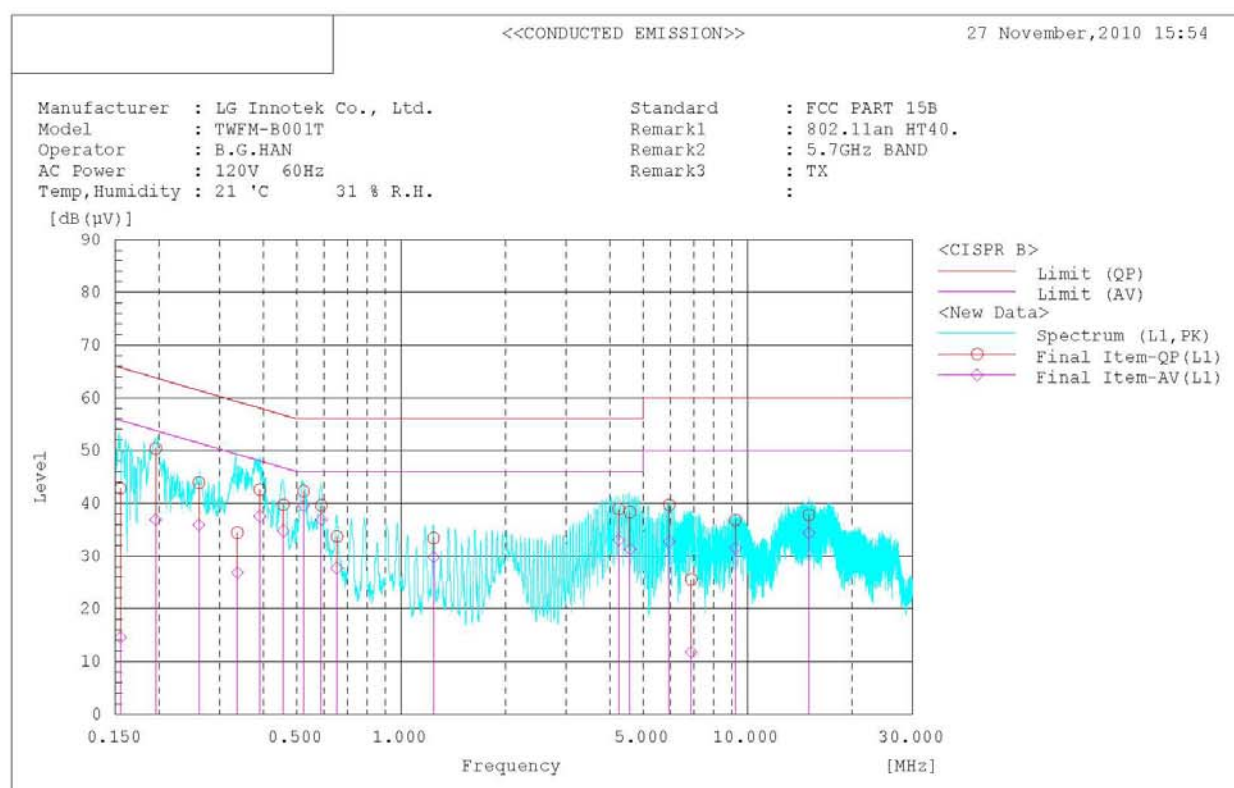
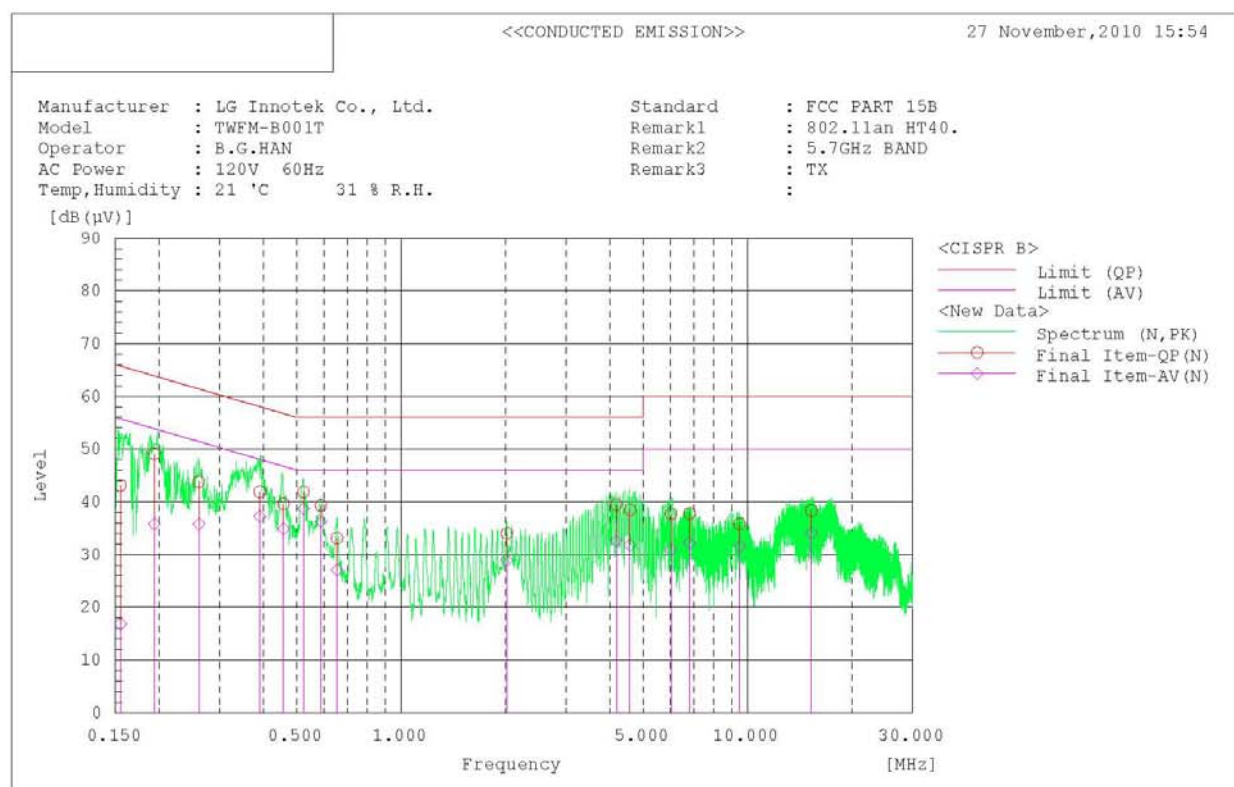
No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]	
1	0.161	42.8	13.8	0.2	43.0	14.0	65.4	55.4	22.4	41.4	
2	0.197	48.6	34.8	0.1	48.7	34.9	63.7	53.7	15.0	18.8	
3	0.260	44.0	35.5	0.1	44.1	35.6	61.4	51.4	17.3	15.8	
4	0.391	42.5	37.9	0.1	42.6	38.0	58.0	48.0	15.4	10.0	
5	0.459	39.0	34.0	0.1	39.1	34.1	56.7	46.7	17.6	12.6	
6	0.521	41.5	38.6	0.1	41.6	38.7	56.0	46.0	14.4	7.3	
7	0.589	38.6	35.1	0.1	38.7	35.2	56.0	46.0	17.3	10.8	
8	0.783	35.1	31.2	0.1	35.2	31.3	56.0	46.0	20.8	14.7	
9	4.316	39.0	33.0	0.3	39.3	33.3	56.0	46.0	16.7	12.7	
10	4.511	39.3	33.0	0.3	39.6	33.3	56.0	46.0	16.4	12.7	
11	6.016	36.6	28.9	0.3	36.9	29.2	60.0	50.0	23.1	20.8	
12	6.609	29.8	18.6	0.3	30.1	18.9	60.0	50.0	29.9	31.1	
13	9.476	36.2	32.2	0.4	36.6	32.6	60.0	50.0	23.4	17.4	
14	17.156	24.8	16.3	0.8	25.6	17.1	60.0	50.0	34.4	32.9	

