



ESTECH Co., Ltd.

Rm 1015, World Venture Center 11,
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Seoul, 158-803, Korea



**Electromagnetic
Interference
Test Report**

Test Report for FCC

FCC ID:BJI-HTK10

IC Number: 1004C-HTK10

Report Number		ESTF151301-006	
Applicant	Company name	TOSHIBA TEC CORPORATION	
	Address	6-78, Minami-cho, Mishima-shi, Shizuoka-ken, 411-8520, Japan	
	Telephone	81-(0)55-976-7305	
Product	Product name	Handy terminal	
	Model No.	HT-K10	Manufacturer TOSHIBA TEC CORPORATION
	Serial No.	NONE	Country of origin CHINA
Test date	2012-11-29 ~ 2013-01-16	Date of issue	17-Jan-13
Testing location	ESTECH. Co., Ltd. 97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea		
Standard	FCC PART 15(2010) , ANSI C 63.4(2003) , KDB 558074 D01, RSS-210(2010)		
Measurement facility registration number	915135	IC Number	4475B-2
Tested by	Manager K.S.Kyong		(Signature)
Reviewed by	Engineering Manager J.M.Yang		(Signature)
Abbreviation	OK, Pass = Passed, Fail = Failed, N/A = not applicable		

*** Note**

- EUT's the difference is between 1D and 2D scanner by request applicant.(Worst data is 1D Scanner.)
- This test report is not permitted to copy partly without our permission
- This test result is dependent on only equipment to be used
- This test result based on a single evaluation of one sample of the above mentioned



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Appendix 1. Special diagram

Appendix 2. Antenna Requirement

1. Laboratory Information

1.1 General

This EUT (Equipment Under Test) has been shown to be capable of compliance with the applicable technical standards and is tested in accordance with the measurement procedures as indicated in this report.

ESTECH Lab attests to accuracy of test data. All measurement reported herein were performed by ESTECH Co., Ltd.

ESTECH Lab assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

1.2 Test Lab.

Corporation Name : ESTECH Co., Ltd.

97-1, Hoeok-ri, Majang-myun, Ichion-city, Kyonggi-do, South Korea

1.3 Official Qualification(s)

KCC : Granted Accreditation from Ministry of Information & Communication for EMC, Safety and Telecommunication

KOLAS : Accredited Lab By Korea Laboratory Accreditation Schema base on CENELEC requirements

FCC : Filed Laboratory at Federal Communications Commission

VCCI : Granted Accreditation from Voluntary Control Council for Interference from ITE

3. Test Standards

Test Standard : FCC PART 15 (2010) & RSS-210(2010)

This Standard sets out the regulations under which an intentional, unintentional, or incidental radiator may be operated without an individual license. It also contains the technical specifications, administrative requirements and other conditions relating to the marketing of Part 15 devices.

Test Method : ANSI C 63.4 (2003) & KDB558074 D01

This standard sets forth uniform methods of measurement of radio-frequency (RF) signals and noise emitted from both unintentional and intentional emitters of RF energy in the frequency range 9 kHz to 40 GHz. Methods for the measurement of radiated and AC power-line conducted radio noise are covered and may be applied to any such equipment unless otherwise specified by individual equipment requirements. These methods cover measurement of certain devices that deliberately radiate energy, such as intentional emitters, but does not cover licensed transmitters. This standard is not intended for certification/approval of avionic equipment or for industrial, scientific, and medical (ISM) equipment. These methods apply to the measurement of individual units or systems comprised of multiple units.

Summary of Test Results

Applied Standard : 47 CFR Part 15 Subpart C & RSS 210 Part I and II					remark
Standard	IC Standard	Test Type	Result	Remark	Limit
15.207	RSS-Gen 7.2.4	AC Power Conducted Emission	Pass	Meet the requirement	
15.205 & 15.209	A8.5	Intentional Radiated Emission	Pass	Meet the requirement	
15.247(a)(2)	A8.2(a)	6 dB Bandwidth 99 % Bandwidth	Pass	Meet the requirement	Min. 500 kHz
15.247(b)(3)	A8.4(4)	Maximum Peak output power	Pass	Meet the requirement	Max. 30 dBm
15.247(c)	A8.5	Transmitter Radiated Emission	Pass	Meet the requirement	Table 15.209
15.247(e)	A8.2(b)	Power Spectral Density	Pass	Meet the requirement	Max. 8 dBm
15.247(d)	A8.5	Band Edge /out of band emission	Pass	Meet the requirement	20 dB less
15.107	RSS-Gen 7.2.4	Receiver conducted Emission	Pass	Meet the requirement	
15.109	RSS-Gen 7.2.5	Receiver radiated emission	Pass	Meet the requirement	

4. Measurement Condition

4.1 EUT Operation(For 802.11b and 802.11g and 802.11n)

a. Channel

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

b. Measurement Channel : WLAN: Low(2412 MHz), Middle(2437 MHz),High(2462 MHz)

c. Test Mode : Continuous Output, DSSS, OFDM

d. Test rate : the worst case of rate 802.11b(11 Mbps), 802.11g(6 Mbps),802.11n(MCS0)



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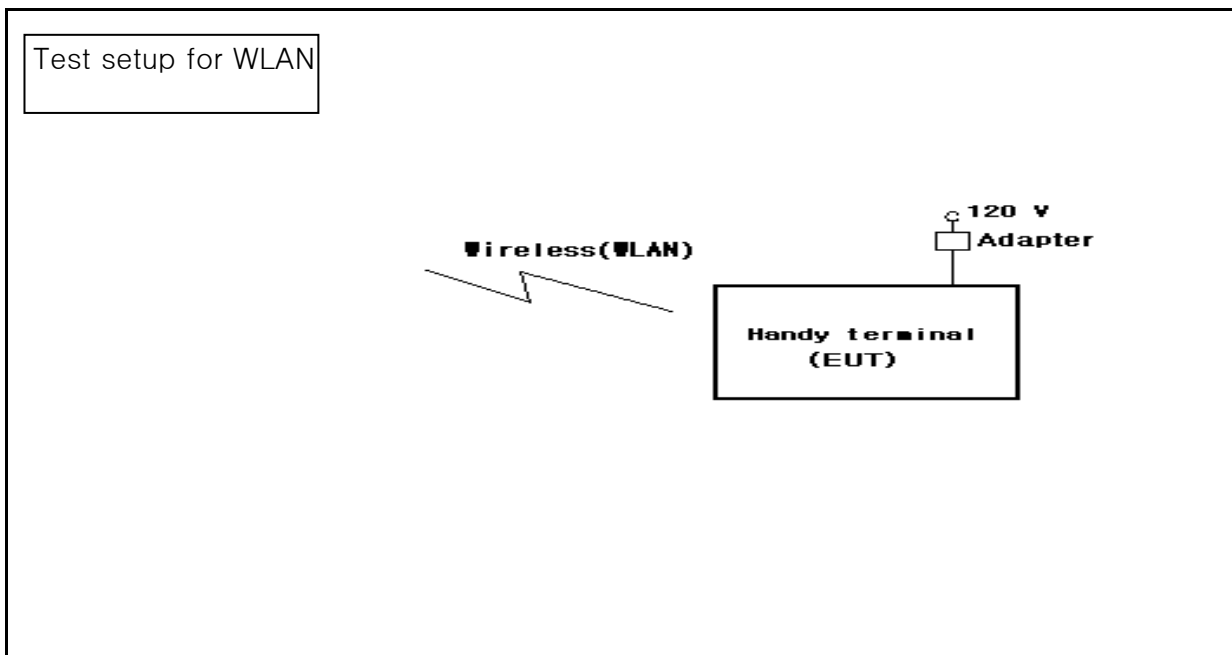


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4.2 EUT Operation.

- * The EUT was in the following operation mode during all testing
- * The operational conditions of the EUT was determined by the manufacturer according to the typical use of the EUT with respect to the expected highest level of emission
- * Execute a RF test program to enable EUT under transmission/receiving condition continuously at specific channel frequency.
- *. Test Mode: Handy terminal 1D Scanner : battery 2200 mAh , battery 3300 mAh
- *. Test Mode: Handy terminal 2D Scanner : battery 2200 mAh , battery 3300 mAh
- *. Transmit mode and receive mode was each test.
- *. Highest frequency of the EUT is above 1 GHz, the measurement shall be made up to 10 times the highest frequency or 40 GHz,

4.3 Configuration and Peripherals



4.4 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
Handy terminal	HT-K10	NONE	TOSHIBA TEC CORPORATION	EUT
Adapter	KSAS0100500200D5	NONE	Kuantech(Beihai)Co., Ltd.	

4.5 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
Handy terminal	Power	Adapter	-	1.5	Unshielded	

5. 6dB Bandwidth Measurement

5.1 Test procedure

558074 D01 DTS Meas Guidance v02 Option 2 :The automatic bandwidth measurement capability of a spectrum analyzer may be employed using the X dB bandwidth mode with X set to 6 dB, if it implements the functionality described above. When using this capability, care should be taken to ensure that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that may be ≥ 6 dB.

5.2 Test instruments and measurement setup

The spectrum analyzer is set to as following.

- . RBW= 100KHz
- . VBW= 300KHz
- . Span= 50MHz
- . Sweep= suitable duration based on the EUT specification.

6dB Bandwidth Test Instruments

Description	Model	Serial Number	Cal. Due Date
Spectrum Analyzer	E4440A	US42041281	2013-09-11
RF Cable	Length: 6cm	-	
-Spectrum Analyzer <=> EUT	Loss: 0.4dB	-	

5.3 Measurement results

EUT	Handy terminal	MODEL	HT-K10
MODE	DSSS	ENVIRONMENTAL CONDITION	24 °C, 44 % R.H.
INPUT POWER	120 Va.c., 60 Hz		

(802.11b)

Channel Frequency (MHz)	Emission bandwidth	Bandwidth at 6dB below(MHz)	Minimum Limit (MHz)	PASS/FAIL
2412	16.09	7.84	0.5	PASS
2437	16.16	7.92	0.5	PASS
2462	15.98	7.30	0.5	PASS



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EUT	Handy terminal	MODEL	HT-K10
MODE	OFDM	ENVIRONMENTAL CONDITION	24 °C, 43 % R.H.
INPUT POWER	120 Va.c., 60 Hz		

(802.11g)

Channel Frequency (MHz)	Emission bandwidth	Bandwidth at 6dB below(MHz)	Minimum Limit (MHz)	PASS/FAIL
2412	19.27	15.36	0.5	PASS
2437	18.80	15.42	0.5	PASS
2462	19.16	15.73	0.5	PASS

EUT	Handy terminal	MODEL	HT-K10
MODE	OFDM	ENVIRONMENTAL CONDITION	24 °C, 43 % R.H.
INPUT POWER	120 Va.c., 60 Hz		

(802.11n)

Channel Frequency (MHz)	Emission bandwidth	Bandwidth at 6dB below(MHz)	Minimum Limit (MHz)	PASS/FAIL
2412	19.95	15.32	0.5	PASS
2437	19.84	15.09	0.5	PASS
2462	19.47	16.00	0.5	PASS



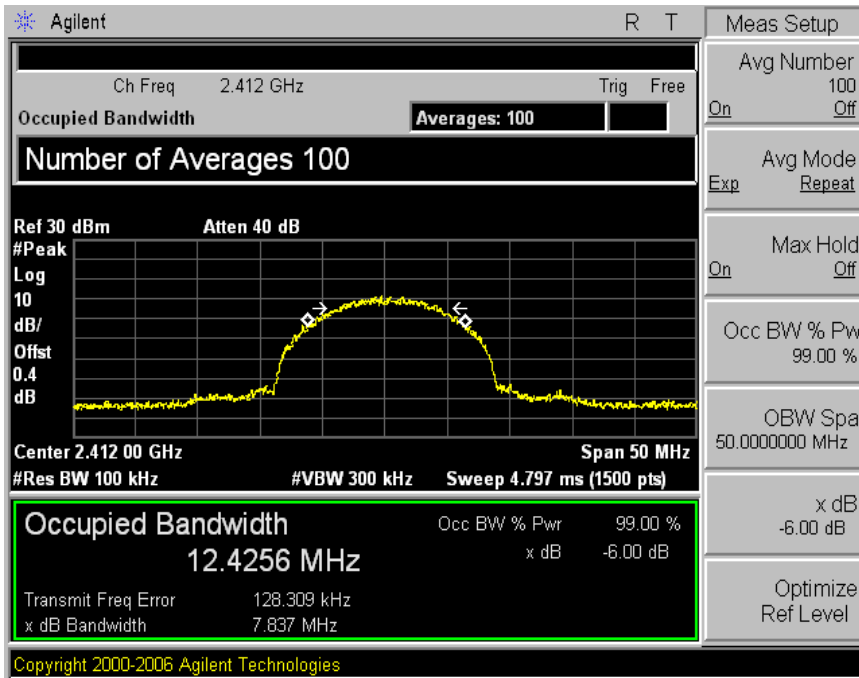
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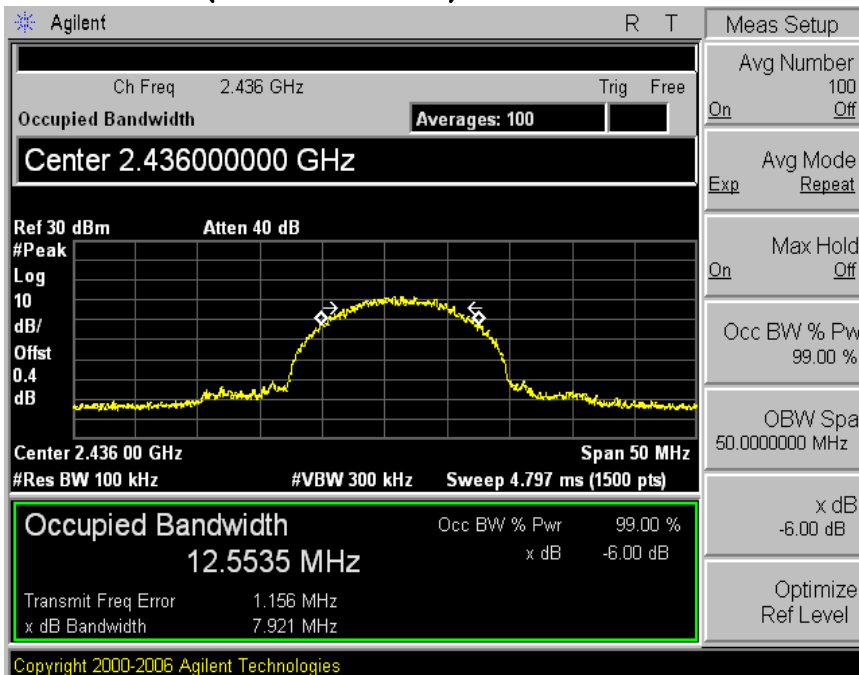


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5.4 Trace data CCK (802.11b-1ch)



CCK (802.11b-6ch)





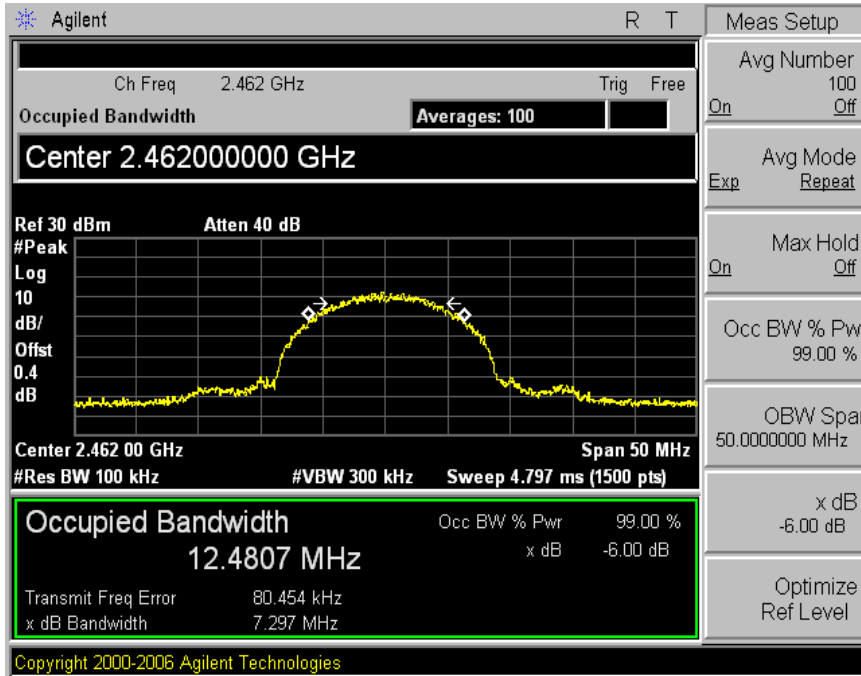
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CCK (802.11b-11ch)





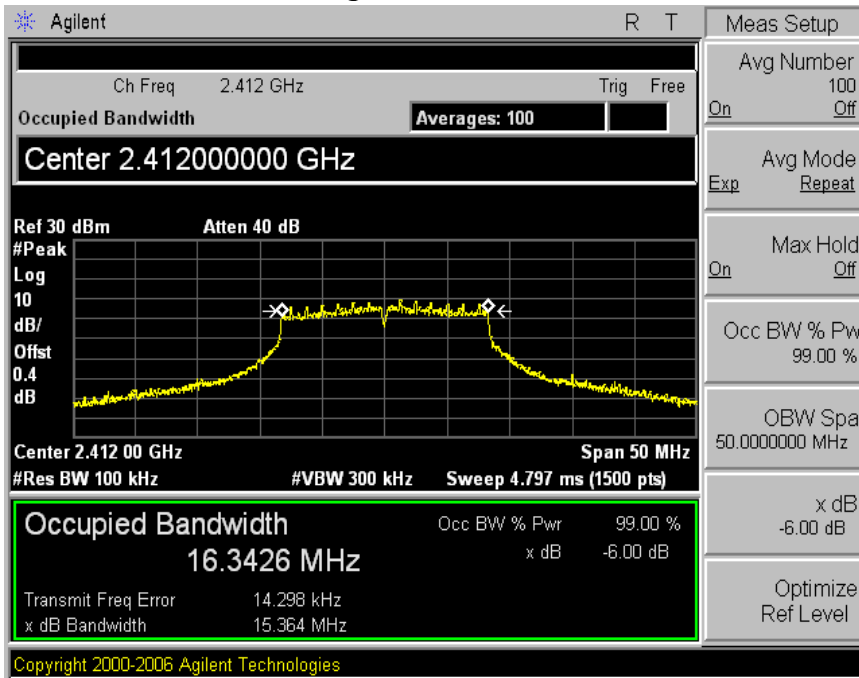
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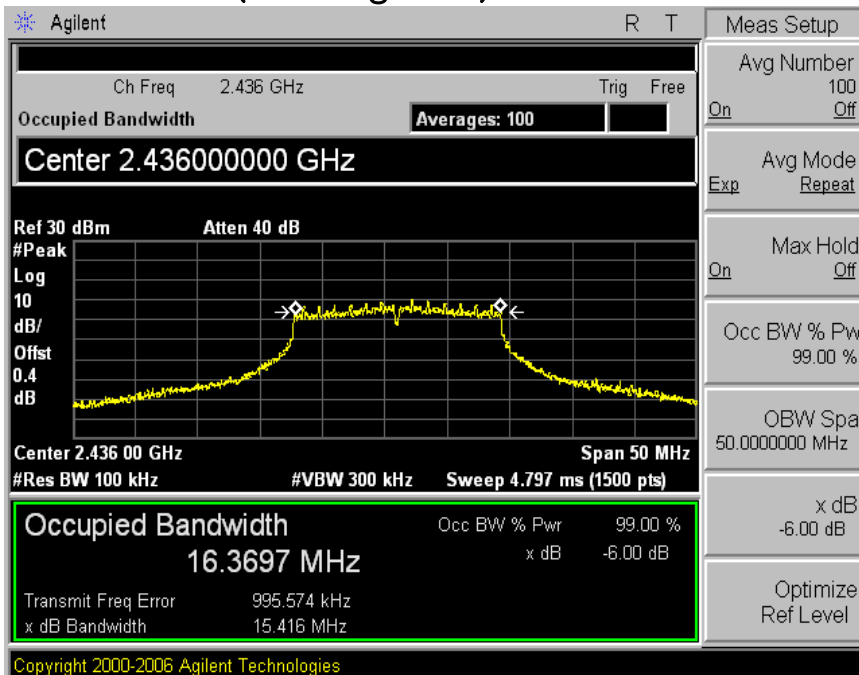


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5.4 Trace data OFDM (802.11g-1ch)



OFDM (802.11g-6ch)





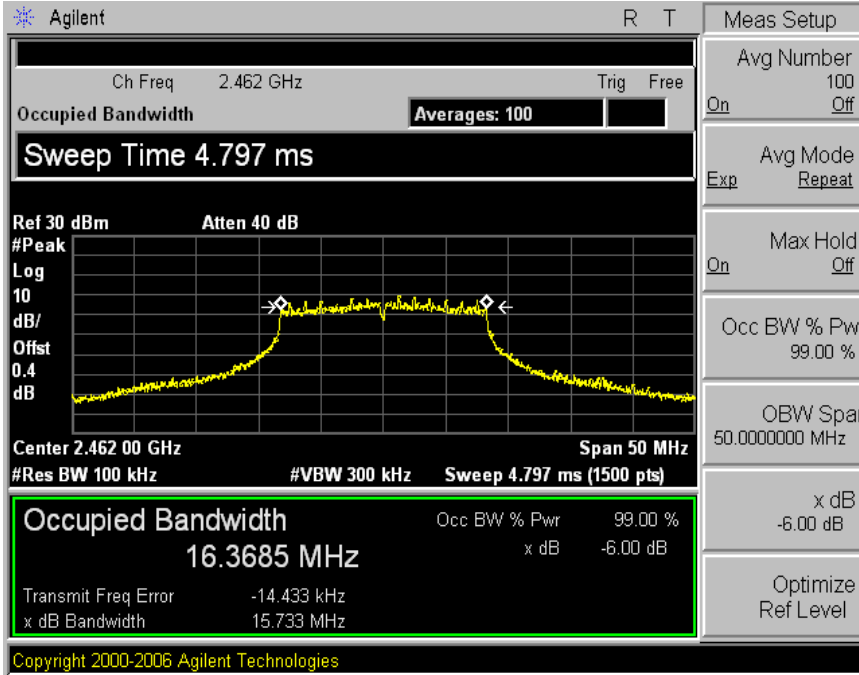
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OFDM (802.11g-11ch)





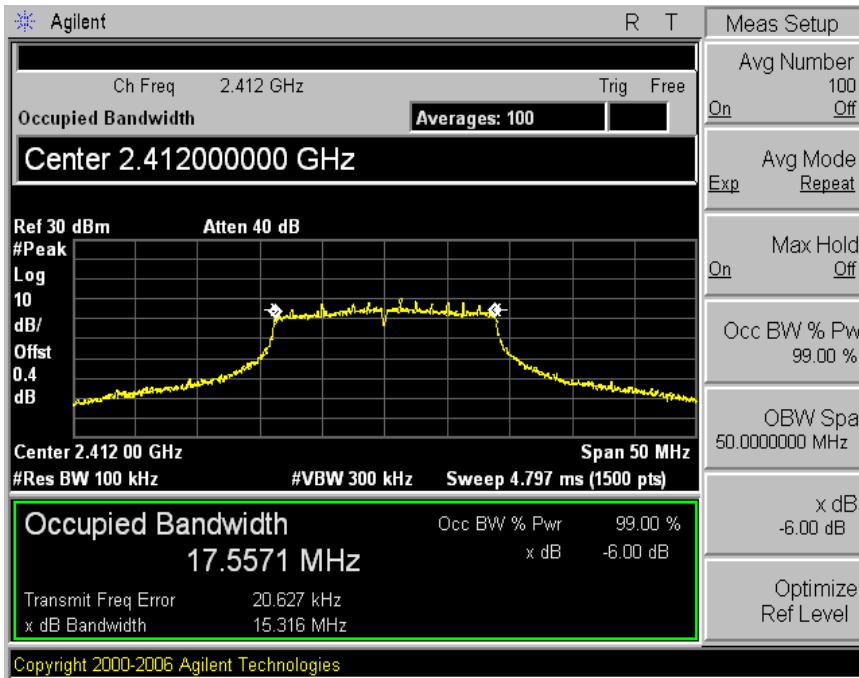
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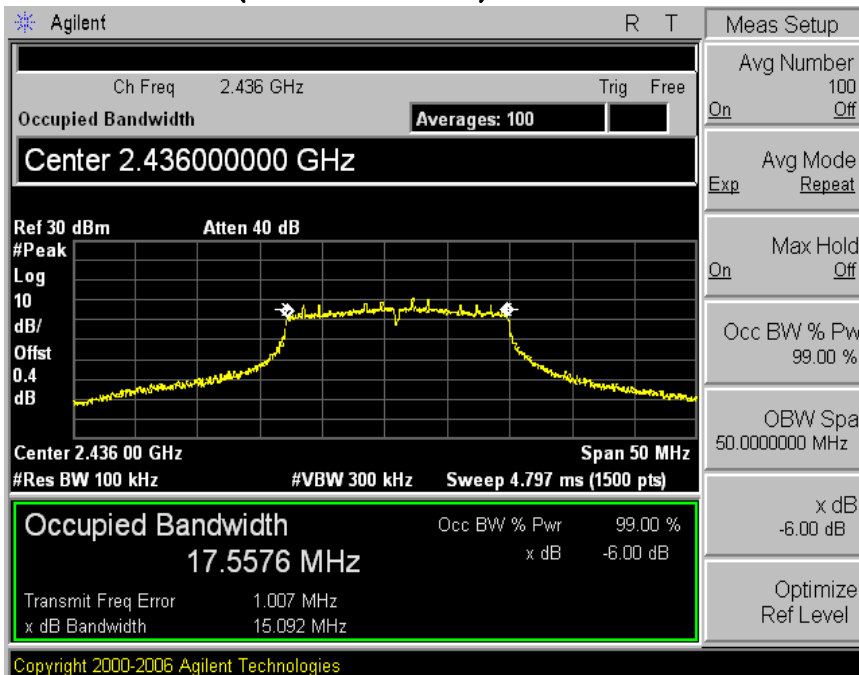


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5.4 Trace data OFDM (802.11n-1ch)



OFDM (802.11n-6ch)





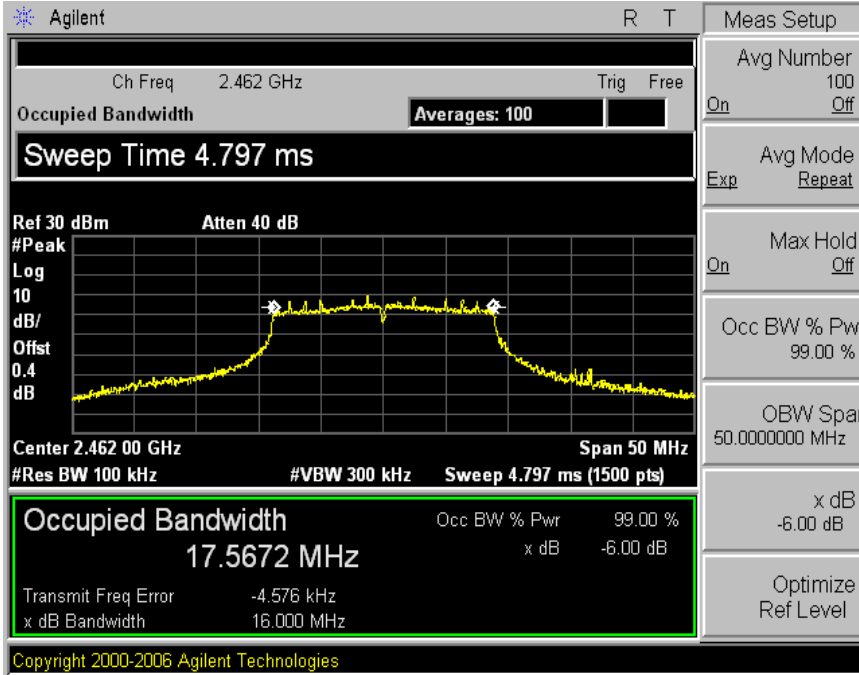
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OFDM (802.11n-11ch)





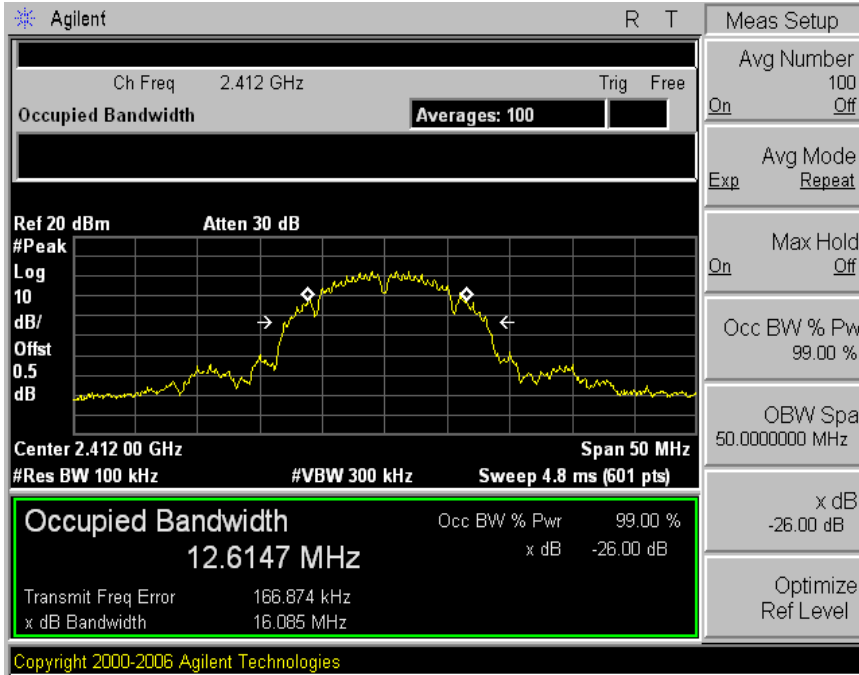
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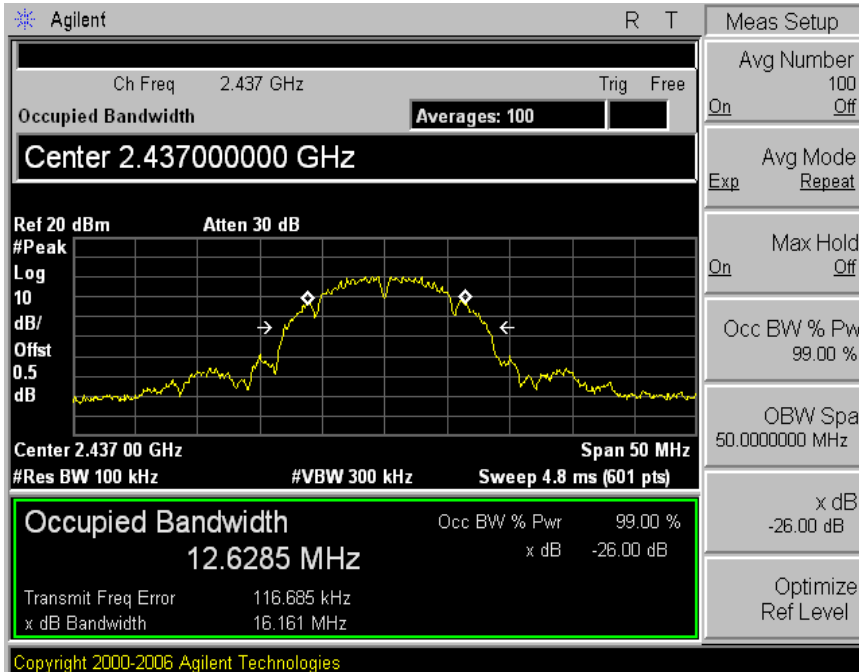


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5.4 Trace data CCK (802.11b-1ch)



CCK (802.11b-6ch)





