

FCC Part 47 §15.247 2400-2483.5 MHz 2017

Occupied Channel Bandwidth 99% (2462 MHz; 30.000 dBm; 20 MHz(11g_20MHz))

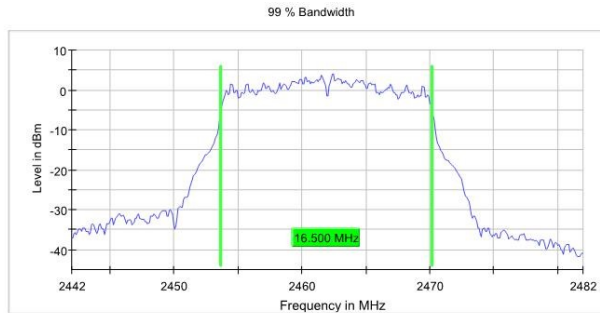
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2462.000000	16.500000	---	---	2453.650000	2470.150000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2462.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44200 GHz	2.44200 GHz
Stop Frequency	2.48200 GHz	2.48200 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	>= 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	400	~ 400
SweepTime	47.266 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	34 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.02 dB	0.30 dB

Wi-Fi 802.11 n(HT20) mode, MCS0

FCC Part 47 §15.247 2400-2483.5 MHz 2017

Occupied Channel Bandwidth 99% (2412 MHz; 30.000 dBm; 20 MHz(11n_20MHz))

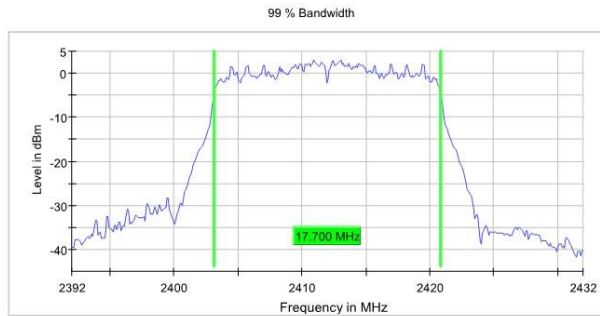
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2412.000000	17.700000	---	---	2403.150000	2420.850000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2412.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.39200 GHz	2.39200 GHz
Stop Frequency	2.43200 GHz	2.43200 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	>= 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	400	~ 400
SweepTime	47.266 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	33 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.22 dB	0.30 dB

FCC Part 47 §15.247 2400-2483.5 MHz 2017

Occupied Channel Bandwidth 99% (2437 MHz; 30.000 dBm; 20 MHz(11n_20MHz))

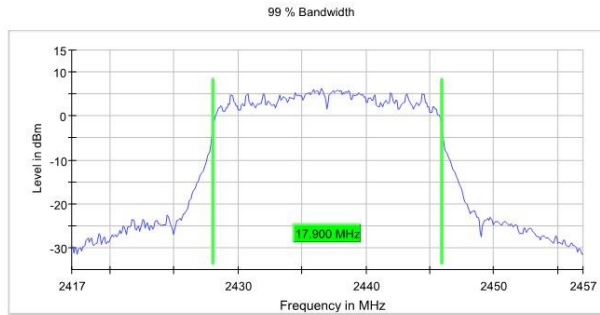
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2437.000000	17.900000	---	---	2428.050000	2445.950000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2437.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.41700 GHz	2.41700 GHz
Stop Frequency	2.45700 GHz	2.45700 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	>= 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	400	~ 400
SweepTime	47.266 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	50 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.08 dB	0.30 dB

FCC Part 47 §15.247 2400-2483.5 MHz 2017

Occupied Channel Bandwidth 99% (2462 MHz; 30.000 dBm; 20 MHz(11n_20MHz))

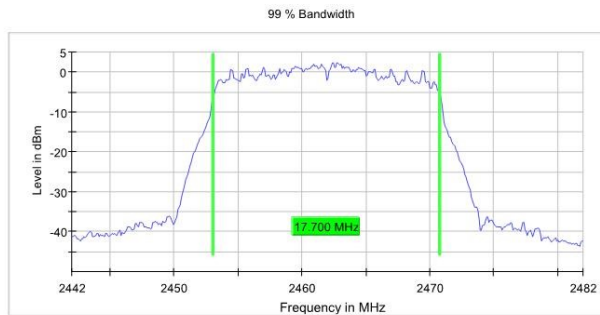
Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2462.000000	17.700000	---	---	2453.050000	2470.750000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2462.000000	PASS

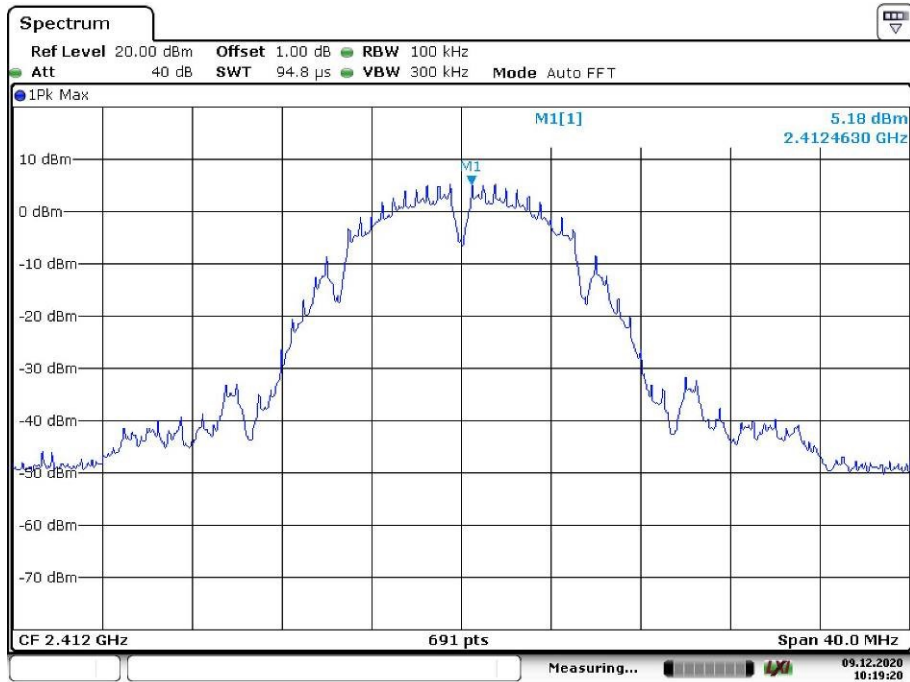


Measurement

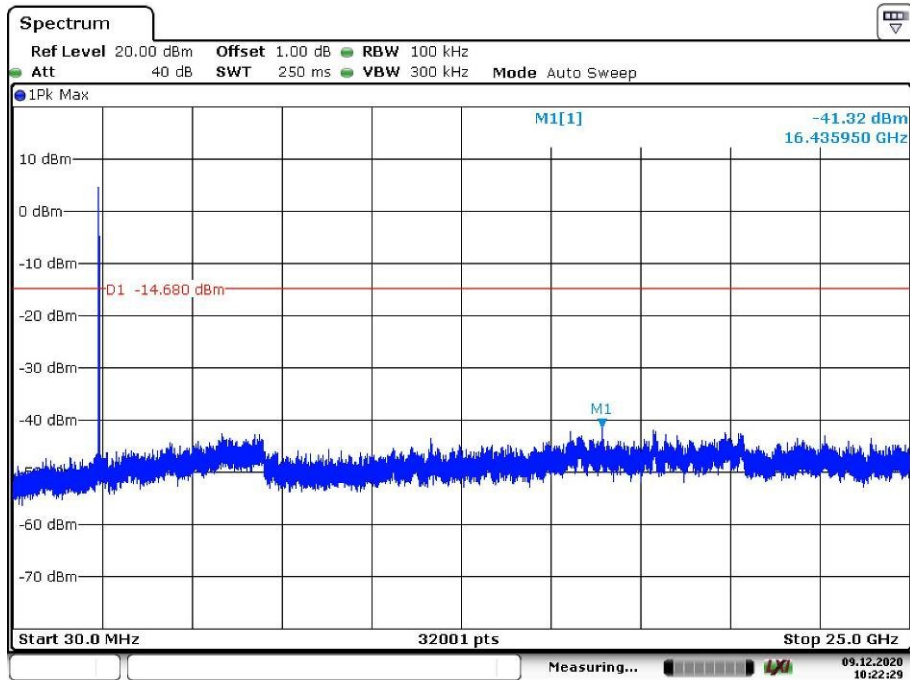
Setting	Instrument Value	Target Value
Start Frequency	2.44200 GHz	2.44200 GHz
Stop Frequency	2.48200 GHz	2.48200 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	>= 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	400	~ 400
SweepTime	47.266 µs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	38 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.21 dB	0.30 dB