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]	
1	0.156	43.0	17.4	0.2	43.2	17.6	65.7	55.7	22.5	38.1	
2	0.195	50.2	36.8	0.2	50.4	37.0	63.8	53.8	13.4	16.8	
3	0.261	43.6	35.7	0.2	43.8	35.9	61.4	51.4	17.6	15.5	
4	0.333	35.4	28.6	0.2	35.6	28.8	59.4	49.4	23.8	20.6	
5	0.377	39.4	25.7	0.2	39.6	25.9	58.3	48.3	18.7	22.4	
6	0.456	38.9	34.2	0.2	39.1	34.4	56.8	46.8	17.7	12.4	
7	0.523	41.8	39.0	0.3	42.1	39.3	56.0	46.0	13.9	6.7	
8	0.587	39.5	36.5	0.3	39.8	36.8	56.0	46.0	16.2	9.2	
9	0.783	34.8	30.6	0.3	35.1	30.9	56.0	46.0	20.9	15.1	
10	4.314	39.0	33.0	0.4	39.4	33.4	56.0	46.0	16.6	12.6	
11	4.769	38.2	32.2	0.4	38.6	32.6	56.0	46.0	17.4	13.4	
12	5.945	39.0	32.2	0.4	39.4	32.6	60.0	50.0	20.6	17.4	
13	6.142	37.8	30.9	0.5	38.3	31.4	60.0	50.0	21.7	18.6	
14	9.605	35.4	31.2	0.5	35.9	31.7	60.0	50.0	24.1	18.3	
15	15.175	26.4	18.6	0.8	27.2	19.4	60.0	50.0	32.8	30.6	