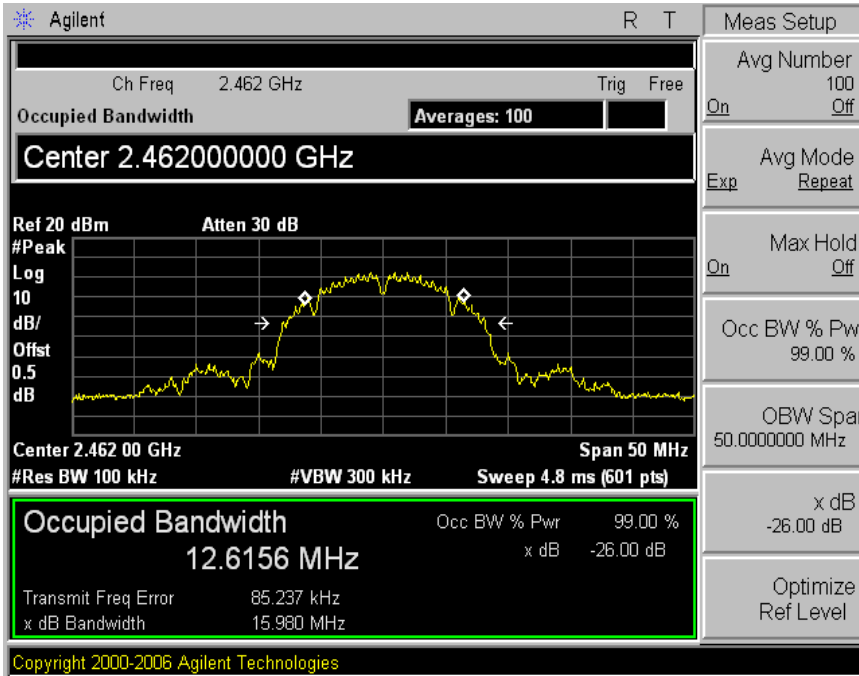
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CCK (802.11b-11ch)





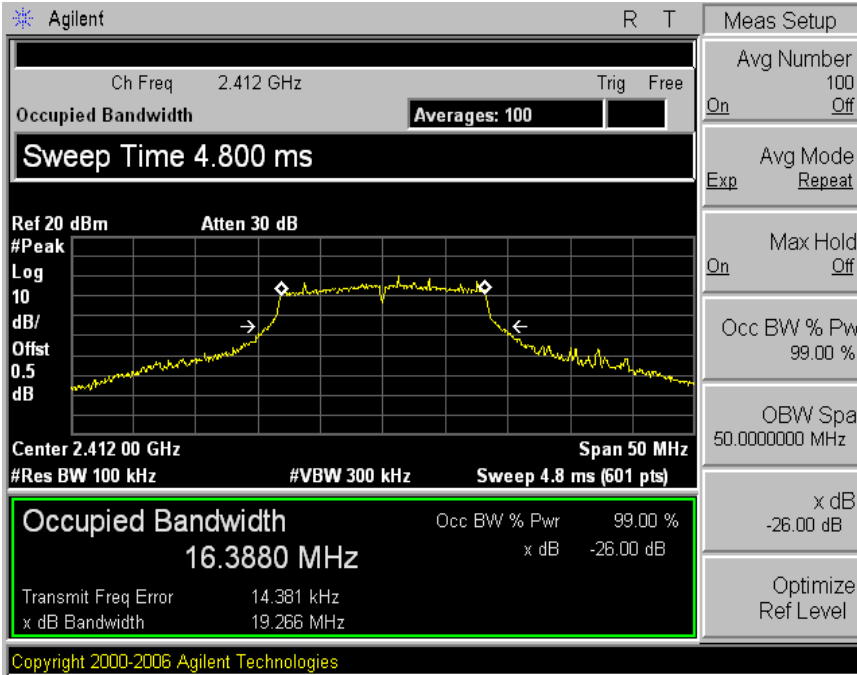
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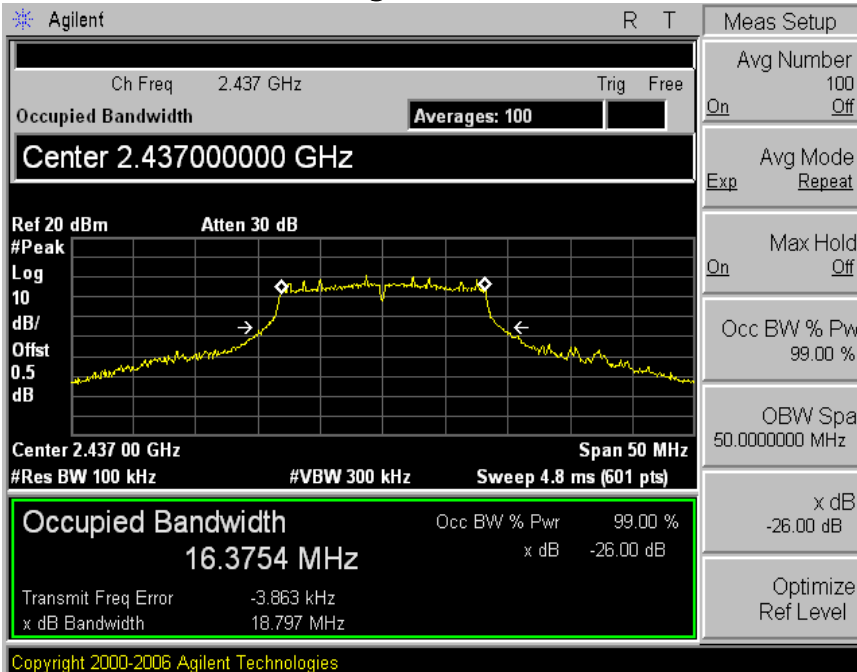


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5.4 Trace data OFDM (802.11g-1ch)



OFDM (802.11g-6ch)





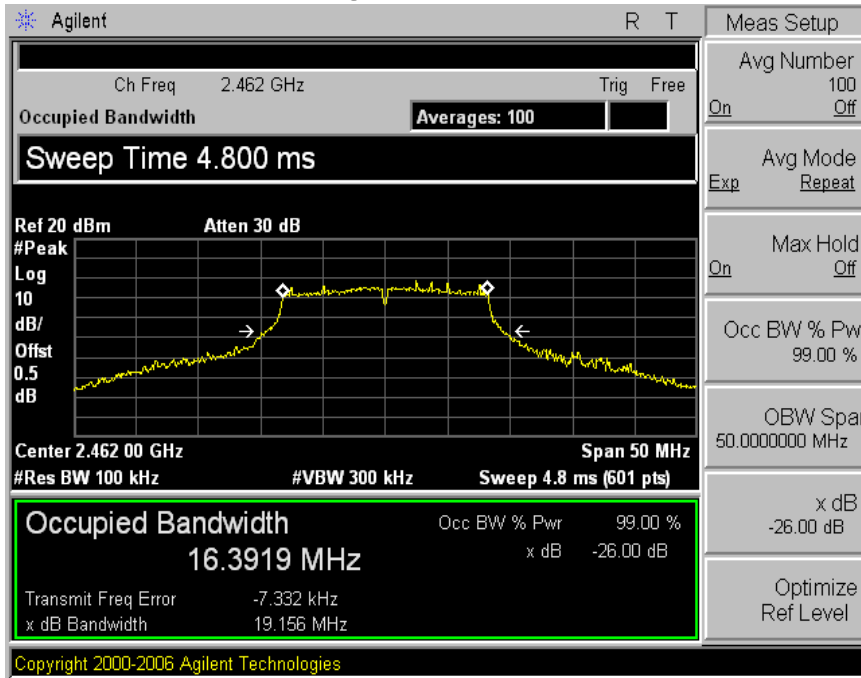
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OFDM (802.11g-11ch)





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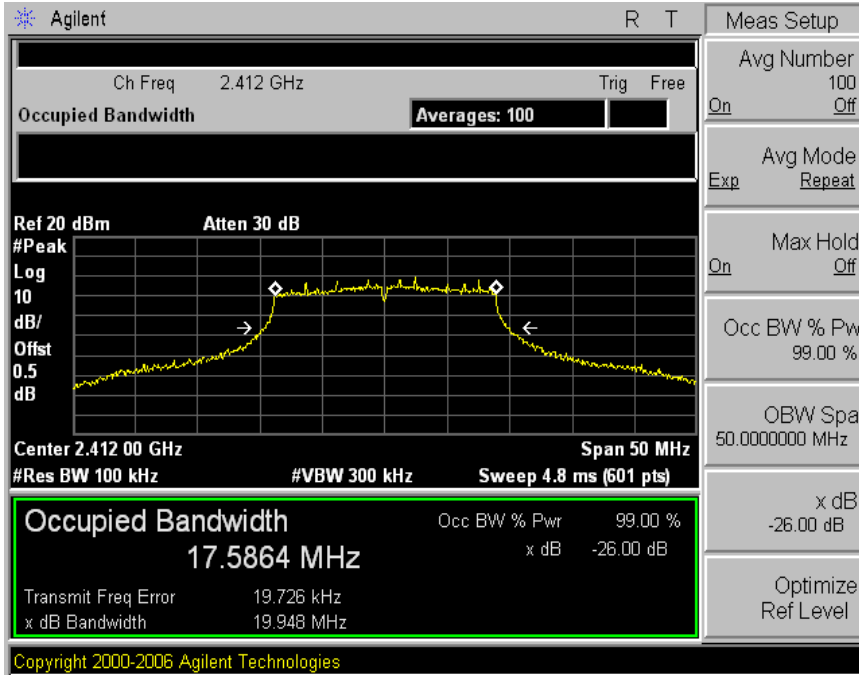
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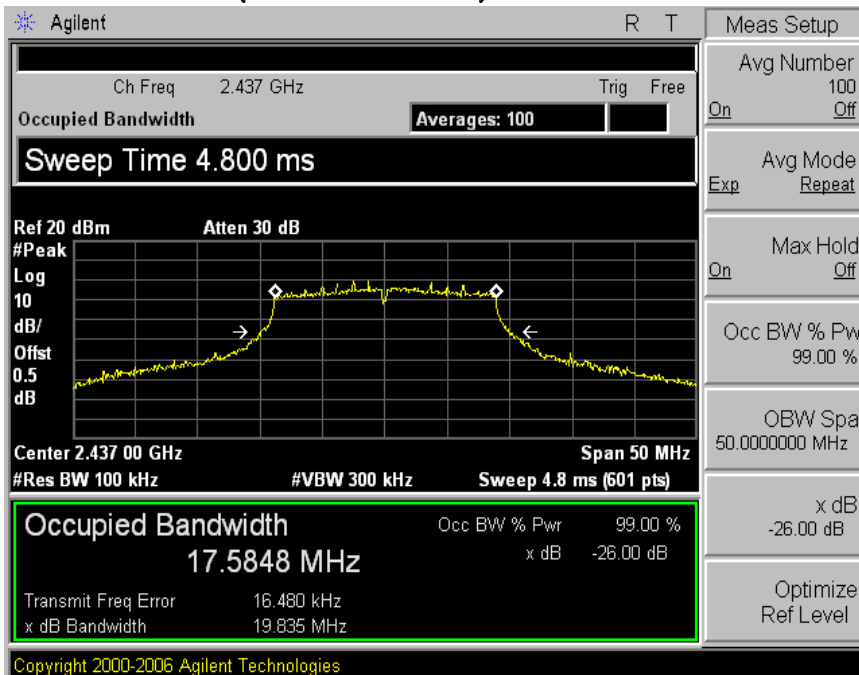
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5.4 Trace data

OFDM (802.11n-1ch)



OFDM (802.11n-6ch)





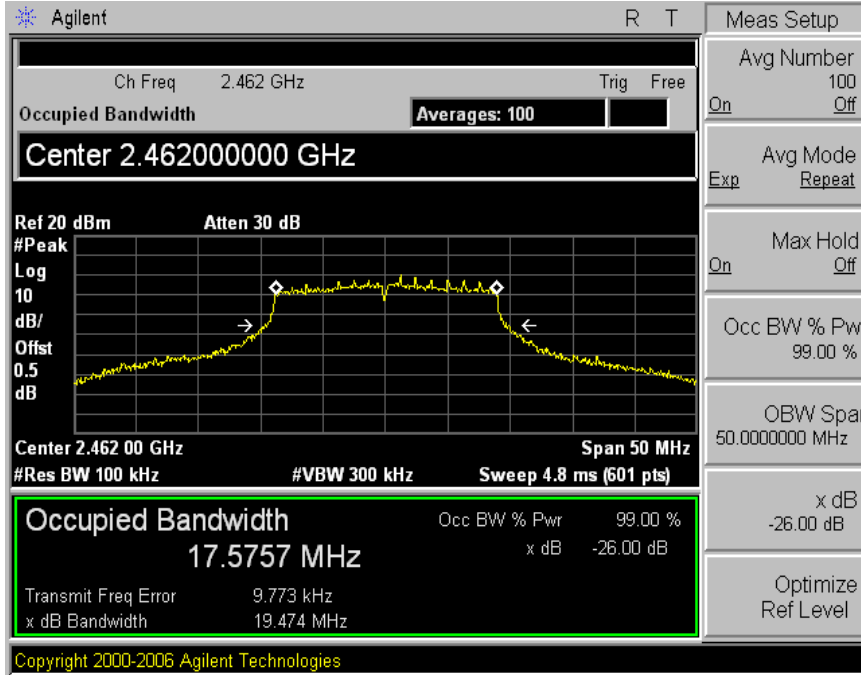
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OFDM (802.11n-11ch)





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6. MAXIMUM PEAK OUTPUT POWER

6.1 Test procedure

558074 D01 DTS Meas Guidance v02 8.1.2 Option 2 and 8.2.1 Option 1

8.1.2 Option 2 This procedure should only be used when the maximum available RBW of the spectrum/signal analyzer is less than the DTS bandwidth.

1. Set the RBW = maximum available (at least 1 MHz).
2. Set the VBW = 3 x RBW or maximum available setting (must be \geq RBW).
3. Set the span to fully encompass the DTS bandwidth.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the spectrum analyzer's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some analyzers, this may require a manual override to ensure use of peak detector). If the spectrum analyzer does not have a band power function, sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS channel bandwidth.

8.2.1 Option1 his procedure should be used with an RMS power averaging detector; however, a sample detector can be used when an RMS detector is not available. This is the baseline method for measuring the maximum (average) conducted output power,

1. Set the analyzer span to a minimum of 1.5 times the EBW.
2. Set the RBW = 1 MHz.
3. Set the VBW \geq 3 MHz.
4. Ensure that the number of measurement points in the sweep \geq 2 x span/RBW.
5. Sweep time = auto couple.
6. Detector = power averaging (RMS)
7. Employ trace averaging in power averaging (RMS) mode over a minimum of 100 traces.
8. Use the spectrum analyzer's band power measurement function with band limits set equal to the EUT was operating duty cycle(>98%) . The trace was averaged over 100 traces to obtain the f

Maximum Peak Output Power Test Instruments

Description	Model	Serial Number	Cal. Due Date
Spectrum Analyzer	FSV40	100939	2014-01-26
RF Cable	Length: 6cm	-	
-Spectrum Analyzer <=> EUT	Loss: 0.4 dB	-	

6.2 Measurement results

EUT	Handy terminal	MODEL	HT-K10
MODE	DSSS	ENVIRONMENTAL CONDITION	24 °C, 43 % R.H.
INPUT POWER	120 Va.c., 60 Hz		

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(802.11b)

CHANNEL	Channel frequency (MHz)	Conducted Power Output(dBm)			Limit[1W] (dBm)	PASS/FAIL
		Detector	(dBm)	(W)		
1	2412	PEAK	12.72	0.019	30.0	PASS
		AVG	11.07	0.013		
6	2437	PEAK	12.94	0.020	30.0	PASS
		AVG	10.61	0.012		
11	2462	PEAK	13.70	0.023	30.0	PASS
		AVG	11.09	0.013		

(802.11g)

EUT	Handy terminal	MODEL	HT-K10
MODE	OFDM	ENVIRONMENTAL CONDITION	24 °C, 43 % R.H.
INPUT POWER	120 Va.c., 60 Hz		

CHANNEL	Channel Frequency (MHz)	Conducted Power Output(dBm)			Limit[1W] (dBm)	PASS/FAIL
		Detector	(dBm)	(W)		
1	2412	PEAK	16.89	0.049	30.0	PASS
		AVG	9.06	0.008		
6	2437	PEAK	18.04	0.064	30.0	PASS
		AVG	10.11	0.010		
11	2462	PEAK	17.17	0.052	30.0	PASS
		AVG	8.81	0.008		

(802.11n)

EUT	Handy terminal	MODEL	HT-K10
MODE	OFDM	ENVIRONMENTAL CONDITION	24 °C, 43 % R.H.
INPUT POWER	120 Va.c., 60 Hz		

CHANNEL	Channel Frequency (MHz)	Conducted Power Output(dBm)			Limit[1W] (dBm)	PASS/FAIL
		Detector	(dBm)	(W)		
1	2412	PEAK	16.79	0.048	30.0	PASS
		AVG	9.19	0.008		
6	2437	PEAK	18.10	0.065	30.0	PASS
		AVG	10.08	0.010		
11	2462	PEAK	17.23	0.053	30.0	PASS
		AVG	9.00	0.008		



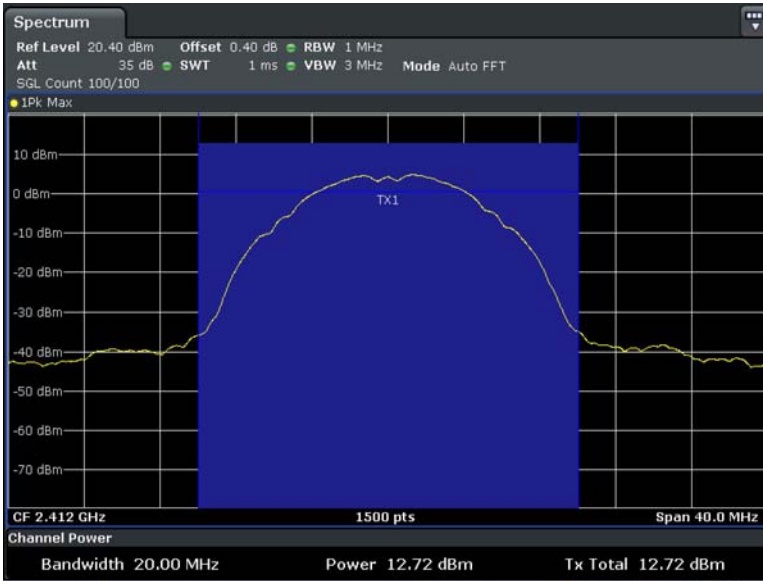
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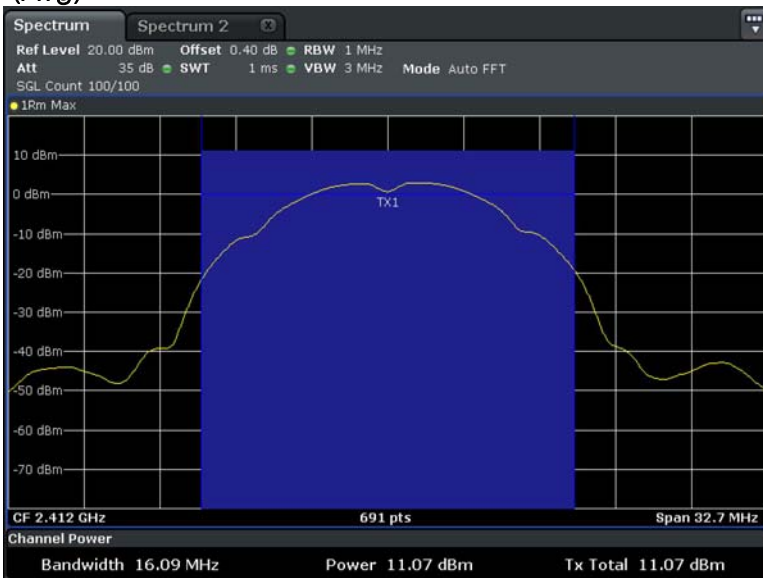


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5.4 Trace data
CCK (802.11b-1ch)
(Peak)



(Avg)





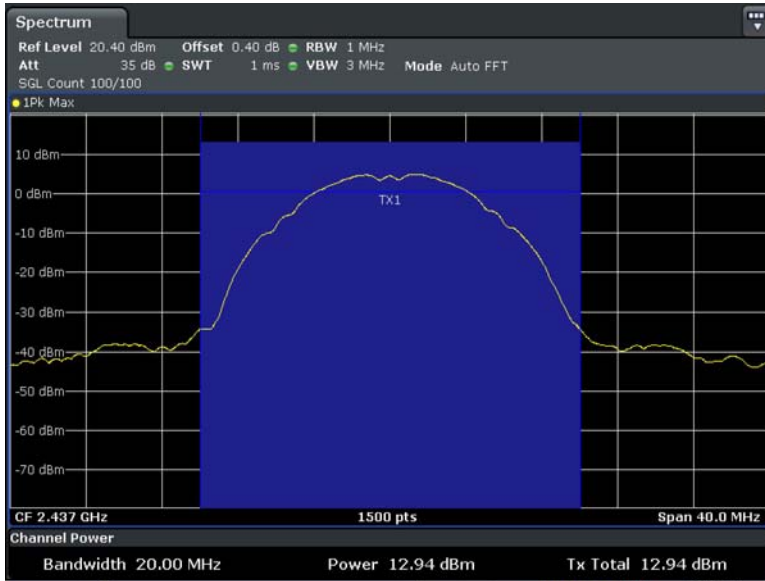
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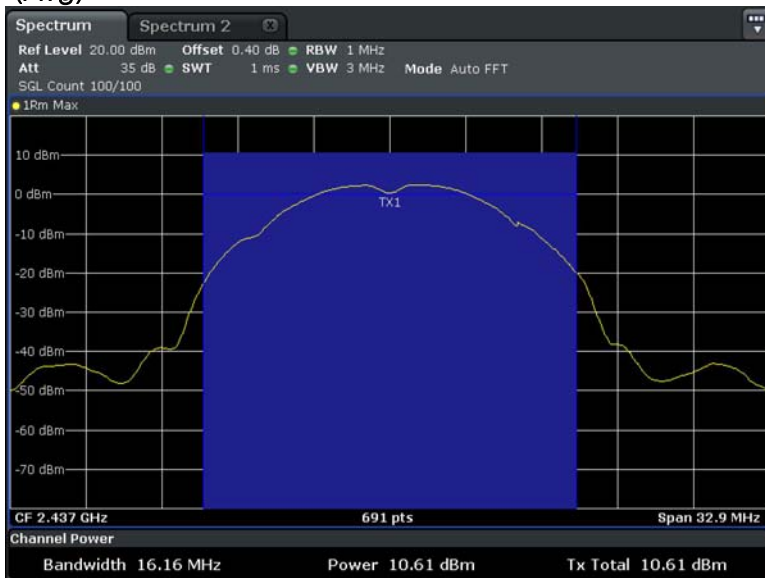


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CCK (802.11b-6ch) (Peak)



(Avg)





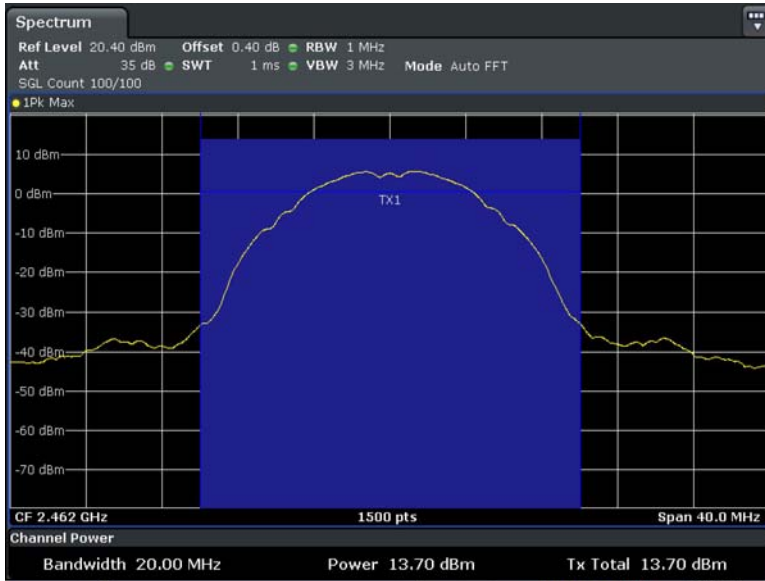
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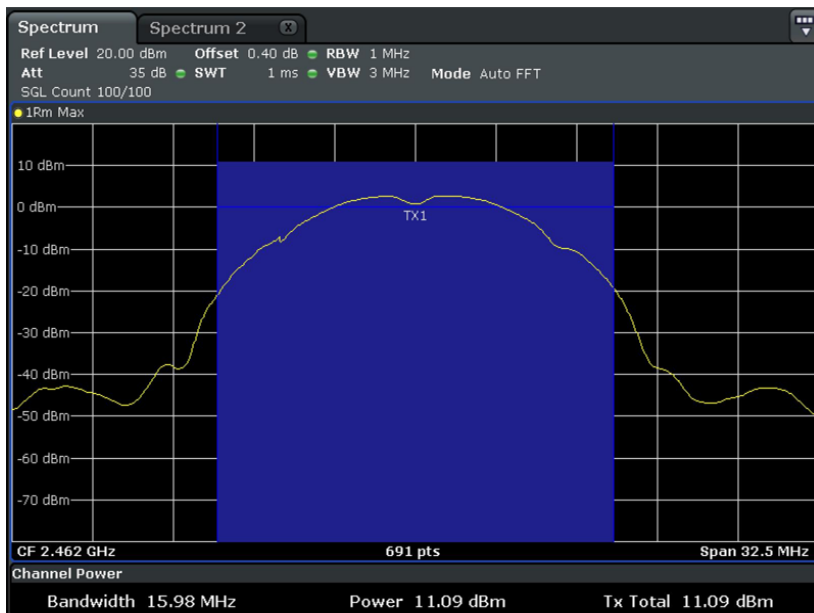


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CCK (802.11b-11ch)
(Peak)



(Avg)





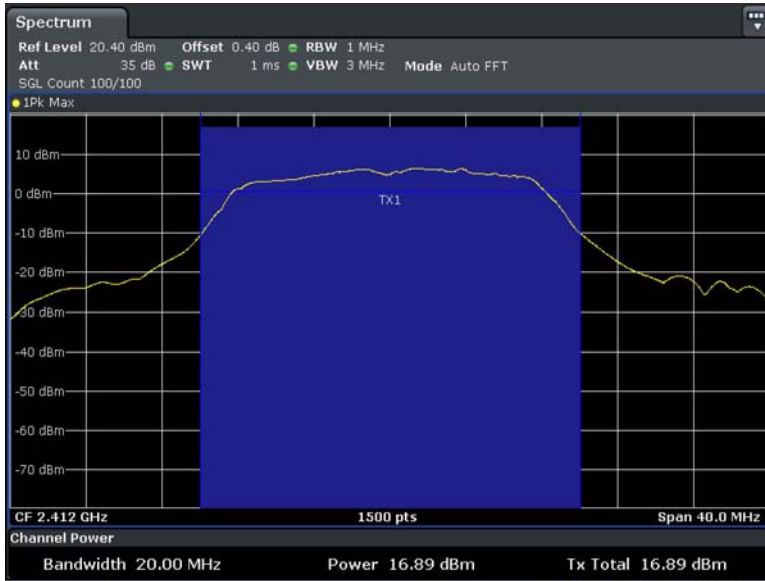
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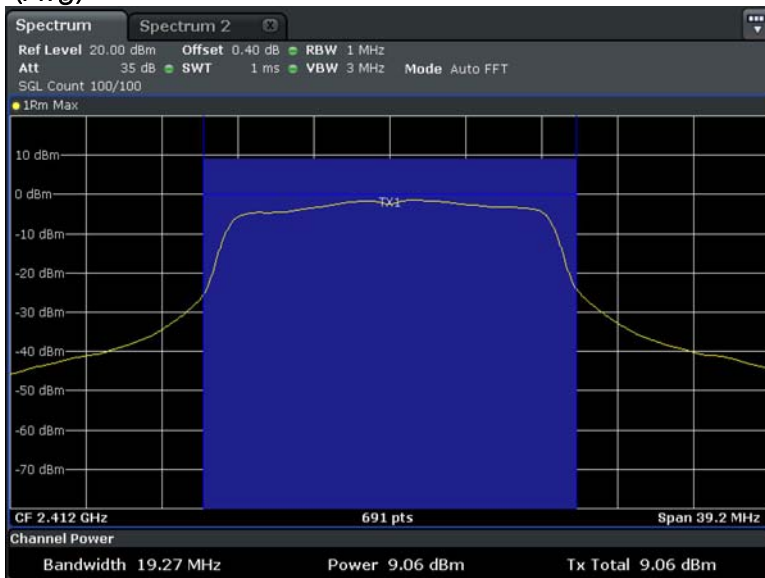


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Interference
Test Report**

OFDM (802.11g-1ch) (Peak)



(Avg)





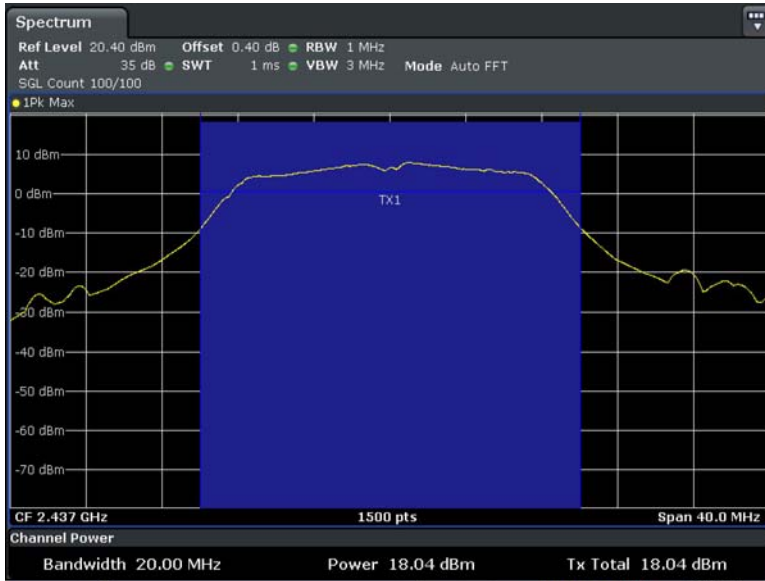
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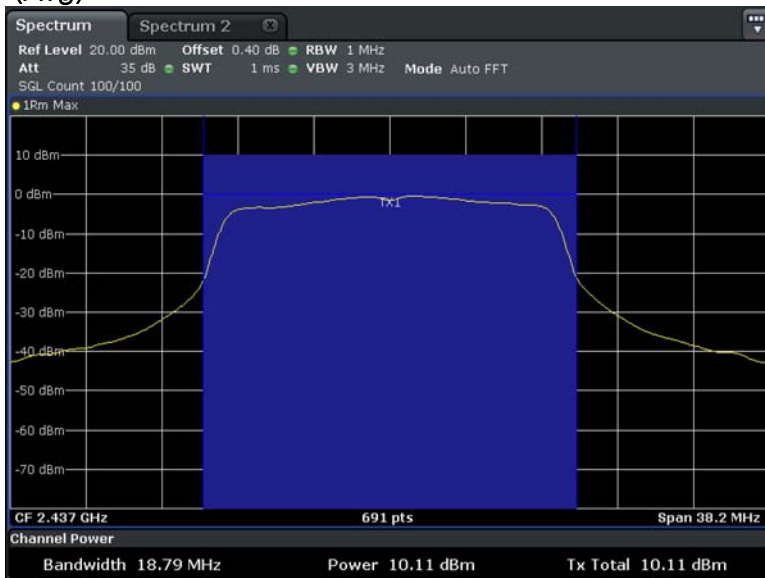


**Electromagnetic
Interference
Test Report**

OFDM (802.11g-6ch) (Peak)



(Avg)