Appendix B.4: Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

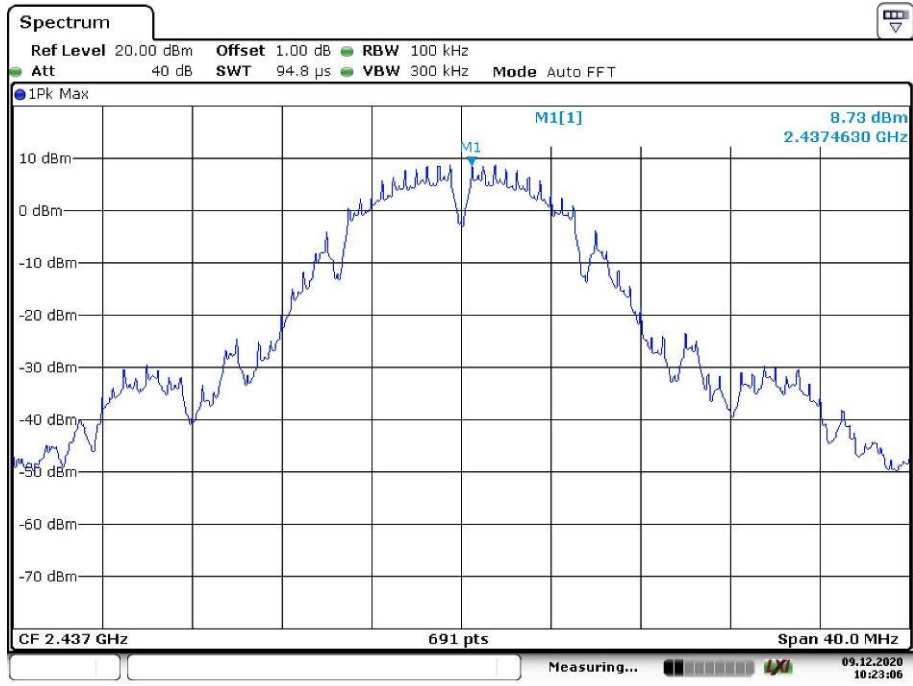
Wi-Fi 802.11 b mode, 1 Mbps



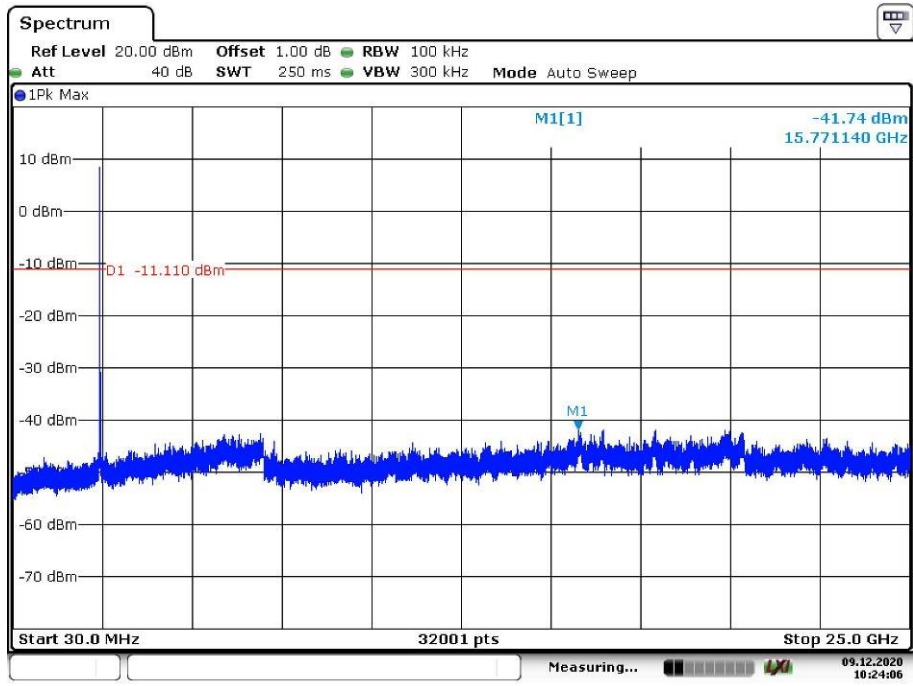
Date: 9.DEC.2020 10:19:21



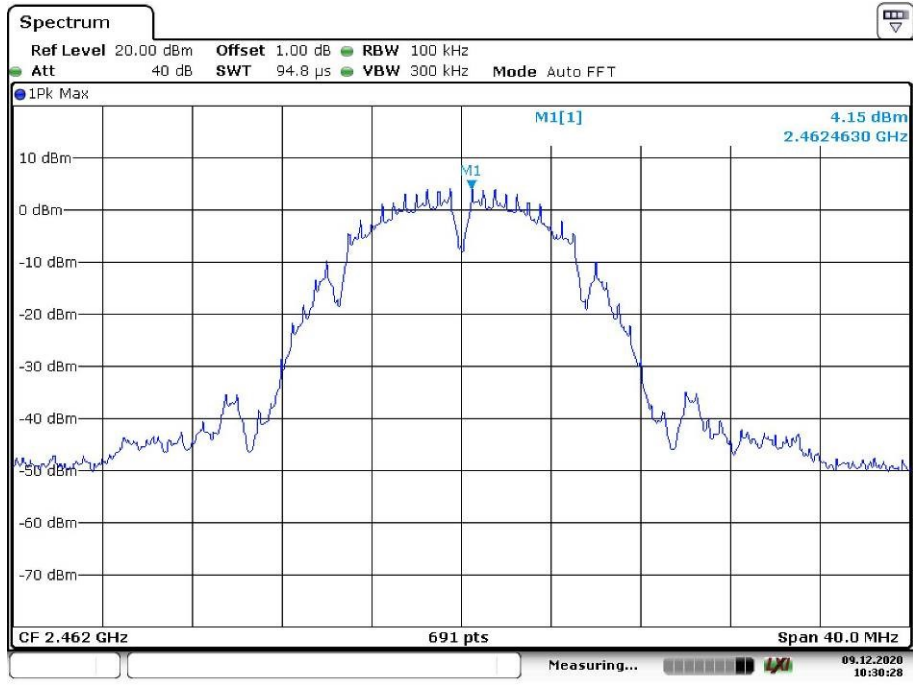
Date: 9.DEC.2020 10:22:29



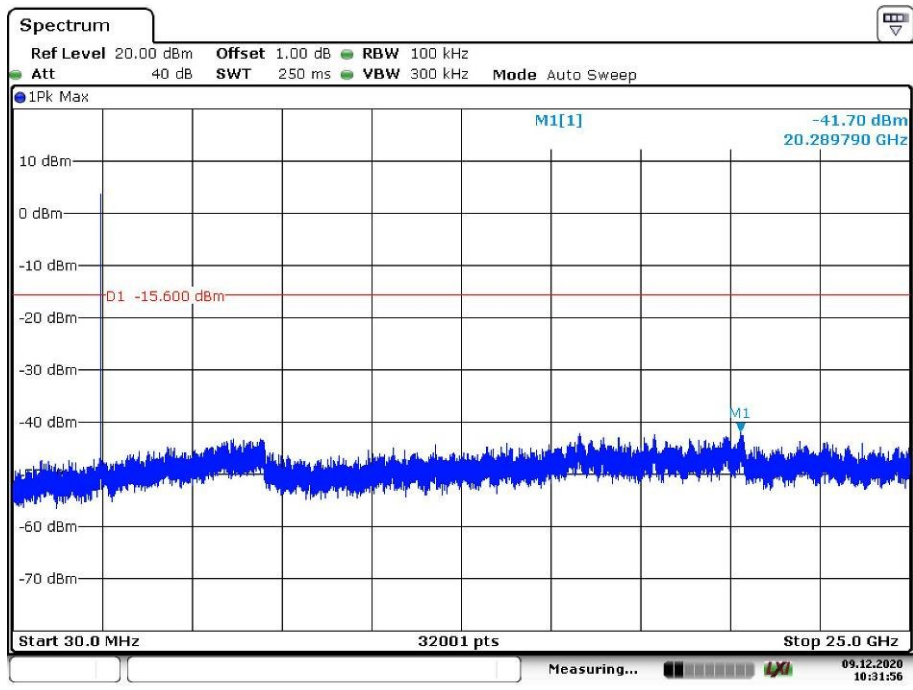
Date: 9.DEC.2020 10:23:07