## AC Line Conducted Emissions (Graph)

Test Mode: 802.11n HT40 (5.7GHz Band)



## AC Line Conducted Emissions (Data List)

Test Mode: 802.11n HT40 (5.7GHz Band)

<<CONDUCTED EMISSION>>

27 November, 2010 15:54

Standard : FCC PART 15B  
 Manufacturer : LG Innotek Co., Ltd.  
 Model : TWFM-B001T  
 Operator : B.G.HAN  
 AC Power : 120V 60Hz  
 Temp, Humidity : 21 °C 31 % R.H.  
 Remark1 : 802.11an HT40.  
 Remark2 : 5.7GHz BAND  
 Remark3 : TX

\*\*\*\*\*  
Final Result

--- N Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]	[dB (μV)]	[dB (μV)]	[dB]	[dB (μV)]	[dB (μV)]	[dB (μV)]	[dB (μV)]	[dB]	[dB]	
1	0.155	42.9	16.6	0.2	43.1	16.8	65.7	55.7	22.6	38.9	
2	0.194	49.0	35.7	0.1	49.1	35.8	63.9	53.9	14.8	18.1	
3	0.261	43.7	35.7	0.1	43.8	35.8	61.4	51.4	17.6	15.6	
4	0.391	41.8	37.1	0.1	41.9	37.2	58.1	48.1	16.2	10.9	
5	0.458	39.5	34.8	0.1	39.6	34.9	56.7	46.7	17.1	11.8	
6	0.523	41.8	38.6	0.1	41.9	38.7	56.0	46.0	14.1	7.3	
7	0.587	39.2	36.2	0.1	39.3	36.3	56.0	46.0	16.7	9.7	
8	0.653	33.0	27.0	0.1	33.1	27.1	56.0	46.0	22.9	18.9	
9	2.021	33.8	28.8	0.2	34.0	29.0	56.0	46.0	22.0	17.0	
10	4.185	39.2	32.3	0.3	39.5	32.6	56.0	46.0	16.5	13.4	
11	4.577	38.2	31.5	0.3	38.5	31.8	56.0	46.0	17.5	14.2	
12	6.015	37.4	30.6	0.3	37.7	30.9	60.0	50.0	22.3	19.1	
13	6.798	37.4	31.8	0.4	37.8	32.2	60.0	50.0	22.2	17.8	
14	9.480	35.4	31.2	0.4	35.8	31.6	60.0	50.0	24.2	18.4	
15	15.296	37.6	33.4	0.7	38.3	34.1	60.0	50.0	21.7	15.9	