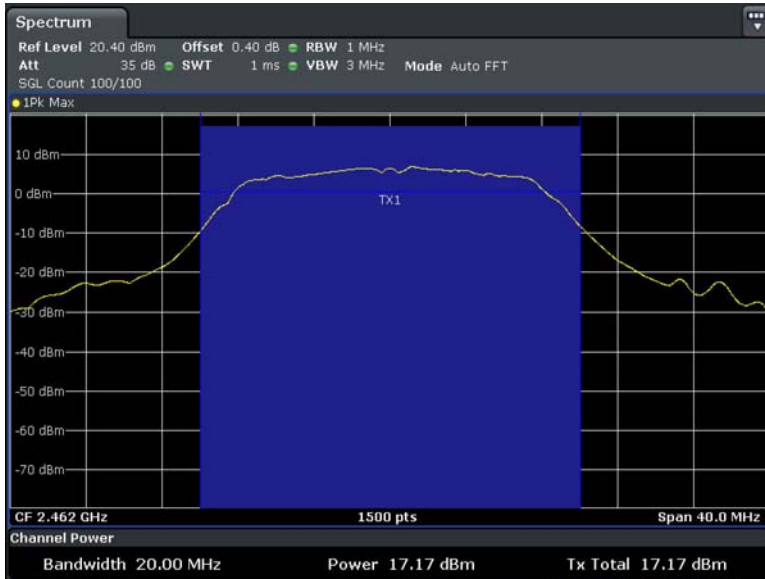
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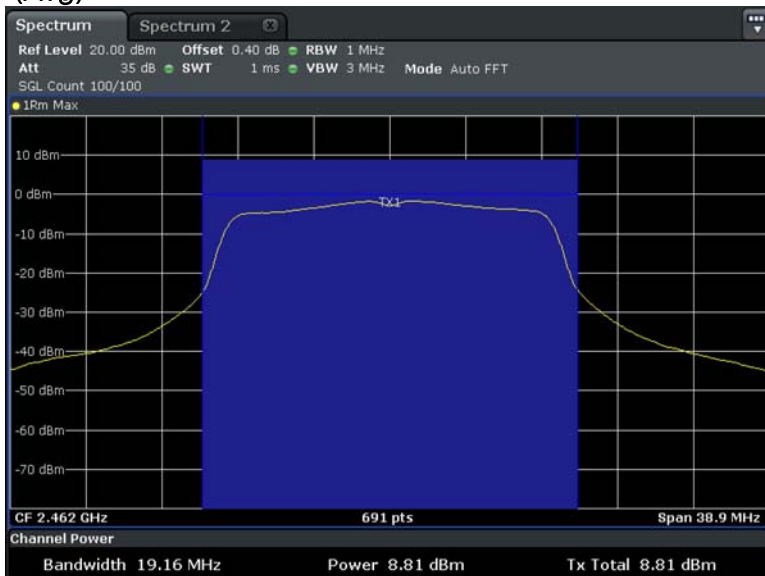


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Test Report**

OFDM (802.11g-11ch) (Peak)



(Avg)





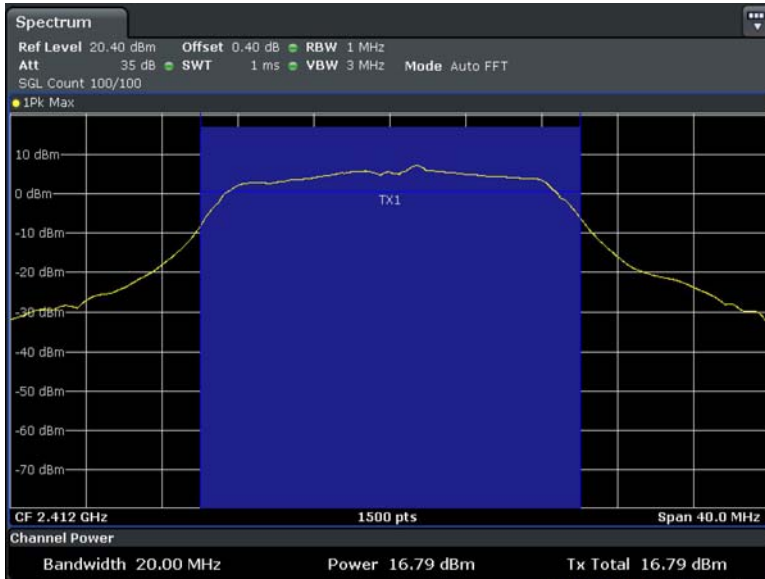
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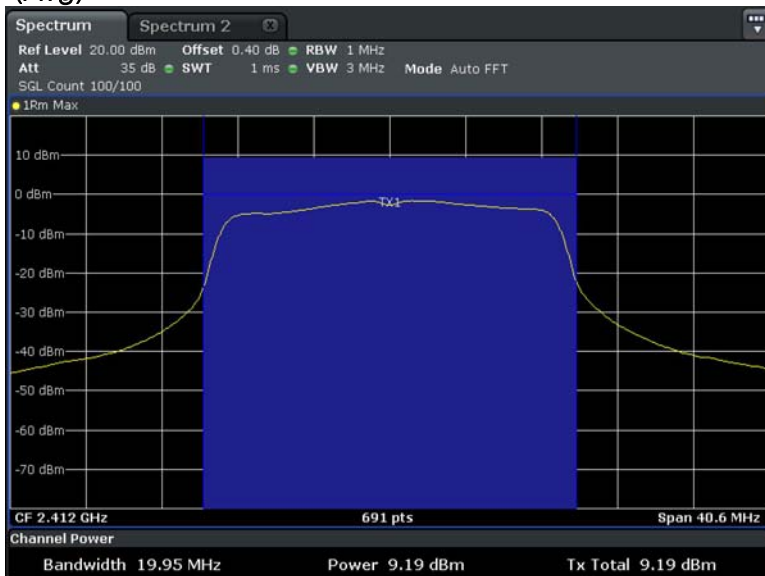


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Interference
Test Report**

OFDM (802.11n-1ch) (Peak)



(Avg)





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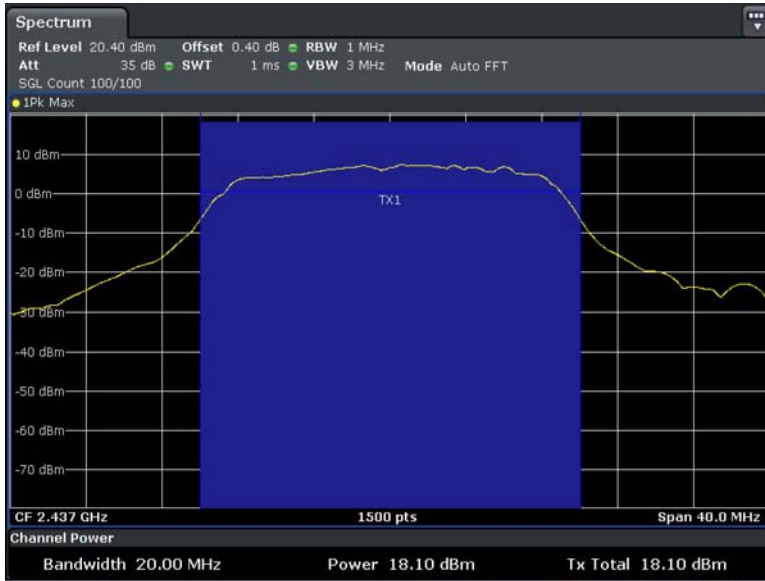
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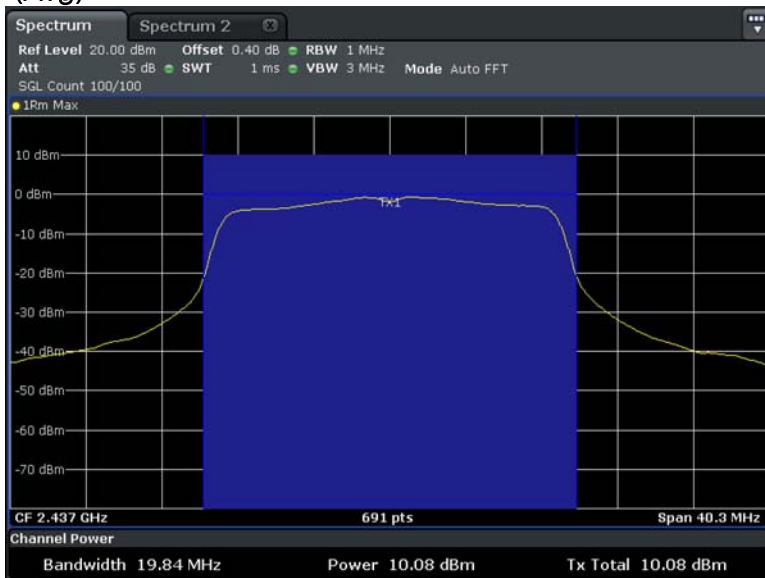
**Electromagnetic
Interference
Test Report**

OFDM (802.11n-6ch)

(Peak)



(Avg)





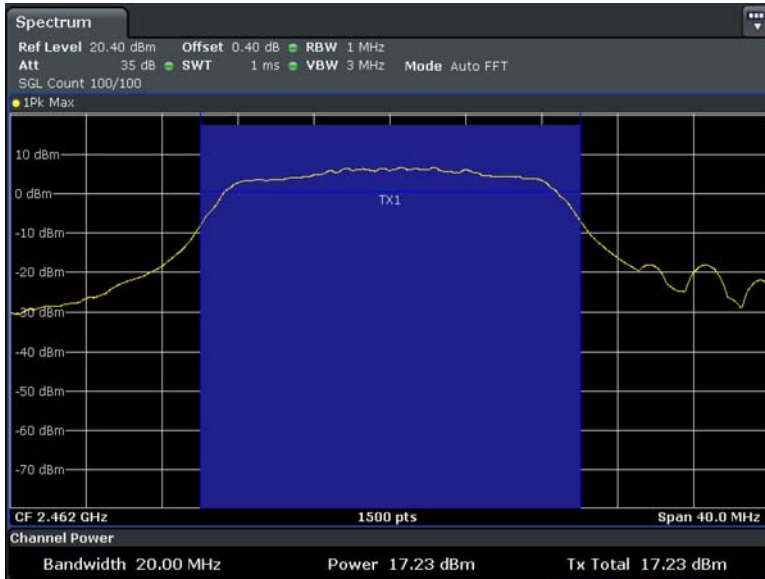
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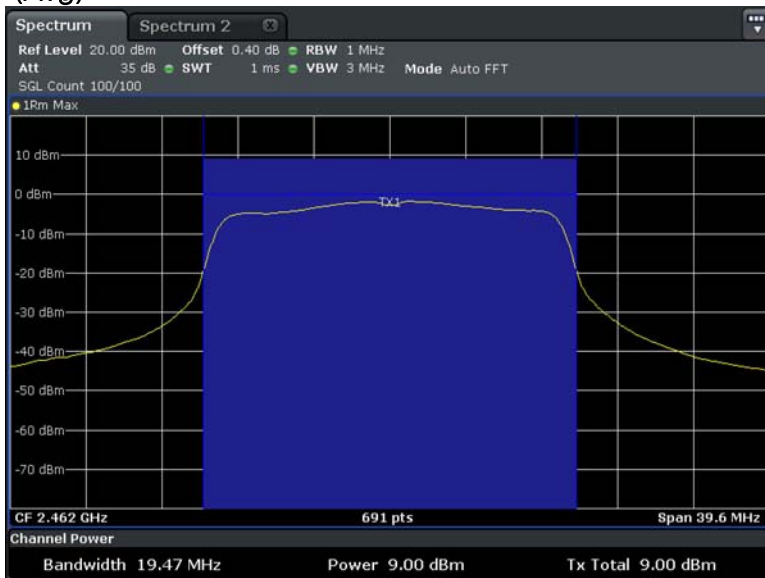


**Electromagnetic
Interference
Test Report**

OFDM (802.11n-11ch) (Peak)



(Avg)



7. Transmitter power spectral density

7.1 Test procedure

558074 D01 DTS Meas Guidance v02 9.1 Option 1: This procedure must be used if maximum peak conducted output power was used to demonstrate compliance to the fundamental output power limit, and is optional if the maximum (average) conducted output power was used to demonstrate compliance.

7.2 Test instruments and measurement setup

The spectrum analyzer is set to as following.

- . RBW= 3KHz
- . VBW= 9.1KHz
- . Span= 1.5 X DTS channel bandwidth
- . Detector= peak

The peak power density Test Instruments

Description	Model	Serial Number	Cal. Due Date
Spectrum Analyzer	E4407B	US42041281	2013-09-11
-Spectrum Analyzer <=> EUT	Loss: 0.4 dB	-	

7.3 Measurement results

802.11b

EUT	Handy terminal	MODEL	HT-K10
MODE	DSSS	ENVIRONMENTAL CONDITION	23 °C, 43 % R.H.
INPUT POWER	120 Va.c., 60 Hz		

CHANNEL	Channel Frequency (MHz)	Measured Power Spectral Density (dBm)	Maximum Permissible Power Density (dBm/3kHz)	Margin
1	2412	2.80	8.0	5.20
6	2437	1.77	8.0	6.23
11	2462	3.25	8.0	4.75

*PSD = MPSD + BWCF



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802.11g

EUT	Handy terminal	MODEL	HT-K10
MODE	OFDM	ENVIRONMENTAL CONDITION	23 °C, 43 % R.H.
INPUT POWER	120 Va.c., 60 Hz		

CHANNEL	Channel Frequency (MHz)	Measured Power Spectral Density (dBm)	Maximum Permissible Power Density (dBm/3kHz)	Margin
1	2412	-15.41	8.0	23.41
6	2437	-16.08	8.0	24.08
11	2462	-15.71	8.0	23.71

802.11n

EUT	Handy terminal	MODEL	HT-K10
MODE	OFDM	ENVIRONMENTAL CONDITION	23 °C, 43 % R.H.
INPUT POWER	120 Va.c., 60 Hz		

CHANNEL	Channel Frequency (MHz)	Measured Power Spectral Density (dBm)	Maximum Permissible Power Density (dBm/3kHz)	Margin
1	2412	-15.46	8.0	23.46
6	2437	-14.94	8.0	22.94
11	2462	-16.10	8.0	24.10



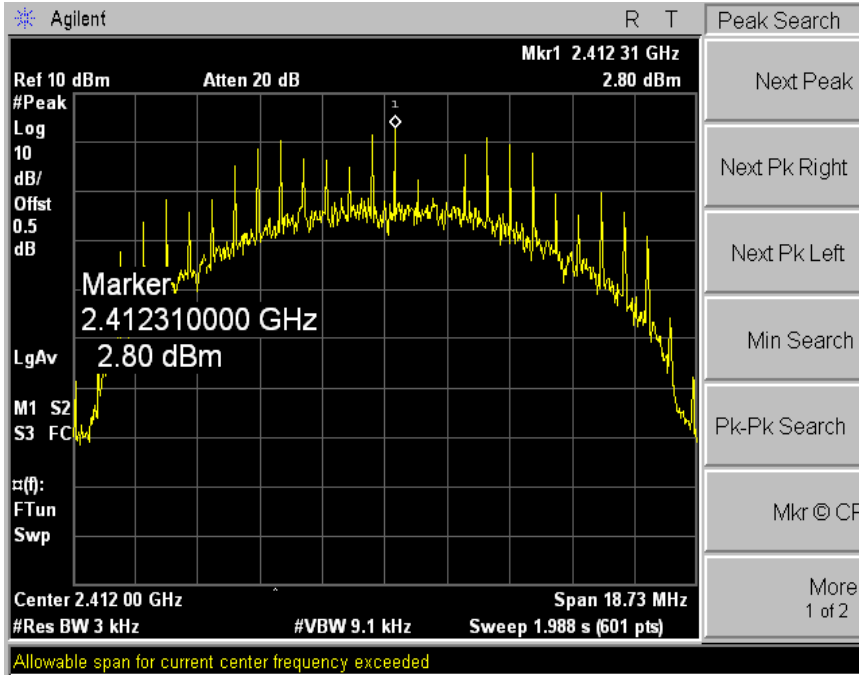
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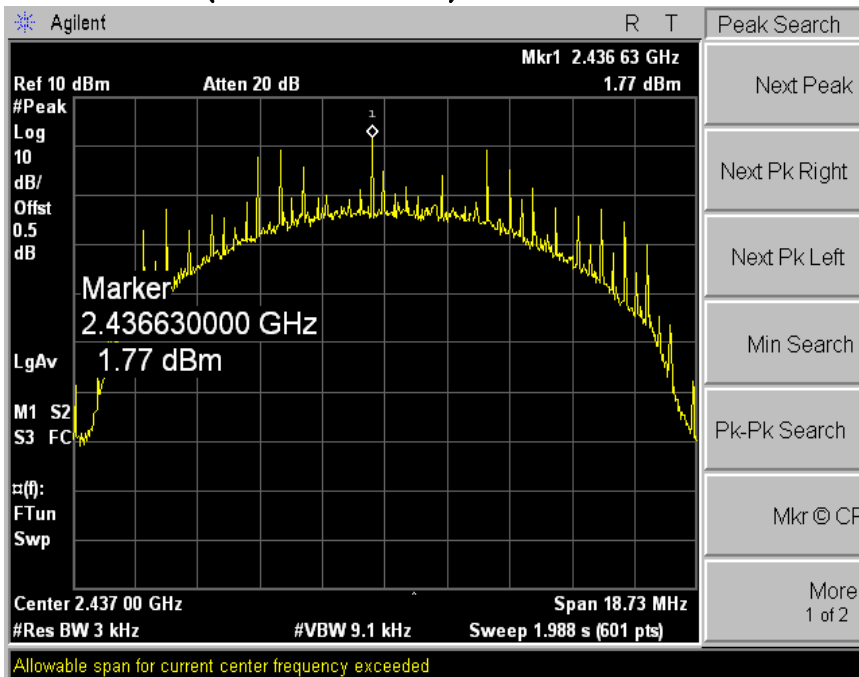


**Electromagnetic
Interference
Test Report**

7.4 Trace data CCK (802.11b-1ch)



CCK (802.11b-6ch)





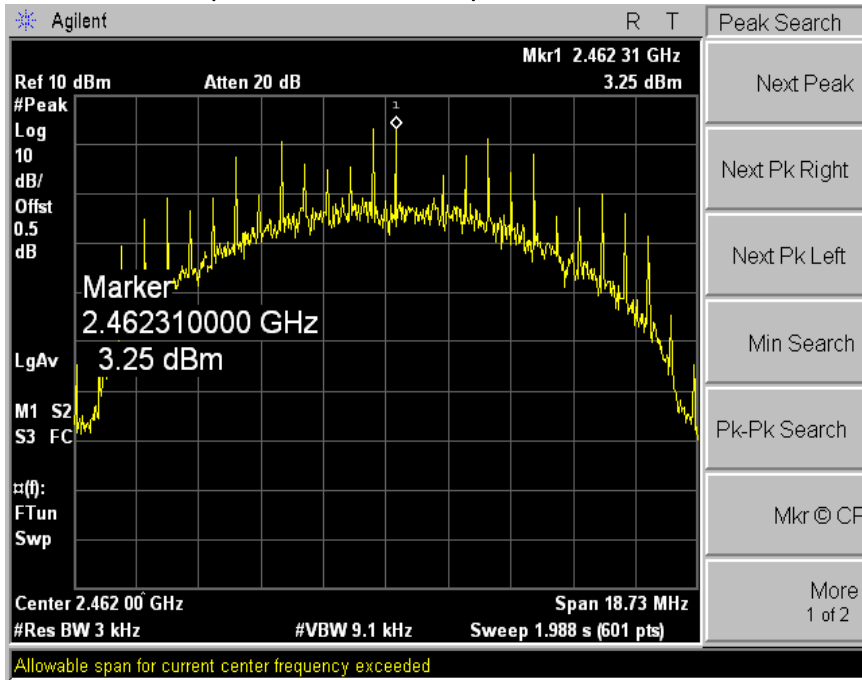
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CCK (802.11b-11ch)





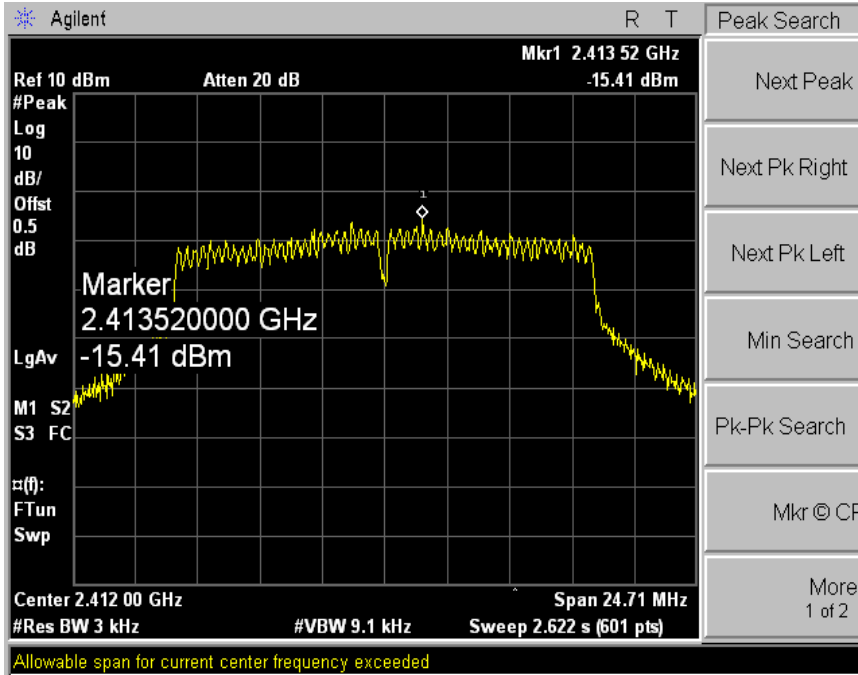
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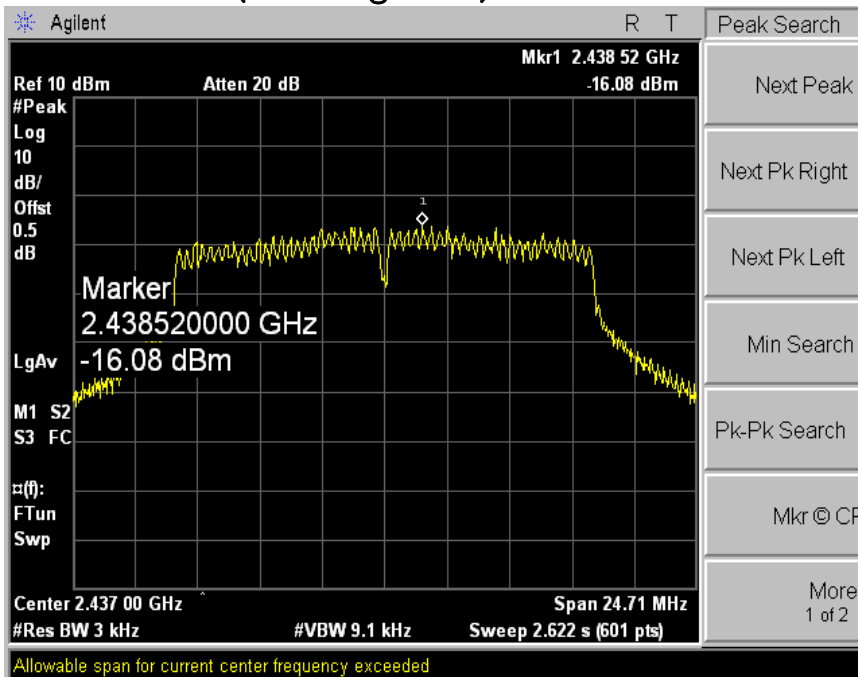


**Electromagnetic
Interference
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7.4 Trace data OFDM (802.11g-1ch)



OFDM (802.11g-6ch)





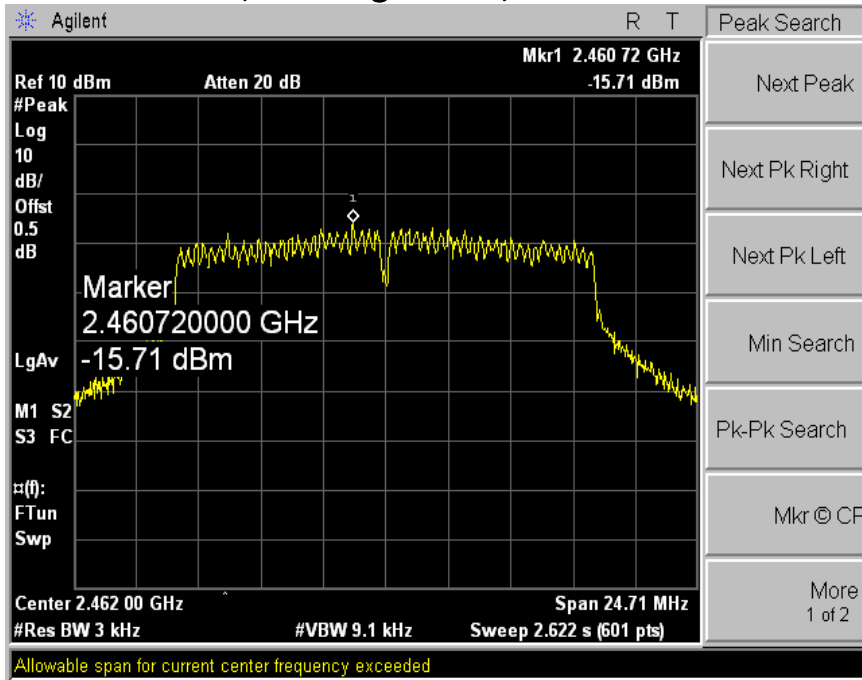
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OFDM (802.11g-11ch)





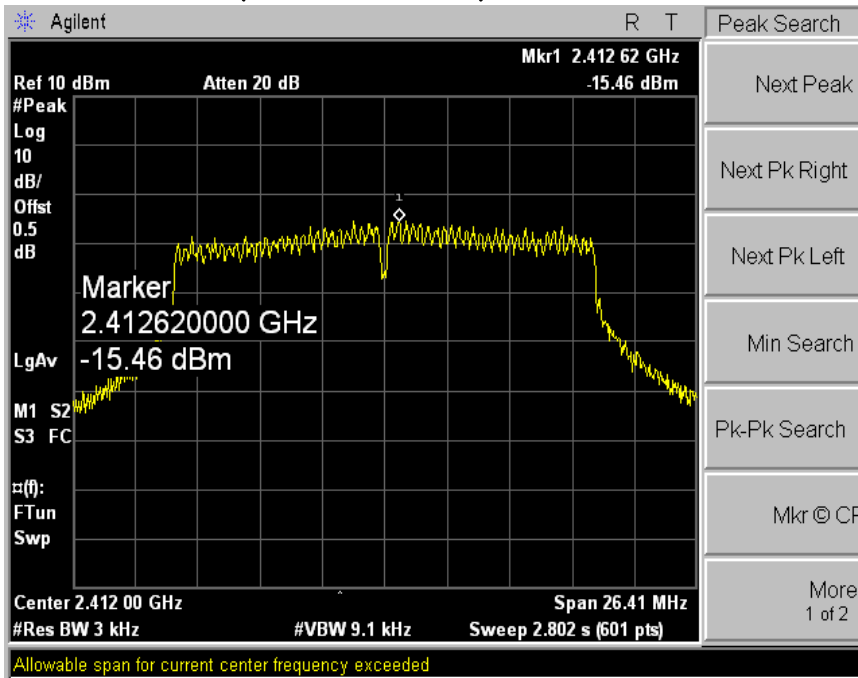
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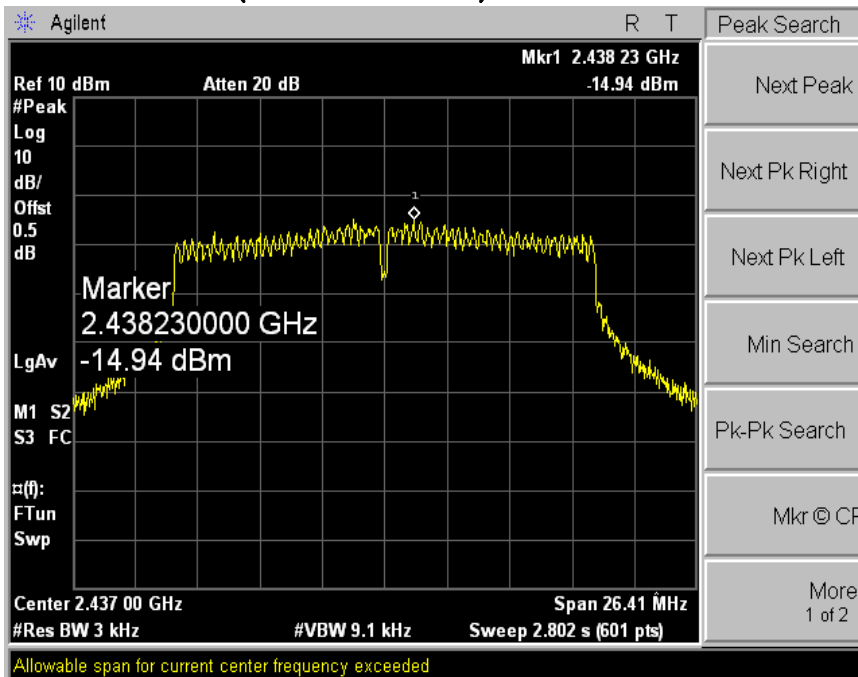


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7.4 Trace data OFDM (802.11n-1ch)



OFDM (802.11n-6ch)





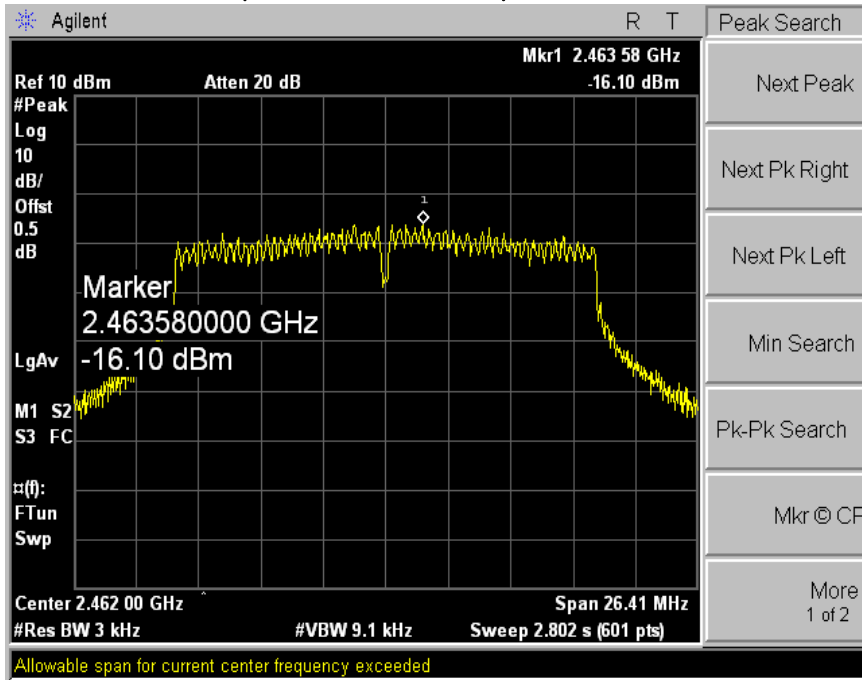
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**Electromagnetic
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OFDM (802.11n-11ch)



8. band-edge and out of band emissions.

8.1 Test procedure

Per the guidance of KDB 558074, section 5.4.1.1, the reference level for out of band emissions is established from the plots of this section since the band edge emissions are measured with a RBW of 100 kHz. This reference level is then used as the limit in subsequent plots for out of band spurious emissions shown in section 8.4 The limit for out of band spurious emission at the band edge is 20 dB below the fundamental emission level measured in a 100 kHz bandwidth.

8.2 Test instruments and measurement setup

The spectrum analyzer is set to as following.

- . RBW= 100KHz
- . VBW= 300KHz
- . Span= suitable frequency span
- . Sweep= suitable duration based on the EUT specification.