Date: 9.DEC.2020 10:24:06

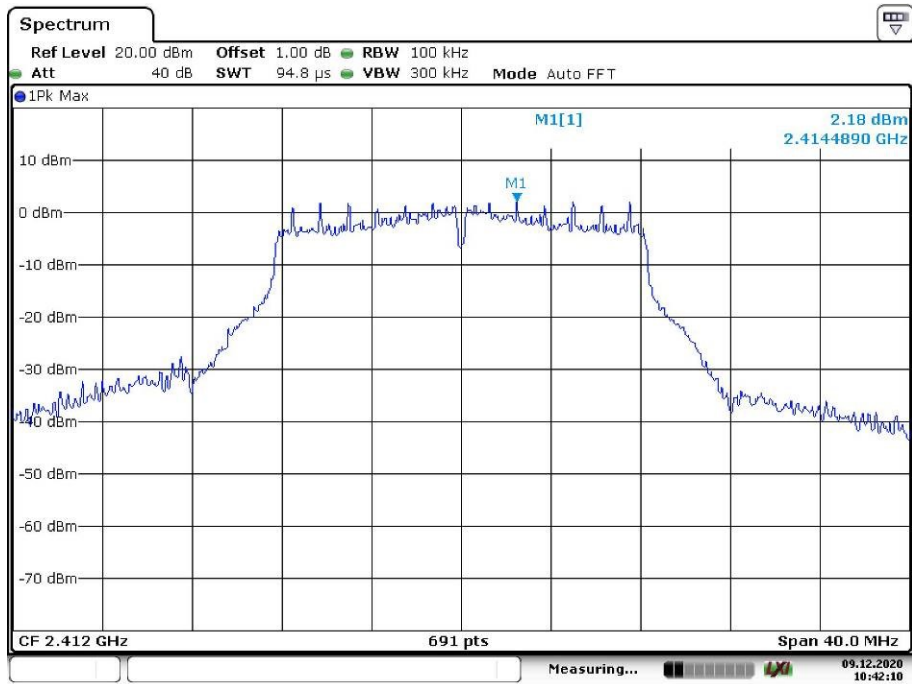


Date: 9.DEC.2020 10:30:29

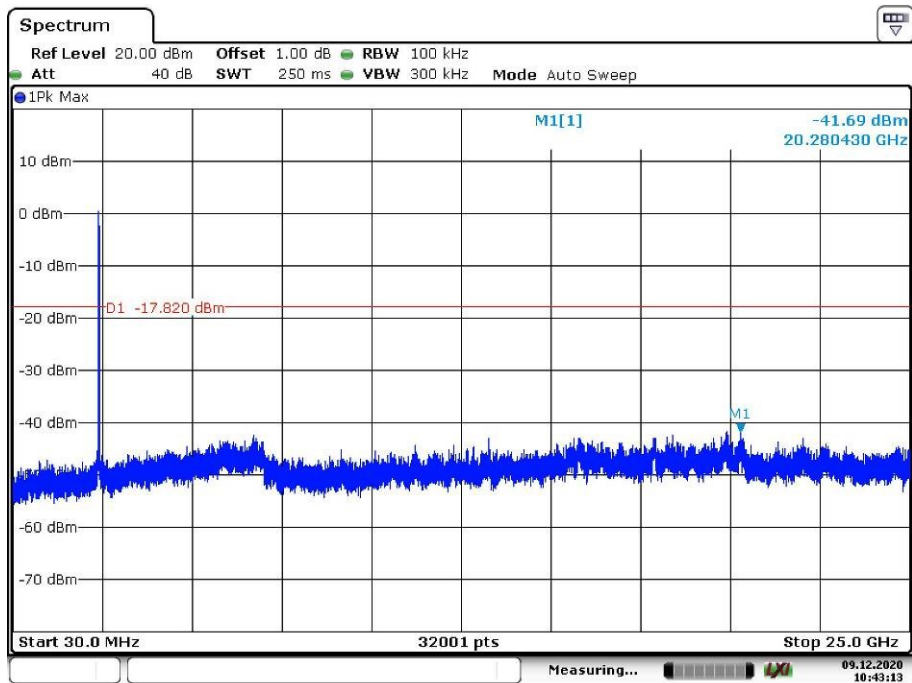


Date: 9.DEC.2020 10:31:57

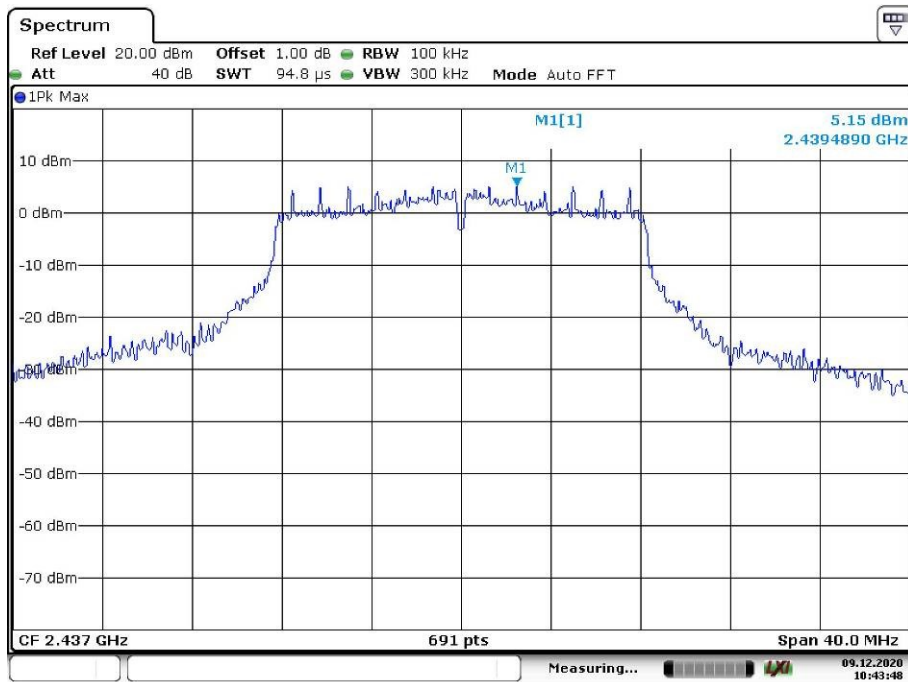
Wi-Fi 802.11 g mode, 6 Mbps



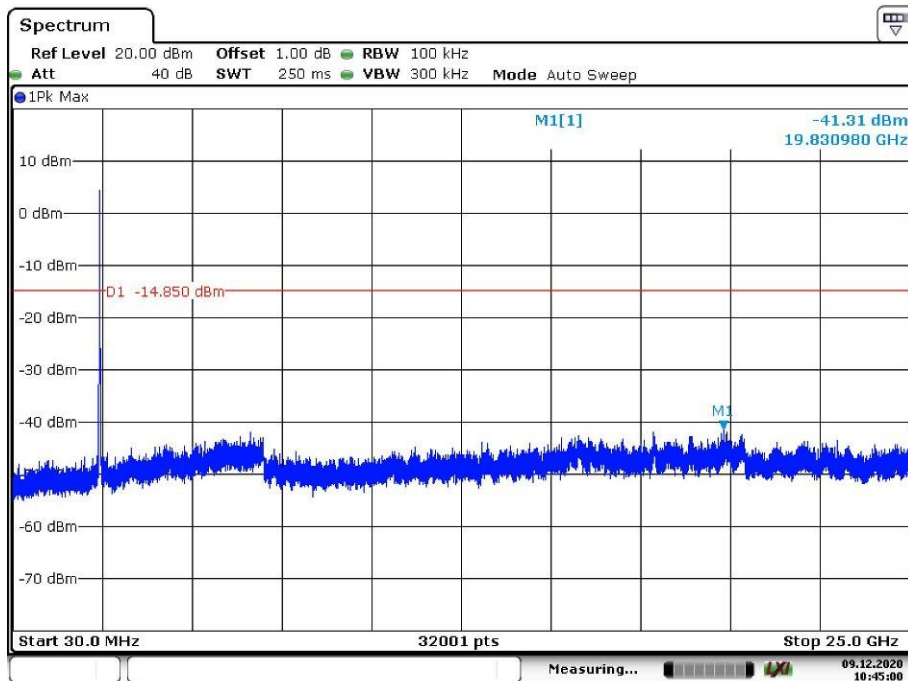
Date: 9.DEC.2020 10:42:11



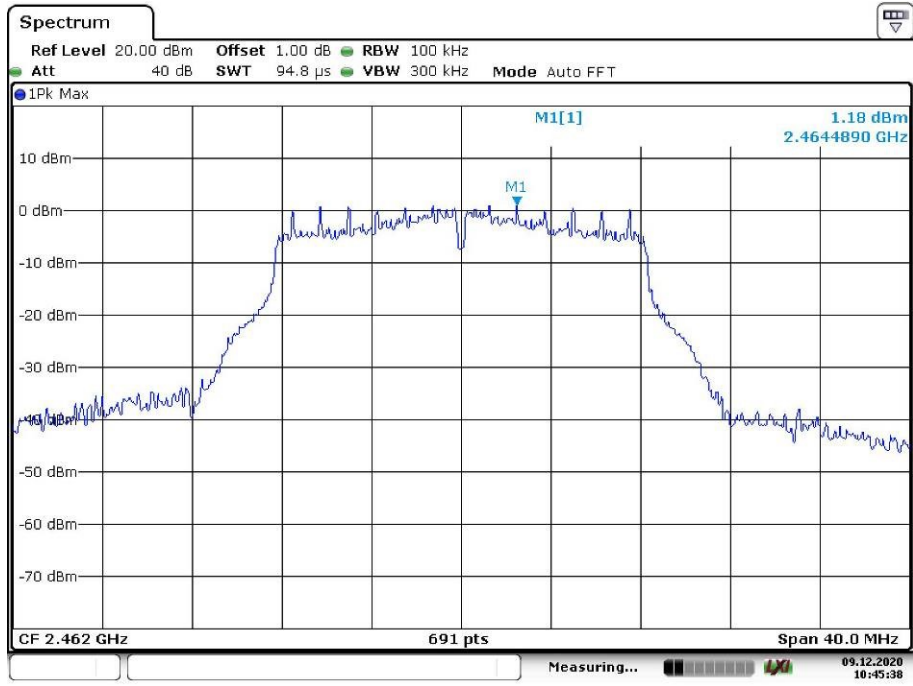
Date: 9.DEC.2020 10:43:13