--- L1 Phase ---

No.	Frequency	Reading QP	Reading AV	c.f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]	[dB (μV)]	[dB (μV)]	[dB]	[dB (μV)]	[dB (μV)]	[dB (μV)]	[dB (μV)]	[dB]	[dB]	
1	0.155	42.6	14.4	0.2	42.8	14.6	65.7	55.7	22.9	41.1	
2	0.196	50.2	36.7	0.2	50.4	36.9	63.8	53.8	13.4	16.9	
3	0.261	43.7	35.7	0.2	43.9	35.9	61.4	51.4	17.5	15.5	
4	0.337	34.2	26.7	0.2	34.4	26.9	59.3	49.3	24.9	22.4	
5	0.391	42.4	37.3	0.2	42.6	37.5	58.0	48.0	15.4	10.5	
6	0.458	39.5	34.6	0.2	39.7	34.8	56.7	46.7	17.0	11.9	
7	0.523	42.0	39.3	0.3	42.3	39.6	56.0	46.0	13.7	6.4	
8	0.588	39.3	36.6	0.3	39.6	36.9	56.0	46.0	16.4	9.1	
9	0.653	33.4	27.4	0.3	33.7	27.7	56.0	46.0	22.3	18.3	
10	1.242	33.1	29.5	0.3	33.4	29.8	56.0	46.0	22.6	16.2	
11	4.247	38.5	32.6	0.4	38.9	33.0	56.0	46.0	17.1	13.0	
12	4.577	37.9	30.9	0.4	38.3	31.3	56.0	46.0	17.7	14.7	
13	5.947	39.3	32.3	0.4	39.7	32.7	60.0	50.0	20.3	17.3	
14	6.876	25.0	11.3	0.5	25.5	11.8	60.0	50.0	34.5	38.2	
15	9.218	36.3	31.0	0.5	36.8	31.5	60.0	50.0	23.2	18.5	
16	15.032	37.0	33.6	0.8	37.8	34.4	60.0	50.0	22.2	15.6	

### 3.2.7 Antenna Requirements

**- Procedure:**

Describe how the EUT complies with the requirement that either its antenna is permanently attached, or that it employs a unique antenna connector, for every antenna proposed for use with the EUT.

**- Conclusion: Comply**

The antenna is permanently attached by soldering. (Refer to Internal Photo file.)

**- Minimum Standard:**

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions.

# **APPENDIX**

## **TEST EQUIPMENT FOR TESTS**

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment.