Band Edge&Out of Emission Test Instruments

Description	Model	Serial Number	Cal. Due Date
Spectrum Analyzer	E4407B	US42041281	2013-09-11
RF Cable	Length: 6cm		-
-Spectrum Analyzer <=> EUT	Loss: 1.5dB		-

8.3 Measurement results of band-edge & out of emission

802.11b

EUT	Handy terminal	MODEL	HT-K10
MODE	DSSS	ENVIRONMENTAL CONDITION	23 °C, 43 % R.H.
INPUT POWER	120 Va.c., 60 Hz		

CHANNEL	Channel Frequency (MHz)	limit	PASS/FAIL
1	2412	20dBc	PASS
11	2462	20dBc	PASS



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802.11g

EUT	Handy terminal	MODEL	HT-K10
MODE	OFDM	ENVIRONMENTAL CONDITION	23 °C, 43 % R.H.
INPUT POWER	120 Va.c., 60 Hz		

CHANNEL	Channel Frequency (MHz)	limit	PASS/FAIL
1	2412	20dBc	PASS
11	2462	20dBc	PASS

802.11n

EUT	Handy terminal	MODEL	HT-K10
MODE	OFDM	ENVIRONMENTAL CONDITION	23 °C, 43 % R.H.
INPUT POWER	120 Va.c., 60 Hz		

CHANNEL	Channel Frequency (MHz)	limit	PASS/FAIL
1	2412	20dBc	PASS
11	2462	20dBc	PASS



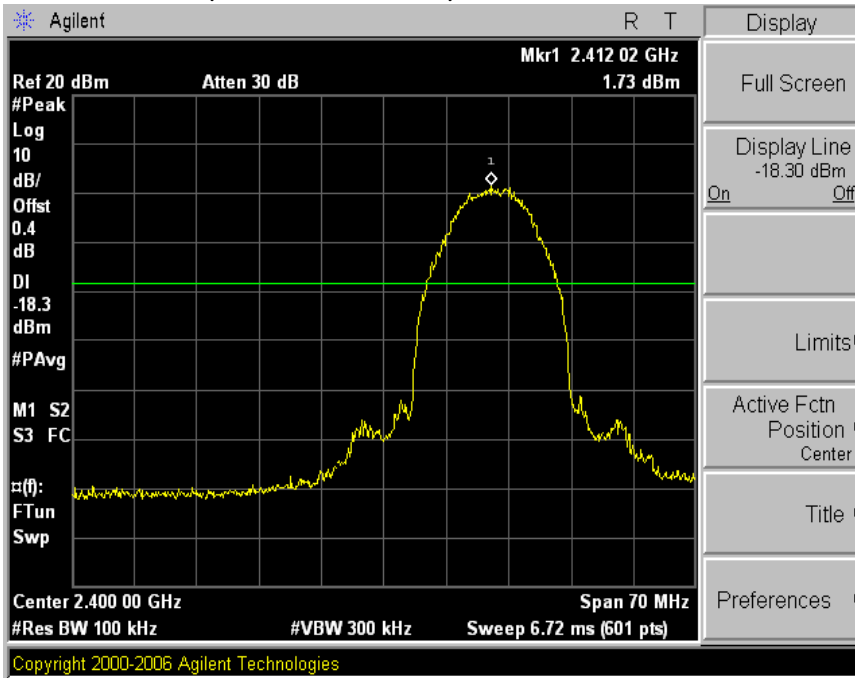
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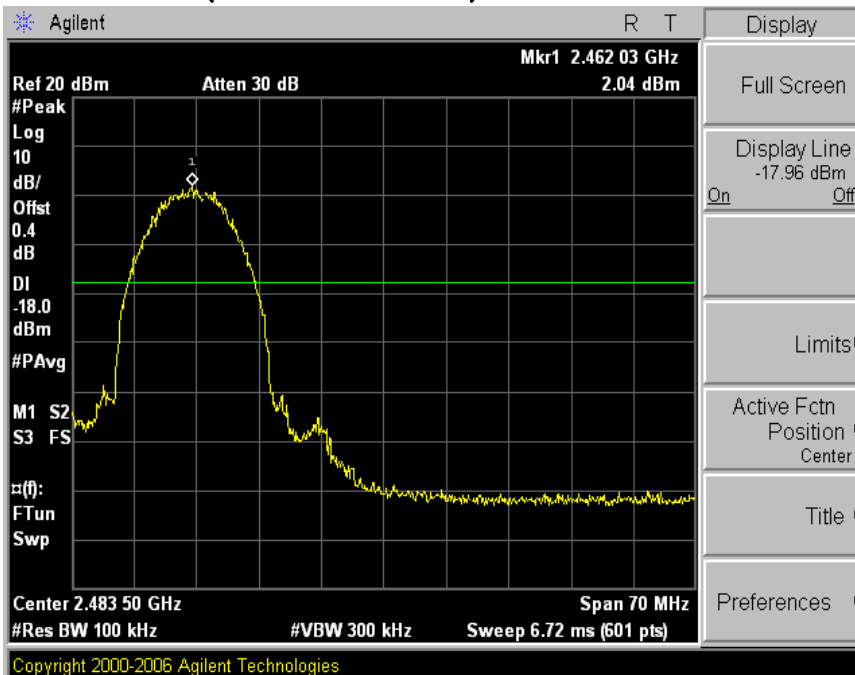


**Electromagnetic
Interference
Test Report**

8.4 Trace data of band-edge & Out of Emission CCK (802.11b-1ch)



CCK (802.11b-11ch)





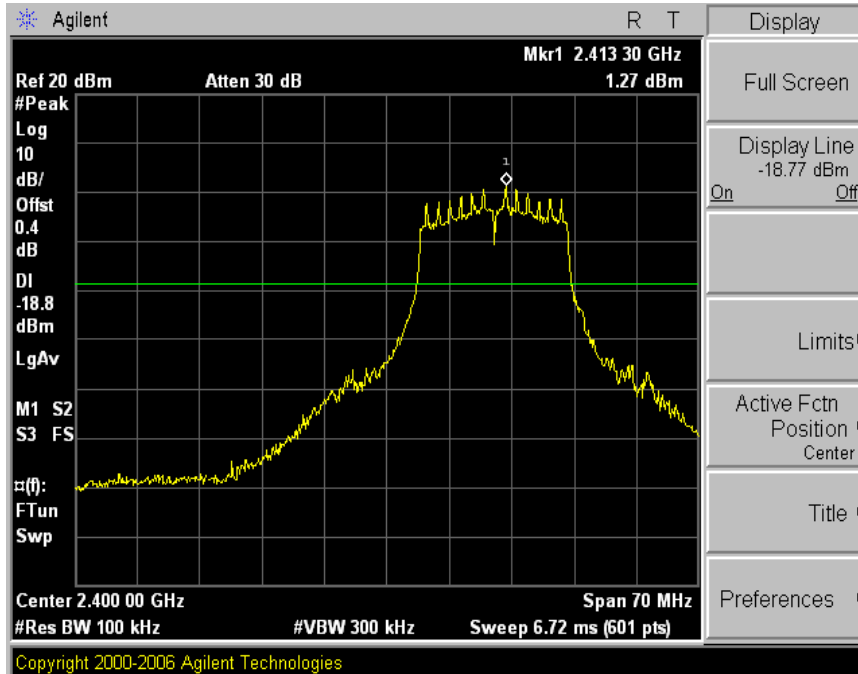
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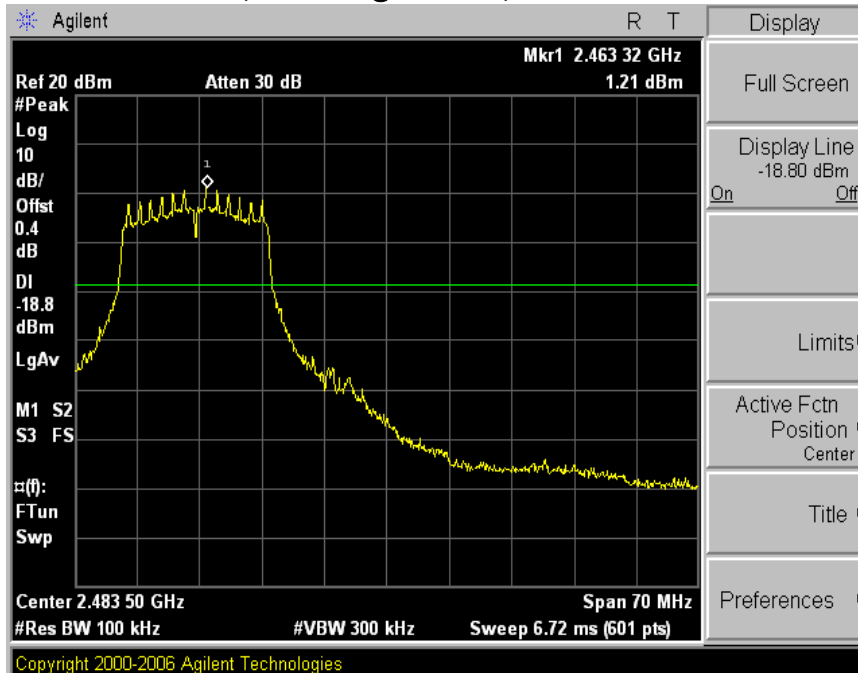


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OFDM (802.11g-1ch)



OFDM (802.11g-11ch)





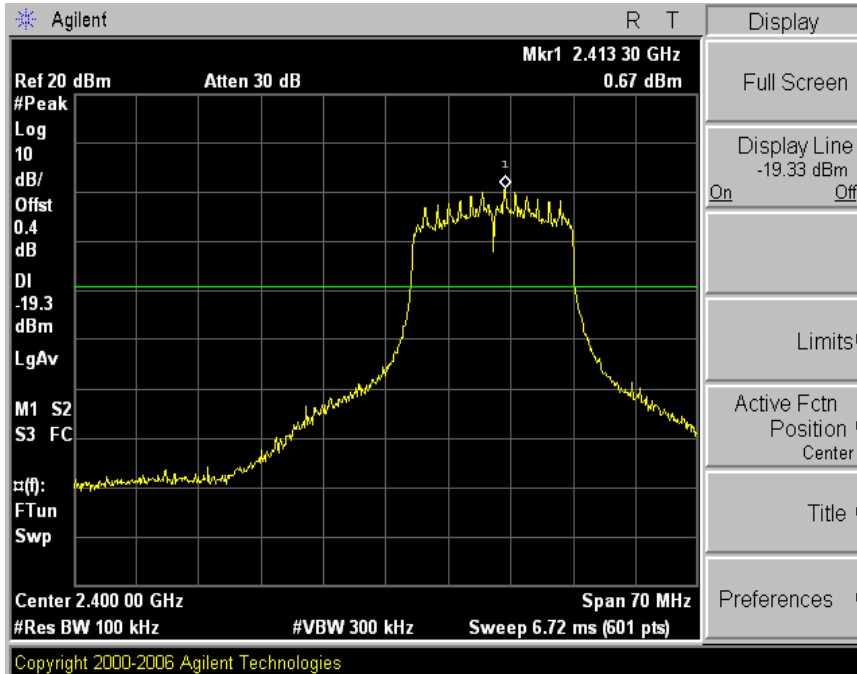
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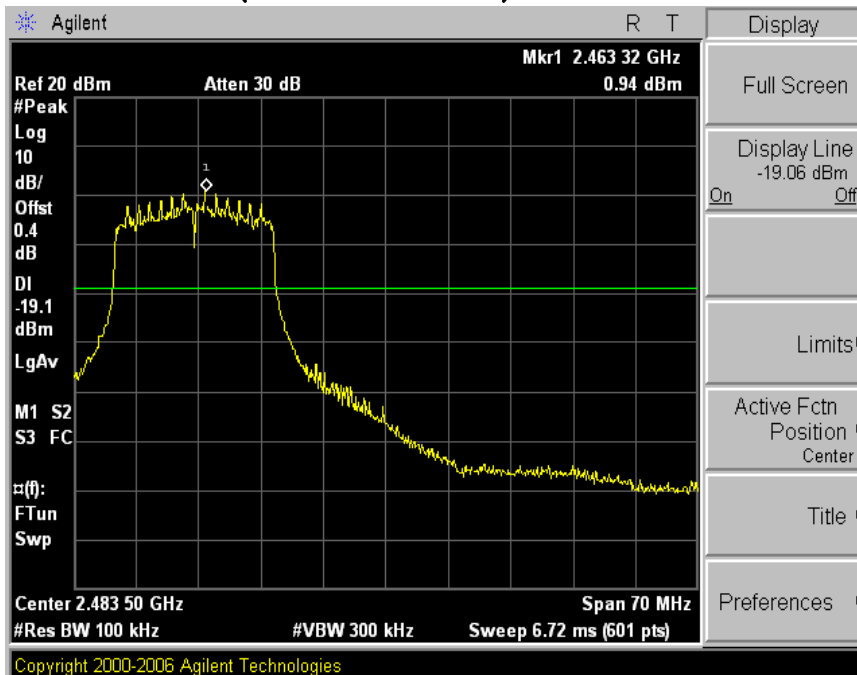


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OFDM (802.11n-1ch)



OFDM (802.11n-11ch)





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CCK (802.11b-1ch)



CCK (802.11b-6ch)





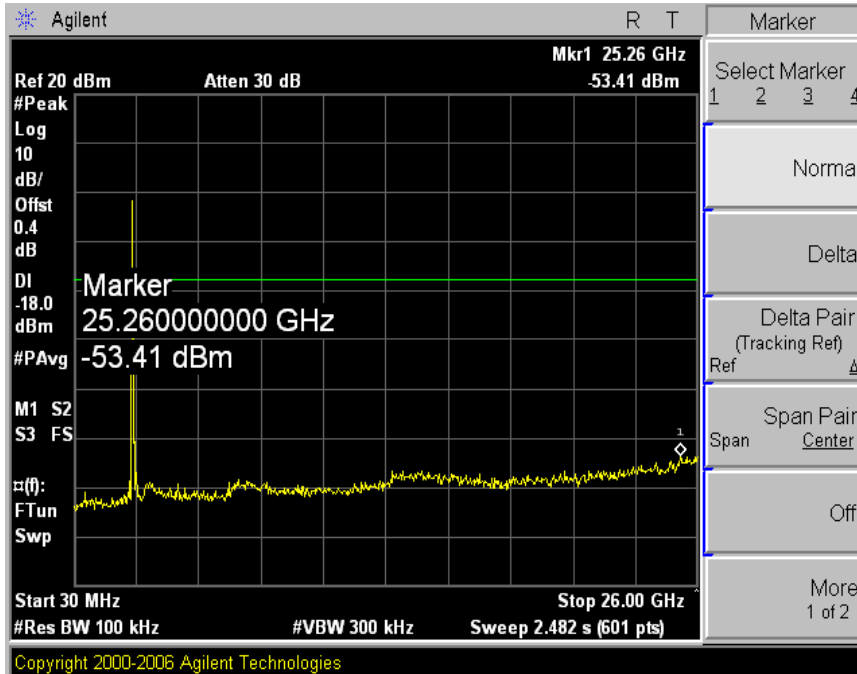
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Test Report**

CCK (802.11b-11ch)





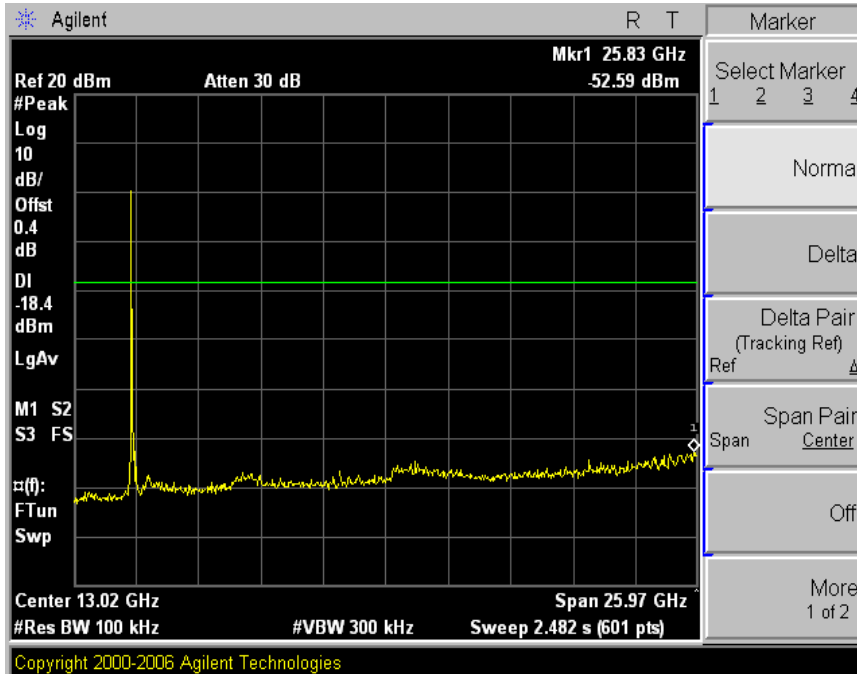
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CCK (802.11g-1ch)



CCK (802.11g-6ch)





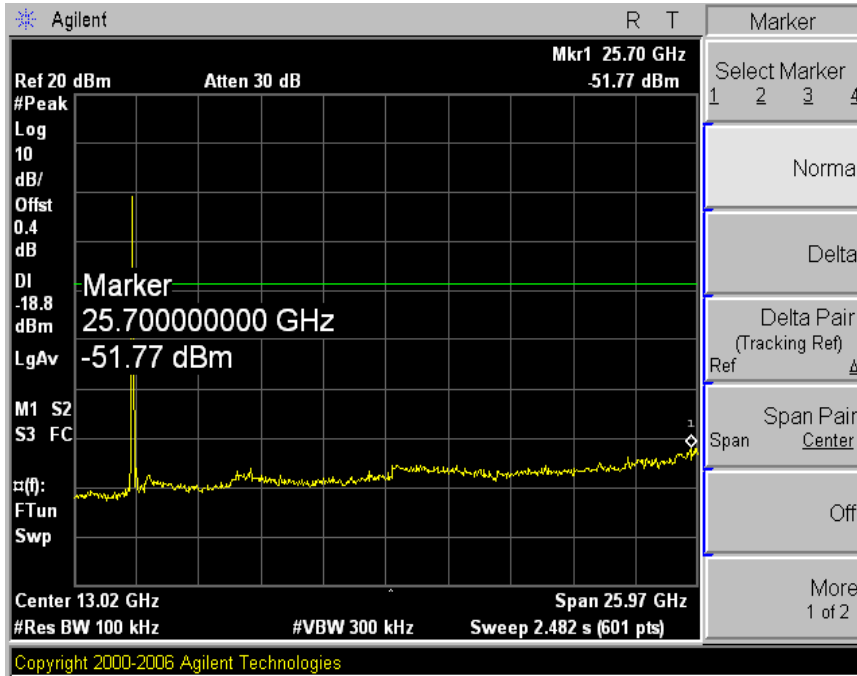
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CCK (802.11g-11ch)





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OFDM (802.11n-1ch)



OFDM (802.11n-6ch)





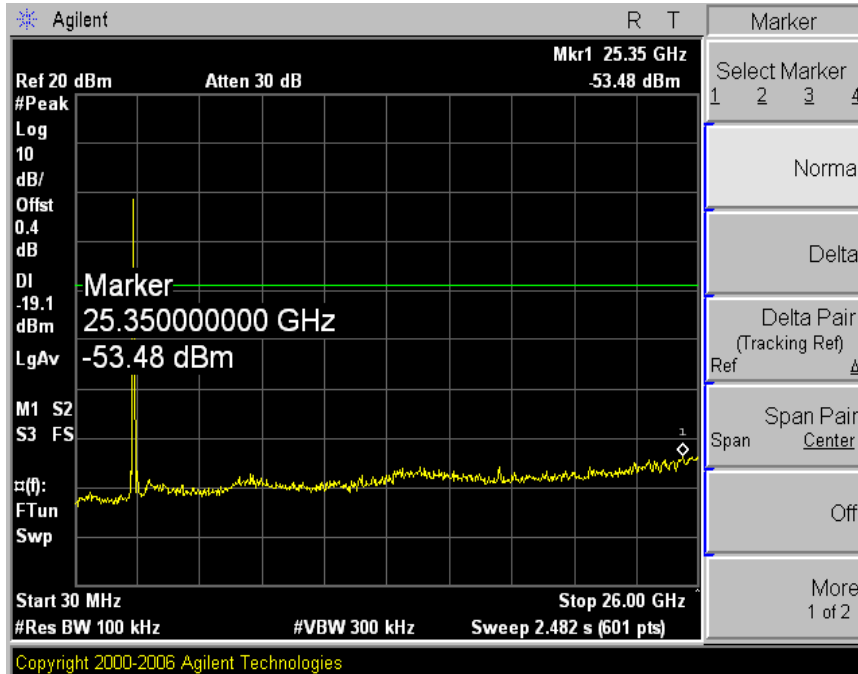
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OFDM (802.11n-11ch)



9. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC Part 15 (2010) & RSS-210(2010). The test setup was made according to ANSI C 63.4 (2003) & KDB 558074 D01 on an open test site, which allows a 3 m distance measurement. The EUT was placed in the center of wooden turntable. The height of this table was 0.8 m. The measurement was conducted with both horizontal and vertical antenna polarization. The turntable has fully rotated. For further description of the configuration refer to the picture of the test setup.

9.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
TEST Receiver	ESCI7	ROHDE & SCHWARZ	1166.5950.07	28-Mar-13
Logbicon Antenna	VULB 9168	SCHWARZBECK	237	20-Jan-13
Turn Table	DT3000-2t	Innco System GmbH	N/A	-
Antenna Mast	MA4000-EP	Innco System GmbH	N/A	-
Antenna Master & Turn table controller	CO2000-P	Innco System GmbH	CO2000/641 /28051111/L	-
TEST Receiver	ESPI7	ROHDE & SCHWARZ	100185	25-Jan-13
PREAMPLIFIER	8449B	AGILENT	3008A00595	25-Jan-13
Horn Antenna	BBHA9120D	SCHWARZBECK	352	15-May-13
Spectrum Analyzer	R3273	ADVANTEST	110600592	26-Jan-13
Pyramidal Horn Antenna	3160-09-01	ETS-LINDGREN	102642	22-Oct-13
Turn Table	DT1500-S	Innco System GmbH	N/A	-
Antenna Mast	MA4000-EP	Innco System GmbH	N/A	-
Antenna Master & Turn table controller	CO2000-P	Innco System GmbH	CO2000/642 /28051111/L	-

9.2 Environmental Condition

Below 1 GHz –Test Place : 10 m Semi-anechoic chamber

Wireless LAN 802.11b Mode

Temperature (°C) : 22.9 °C
 Humidity (% R.H.) : 50.1 % R.H.

Wireless LAN 802.11g Mode

Temperature (°C) : 23.2 °C
 Humidity (% R.H.) : 46.8 % R.H.

Wireless LAN 802.11n Mode

Temperature (°C) : 21.8 °C
 Humidity (% R.H.) : 54.5 % R.H.

Above 1 GHz–Test Place : 3 m Semi-anechoic chamber

Wireless LAN 802.11b Mode

Temperature (°C) : 21.4 °C
 Humidity (% R.H.) : 47.2 % R.H.

Wireless LAN 802.11g Mode

Temperature (°C) : 23.1 °C
 Humidity (% R.H.) : 44.8 % R.H.

Wireless LAN 802.11n Mode

Temperature (°C) : 23.6 °C
 Humidity (% R.H.) : 51.4 % R.H.

9.3 Measurement Instrument setting for Radiated Emission

9.3.1 Frequency range below 1 GHz

RBW: 120 kHz , VBW: 3 x RBW , Detector: Quasi Peak

9.3.2 Frequency range above 1 GHz

Peak Power Measurement Procedure (KDB 558074 section 10.2.3.2)

- a. RBW: 1 MHz , VBW: 3 MHz
- b. Trace mode = max hold
- c. Detector: Peak
- d. Sweep time = auto couple

Average Power Measurement Procedures (KDB 558074 section 10.2.3.3)

- a. Set analyzer center frequency to the frequency associated with the emission
- b. Set span to at least 1 MHz
- c. RBW: 1 MHz , VBW: 3 MHz
- d. Detector : power average (RMS) detector
- e. Sweep time = 1 s $\geq 10 \times$ (number of measurement points in sweep) \times (maximum data rate per stream)

Note

Band	Duty cycle(%)	Ton (ms)	Ton + Toff (ms)	DCF=20*log(1/Duty) (dB)
802.11b	98.9	1.349	1.364	not applicable
802.11g	98.3	2.09	2.126	not applicable
802.11n	99.1	1.983	2.001	not applicable

*There did not applied of duty cycle factor for average value because of measured with the EUT transmitting continuously ($\geq 98\%$ duty cycle) at its maximum power control level.

9.4 Test Data for wireless LAN (802.11b)

Test Date : 26-Dec-12

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
48.00	5.02	V	1.0	12.65	1.06	40.00	18.73	-21.27
72.00	4.92	V	1.0	10.67	1.24	40.00	16.83	-23.17
82.00	4.94	V	1.0	8.90	1.40	40.00	15.24	-24.76
100.00	7.01	V	1.0	8.10	1.60	43.50	16.71	-26.79
103.00	6.74	V	1.0	8.37	1.60	43.50	16.71	-26.79
144.00	4.32	H	2.0	12.02	1.90	43.50	18.24	-25.26
180.80	4.98	V	1.0	10.97	2.01	43.50	17.96	-25.54
204.90	6.25	V	1.0	9.30	2.15	43.50	17.69	-25.81
208.10	6.53	V	1.0	9.43	2.18	43.50	18.14	-25.36
664.50	4.05	H	1.5	20.33	4.00	46.00	28.38	-17.62
744.30	3.72	V	1.0	21.33	4.20	46.00	29.25	-16.75
993.60	3.64	H	1.0	23.66	4.97	54.00	32.27	-21.73

Remark	<p>H : Horizontal, V : Vertical TEST MODE : 802.11b-CH6(2437 MHz)</p> <p>*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)</p> <p>*CL = Cable Loss(In case of below 1000 MHz)</p> <p>*The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1 GHz.</p>
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9.4-1 Test Data for wireless LAN

Test Date 29-Dec-12

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2333.1	31.19	H	1.1	26.52	5.0	0	74.0	62.71	-11.29
2330.9	30.67	V	1.2	26.51	5.0	0	74.0	62.18	-11.82
2386.7	29.83	H	1.1	26.68	5.0	0	74.0	61.51	-12.49
2386.7	29.26	V	1.2	26.68	5.0	0	74.0	60.94	-13.06
2390.0	30.78	H	1.1	26.69	5.0	0	74.0	62.47	-11.53
2390.0	29.35	V	1.2	26.69	5.0	0	74.0	61.04	-12.96
4824.1	50.65	H	1.1	31.40	-22.7	0	74.0	59.31	-14.69
4824.1	48.72	V	1.2	31.40	-22.7	0	74.0	57.38	-16.62
7236.1	49.48	H	1.1	35.50	-19.1	0	74.0	65.87	-8.13
7236.1	47.44	V	1.2	35.50	-19.1	0	74.0	63.83	-10.17
AV(RBW: 1 MHz VBW: 3 MHz)									
2332.8	16.40	H	1.1	26.52	5.0	0	54.0	47.92	-6.08
2332.2	15.16	V	1.2	26.51	5.0	0	54.0	46.67	-7.33
2390.0	15.95	H	1.1	26.69	5.0	0	54.0	47.64	-6.36
2390.0	14.58	V	1.2	26.69	5.0	0	54.0	46.27	-7.73
4824.1	37.22	H	1.1	31.40	-22.7	0	54.0	45.88	-8.12
4824.1	36.45	V	1.2	31.40	-22.7	0	54.0	45.11	-8.89
7236.1	34.28	H	1.1	35.50	-19.1	0	54.0	50.67	-3.33
7236.1	33.54	V	1.2	35.50	-19.1	0	54.0	49.93	-4.07
Remark	<p>H : Horizontal, V : Vertical TEST MODE : 802.11b-CH1(2412 MHz)</p> <p>*The TX signal isn't detected from 4th harmonics.</p> <p>*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)</p> <p>*Multiple of CL = Cable Loss-Amplifier Gain(In case of above1000 MHz)</p> <p>*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain</p> <p>FYI</p> <p>a. Ton Time = 1.349 ms</p> <p>b. duty cycle : 98.9 %</p> <p>c. There did not applied of duty cycle factor for average value.</p>								

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9.4-2 Test Data for wireless LAN

Test Date 30-Dec-12

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction (dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
4874.0	48.35	H	1.1	31.48	-22.5	0	74.0	57.28	-16.72
4874.0	47.62	V	1.2	31.48	-22.5	0	74.0	56.55	-17.45
7311.0	47.25	H	1.1	35.69	-19.0	0	74.0	63.98	-10.02
7311.0	46.49	V	1.2	35.69	-19.0	0	74.0	63.22	-10.78
AV(RBW: 1 MHz VBW: 3 MHz)									
4874.0	36.12	H	1.1	31.48	-22.5	0	54.0	45.05	-8.95
4874.0	35.41	V	1.2	31.48	-22.5	0	54.0	44.34	-9.66
7311.0	33.24	H	1.1	35.69	-19.0	0	54.0	49.97	-4.03
7311.0	32.65	V	1.2	35.69	-19.0	0	54.0	49.38	-4.62
Remark	<p>H : Horizontal, V : Vertical TEST MODE : 802.11b-CH6(2437 MHz)</p> <p>*The TX signal isn't detected from 4th harmonics. *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *Multiple of CL = Cable Loss-Amplifier Gain(In case of above1000 MHz) *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain FYI a. Ton Time = 1.349 ms b. duty cycle : 98.9 % c. There did not applied of duty cycle factor for average value.</p>								

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Interference
Test Report**

9.4-3 Test Data for wireless LAN

Test Date 31-Dec-12

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2483.5	31.76	H	1.1	26.98	5.0	0	74.0	63.74	-10.26
2483.5	29.11	V	1.2	26.98	5.0	0	74.0	61.09	-12.91
2487.2	32.32	H	1.1	27.00	5.0	0	74.0	64.32	-9.68
2486.0	31.45	V	1.2	26.99	5.0	0	74.0	63.44	-10.56
4924.1	49.86	H	1.1	31.57	-22.4	0	74.0	59.06	-14.94
4924.1	49.20	V	1.2	31.57	-22.4	0	74.0	58.40	-15.60
7386.1	47.35	H	1.1	35.88	-18.8	0	74.0	64.42	-9.58
7386.1	45.49	V	1.2	35.88	-18.8	0	74.0	62.56	-11.44
AV(RBW: 1 MHz VBW: 3 MHz)									
2483.5	16.83	H	1.1	26.98	5.0	0	54.0	48.81	-5.19
2483.5	18.83	V	1.2	26.98	5.0	0	54.0	50.81	-3.19
2486.7	18.89	H	1.1	26.99	5.0	0	54.0	50.88	-3.12
2486.7	18.63	V	1.2	26.99	5.0	0	54.0	50.62	-3.38
4924.1	37.41	H	1.1	31.57	-22.4	0	54.0	46.61	-7.39
4924.1	35.75	V	1.2	31.57	-22.4	0	54.0	44.95	-9.05
7386.1	33.42	H	1.1	35.88	-18.8	0	54.0	50.49	-3.51
7386.1	33.27	V	1.2	35.88	-18.8	0	54.0	50.34	-3.66
Remark	<p>H : Horizontal, V : Vertical TEST MODE : 802.11b-CH11(2462 MHz)</p> <p>*The TX signal isn't detected from 4th harmonics.</p> <p>*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)</p> <p>*Multiple of CL = Cable Loss-Amplifier Gain(In case of above1000 MHz)</p> <p>*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain</p> <p>FYI</p> <p>a. Ton Time = 1.349 ms</p> <p>b. duty cycle : 98.9 %</p> <p>c. There did not applied of duty cycle factor for average value.</p>								

9.5 Test Data for wireless LAN (802.11g)

Test Date : 27-Dec-12

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
44.60	3.17	V	1.0	12.53	1.00	40.00	16.70	-23.30
48.00	1.73	H	2.5	12.65	1.06	40.00	15.44	-24.56
72.00	3.68	H	2.5	10.67	1.24	40.00	15.59	-24.41
74.10	9.45	V	1.0	10.28	1.28	40.00	21.02	-18.98
76.10	7.93	V	1.0	9.92	1.32	40.00	19.17	-20.83
77.20	8.96	V	1.0	9.72	1.34	40.00	20.02	-19.98
79.10	8.22	V	1.0	9.37	1.38	40.00	18.98	-21.02
201.30	6.39	H	2.0	9.14	2.11	43.50	17.65	-25.85
206.70	6.31	V	1.0	9.37	2.17	43.50	17.85	-25.65
623.30	3.64	V	1.0	19.97	3.82	46.00	27.42	-18.58
636.00	3.84	H	1.5	20.08	3.88	46.00	27.80	-18.20
810.80	3.65	H	1.0	22.28	4.40	46.00	30.33	-15.67

Remark	<p>H : Horizontal, V : Vertical TEST MODE : 802.11g-CH6(2437 MHz)</p> <p>*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)</p> <p>*CL = Cable Loss(In case of below 1000 MHz)</p> <p>*The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1 GHz.</p>
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9.5-1 Test Data for wireless LAN