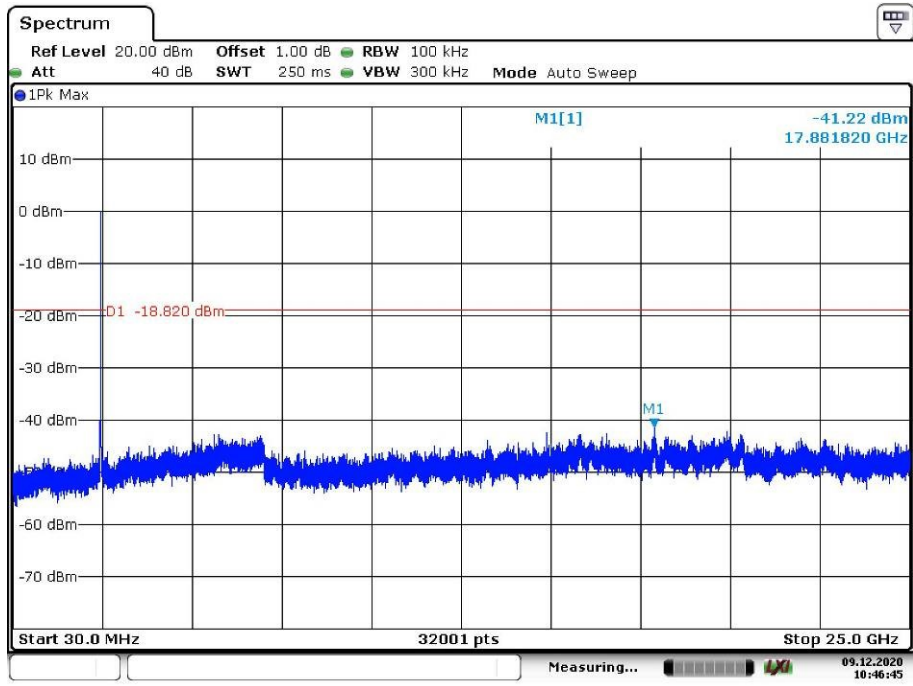
Date: 9.DEC.2020 10:43:47



Date: 9.DEC.2020 10:45:00

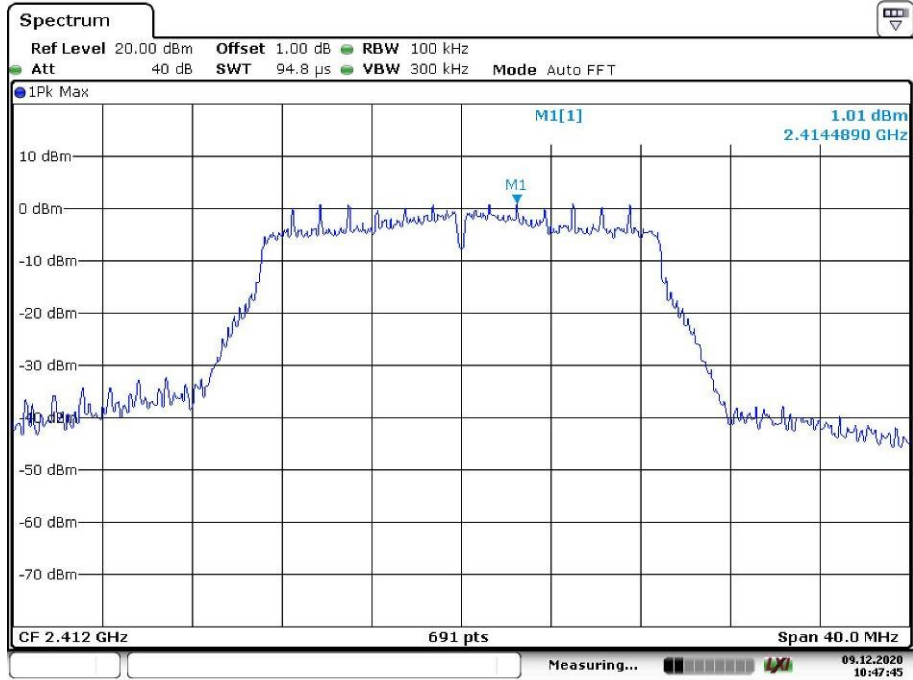


Date: 9.DEC.2020 10:45:38

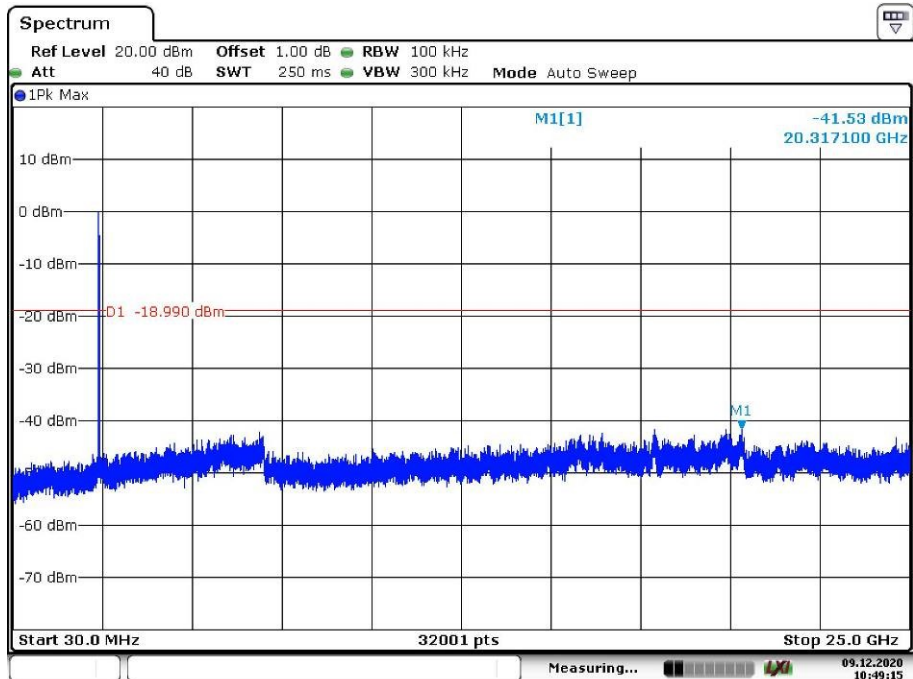


Date: 9.DEC.2020 10:46:45

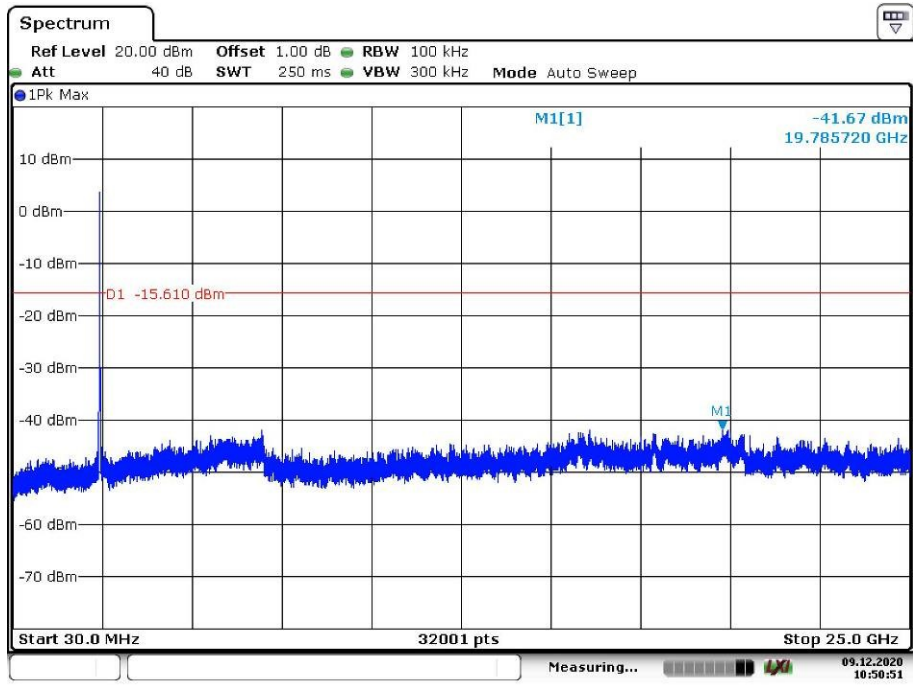
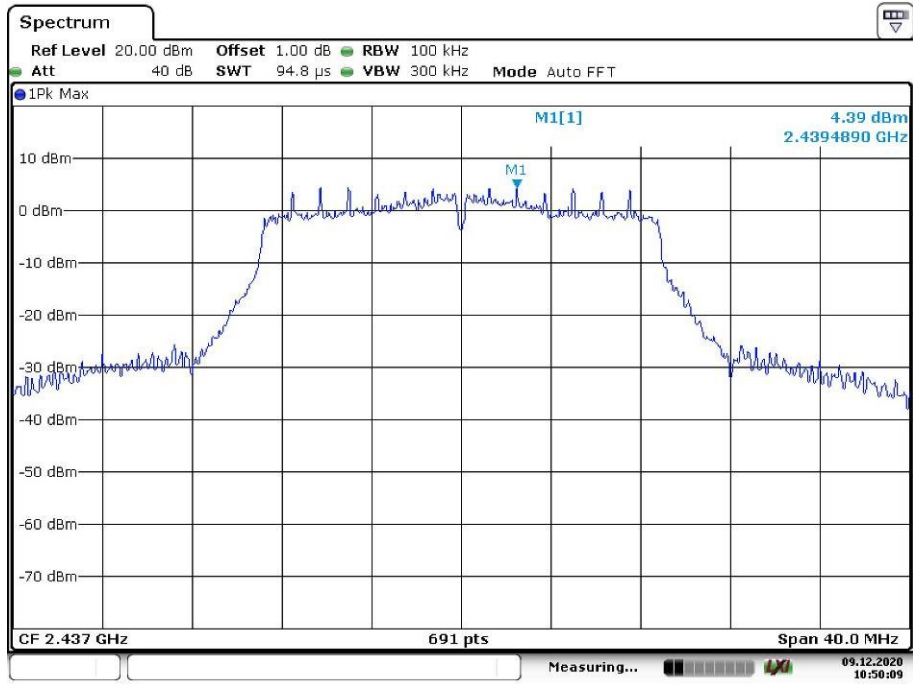
Wi-Fi 802.11 n(HT20) mode, MCS0