	Type	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	Next.Due.Date (dd/mm/yy)	S/N
<input checked="" type="checkbox"/>	Spectrum Analyzer	Agilent	E4440A	30/09/10	30/09/11	MY45304199
<input checked="" type="checkbox"/>	Spectrum Analyzer	Rohde Schwarz	FSQ26	25/02/10	25/02/11	200445
<input type="checkbox"/>	Spectrum Analyzer(RE)	H.P	8563E	04/10/10	04/10/11	3551A04634
<input type="checkbox"/>	Power Meter	H.P	EPM-442A	01/07/10	01/07/11	GB37170413
<input type="checkbox"/>	Power Sensor	H.P	8481A	01/07/10	01/07/11	3318A96332
<input checked="" type="checkbox"/>	Wideband Power Sensor	Rohde Schwarz	NRP-Z81	01/07/10	01/07/11	100418
<input type="checkbox"/>	Power Divider	Agilent	11636B	05/10/10	05/10/11	56471
<input type="checkbox"/>	Power Splitter	Anritsu	K241B	05/10/10	05/10/11	020611
<input type="checkbox"/>	Power Splitter	Anritsu	K241B	01/07/10	01/07/11	017060
<input type="checkbox"/>	Frequency Counter	H.P	5342A	01/07/10	01/07/11	2119A04450
<input type="checkbox"/>	TEMP & HUMIDITY Chamber	JISCO	KR-100/J-RHC2	04/10/10	04/10/11	30604493/021031
<input checked="" type="checkbox"/>	Digital Multimeter	H.P	34401A	12/03/10	12/03/11	3146A13475, US36122178
<input type="checkbox"/>	Multifunction Synthesizer	HP	8904A	11/10/10	11/10/11	3633A08404
<input checked="" type="checkbox"/>	Signal Generator	Rohde Schwarz	SMR20	12/03/10	12/03/11	101251
<input type="checkbox"/>	Signal Generator	H.P	ESG-3000A	01/07/10	01/07/11	US37230529
<input type="checkbox"/>	Vector Signal Generator	Rohde Schwarz	SMJ100A	11/01/10	11/01/11	100148
<input type="checkbox"/>	Vector Signal Generator	Rohde Schwarz	SMBV100A	23/02/10	23/02/11	255571
<input type="checkbox"/>	Audio Analyzer	H.P	8903B	02/07/10	02/07/11	3011A09448
<input type="checkbox"/>	Modulation Analyzer	H.P	8901B	01/07/10	01/07/11	3028A03029
<input type="checkbox"/>	8960 Series 10 Wireless Comms. Test Set	Agilent	E5515C	02/07/10	02/07/11	GB43461134
<input type="checkbox"/>	Universal Radio communication Tester	Rohde Schwarz	CMU 200	12/03/10	12/03/11	106760
<input type="checkbox"/>	Bluetooth Tester	TESCOM	TC-3000B	01/07/10	01/07/11	3000B000268
<input type="checkbox"/>	Thermo hygrometer	BODYCOM	BJ5478	28/01/10	28/01/11	090205-3
<input checked="" type="checkbox"/>	Thermo hygrometer	BODYCOM	BJ5478	28/01/10	28/01/11	090205-2
<input type="checkbox"/>	Thermo hygrometer	BODYCOM	BJ5478	28/01/10	28/01/11	090205-4
<input type="checkbox"/>	AC Power supply	DAEKWANG	5KVA	12/03/10	12/03/11	20060321-1
<input checked="" type="checkbox"/>	DC Power Supply	HP	6622A	12/03/10	12/03/11	3448A03760
<input type="checkbox"/>	DC Power Supply	HP	6633A	12/03/10	12/03/11	3524A06634
<input type="checkbox"/>	BAND Reject Filter	Microwave Circuits	N0308372	05/10/10	05/10/11	3125-01DC0352
<input type="checkbox"/>	BAND Reject Filter	Wainwright	WRCG1750	05/10/10	05/10/11	2
<input type="checkbox"/>	High-Pass Filter	ANRITSU	MP526D	04/10/10	04/10/11	M27756
<input type="checkbox"/>	High-pass filter	Wainwright	WHNX2.1	N/A	N/A	1
<input checked="" type="checkbox"/>	High-pass filter	Wainwright	WHNX3.0	N/A	N/A	9
<input type="checkbox"/>	High-pass filter	Wainwright	WHNX5.0	N/A	N/A	8
<input checked="" type="checkbox"/>	High-Pass Filter	Wainwright	WHKX8.5	N/A	N/A	1
<input type="checkbox"/>	Tunable Notch Filter	Wainwright	WRCT800.0 /960.0-0.2/40-8SSK	N/A	N/A	32
<input type="checkbox"/>	Tunable Notch Filter	Wainwright	WRCD1700.0 /2000.0-0.2/40-10SSK	N/A	N/A	53
<input type="checkbox"/>	Tunable Notch Filter	Wainwright	WRCT1900.0/ 2200.0-5/40-10SSK	N/A	N/A	30
<input checked="" type="checkbox"/>	HORN ANT	ETS	3115	04/10/10	04/10/11	21097
<input type="checkbox"/>	HORN ANT	ETS	3115	14/07/10	14/07/11	6419
<input checked="" type="checkbox"/>	HORN ANT	A.H.Systems	SAS-574	10/06/09	10/06/11	154
<input type="checkbox"/>	HORN ANT	A.H.Systems	SAS-574	10/06/09	10/06/11	155