Test Date 29-Dec-12

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2389.2	36.41	H	1.1	26.69	5.0	0	74.0	68.10	-5.90
2389.2	37.15	V	1.2	26.69	5.0	0	74.0	68.84	-5.16
2390.0	39.29	H	1.1	26.69	5.0	0	74.0	70.98	-3.02
2390.0	38.15	V	1.2	26.69	5.0	0	74.0	69.84	-4.16
4824.1	51.62	H	1.1	31.40	-22.7	0	74.0	60.28	-13.72
4824.1	50.55	V	1.2	31.40	-22.7	0	74.0	59.21	-14.79
7236.1	50.41	H	1.1	35.50	-19.1	0	74.0	66.80	-7.20
7236.1	48.36	V	1.2	35.50	-19.1	0	74.0	64.75	-9.25
AV(RBW: 1 MHz VBW: 3 MHz)									
2389.6	17.43	H	1.1	26.69	5.0	0	54.0	49.12	-4.88
2389.6	18.22	V	1.2	26.69	5.0	0	54.0	49.91	-4.09
2390.0	17.73	H	1.1	26.69	5.0	0	54.0	49.42	-4.58
2390.0	18.44	V	1.2	26.69	5.0	0	54.0	50.13	-3.87
4824.1	37.99	H	1.1	31.40	-22.7	0	54.0	46.65	-7.35
4824.1	37.02	V	1.2	31.40	-22.7	0	54.0	45.68	-8.32
7236.1	34.35	H	1.1	35.50	-19.1	0	54.0	50.74	-3.26
7236.1	33.78	V	1.2	35.50	-19.1	0	54.0	50.17	-3.83
Remark	<p>H : Horizontal, V : Vertical TEST MODE : 802.11g-CH1(2412 MHz)</p> <p>*The TX signal isn't detected from 4th harmonics. *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *Multiple of CL = Cable Loss-Amplifier Gain(In case of above1000 MHz) *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain FYI a. Ton Time = 2.09 ms b. duty cycle : 98.3 % c. There did not applied of duty cycle factor for average value.</p>								

9.5-2 Test Data for wireless LAN

Test Date 30-Dec-12

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction (dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
4874.0	49.28	H	1.1	31.48	-22.5	0	74.0	58.21	-15.79
4874.0	48.35	V	1.2	31.48	-22.5	0	74.0	57.28	-16.72
7311.0	48.96	H	1.1	35.69	-19.0	0	74.0	65.69	-8.31
7311.0	47.45	V	1.2	35.69	-19.0	0	74.0	64.18	-9.82
AV(RBW: 1 MHz VBW: 3 MHz)									
4874.0	37.35	H	1.1	31.48	-22.5	0	54.0	46.28	-7.72
4874.0	36.25	V	1.2	31.48	-22.5	0	54.0	45.18	-8.82
7311.0	33.02	H	1.1	35.69	-19.0	0	54.0	49.75	-4.25
7311.0	32.49	V	1.2	35.69	-19.0	0	54.0	49.22	-4.78
Remark	<p>H : Horizontal, V : Vertical TEST MODE : 802.11g-CH6(2437 MHz)</p> <p>*The TX signal isn't detected from 4th harmonics.</p> <p>*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)</p> <p>*Multiple of CL = Cable Loss-Amplifier Gain(In case of above1000 MHz)</p> <p>*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain</p> <p>FYI</p> <p>a. Ton Time = 2.09 ms</p> <p>b. duty cycle : 98.3 %</p> <p>c. There did not applied of duty cycle factor for average value.</p>								

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9.5-3 Test Data for wireless LAN

Test Date 31-Dec-12

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2483.5	39.08	H	1.1	26.98	5.0	0	74.0	71.06	-2.94
2483.5	37.69	V	1.2	26.98	5.0	0	74.0	69.67	-4.33
2484.6	39.40	H	1.1	26.99	5.0	0	74.0	71.39	-2.61
2484.6	38.76	V	1.2	26.99	5.0	0	74.0	70.75	-3.25
4924.1	50.01	H	1.1	31.57	-22.4	0	74.0	59.21	-14.79
4924.1	49.81	V	1.2	31.57	-22.4	0	74.0	59.01	-14.99
7386.1	48.74	H	1.1	35.88	-18.8	0	74.0	65.81	-8.19
7386.1	47.25	V	1.2	35.88	-18.8	0	74.0	64.32	-9.68
AV(RBW: 1 MHz VBW: 3 MHz)									
2483.5	18.75	H	1.1	26.98	5.0	0	54.0	50.73	-3.27
2483.5	18.45	V	1.2	26.98	5.0	0	54.0	50.43	-3.57
2483.6	18.50	H	1.1	26.98	5.0	0	54.0	50.48	-3.52
2483.6	18.47	V	1.2	26.98	5.0	0	54.0	50.45	-3.55
4924.1	37.85	H	1.1	31.57	-22.4	0	54.0	47.05	-6.95
4924.1	36.25	V	1.2	31.57	-22.4	0	54.0	45.45	-8.55
7386.1	33.85	H	1.1	35.88	-18.8	0	54.0	50.92	-3.08
7386.1	33.29	V	1.2	35.88	-18.8	0	54.0	50.36	-3.64
Remark	<p>H : Horizontal, V : Vertical TEST MODE : 802.11g-CH11(2462 MHz)</p> <p>*The TX signal isn't detected from 4th harmonics. *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *Multiple of CL = Cable Loss-Amplifier Gain(In case of above1000 MHz) *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain FYI a. Ton Time = 2.09 ms b. duty cycle : 98.3 % c. There did not applied of duty cycle factor for average value.</p>								

9.6 Test Data for wireless LAN (802.11n)

Test Date : 28-Dec-12

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
61.40	6.54	V	1.0	11.84	1.20	40.00	19.58	-20.42
71.80	5.36	V	1.0	10.70	1.24	40.00	17.30	-22.70
75.10	12.11	V	1.0	10.10	1.30	40.00	23.51	-16.49
102.80	6.80	V	1.0	8.35	1.60	43.50	16.75	-26.75
144.00	3.34	V	1.0	12.02	1.90	43.50	17.26	-26.24
155.00	2.52	H	2.0	12.21	1.95	43.50	16.68	-26.82
170.40	2.61	H	1.9	11.65	2.00	43.50	16.26	-27.24
204.80	5.81	V	1.0	9.29	2.15	43.50	17.25	-26.25
277.90	4.34	H	1.5	12.29	2.50	46.00	19.13	-26.87
302.60	3.12	H	1.5	13.22	2.61	46.00	18.95	-27.05
953.20	3.28	H	1.0	23.37	4.81	46.00	31.46	-14.54
991.80	3.07	V	1.0	23.65	4.96	54.00	31.68	-22.32

Remark	<p>H : Horizontal, V : Vertical TEST MODE : 802.11n-CH6(2437 MHz)</p> <p>*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)</p> <p>*CL = Cable Loss(In case of below 1000 MHz)</p> <p>*The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1 GHz.</p>
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9.6-1 Test Data for wireless LAN

Test Date 29-Dec-12

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2389.2	37.61	H	1.1	26.69	5.0	0	74.0	69.30	-4.70
2389.2	37.30	V	1.2	26.69	5.0	0	74.0	68.99	-5.01
2390.0	39.88	H	1.1	26.69	5.0	0	74.0	71.57	-2.43
2390.0	39.15	V	1.2	26.69	5.0	0	74.0	70.84	-3.16
4824.1	52.71	H	1.1	31.40	-22.7	0	74.0	61.37	-12.63
4824.1	51.62	V	1.2	31.40	-22.7	0	74.0	60.28	-13.72
7236.1	51.35	H	1.1	35.50	-19.1	0	74.0	67.74	-6.26
7236.1	50.46	V	1.2	35.50	-19.1	0	74.0	66.85	-7.15
AV(RBW: 1 MHz VBW: 3 MHz)									
2389.6	18.21	H	1.1	26.69	5.0	0	54.0	49.90	-4.10
2389.6	19.06	V	1.2	26.69	5.0	0	54.0	50.75	-3.25
2390.0	18.33	H	1.1	26.69	5.0	0	54.0	50.02	-3.98
2390.0	19.00	V	1.2	26.69	5.0	0	54.0	50.69	-3.31
4824.1	38.22	H	1.1	31.40	-22.7	0	54.0	46.88	-7.12
4824.1	37.65	V	1.2	31.40	-22.7	0	54.0	46.31	-7.69
7236.1	34.52	H	1.1	35.50	-19.1	0	54.0	50.91	-3.09
7236.1	33.99	V	1.2	35.50	-19.1	0	54.0	50.38	-3.62
Remark	<p>H : Horizontal, V : Vertical TEST MODE : 802.11n-CH1(2412 MHz)</p> <p>*The TX signal isn't detected from 4th harmonics. *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *Multiple of CL = Cable Loss-Amplifier Gain(In case of above1000 MHz) *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain FYI a. Ton Time = 1.983 ms b. duty cycle : 99.1 % c. There did not applied of duty cycle factor for average value.</p>								

9.6-2 Test Data for wireless LAN

Test Date 30-Dec-12

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction (dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
4874.0	50.98	H	1.1	31.48	-22.5	0	74.0	59.91	-14.09
4874.0	49.74	V	1.2	31.48	-22.5	0	74.0	58.67	-15.33
7311.0	49.85	H	1.1	35.69	-19.0	0	74.0	66.58	-7.42
7311.0	48.26	V	1.2	35.69	-19.0	0	74.0	64.99	-9.01
AV(RBW: 1 MHz VBW: 3 MHz)									
4874.0	38.52	H	1.1	31.48	-22.5	0	54.0	47.45	-6.55
4874.0	37.41	V	1.2	31.48	-22.5	0	54.0	46.34	-7.66
7311.0	34.00	H	1.1	35.69	-19.0	0	54.0	50.73	-3.27
7311.0	33.28	V	1.2	35.69	-19.0	0	54.0	50.01	-3.99
Remark	<p>H : Horizontal, V : Vertical TEST MODE : 802.11n-CH6(2437 MHz)</p> <p>*The TX signal isn't detected from 4th harmonics.</p> <p>*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)</p> <p>*Multiple of CL = Cable Loss-Amplifier Gain(In case of above1000 MHz)</p> <p>*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain</p> <p>FYI</p> <p>a. Ton Time = 1.983 ms</p> <p>b. duty cycle : 99.1 %</p> <p>c. There did not applied of duty cycle factor for average value.</p>								

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9.6-3 Test Data for wireless LAN

Test Date 31-Dec-12

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction (dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2483.5	38.97	H	1.1	26.98	5.0	0	74.0	70.95	-3.05
2483.5	39.05	V	1.2	26.98	5.0	0	74.0	71.03	-2.97
2484.6	39.46	H	1.1	26.99	5.0	0	74.0	71.45	-2.55
2483.9	39.36	V	1.2	26.98	5.0	0	74.0	71.34	-2.66
4924.1	51.25	H	1.1	31.57	-22.4	0	74.0	60.45	-13.55
4924.1	50.42	V	1.2	31.57	-22.4	0	74.0	59.62	-14.38
7386.1	50.35	H	1.1	35.88	-18.8	0	74.0	67.42	-6.58
7386.1	49.72	V	1.2	35.88	-18.8	0	74.0	66.79	-7.21
AV(RBW: 1 MHz VBW: 3 MHz)									
2483.5	18.95	H	1.1	26.98	5.0	0	54.0	50.93	-3.07
2483.5	18.66	V	1.2	26.98	5.0	0	54.0	50.64	-3.36
2483.6	18.73	H	1.1	26.98	5.0	0	54.0	50.71	-3.29
2483.6	18.58	V	1.2	26.98	5.0	0	54.0	50.56	-3.44
4924.1	38.02	H	1.1	31.57	-22.4	0	54.0	47.22	-6.78
4924.1	37.25	V	1.2	31.57	-22.4	0	54.0	46.45	-7.55
7386.1	34.00	H	1.1	35.88	-18.8	0	54.0	51.07	-2.93
7386.1	33.26	V	1.2	35.88	-18.8	0	54.0	50.33	-3.67
Remark	<p>H : Horizontal, V : Vertical TEST MODE : 802.11n-CH11(2462 MHz)</p> <p>*The TX signal isn't detected from 4th harmonics.</p> <p>*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)</p> <p>*Multiple of CL = Cable Loss-Amplifier Gain(In case of above1000 MHz)</p> <p>*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain FYI</p> <p>a. Ton Time = 1.983 ms</p> <p>b. duty cycle : 99.1 %</p> <p>c. There did not applied of duty cycle factor for average value.</p>								



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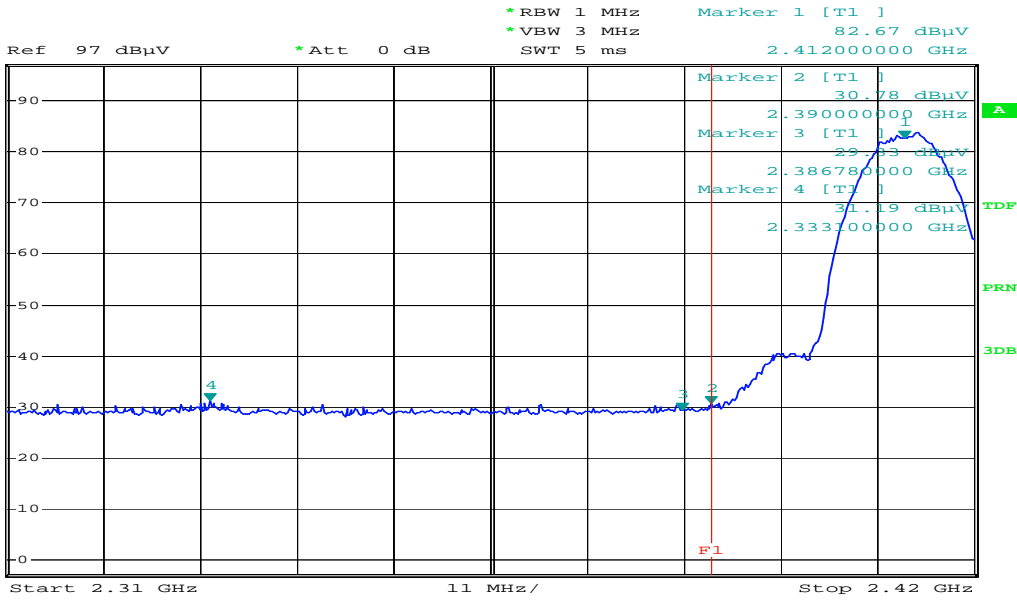
**Electromagnetic
Interference
Test Report**

9.7 Restricted Band Edges for 802.11b

Band Edges(CH Low)

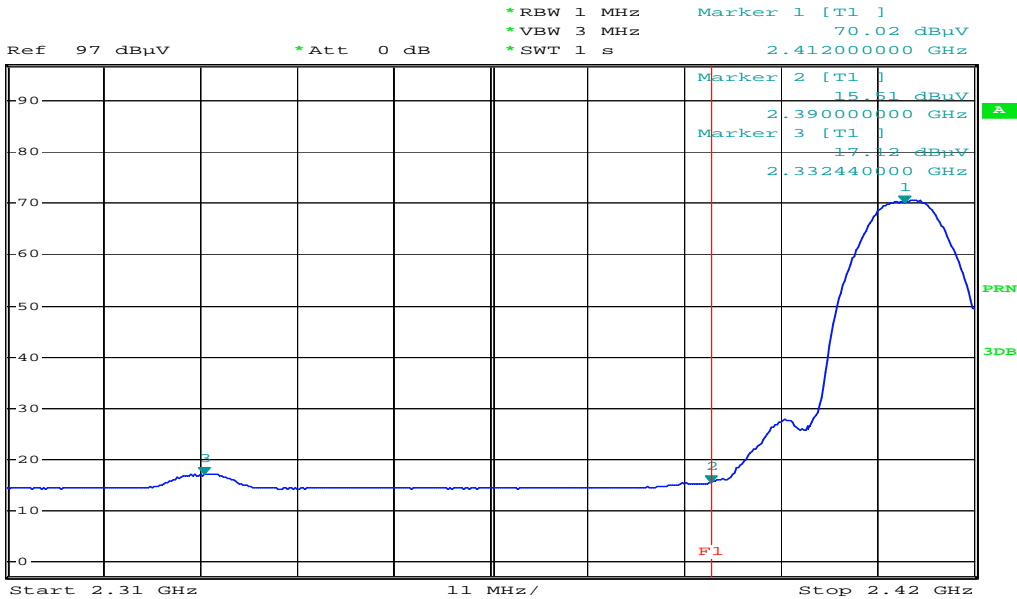
Detector mode:Peak

Polarity:Horizontal



Detector mode:Average

Polarity:Horizontal





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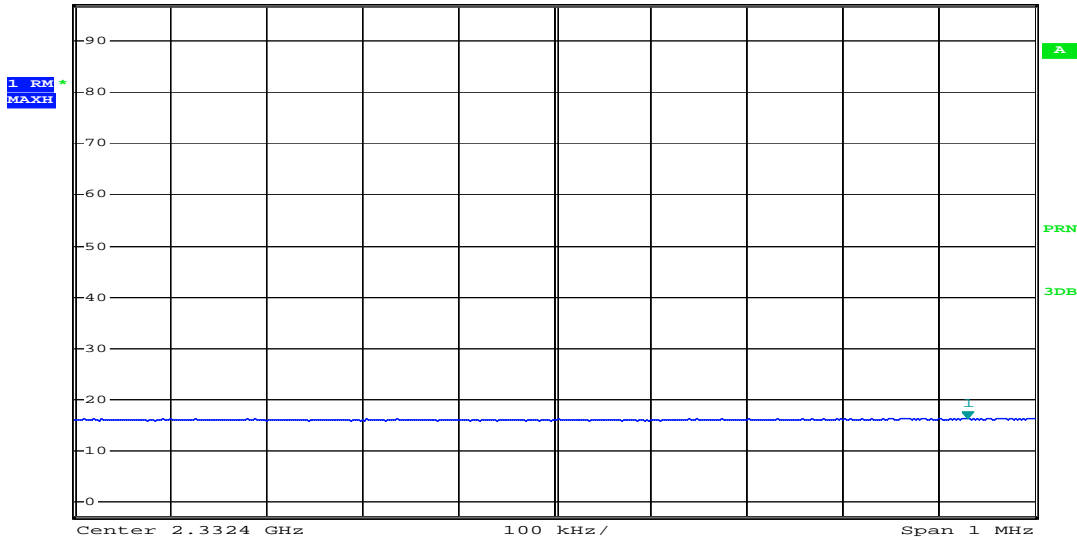
Band Edges(CH Low)

Detector mode:Average

Polarity:Horizontal



Ref 97 dB μ V *Att 0 dB *RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 16.40 dB μ V
*SWT 1 s 2.332830000 GHz

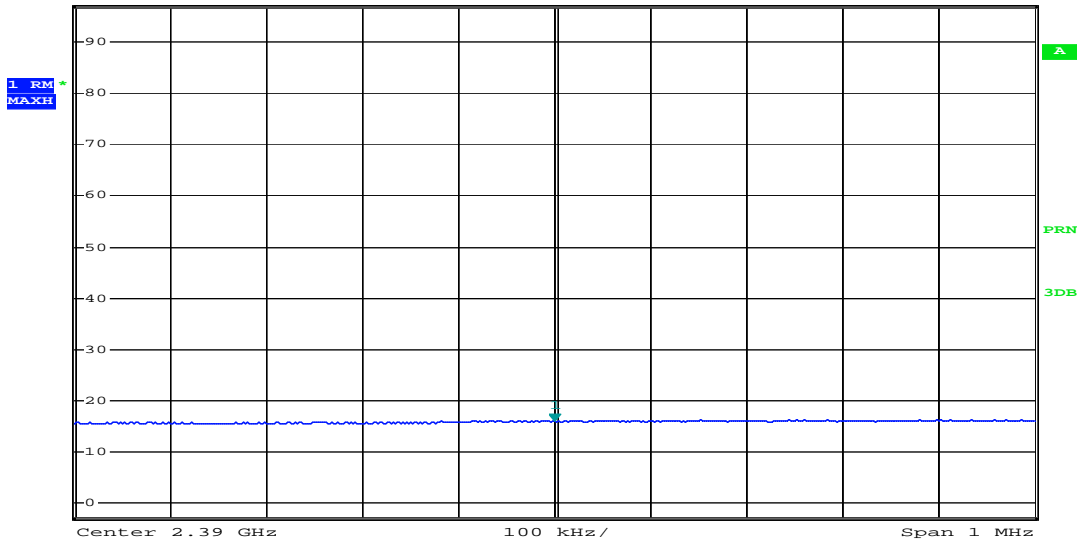


Detector mode:Average

Polarity:Horizontal



Ref 97 dB μ V *Att 0 dB *RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 15.95 dB μ V
*SWT 1 s 2.390000000 GHz





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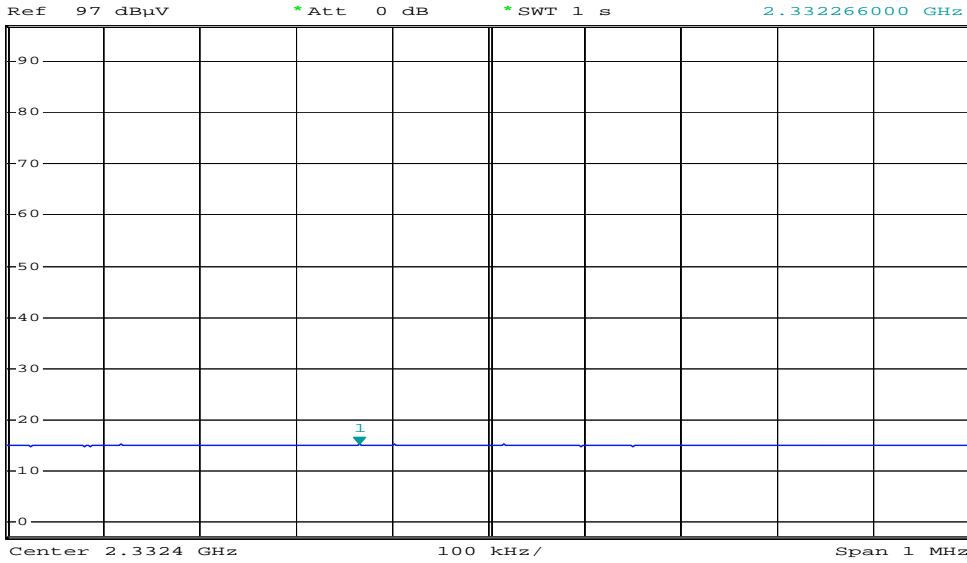
Band Edges(CH Low)

Detector mode:Average

Polarity:Vertical



* RBW 1 MHz Marker 1 [T1]
* VBW 3 MHz 15.16 dBμV
* SWT 1 s 2.332266000 GHz

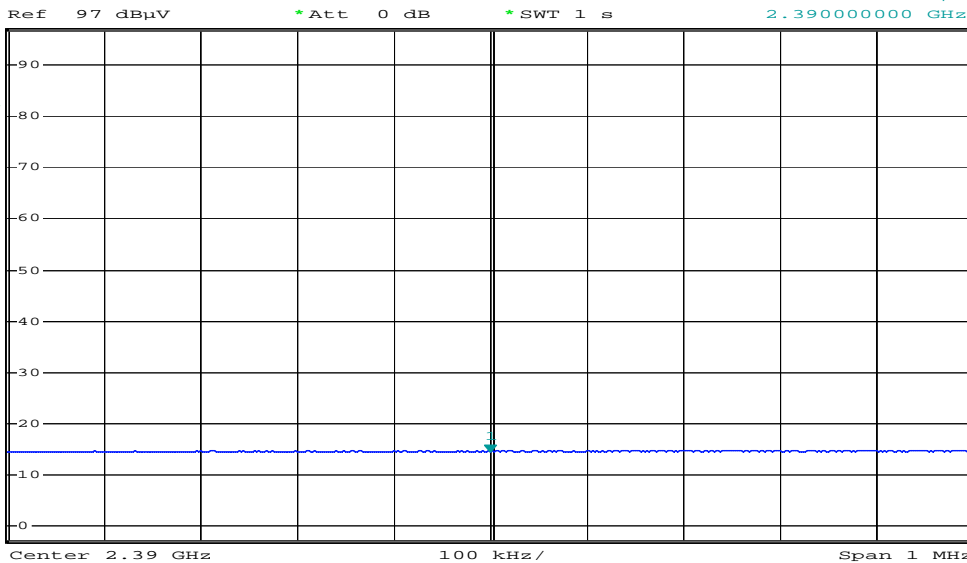


Detector mode:Average

Polarity:Vertical



* RBW 1 MHz Marker 1 [T1]
* VBW 3 MHz 14.58 dBμV
* SWT 1 s 2.390000000 GHz





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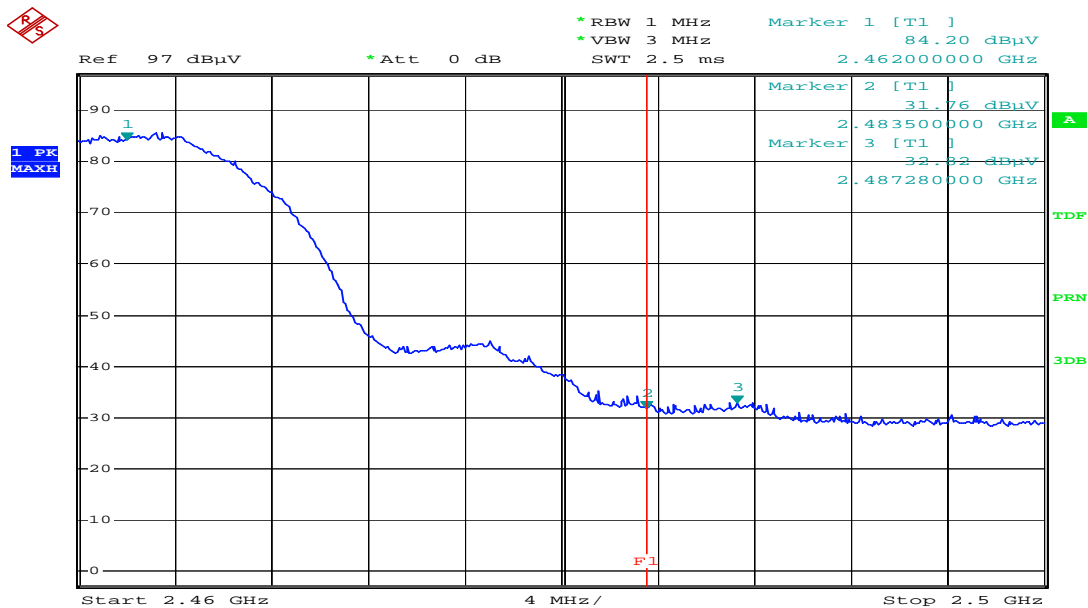


**Electromagnetic
Interference
Test Report**

Band Edges(CH High)

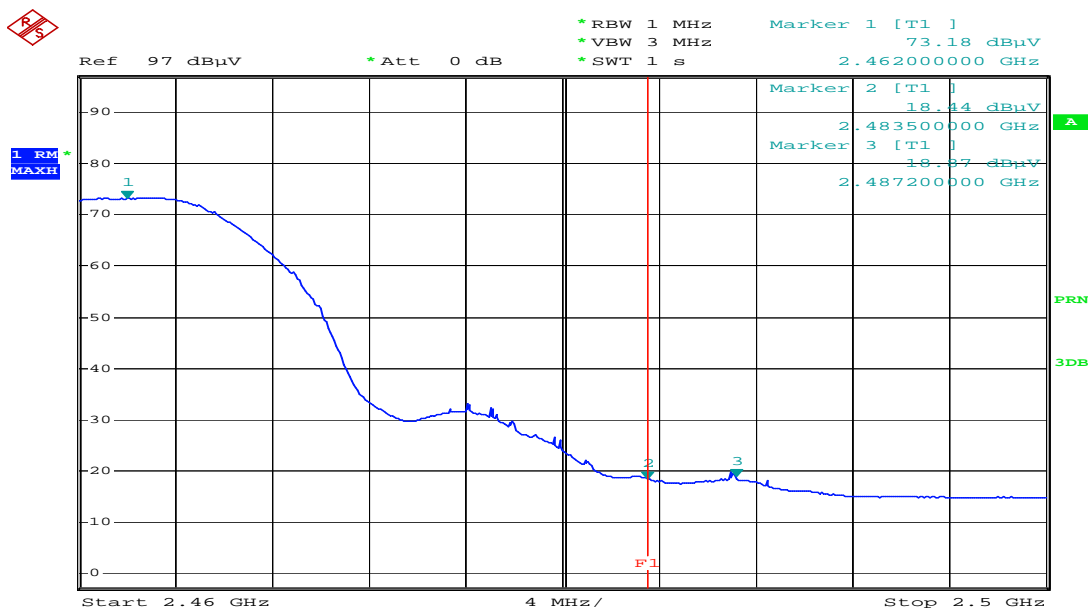
Detector mode:Peak

Polarity:Horizontal



Detector mode:Average

Polarity:Horizontal





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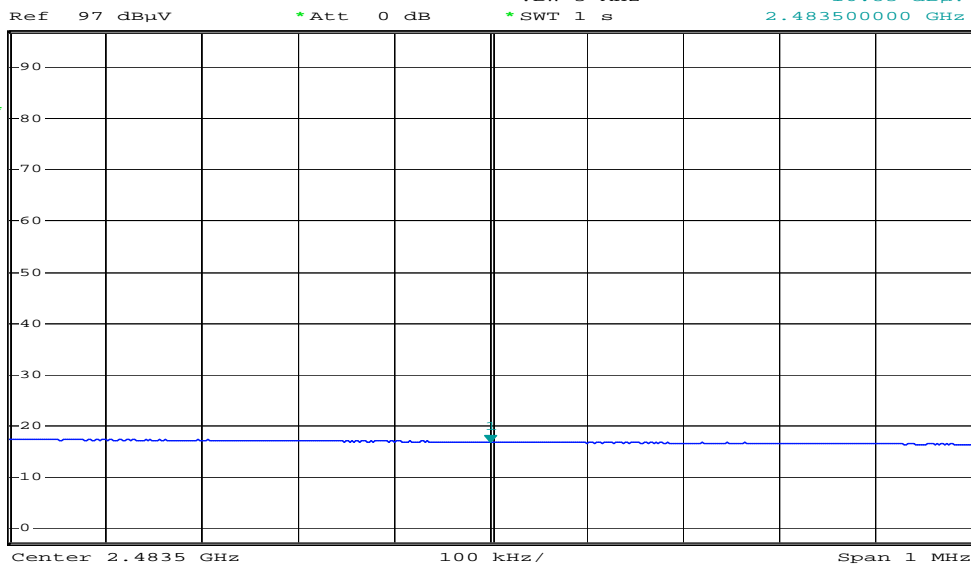
Band Edges(CH High)

Detector mode:Average

Polarity:Horizontal



*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 16.83 dBμV
*SWT 1 s 2.483500000 GHz

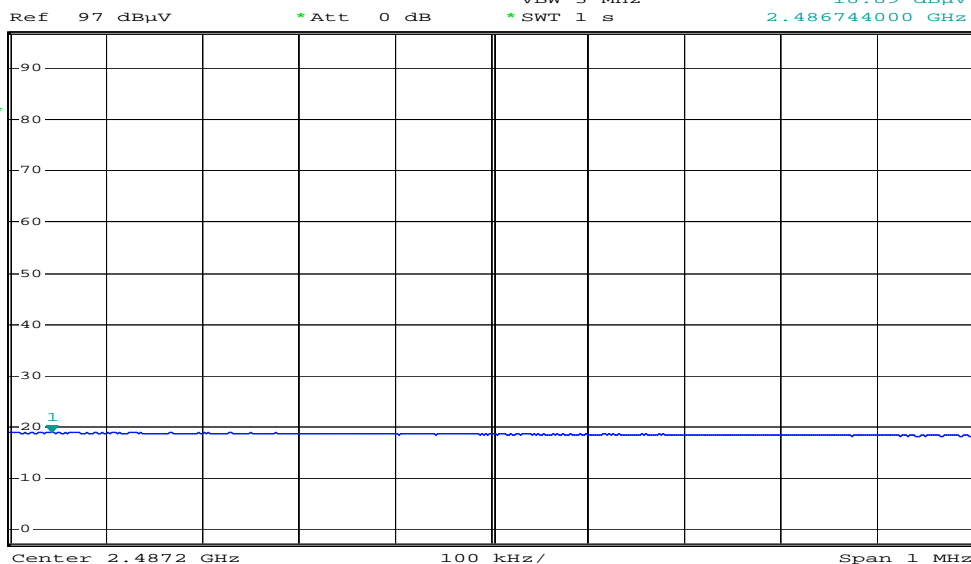


Detector mode:Average

Polarity:Horizontal



*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 18.89 dBμV
*SWT 1 s 2.486744000 GHz