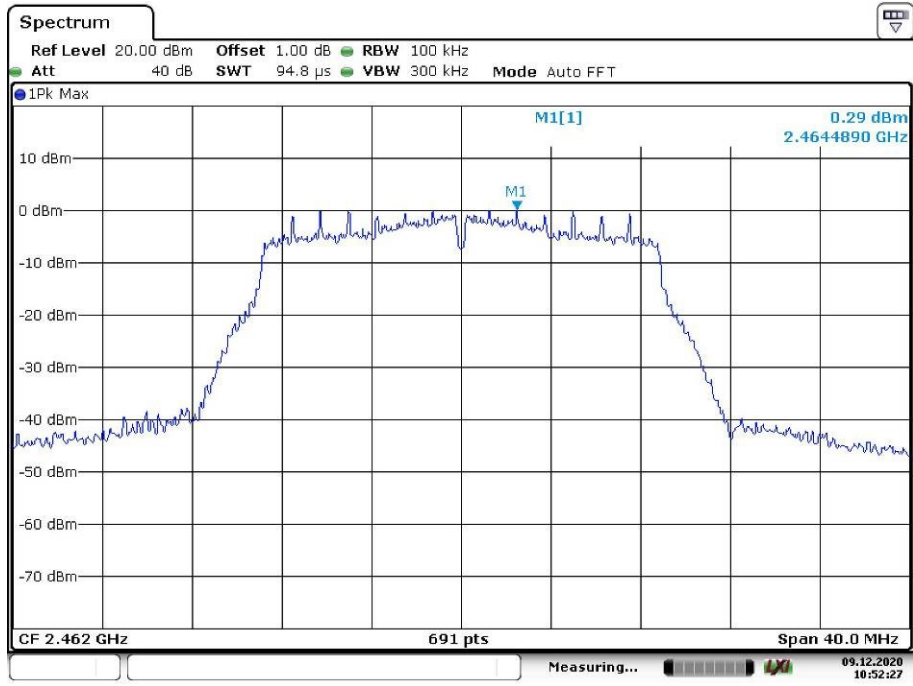


Date: 9.DEC.2020 10:47:45

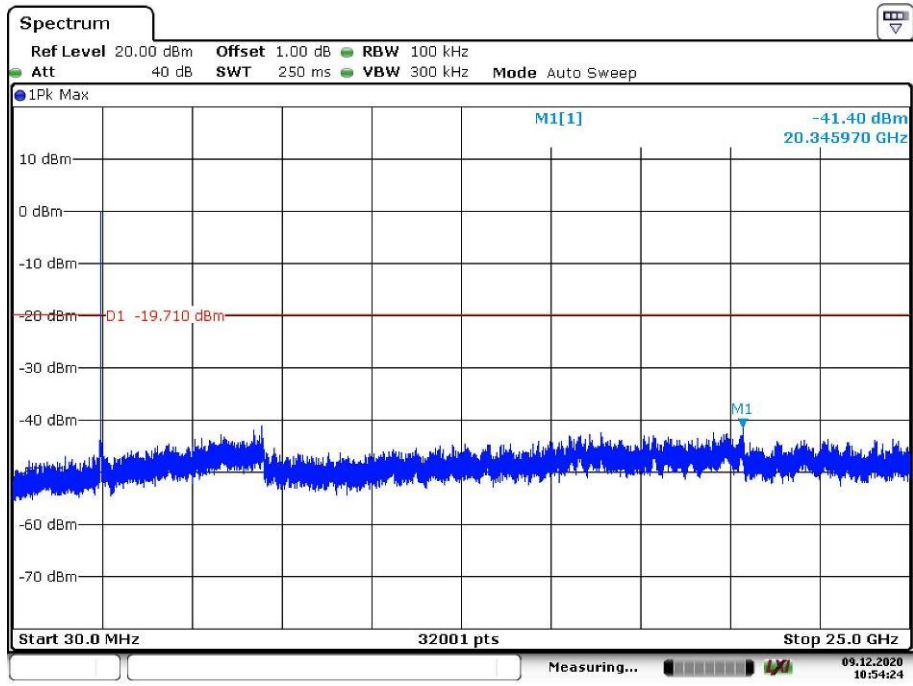


Date: 9.DEC.2020 10:49:14



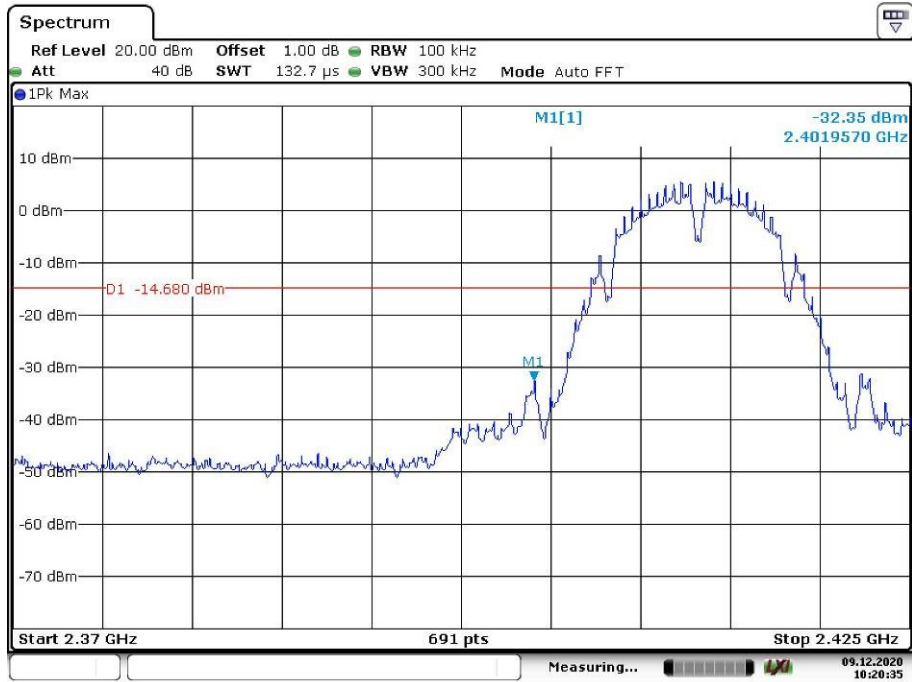


Date: 9.DEC.2020 10:52:26

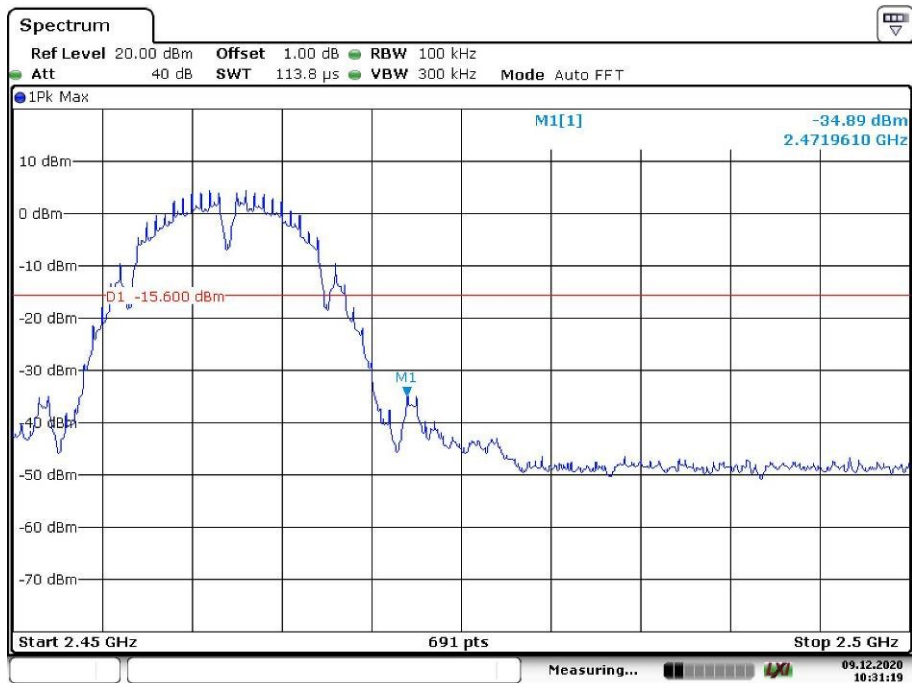


Date: 9.DEC.2020 10:54:24

Wi-Fi 802.11 b mode, Band Edge

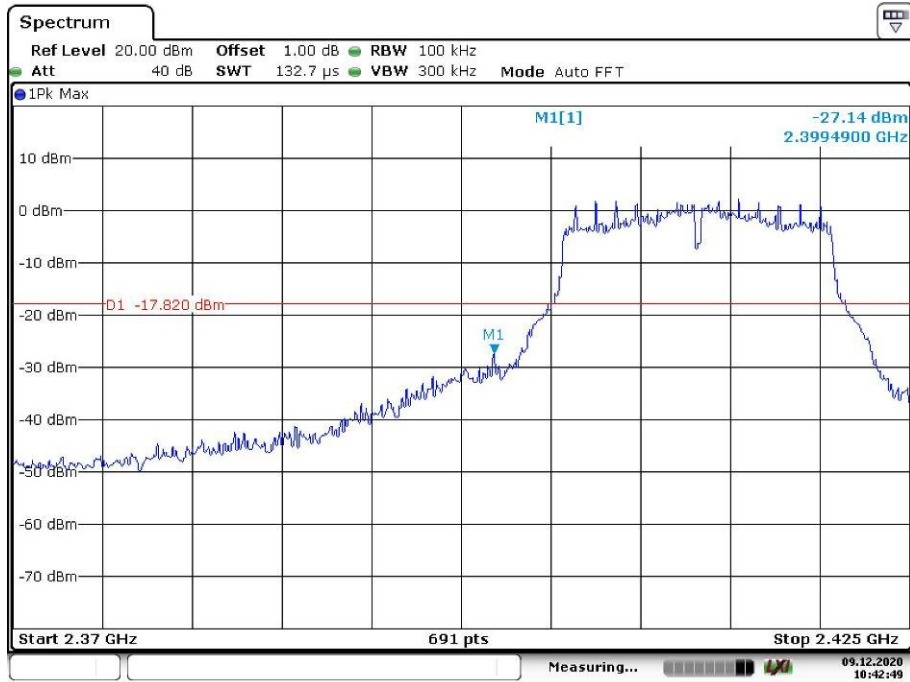


Date: 9.DEC.2020 10:20:35

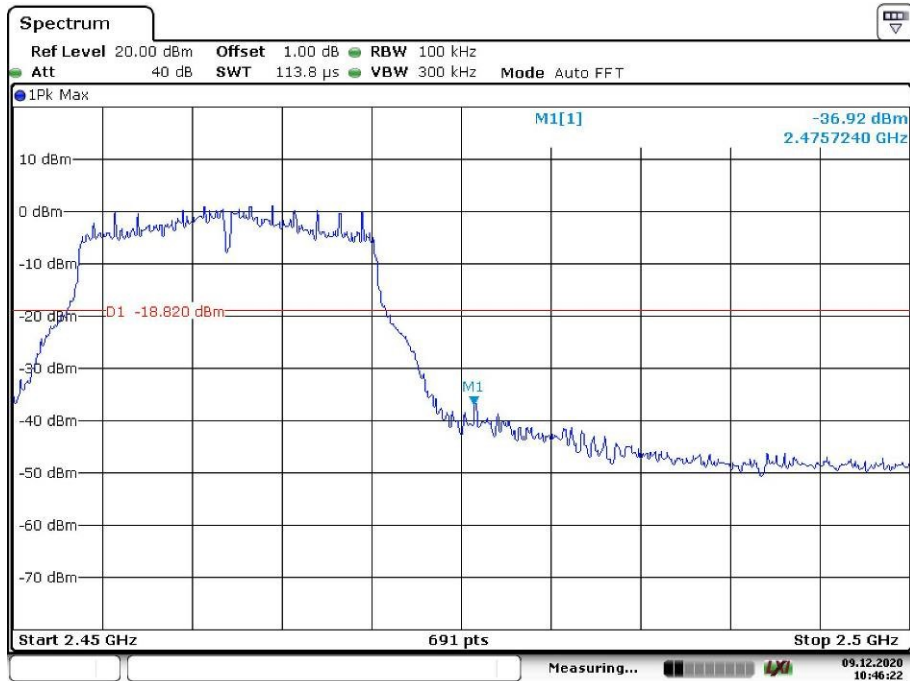


Date: 9.DEC.2020 10:31:19

Wi-Fi 802.11 g mode, Band Edge