	Type	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	Next.Due.Date (dd/mm/yy)	S/N
<input type="checkbox"/>	Dipole Antenna	Schwarzbeck	VHA9103	29/11/10	29/11/11	2116
<input type="checkbox"/>	Dipole Antenna	Schwarzbeck	VHA9103	29/11/10	29/11/11	2117
<input type="checkbox"/>	Dipole Antenna	Schwarzbeck	UHA9105	29/11/10	29/11/11	2261
<input type="checkbox"/>	Dipole Antenna	Schwarzbeck	UHA9105	29/11/10	29/11/11	2262
<input type="checkbox"/>	LOOP Antenna	ETS	6502	29/10/10	29/10/11	3471
<input checked="" type="checkbox"/>	HORN ANT	SCHWARZBECK	BBHA9120A	13/04/10	13/04/11	322
<input type="checkbox"/>	Coaxial Fixed Attenuators	Agilent	8491B	01/07/10	01/07/11	MY39260700
<input type="checkbox"/>	Attenuator (3dB)	WEINSCHEL	56-3	05/10/10	05/10/11	Y2342
<input type="checkbox"/>	Attenuator (3dB)	WEINSCHEL	56-3	05/10/10	05/10/11	Y2370
<input type="checkbox"/>	Attenuator (10dB)	WEINSCHEL	23-10-34	01/10/10	01/10/11	BP4386
<input type="checkbox"/>	Attenuator (10dB)	WEINSCHEL	23-10-34	11/01/10	11/01/11	BP4387
<input type="checkbox"/>	Attenuator (10dB)	WEINSCHEL	31696	05/10/10	05/10/11	446
<input type="checkbox"/>	Attenuator (10dB)	WEINSCHEL	31696	05/10/10	05/10/11	408
<input type="checkbox"/>	Attenuator (20dB)	WEINSCHEL	86-20-11	05/10/10	05/10/11	432
<input type="checkbox"/>	Attenuator (30dB)	JFW	50FH-030-300	12/03/10	12/03/11	060320-1
<input type="checkbox"/>	Attenuator (40dB)	WEINSCHEL	57-40-33	01/10/10	01/10/11	NN837
<input type="checkbox"/>	Termination	H.P	HP-909D	02/07/10	02/07/11	02750
<input type="checkbox"/>	Termination	H.P	HP-909D	02/07/10	02/07/11	02702
<input type="checkbox"/>	Type N Coaxial CIRCULATOR	NOVA MICROWAVE	0088CAN	01/07/10	01/07/11	788
<input type="checkbox"/>	Type N Coaxial CIRCULATOR	NOVA MICROWAVE	0185CAN	01/07/10	01/07/11	790
<input type="checkbox"/>	Type N Coaxial CIRCULATOR	NOVA MICROWAVE	0215CAN	01/07/10	01/07/11	112
<input type="checkbox"/>	Amplifier (30dB)	Agilent	8449B	23/04/10	23/04/11	3008A01590
<input checked="" type="checkbox"/>	Amplifier (30dB)	H.P	8449B	13/05/10	13/05/11	3008A00370
<input type="checkbox"/>	Amplifier	EMPOWER	BBS3Q7ELU	04/10/10	04/10/11	1020
<input type="checkbox"/>	RF Power Amplifier	OPHIRRF	5069F	01/07/10	01/07/11	1006
<input type="checkbox"/>	EMI TEST RECEIVER	R&S	ESU	29/01/10	29/01/11	100014
<input type="checkbox"/>	BILOG ANTENNA	SCHAFFNER	CBL6112B	14/07/10	14/07/11	2737
<input type="checkbox"/>	Amplifier (22dB)	H.P	8447E	29/01/10	29/01/11	2945A02865
<input checked="" type="checkbox"/>	EMI TEST RECEIVER	R&S	ESCI	12/05/10	12/05/11	100364
<input checked="" type="checkbox"/>	LOG-PERIODIC ANT.	Schwarzbeck	UHALP 9108 A-1	07/10/09	07/10/11	1098
<input checked="" type="checkbox"/>	BICONICAL ANT.	Schwarzbeck	VHA 9103	06/10/09	06/10/11	91031946
<input type="checkbox"/>	LOG-PERIODIC ANT.	Schwarzbeck	UHALP9108A	07/07/10	07/07/11	590
<input checked="" type="checkbox"/>	Low Noise Pre Amplifier	TSJ	MLA-100K01-B01-2	12/03/10	12/03/11	1252741
<input type="checkbox"/>	Low Noise Pre Amplifier	TSJ	MLA-00108-B02-36	08/02/10	08/02/11	1518831
<input type="checkbox"/>	Amplifier (25dB)	Agilent	8447D	12/03/10	12/03/11	2944A10144
<input type="checkbox"/>	Amplifier (25dB)	Agilent	8447D	01/07/10	01/07/11	2648A04922
<input checked="" type="checkbox"/>	Spectrum Analyzer(CE)	H.P	8591E	12/03/10	12/03/11	3649A05889
<input checked="" type="checkbox"/>	LISN	Kyoritsu	KNW-407	29/01/10	29/01/11	8-317-8
<input checked="" type="checkbox"/>	LISN	Kyoritsu	KNW-242	29/01/10	29/01/11	8-654-15
<input checked="" type="checkbox"/>	CVCF	NF Electronic	4420	12/03/10	12/03/11	304935/337980
<input checked="" type="checkbox"/>	50 ohm Terminator	HME	CT-01	12/01/10	12/01/11	N/A
<input checked="" type="checkbox"/>	RFI/FIELD Intensity Meter	Kyoritsu	KNM-2402	02/07/10	02/07/11	4N-170-3