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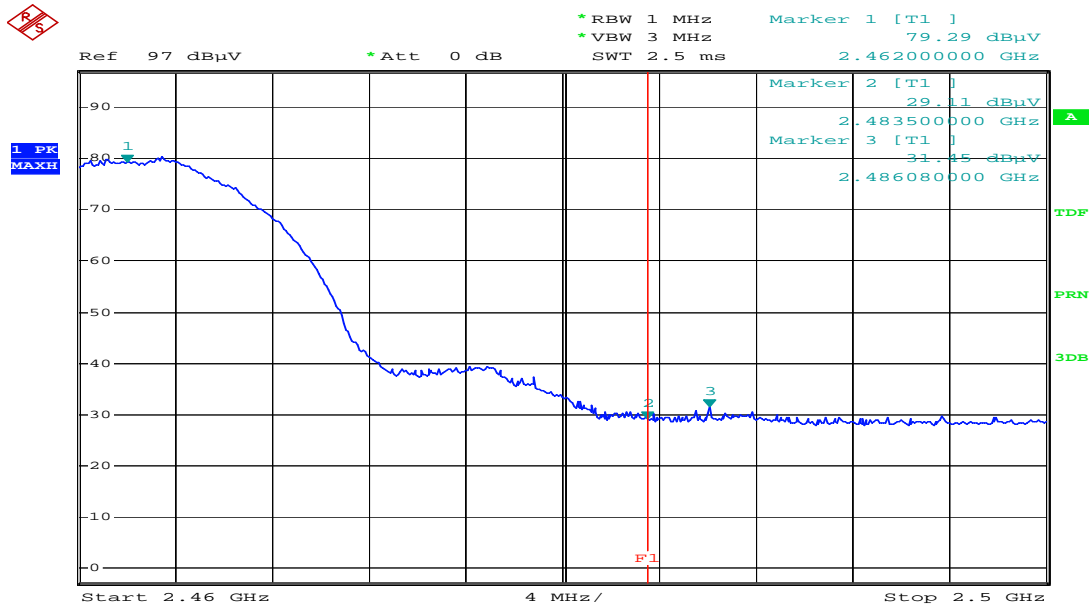


**Electromagnetic
Interference
Test Report**

Band Edges(CH High)

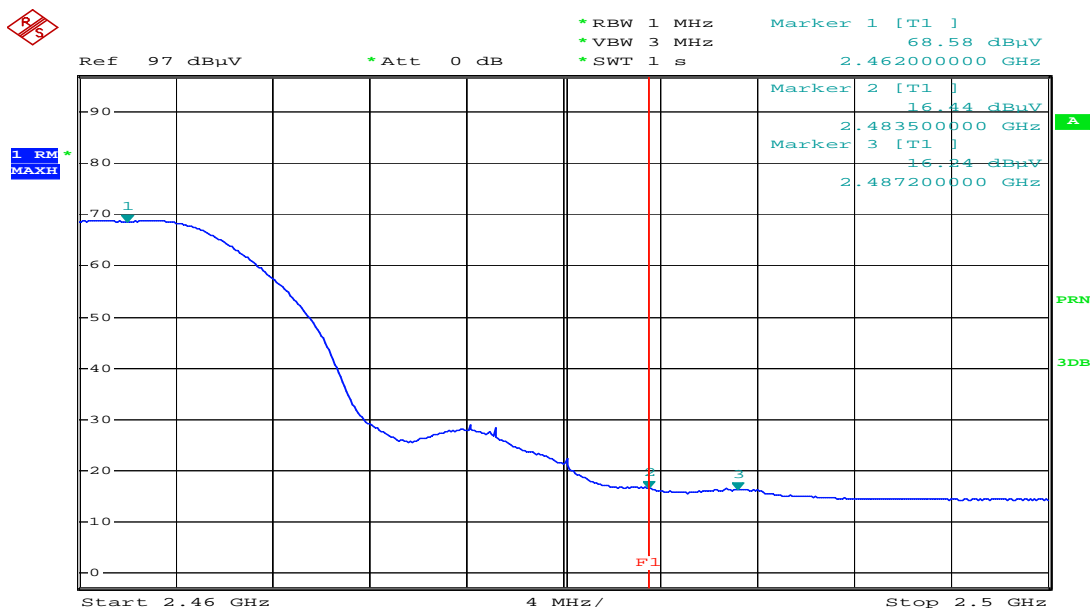
Detector mode:Peak

Polarity:Vertical



Detector mode:Average

Polarity:Vertical





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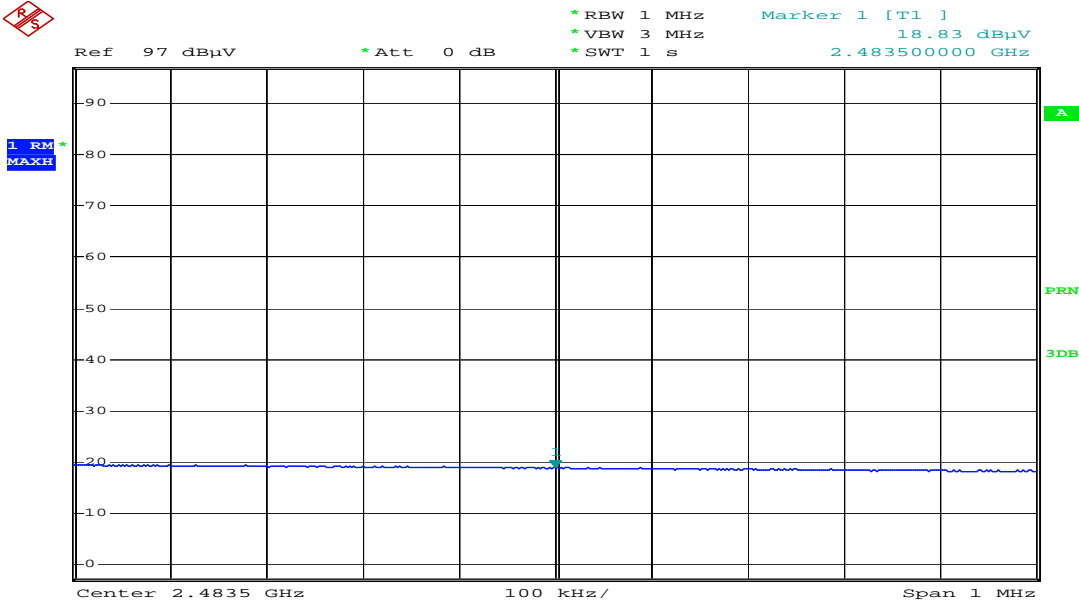


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Test Report**

Band Edges(CH High)

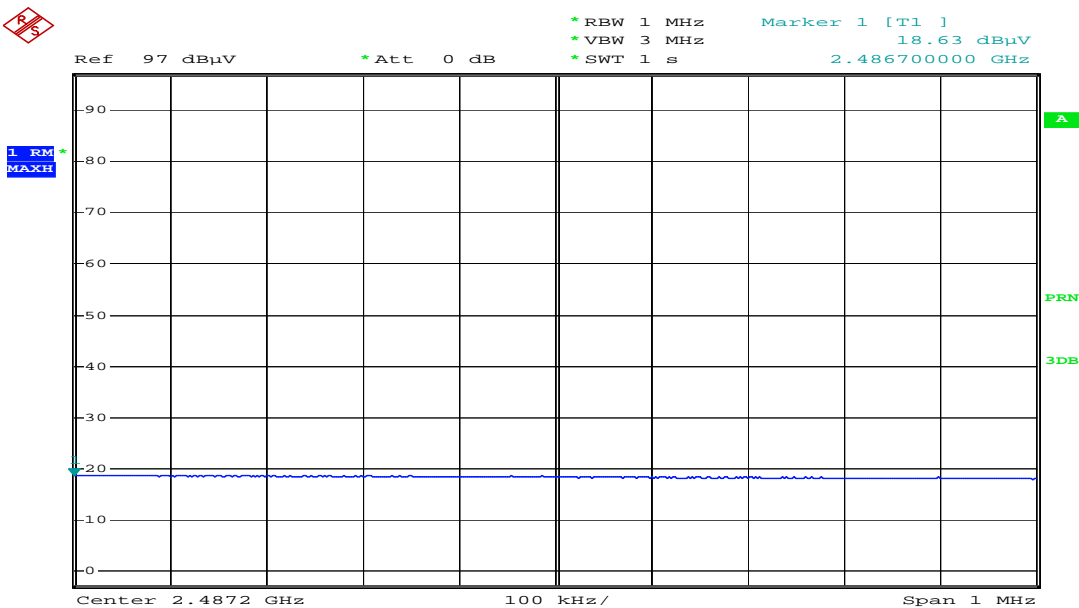
Detector mode:Average

Polarity:Vertical



Detector mode:Average

Polarity:Vertical





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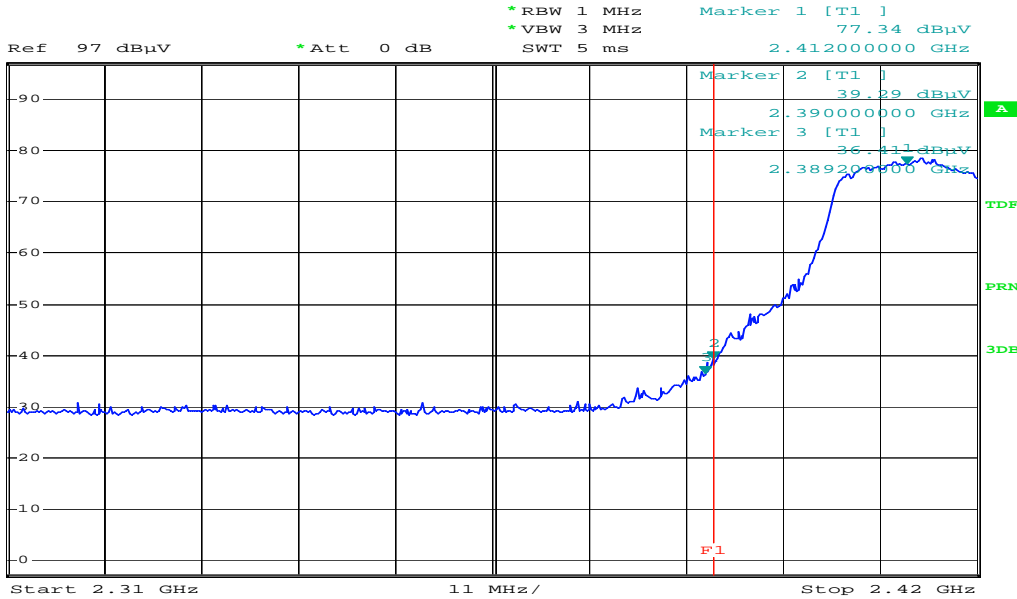
**Electromagnetic
Interference
Test Report**

Restricted Band Edges for 802.11g

Band Edges(CH Low)

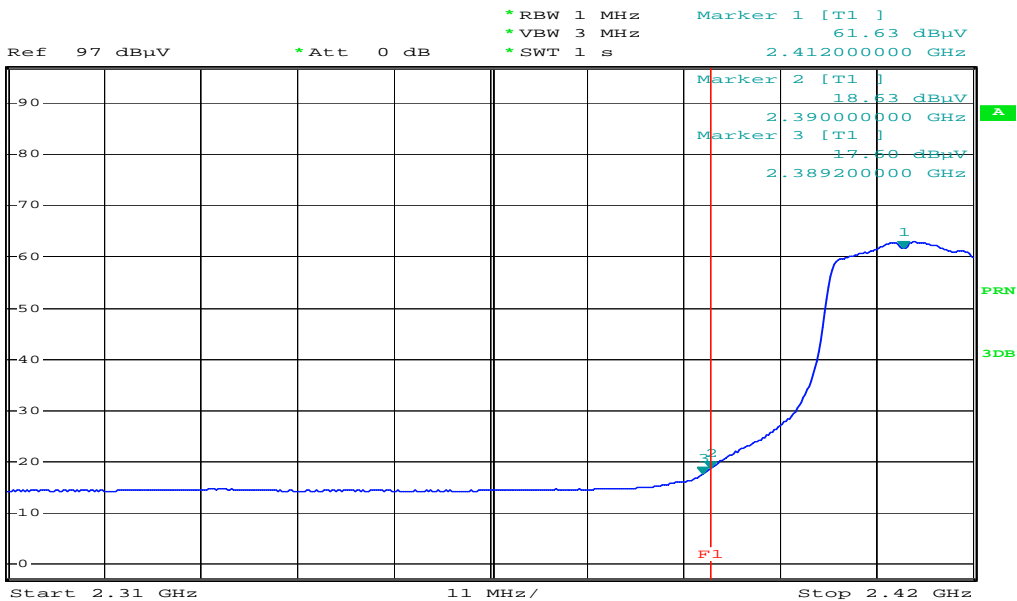
Detector mode:Peak

Polarity:Horizontal



Detector mode:Average

Polarity:Horizontal





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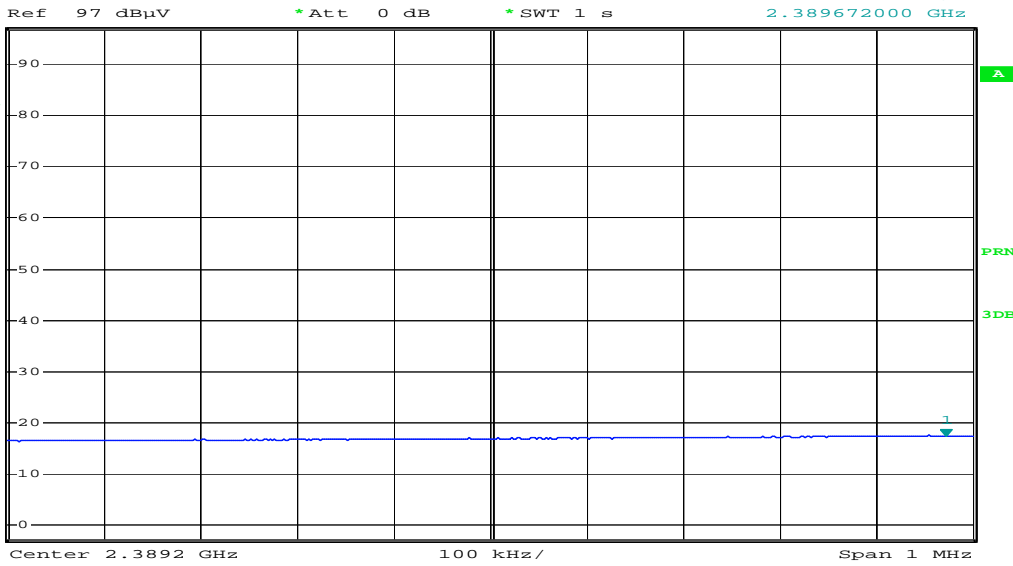
Band Edges(CH Low)

Detector mode:Average

Polarity:Horizontal



*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 17.43 dBμV
*SWT 1 s 2.389672000 GHz

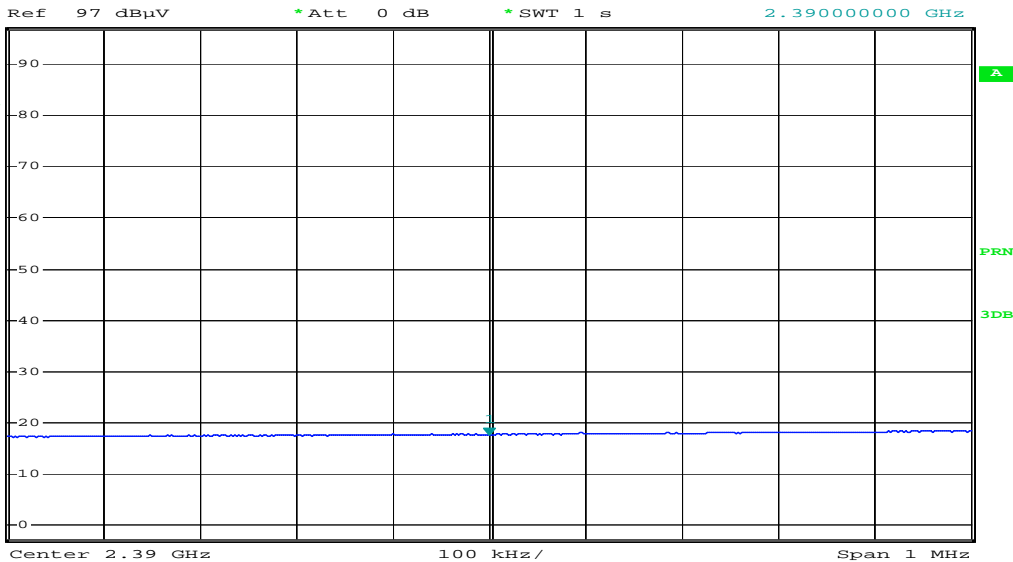


Detector mode:Average

Polarity:Horizontal



*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 17.73 dBμV
*SWT 1 s 2.390000000 GHz





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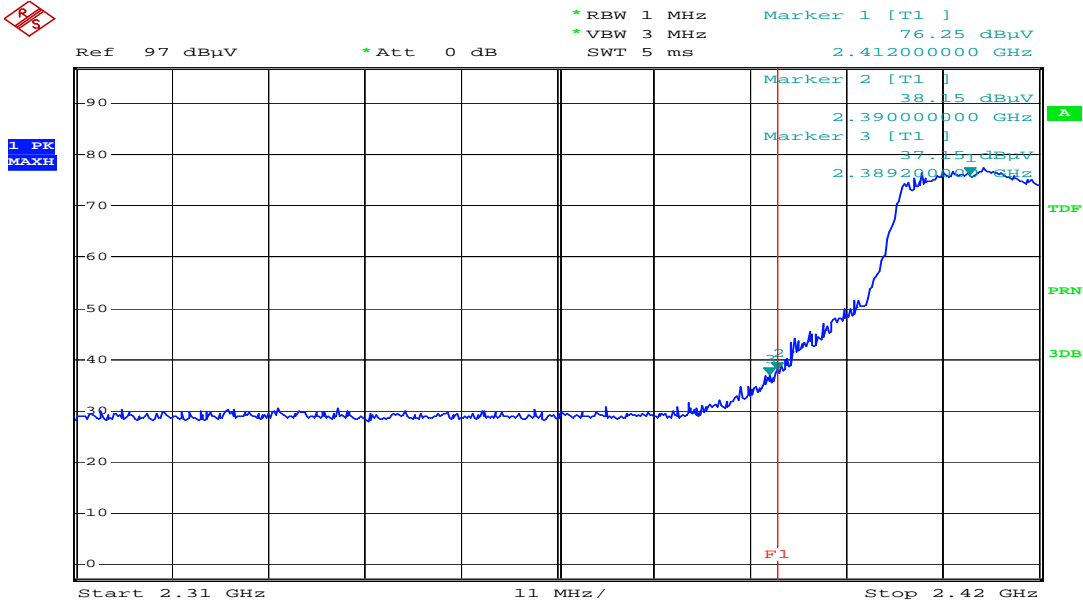


**Electromagnetic
Interference
Test Report**

Band Edges(CH Low)

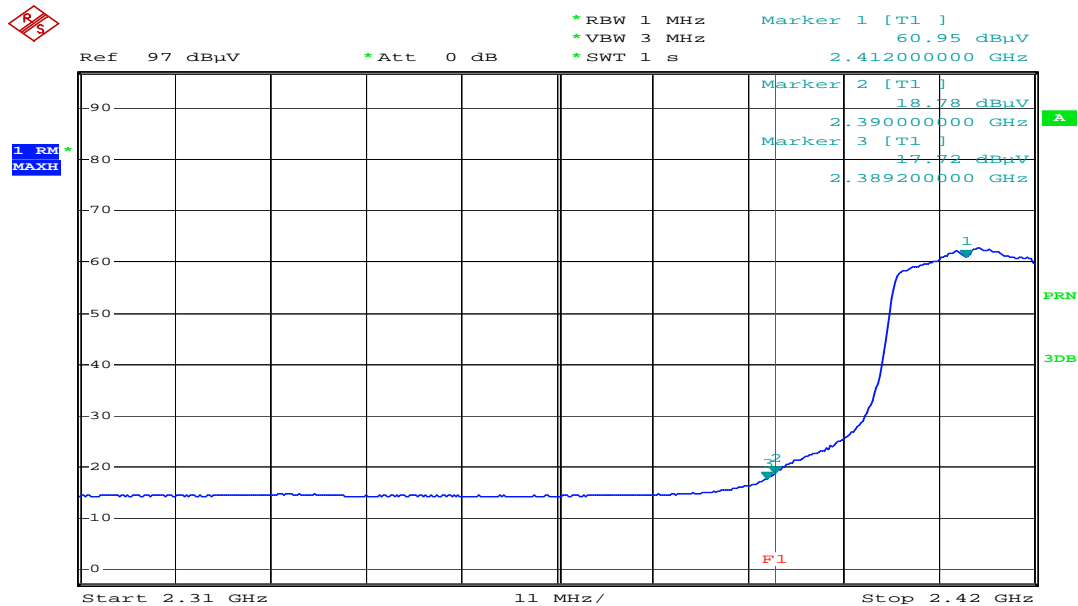
Detector mode:Peak

Polarity:Vertical



Detector mode:Average

Polarity:Vertical





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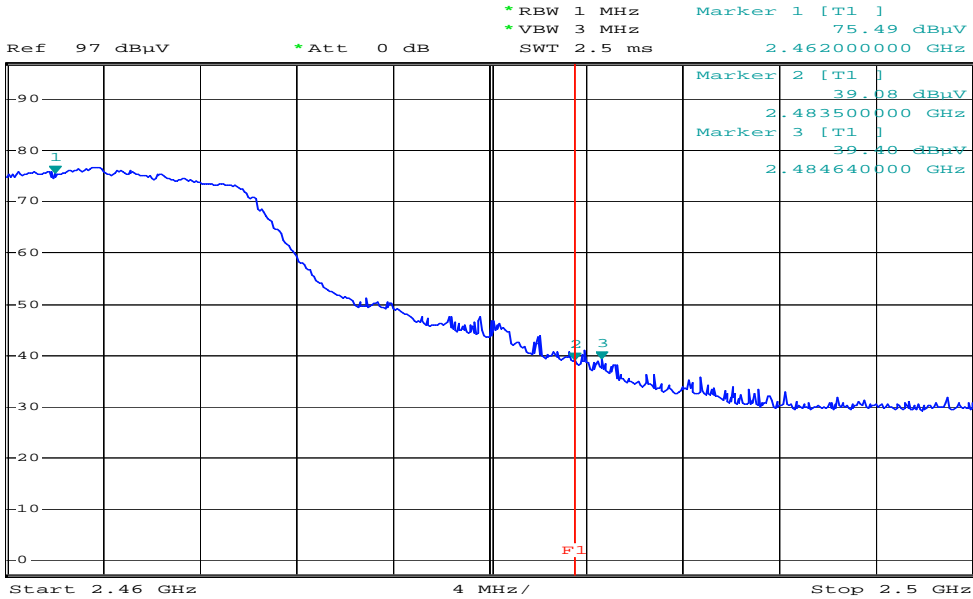


**Electromagnetic
Interference
Test Report**

Band Edges(CH High)

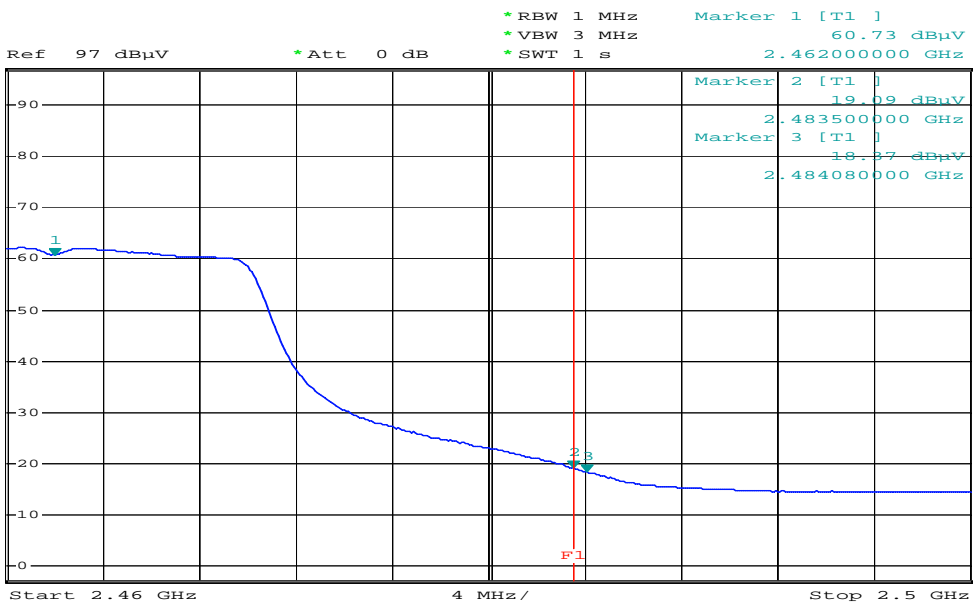
Detector mode:Peak

Polarity:Horizontal



Detector mode:Average

Polarity:Horizontal





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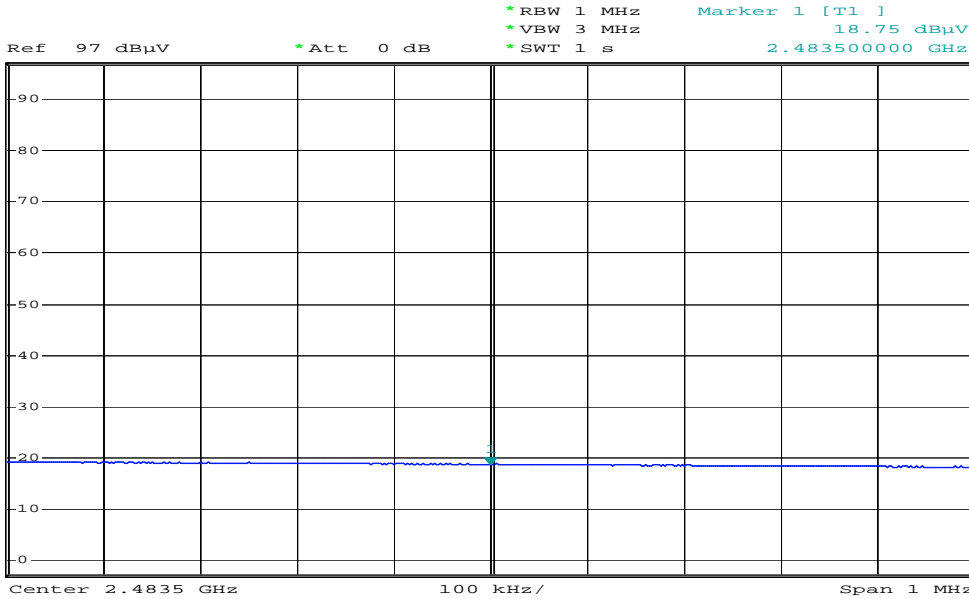


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Band Edges(CH High)

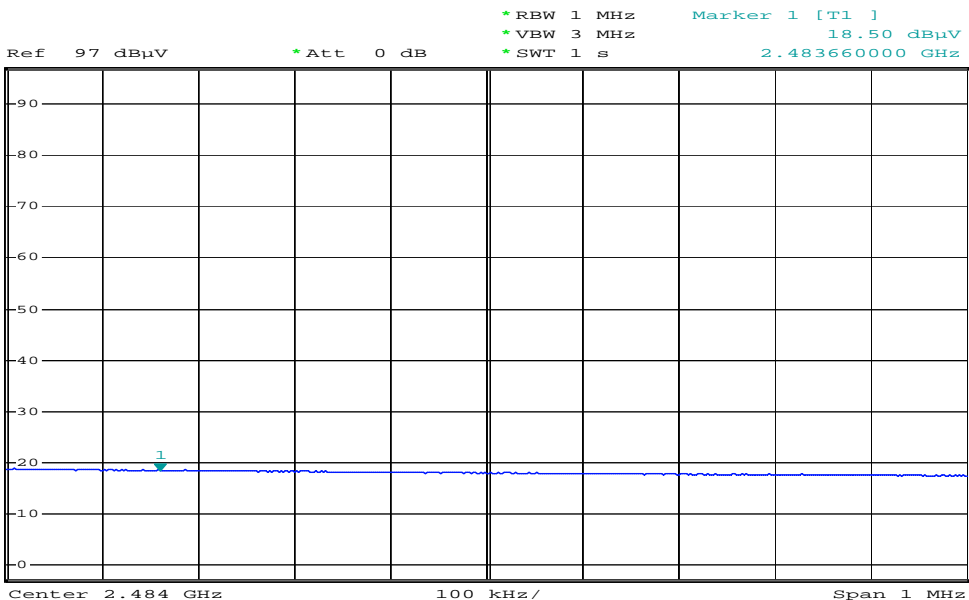
Detector mode:Average

Polarity:Horizontal



Detector mode:Average

Polarity:Horizontal





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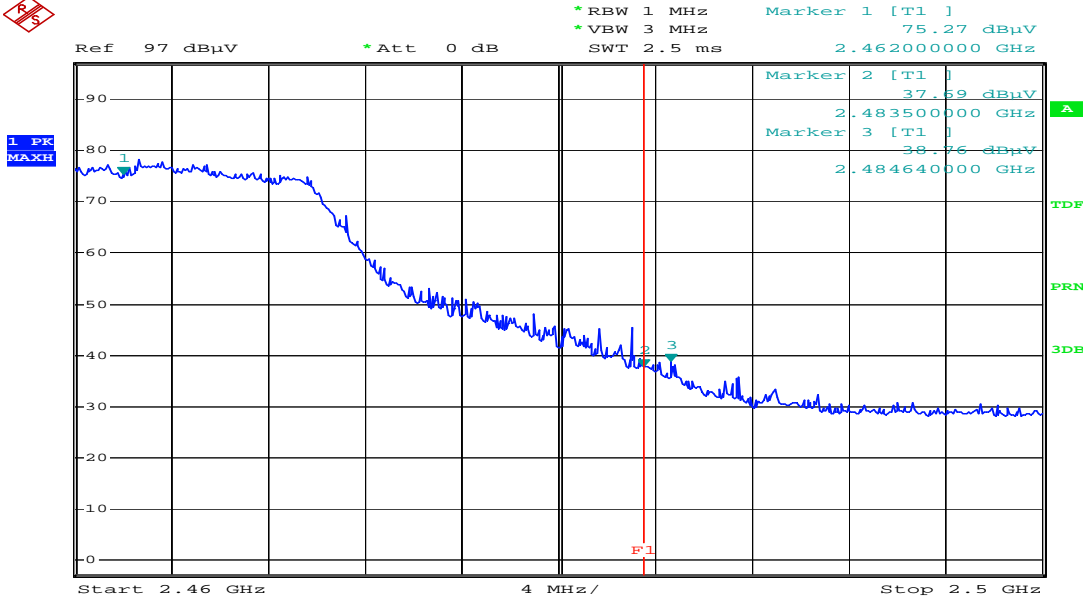


**Electromagnetic
Interference
Test Report**

Band Edges(CH High)