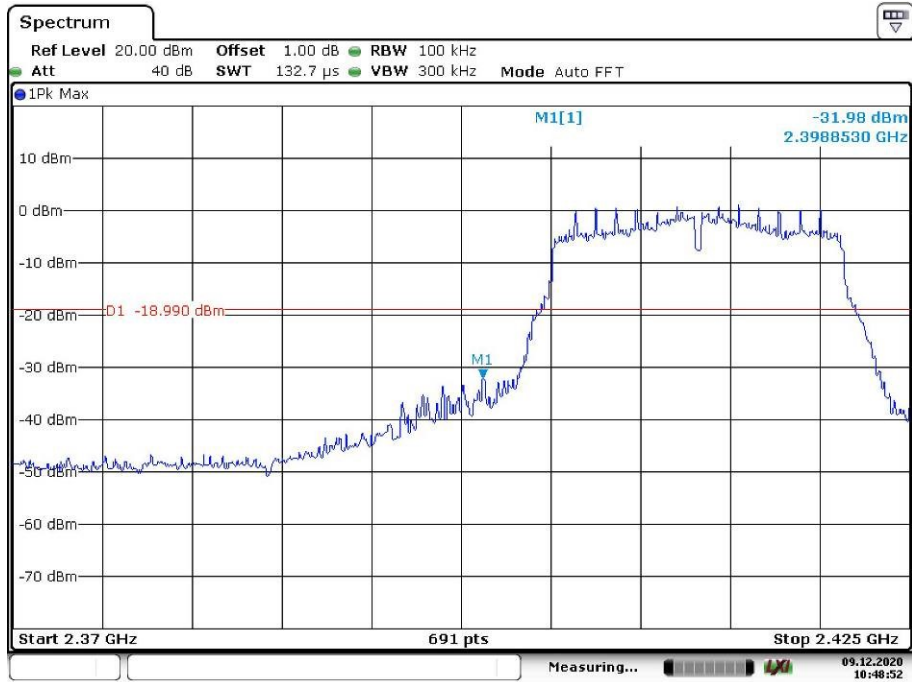


Date: 9.DEC.2020 10:42:49

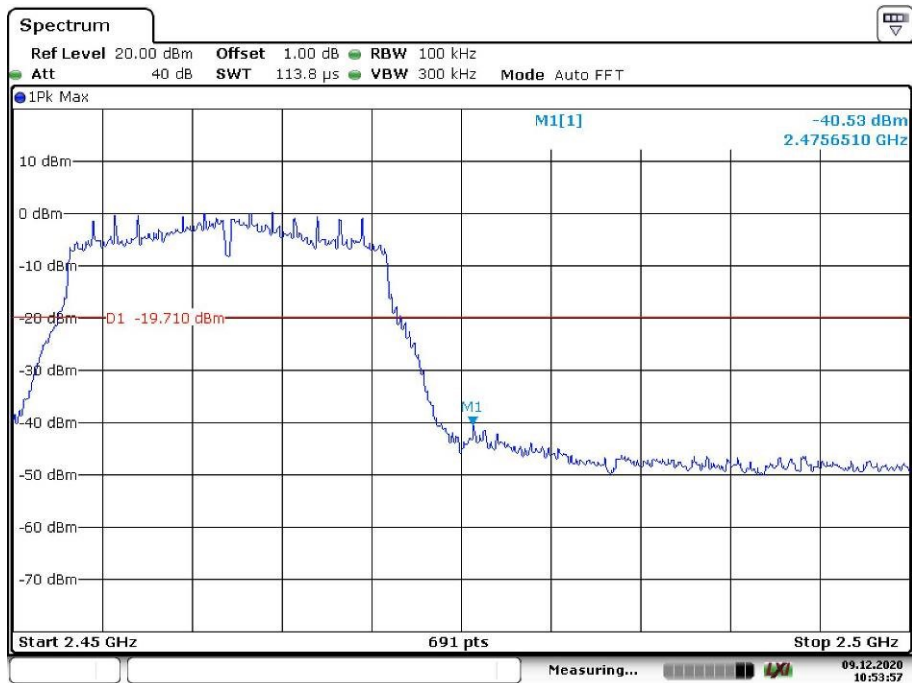


Date: 9.DEC.2020 10:46:22

Wi-Fi 802.11 n(HT20) mode, Band Edge



Date: 9.DEC.2020 10:48:52



Date: 9.DEC.2020 10:53:57

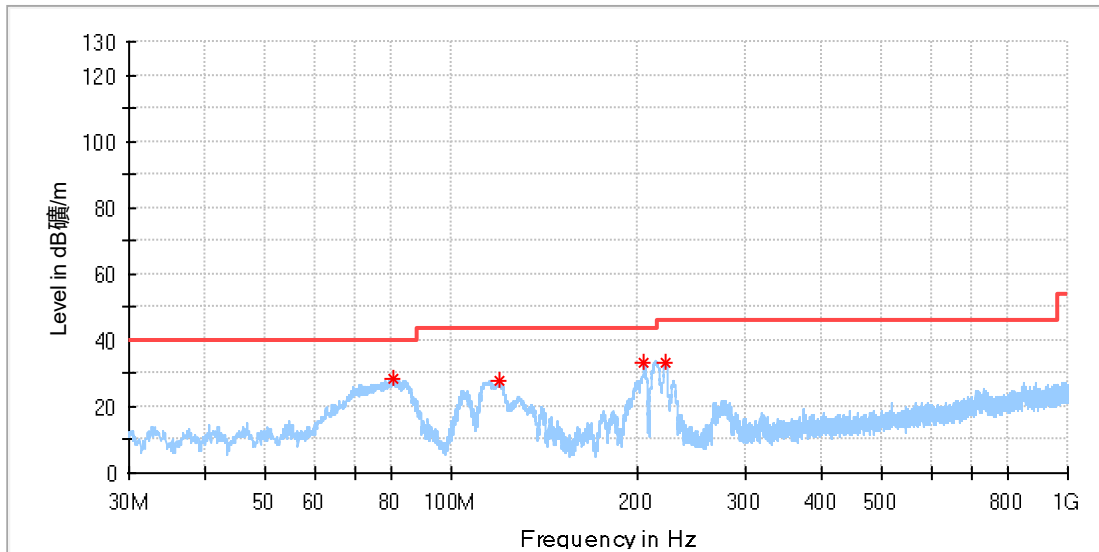
Note: Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and 18GHz - 26.5GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

Appendix B.5: Test Results of Radiated Spurious Emissions

30MHz - 1GHz (Worst case)
 Wi-Fi 802.11 b mode, 1 Mbps