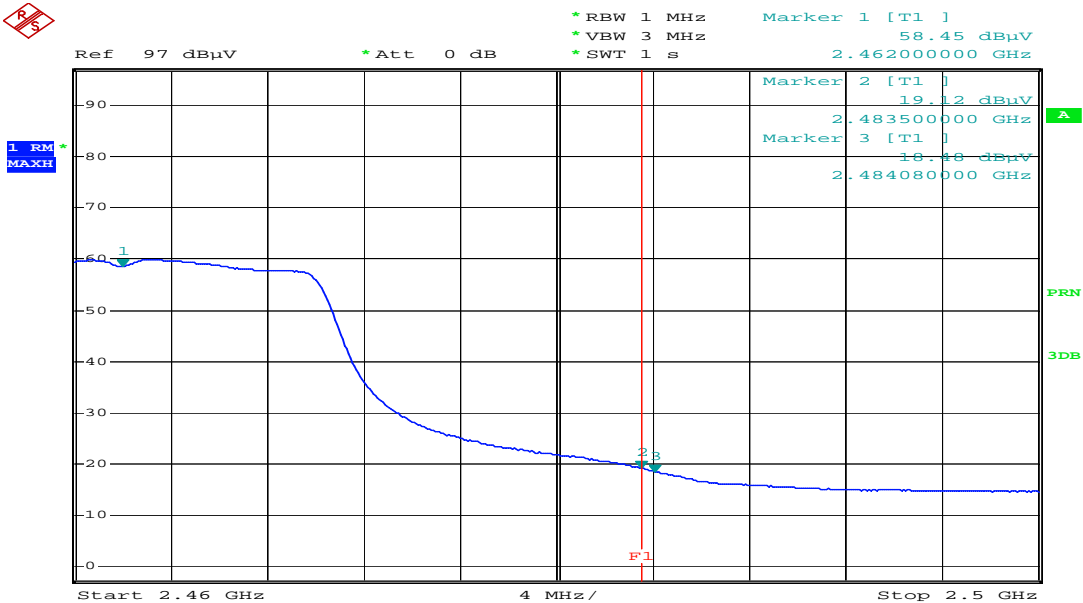
Detector mode:Peak

Polarity:Vertical



Detector mode:Average

Polarity:Vertical





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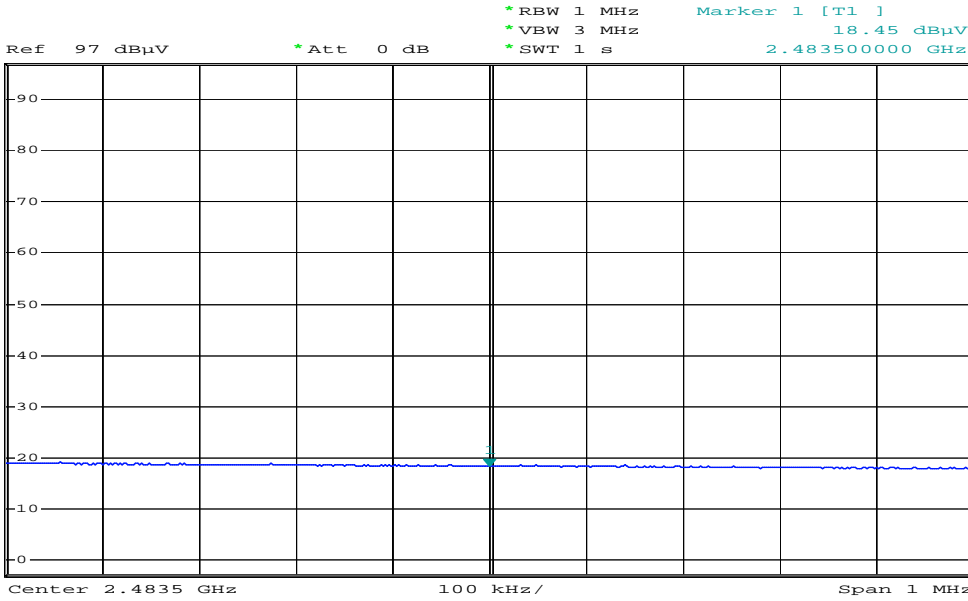


**Electromagnetic
Interference
Test Report**

Band Edges(CH High)

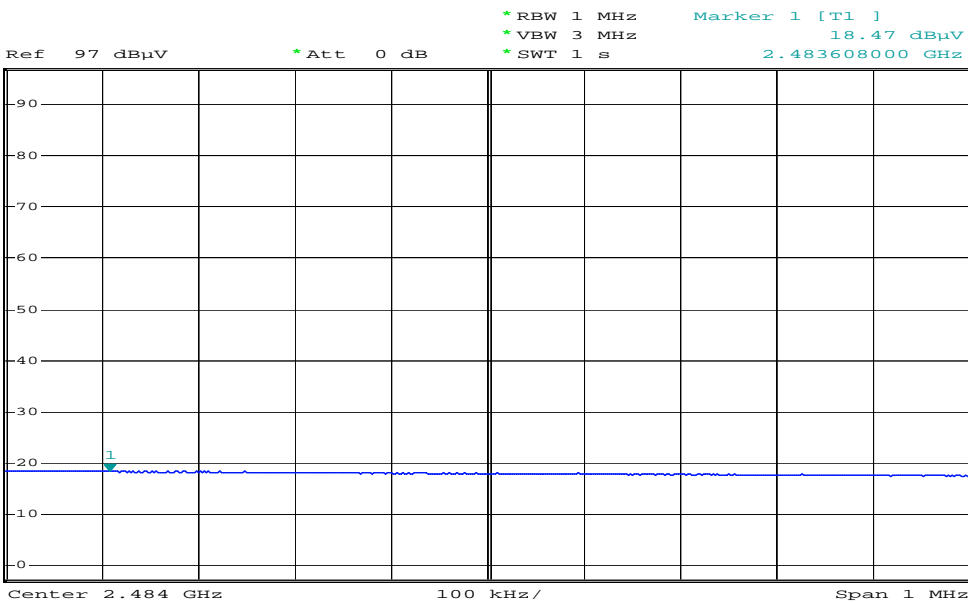
Detector mode:Average

Polarity:Vertical



Detector mode:Average

Polarity:Vertical





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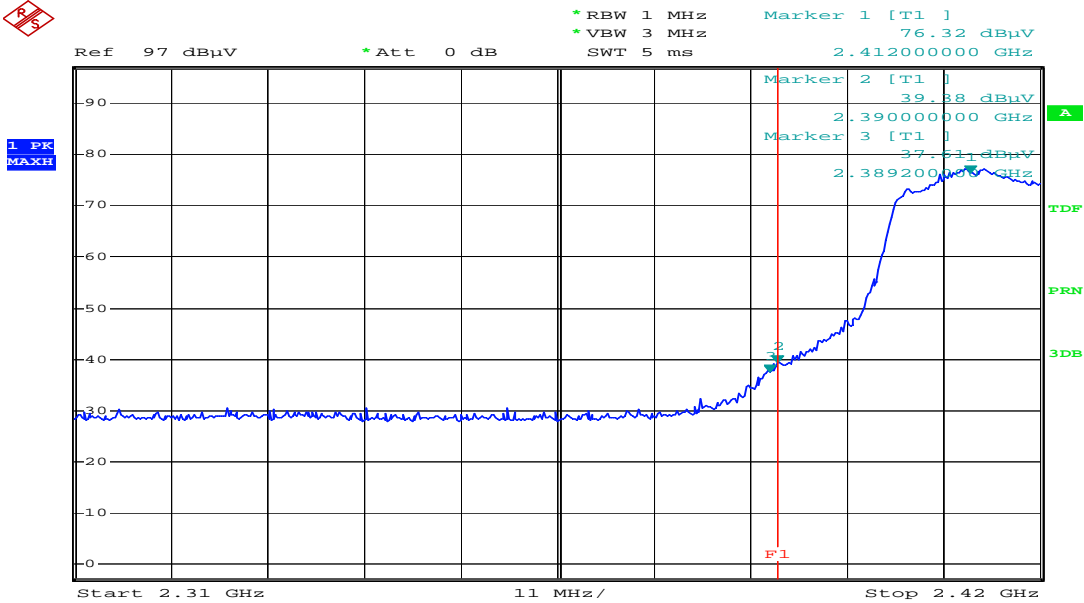
**Electromagnetic
Interference
Test Report**

Restricted Band Edges for 802.11n

Band Edges(CH Low)

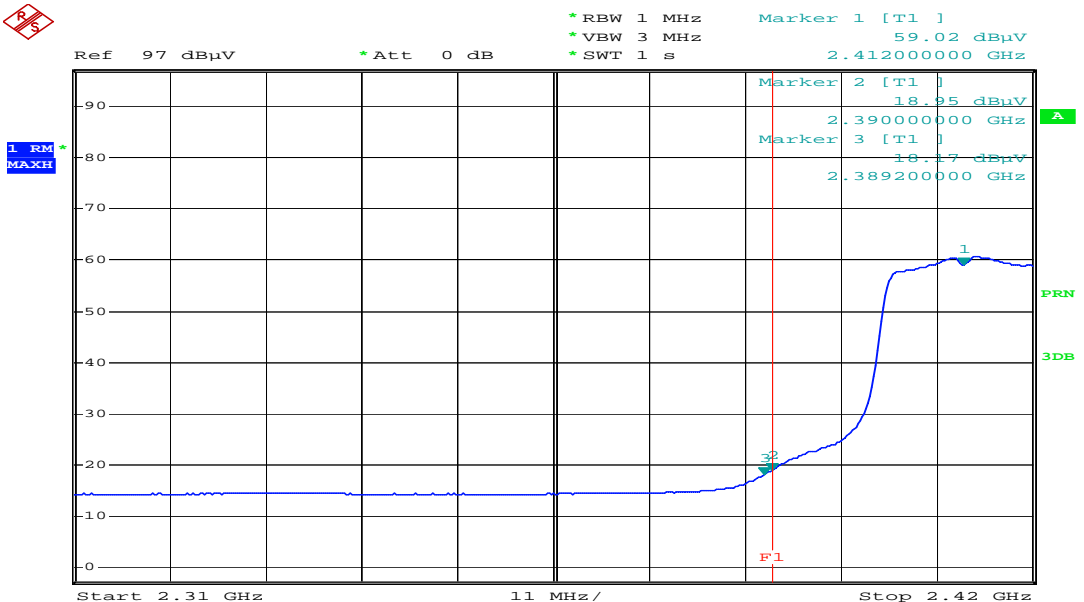
Detector mode:Peak

Polarity:Horizontal



Detector mode:Average

Polarity:Horizontal





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**Electromagnetic
Interference
Test Report**

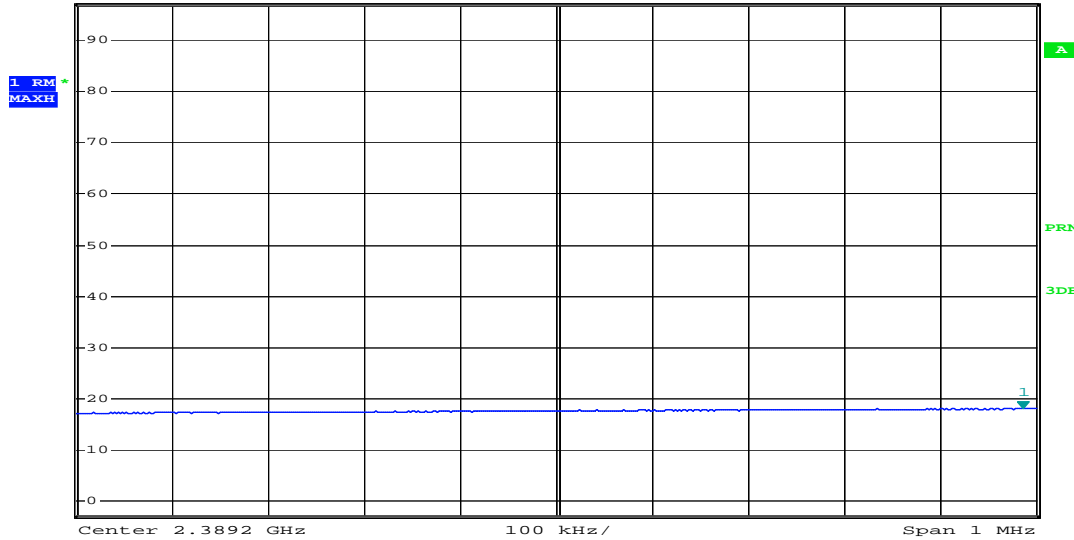
Band Edges(CH Low)

Detector mode:Average

Polarity:Horizontal



Ref 97 dB μ V *Att 0 dB *RBW 1 MHz Marker 1 [T1] 18.21 dB μ V
*VBW 3 MHz 2.389686000 GHz
*SWT 1 s

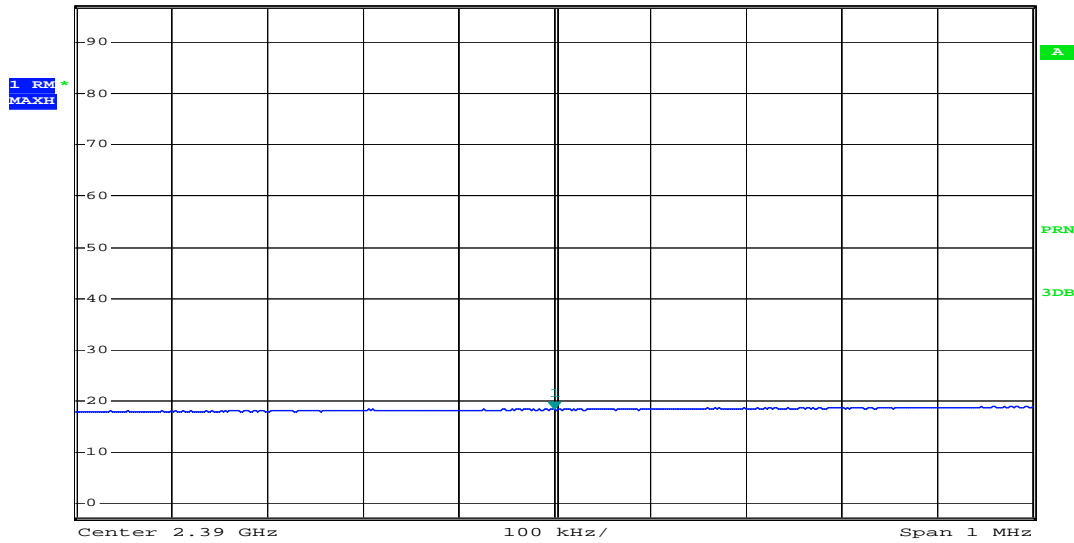


Detector mode:Average

Polarity:Horizontal



Ref 97 dB μ V *Att 0 dB *RBW 1 MHz Marker 1 [T1] 18.33 dB μ V
*VBW 3 MHz 2.390000000 GHz
*SWT 1 s





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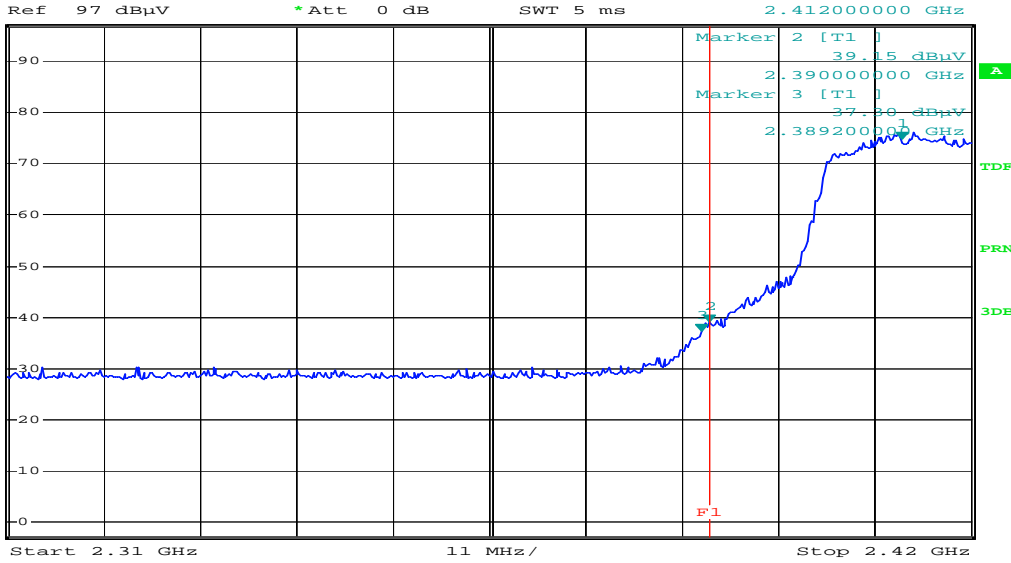
Band Edges(CH Low)

Detector mode:Peak

Polarity:Vertical



*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 74.95 dBuV
SWT 5 ms 2.412000000 GHz

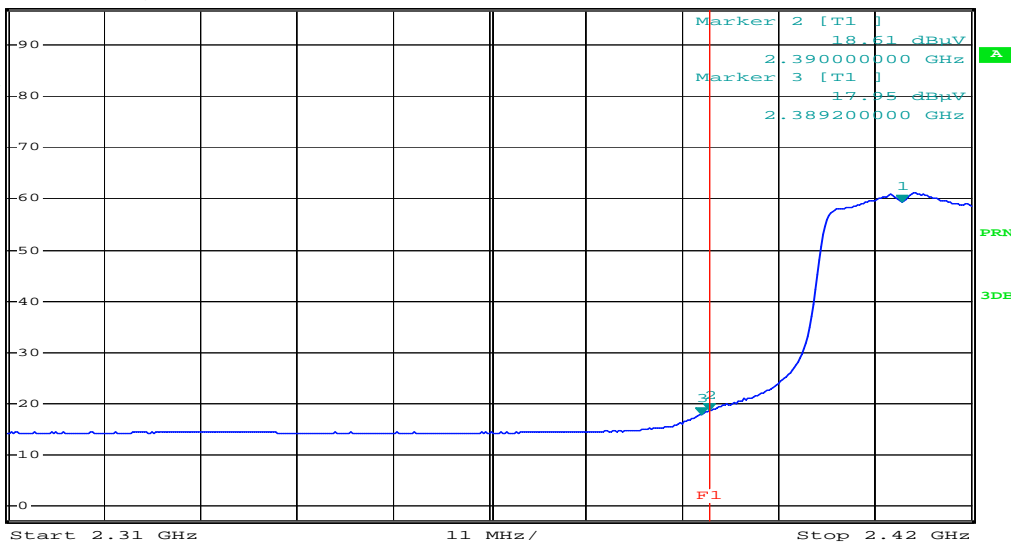


Detector mode:Average

Polarity:Vertical



*RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz 59.23 dBuV
*SWT 1 s 2.412000000 GHz





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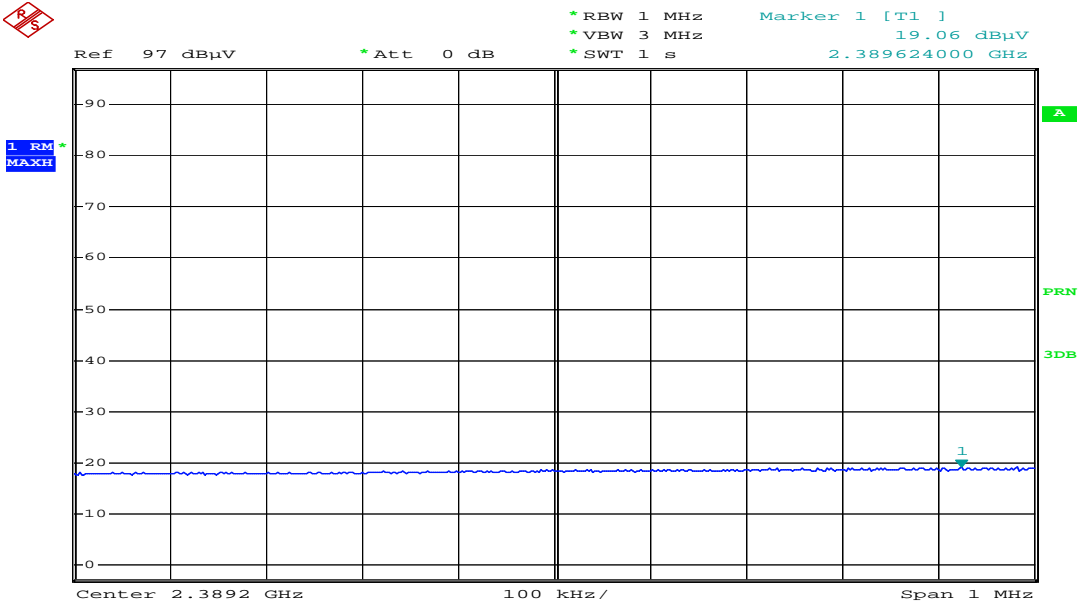


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Test Report**

Band Edges(CH Low)

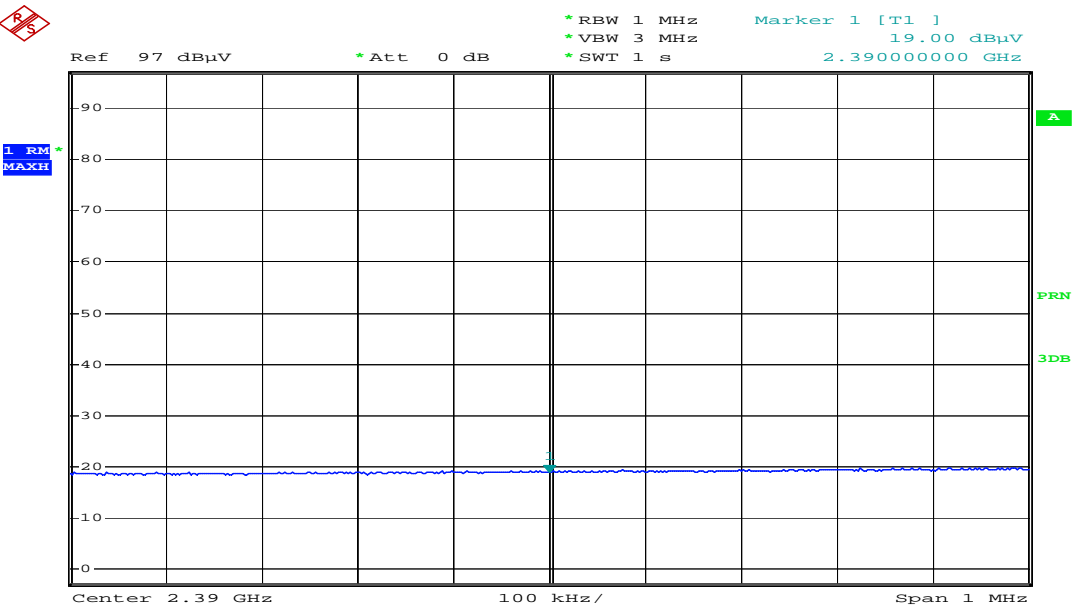
Detector mode:Average

Polarity:Vertical



Detector mode:Average

Polarity:Vertical





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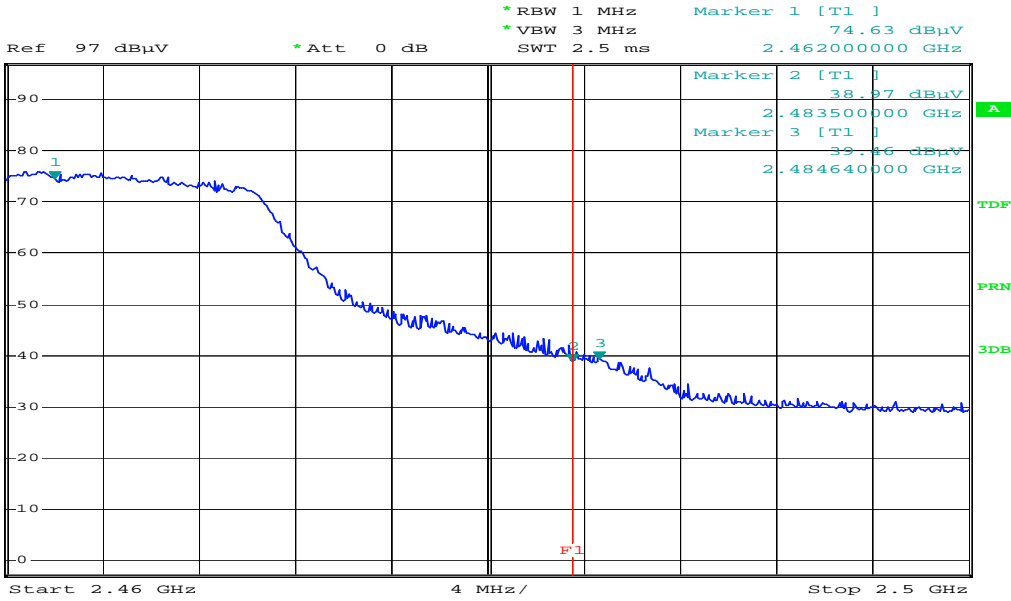


**Electromagnetic
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Band Edges(CH High)

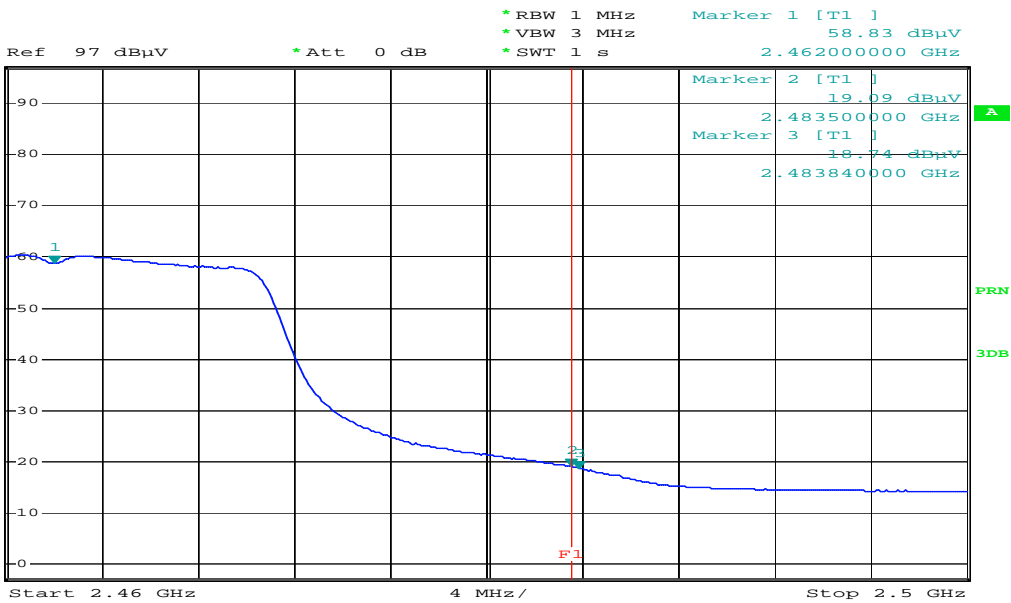
Detector mode:Peak

Polarity:Horizontal



Detector mode:Average

Polarity:Horizontal





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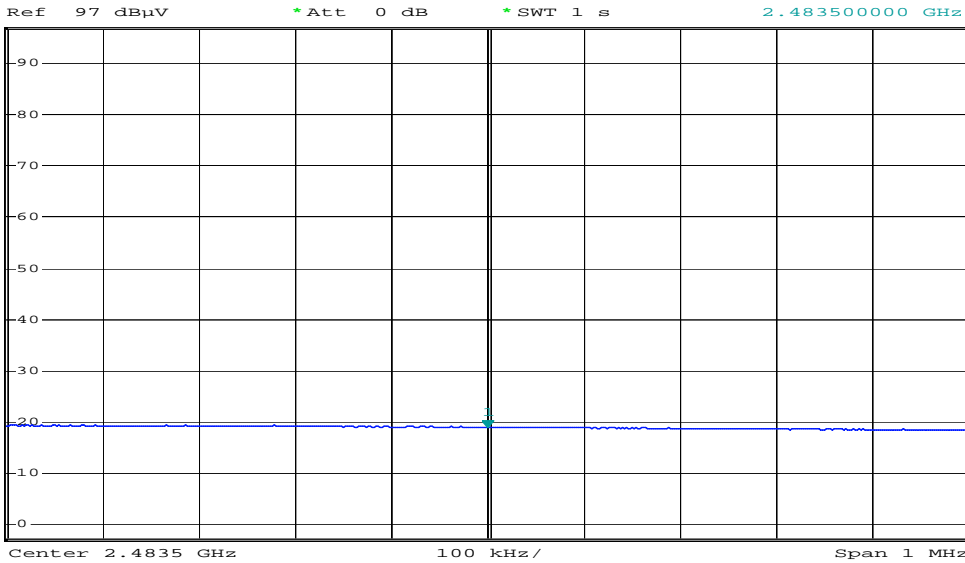
Band Edges(CH High)

Detector mode:Average

Polarity:Horizontal



* RBW 1 MHz Marker 1 [T1]
* VBW 3 MHz 18.95 dBμV
* SWT 1 s 2.483500000 GHz

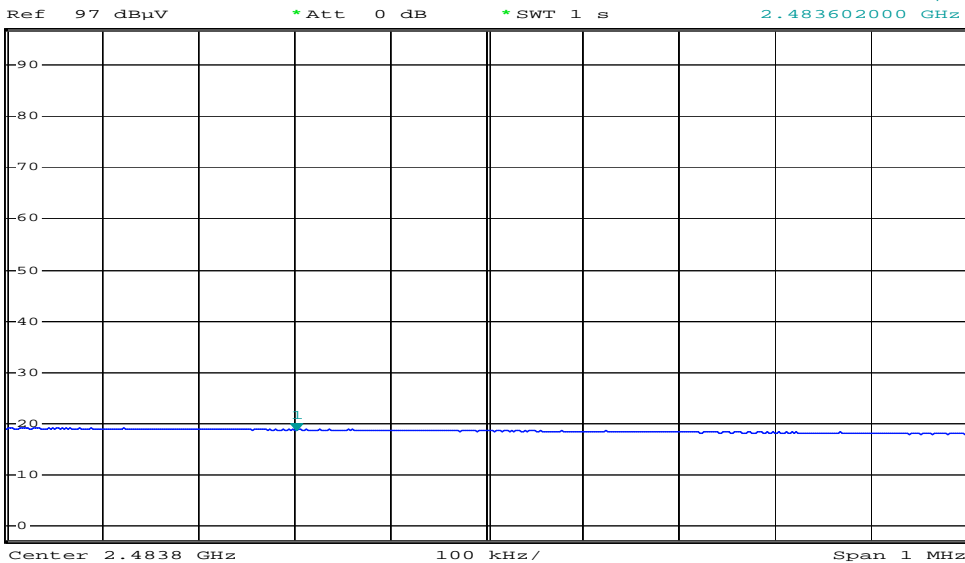


Detector mode:Average

Polarity:Horizontal



* RBW 1 MHz Marker 1 [T1]
* VBW 3 MHz 18.73 dBμV
* SWT 1 s 2.483602000 GHz





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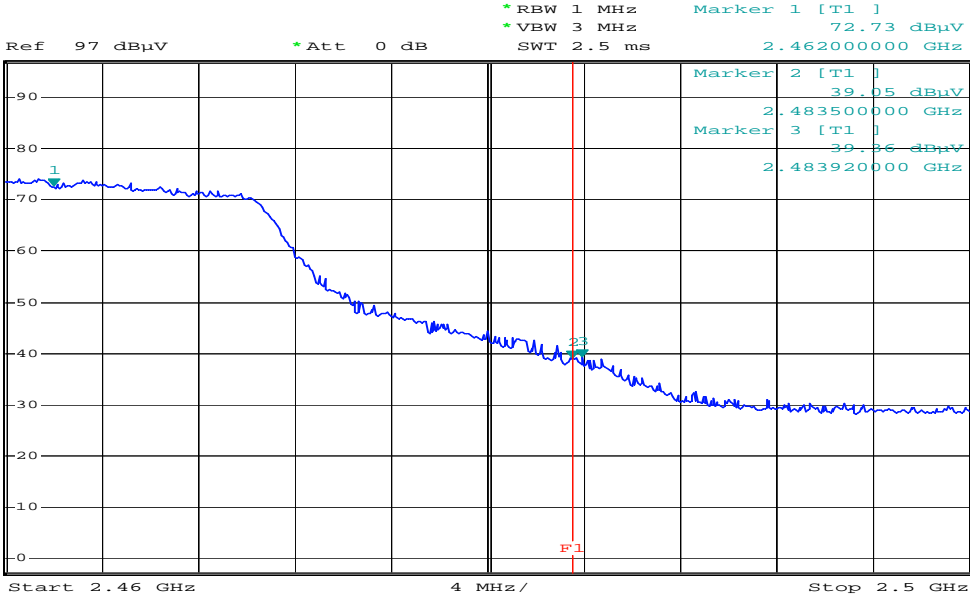


**Electromagnetic
Interference
Test Report**

Band Edges(CH High)