EUT Information

EUT Name:	Control Extender
Model:	EL-IO-200
Test Mode:	Wi-Fi 2.4G 11b_Low Channel
Test Voltage::	120V/60Hz
Remark:	Temp 23 Humi:49%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

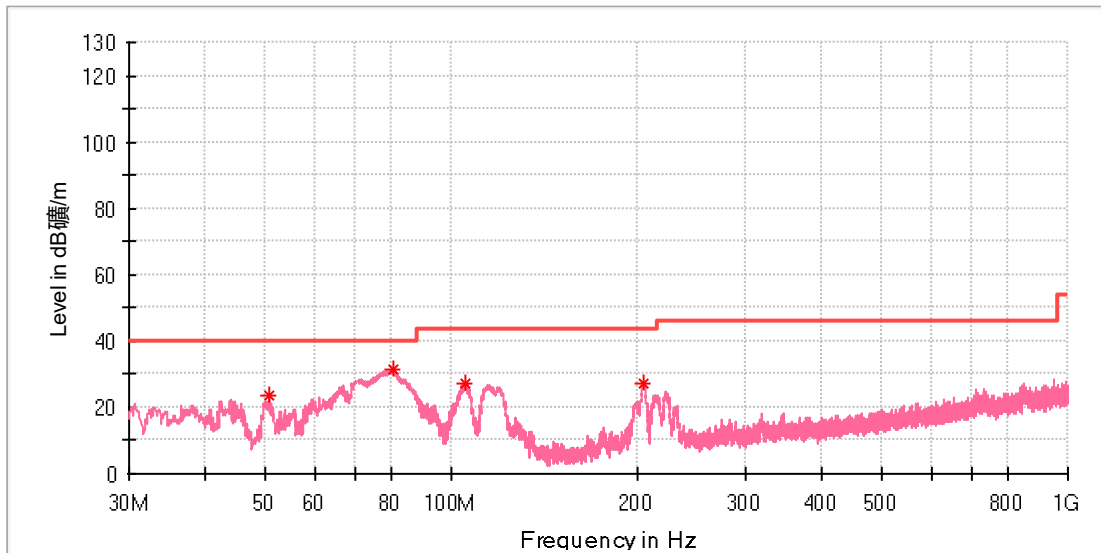
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
80.779500	28.61	---	40.00	11.39	100.0	H	281.0	-23.3
119.482500	27.63	---	43.50	15.87	100.0	H	6.0	-20.7
204.745500	33.50	---	43.50	10.00	100.0	H	359.0	-18.9
222.593500	33.35	---	46.00	12.65	100.0	H	359.0	-18.4