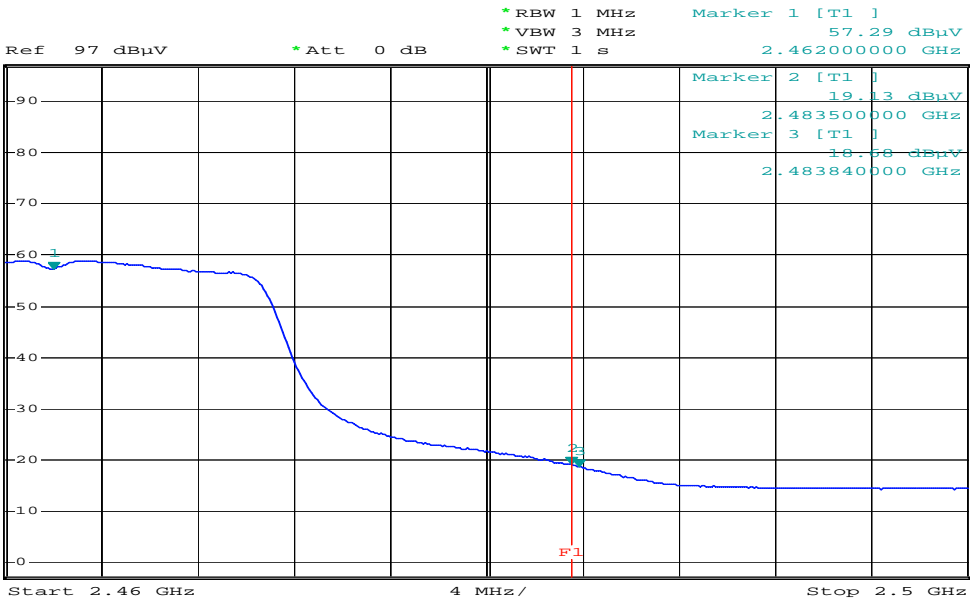
Detector mode:Peak

Polarity:Vertical



Detector mode:Average

Polarity:Vertical





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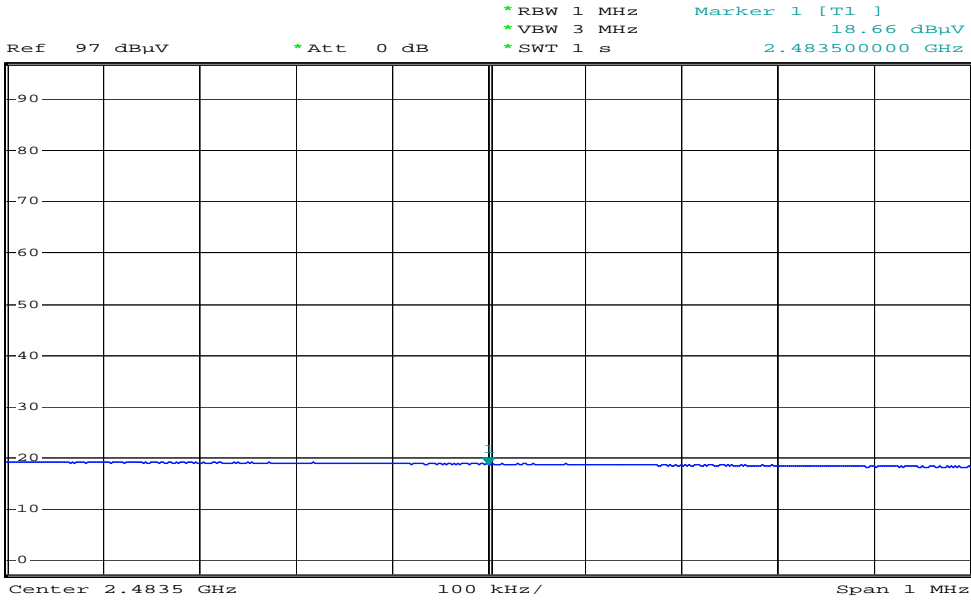


**Electromagnetic
Interference
Test Report**

Band Edges(CH High)

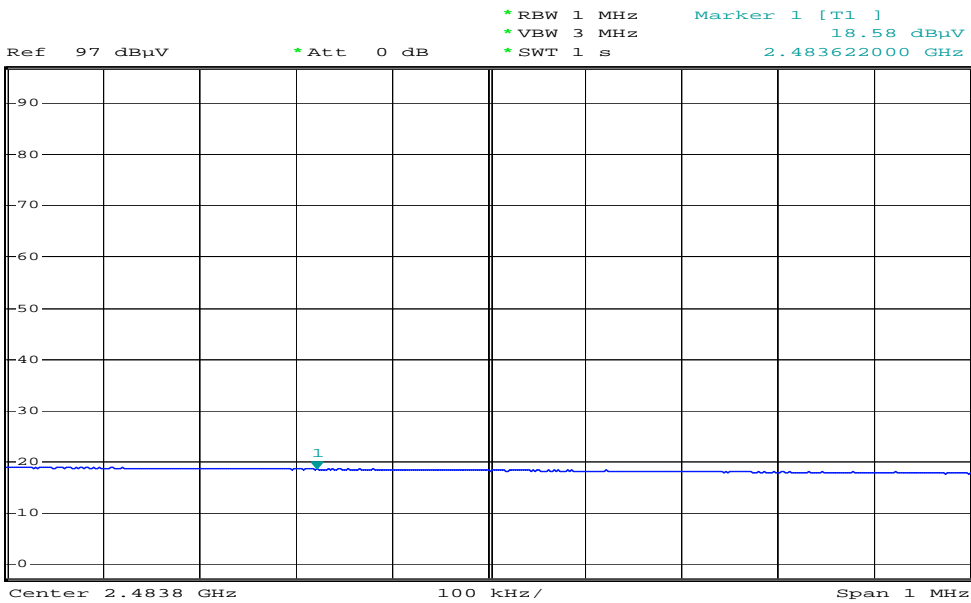
Detector mode:Average

Polarity:Vertical



Detector mode:Average

Polarity:Vertical





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**Electromagnetic
Interference
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10. Measurement of conducted disturbance

The continuous disturbance voltage of AC Mains in the frequency from 0.15 to 30 MHz was measured in accordance to FCC Part 15 (2010) & RSS-210(2010). The test setup was made according to ANSI C 63.4 (2003) in a shielded. The EUT was placed on a non-conductive table at least 0.8 m above the ground plan. A grounded vertical reference plane was positioned in a distance of 0.4 m from the EUT. The distance from the EUT to other metal surfaces was at least 0.8 m. The EUT was only earthen by its power cord through the line impedance stabilizing network. The power cord has been bundled to a length of 1.0 m.. The test receiver with Quasi Peak detector complies with CISPR 16.

10.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
TEST Receiver	ESHS 30	Rohde & Schwarz	828765/002	14-Dec-13
LISN	ENV216	Rohde & Schwarz	101231	19-Sep-13
LISN	ESH3-Z5	Rohde & Schwarz	838979/010	26-Jan-13
Pulse Limiter	ESH3Z2	Rohde & Schwarz	NONE	25-Jan-13
Bluetooth Tester	TC-3000A	TESCOM	3000A570224	23-Aug-13

10.2 Environmental Condition

Test Place : Shielded Room

Wireless LAN 802.11b Mode

Temperature (°C) : 23.2 °C

Humidity (% R.H.) : 52.4 % R.H.

Wireless LAN 802.11g Mode

Temperature (°C) : 21.6 °C

Humidity (% R.H.) : 49.2 % R.H.

Wireless LAN 802.11n Mode

Temperature (°C) : 22.5 °C

Humidity (% R.H.) : 51.0 % R.H.

10.3 Test Data for wireless LAN (802.11g)

Test Date : 27-Dec-12

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dB μ V)	Reading (dB μ V)	Result (dB μ V)	Limit (dB μ V)	Reading (dB μ V)	Result (dB)
0.15	0.06	0.27	H	66.00	45.48	45.81	56.00	27.54	27.87
0.16	0.06	0.27	H	65.46	41.56	41.89	55.46	25.05	25.38
0.17	0.06	0.27	H	64.77	39.97	40.30	54.77	24.42	24.75
0.18	0.05	0.28	N	64.49	47.16	47.49	54.49	28.76	29.09
0.19	0.05	0.28	N	64.04	46.49	46.82	54.04	29.18	29.51
0.20	0.05	0.28	N	63.61	42.78	43.11	53.61	24.55	24.88
0.25	0.05	0.29	N	61.76	42.14	42.49	51.76	26.78	27.13
0.26	0.05	0.30	N	61.43	40.32	40.67	51.43	23.88	24.23
Remark	H : Hot Line, N : Neutral Line TEST MODE : 802.11g - CH 6(2437 MHz)								

10.3 Test Data for wireless LAN (802.11n)

Test Date : 28-Dec-12

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dB μ V)	Reading (dB μ V)	Result (dB μ V)	Limit (dB μ V)	Reading (dB μ V)	Result (dB)
0.15	0.06	0.27	N	66.00	47.64	47.97	56.00	28.62	28.95
0.16	0.06	0.27	N	65.46	49.70	50.03	55.46	31.39	31.72
0.17	0.06	0.27	H	64.96	43.02	43.35	54.96	27.12	27.45
0.19	0.05	0.28	N	64.04	41.33	41.66	54.04	23.63	23.96
0.20	0.05	0.28	H	63.61	42.98	43.31	53.61	27.62	27.95
0.21	0.05	0.28	H	63.21	44.59	44.92	53.21	29.51	29.84
0.26	0.05	0.30	N	61.43	40.34	40.69	51.43	25.15	25.50
0.27	0.05	0.30	H	61.12	40.58	40.93	51.12	28.90	29.25
0.31	0.05	0.31	N	59.97	35.90	36.26	49.97	21.56	21.92
Remark	H : Hot Line, N : Neutral Line TEST MODE : 802.11N - CH 6(2437 MHz)								



ESTECH Co., Ltd.

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426-5 Gasan-dong, Guncheon-gu,
Seoul, 158-803, Korea



**Electromagnetic
Interference
Test Report**

11. Photographs of test setup

11.1. Setup for Radiated Test : (30 ~ 1 000) MHz

[Front]



[Rear]





ESTECH Co., Ltd.

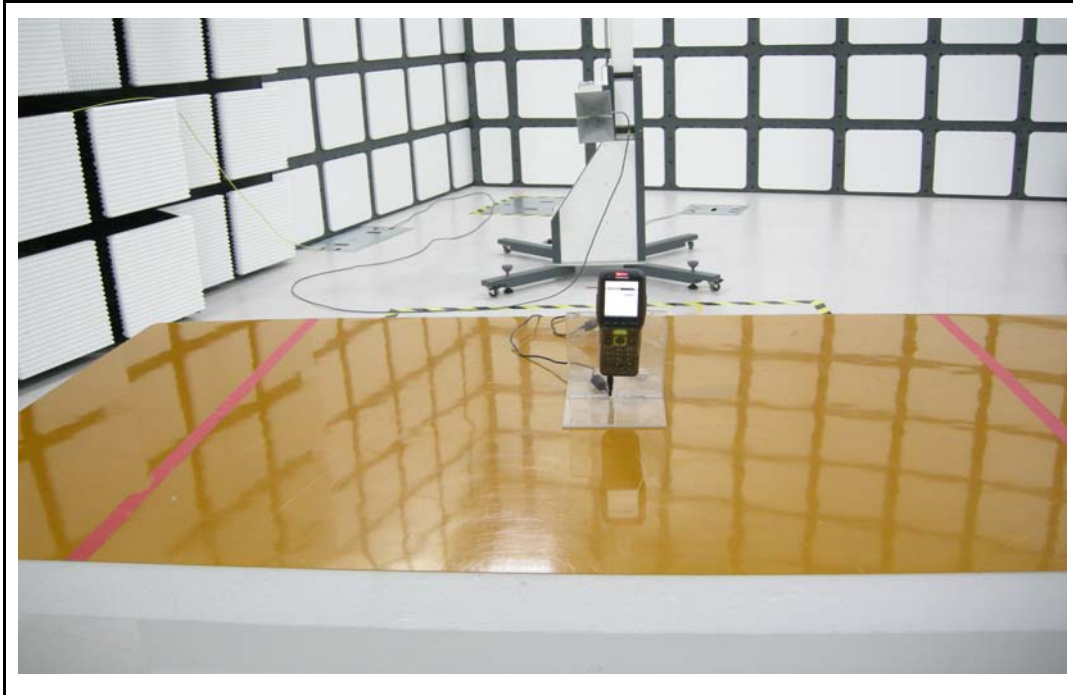
Rm 1015, World Venture Center 11,
426-5 Gasan-dong, Guncheon-gu,
Seoul, 158-803, Korea



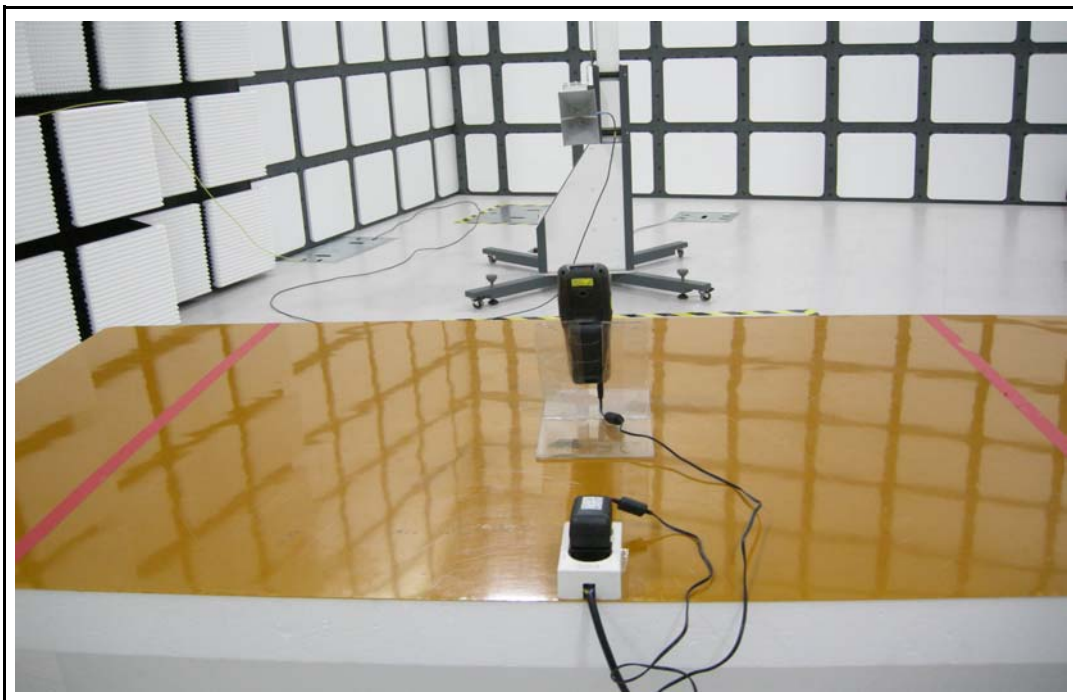
**Electromagnetic
Interference
Test Report**

11.2. Setup for Radiated Test : Above 1 GHz

[Front]



[Rear]





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**Electromagnetic
Interference
Test Report**

11.3. Setup for Conducted Test : (0.15 ~ 30) MHz

[Front]



[Rear]





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Seoul, 158-803, Korea



**Electromagnetic
Interference
Test Report**

11.4. Photographs of EUT

[Front]



[Rear]



Appendix 1. Special diagram for Wireless LAN

802.11b - CH 6
*HOT

ES TECH
HOT LINE

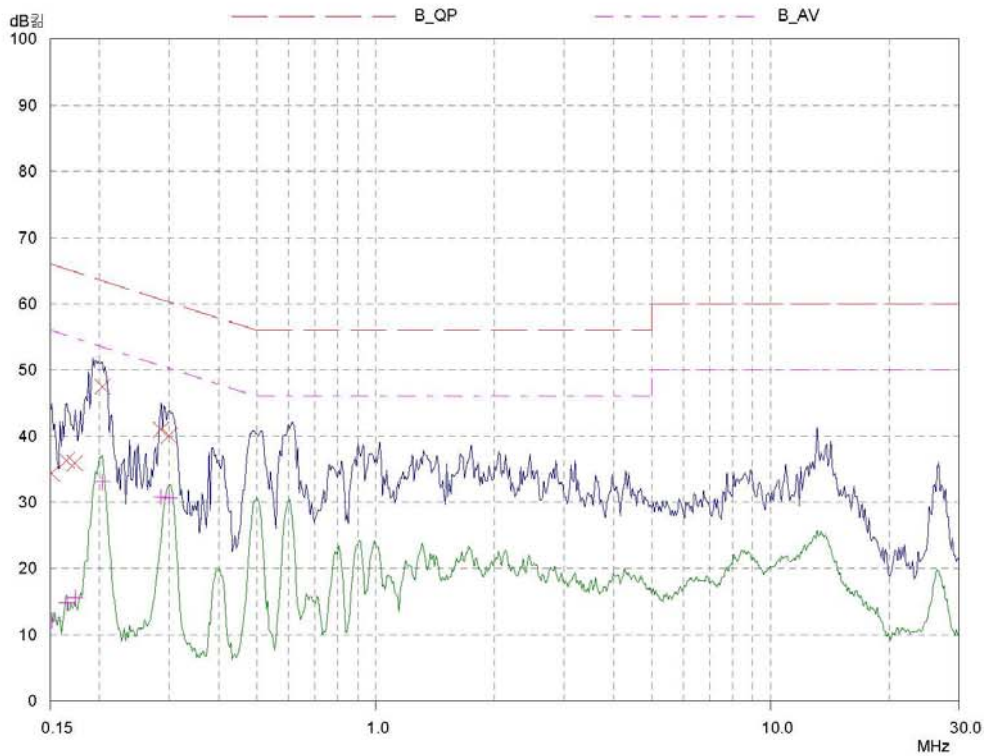
26 Dec 2012 15:00

EUT: HT-K10
Manuf:
Op Cond: 120 Va.c.
Operator: K.S.Kyong
Test Spec: CLASS B
Comment: 1D Scanner_WLAN 802.11b Mode

Result File: 130106_h.dat : TOSHIBA TEC CORPORATION

Scan Settings			Receiver Settings						
Frequencies			IF BW	Detector	M-Time	Atten	Preamp	OpRge	
Start	Stop	Step	10kHz	PK+AV	10msec	Auto	OFF	60dB	
150kHz	30MHz	0.8%							

Final Measurement: Detectors: X QP / + AV
 Meas Time: 1sec
 Subranges: 25
 Acc Margin: 0 dB



Special diagram for Wireless LAN

802.11b - CH 6

*NEUTRAL

ES TECH

26 Dec 2012 15:05

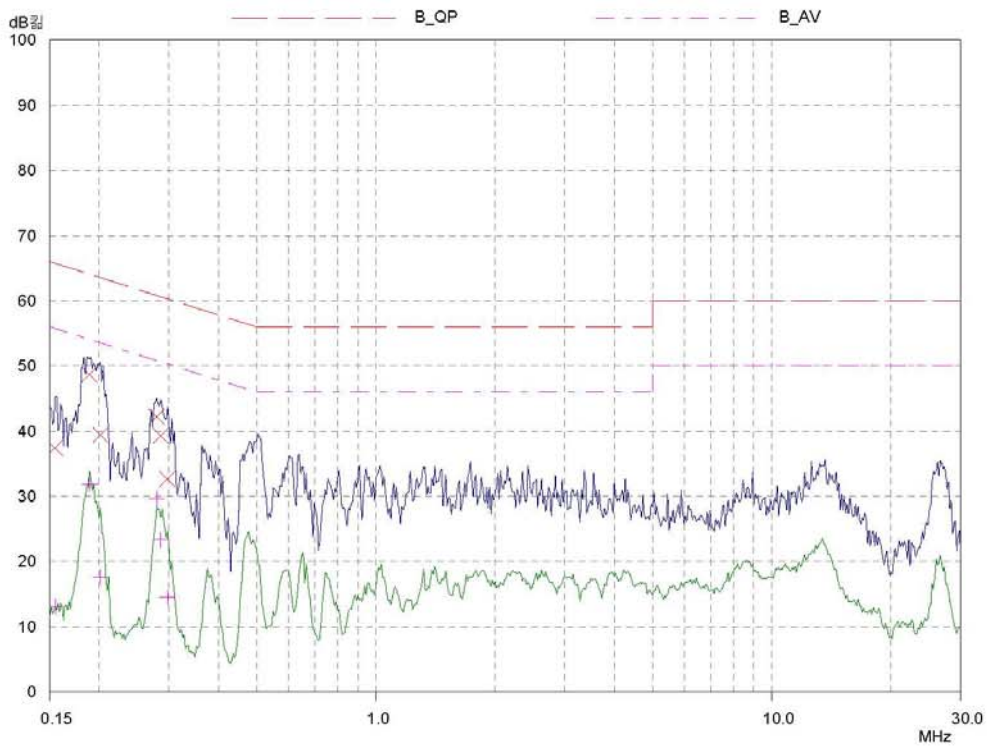
NEUTRAL LINE

EUT: HT-K10
Manuf:
Op Cond: 120 Va.c.
Operator: K.S.Kyong
Test Spec: CLASS B
Comment: 1D Scanner_WLAN 802.11b Mode

Result File: 130106_n.dat : TOSHIBA TEC CORPORATION

Scan Settings			(1 Range)			Receiver Settings			
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge	
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB	

Final Measurement: Detectors: X QP / + AV
Meas Time: 1sec
Subranges: 25
Acc Margin: 0 dB



Special diagram for Wireless LAN

802.11g - CH 6
*HOT

ES TECH
HOT LINE

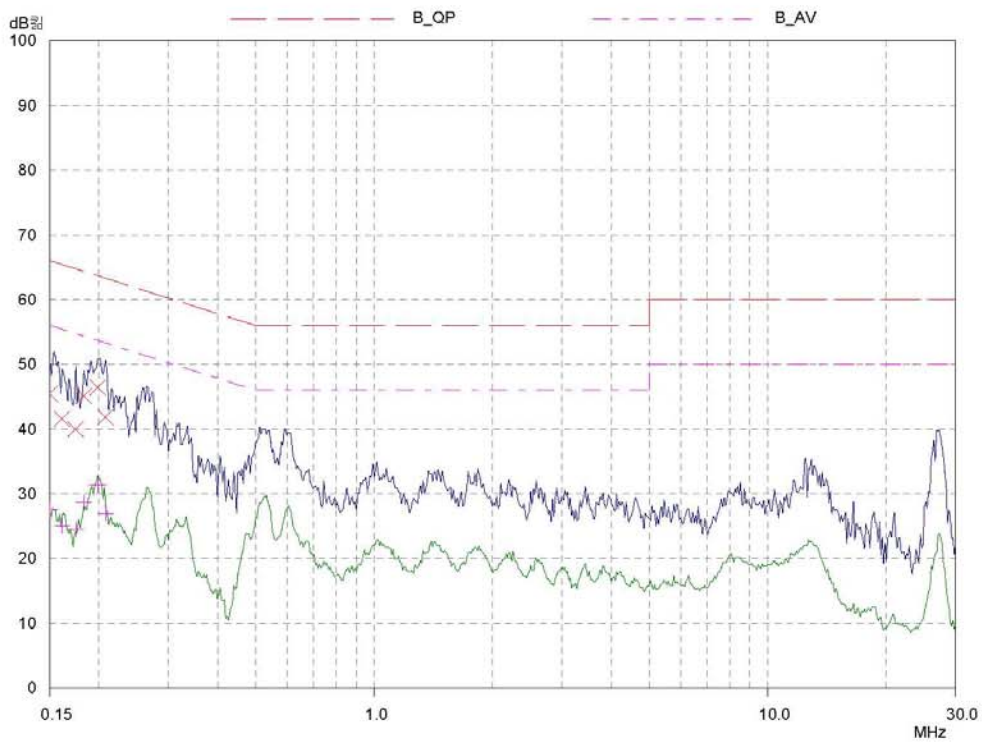
27 Dec 2012 15:39

EUT: HT-K10
Manuf:
Op Cond: 120 V.a.c.
Operator: K.S.Kyong
Test Spec: CLASS B
Comment: 1D Scanner_WLAN 802.11g Mode

Result File: 130106_h.dat : TOSHIBA TEC CORPORATION

Scan Settings			(1 Range) Frequencies		Receiver Settings			
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB

Final Measurement: Detectors: X QP / + AV
Meas Time: 1sec
Subranges: 25
Acc Margin: 0 dB



Special diagram for Wireless LAN

802.11g - CH 6

*NEUTRAL

ES TECH

27 Dec 2012 15:43

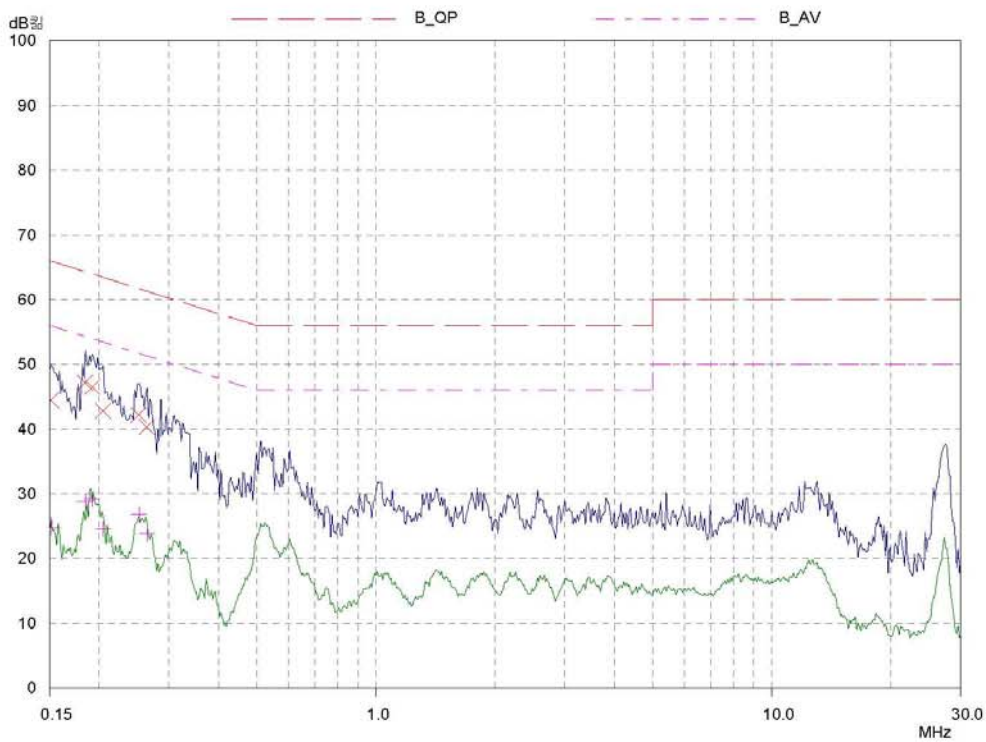
NEUTRAL LINE

EUT: HT-K10
Manuf:
Op Cond: 120 Va.c.
Operator: K.S.Kyong
Test Spec: CLASS B
Comment: 1D Scanner_WLAN 802.11g Mode

Result File: 130106_n.dat : TOSHIBA TEC CORPORATION

Scan Settings			(1 Range) Frequencies		Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preampl	OpRge	
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB	

Final Measurement: Detectors: X QP / + AV
Meas Time: 1sec
Subranges: 25
Acc Margin: 0 dB



Special diagram for Wireless LAN

802.11n - CH 6
*HOT

ES TECH
HOT LINE

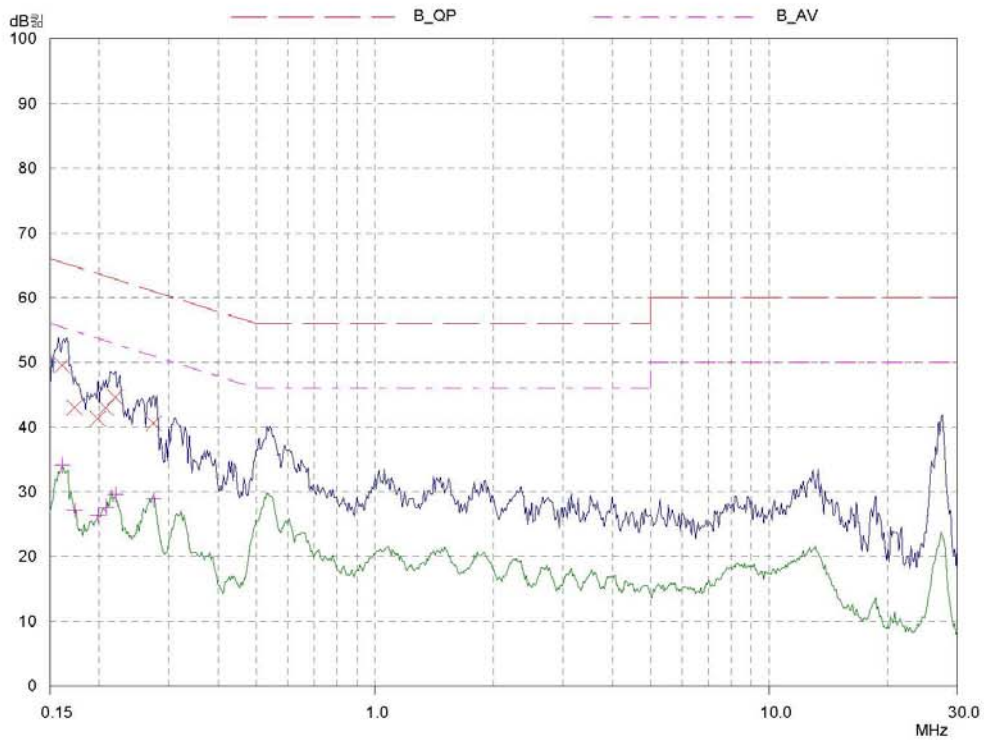
28 Dec 2012 15:59

EUT: HT-K10
Manuf: 120 Va.c.
Op Cond: K.S.Kyong
Operator: CLASS B
Test Spec: 1D Scanner_WLAN 802.11n Mode
Comment:

Result File: 130106_h.dat : TOSHIBA TEC CORPORATION

Scan Settings			(1 Range) Frequencies		Receiver Settings			
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB

Final Measurement: Detectors: X QP / + AV
Meas Time: 1sec
Subranges: 25
Acc Margin: 0 dB



Special diagram for Wireless LAN

802.11n - CH 6

*NEUTRAL

ES TECH

28 Dec 2012 16:03

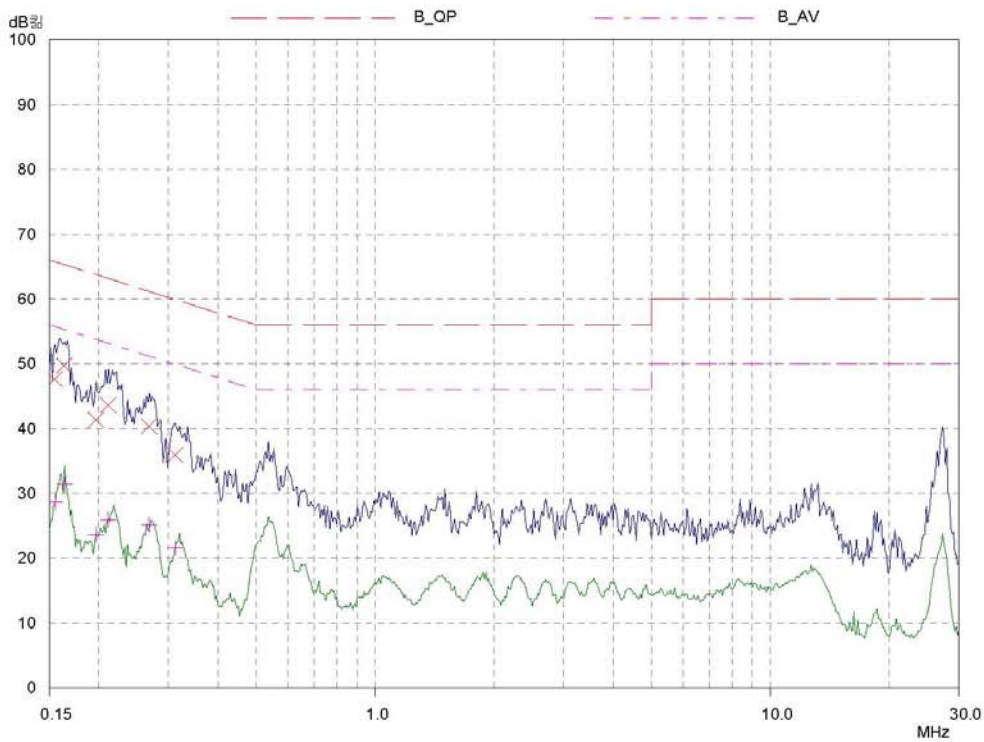
NEUTRAL LINE

EUT: HT-K10
Manuf:
Op Cond: 120 Va.c.
Operator: K.S.Kyong
Test Spec: CLASS B
Comment: 1D Scanner_WLAN 802.11n Mode

Result File: 130106_n.dat : TOSHIBA TEC CORPORATION

Scan Settings			(1 Range) Frequencies		Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge	
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB	

Final Measurement:	Detectors:	X QP / + AV
	Meas Time:	1sec
	Subranges:	25
	Acc Margin:	0 dB



Appendix 2. Antenna Requirement

1. Antenna Requirement

1.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, 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.

And according to FCC 47 CFR Section 15.24

1.2 Antenna Connected Construction

The antenna types used in this product are Intergrated Sandwich antenna . The maximum Gain of this antenna is 2.42 dBi.