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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EUT Information

EUT Name: Control Extender
 Model: EL-IO-200
 Test Mode: Wi-Fi 2.4G 11b_Low Channel
 Test Voltage:: 120V/60Hz
 Remark: Temp 23 Humi:49%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

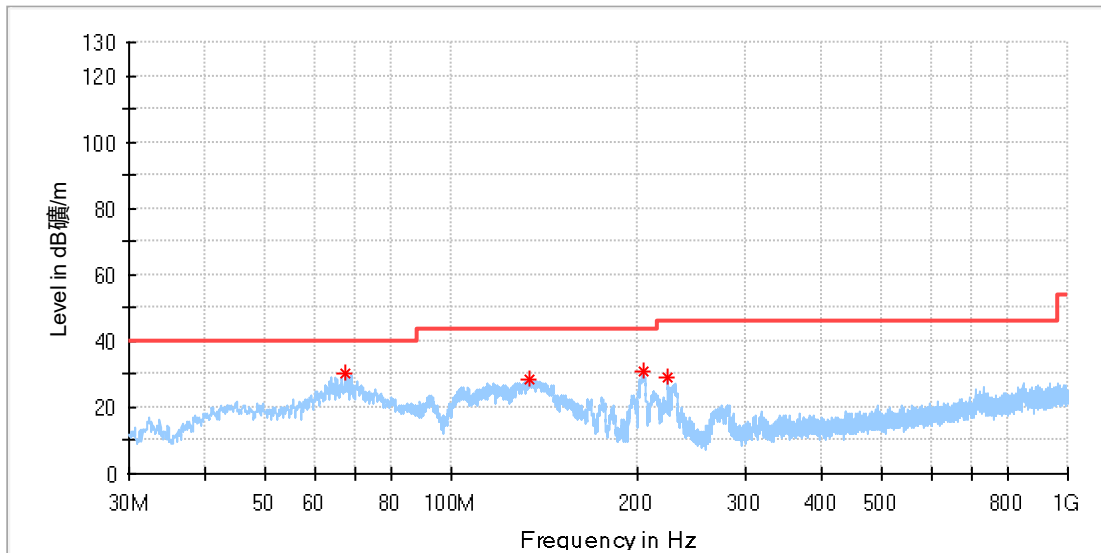
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
50.612500	23.71	---	40.00	16.29	100.0	V	85.0	-18.3
80.488500	31.31	---	40.00	8.69	100.0	V	243.0	-23.4
104.981000	27.42	---	43.50	16.08	100.0	V	66.0	-18.7
205.230500	27.12	---	43.50	16.38	100.0	V	66.0	-18.9

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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EUT Information

EUT Name: Control Extender
 Model: EL-IO-200
 Test Mode: Wi-Fi 2.4G 11b_High Channel
 Test Voltage:: 120V/60Hz
 Remark: Temp 23 Humi:49%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

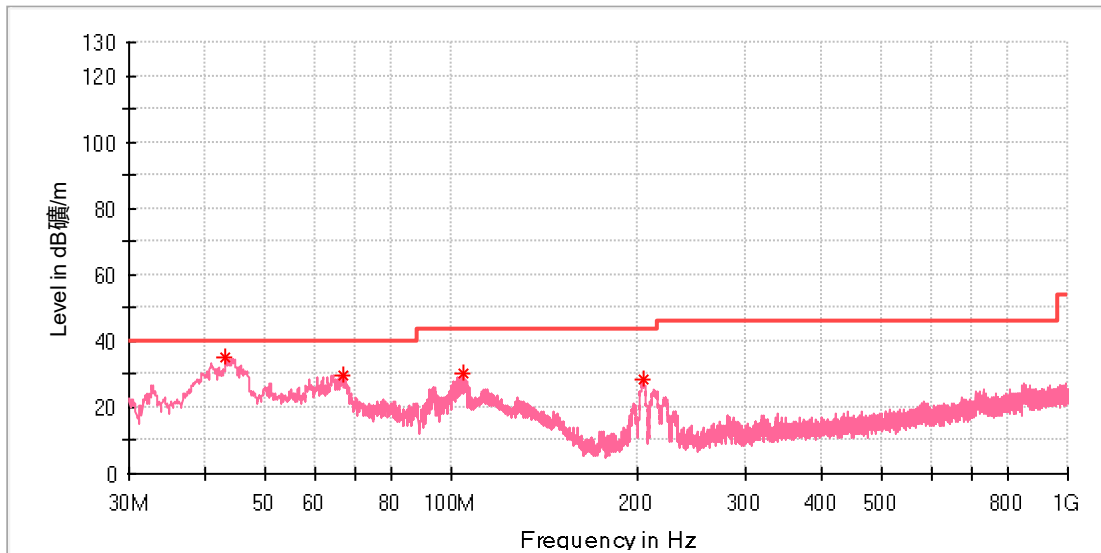
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
67.296500	30.49	---	40.00	9.51	100.0	H	281.0	-20.9
134.129500	28.33	---	43.50	15.17	100.0	H	290.0	-22.0
204.842500	30.76	---	43.50	12.74	100.0	H	245.0	-18.9
224.145500	28.84	---	46.00	17.16	100.0	H	2.0	-18.3

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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EUT Information

EUT Name:	Control Extender
Model:	EL-IO-200
Test Mode:	Wi-Fi 2.4G 11b_High Channel
Test Voltage::	120V/60Hz
Remark:	Temp 23 Humi:49%
Test Standard:	FCC 15.247
Tested By:	Kei Zhang
Reviewed By:	Terry Yin



Critical_Freqs

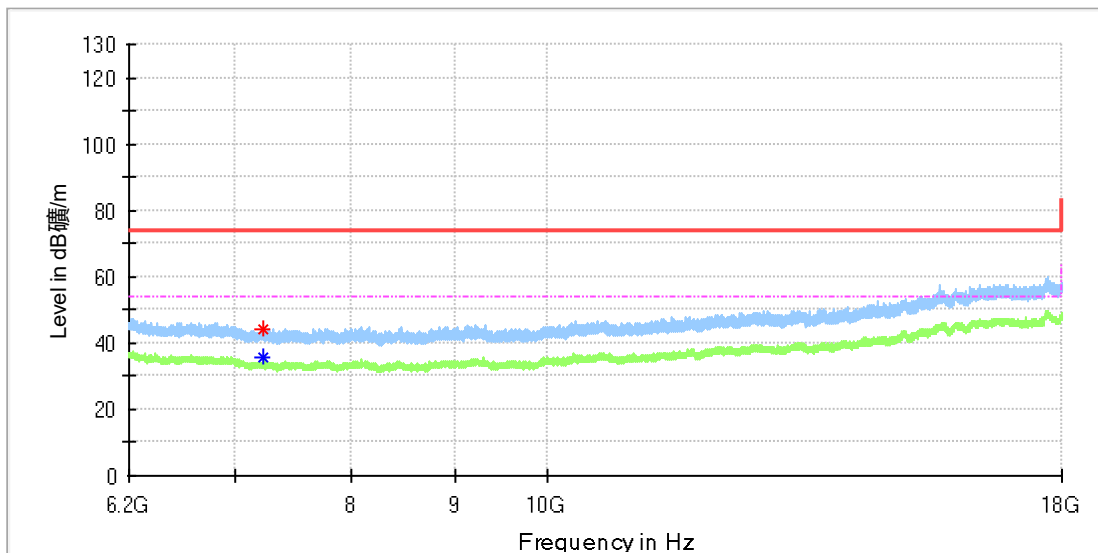
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
43.046500	35.00	---	40.00	5.00	100.0	V	25.0	-19.3
66.860000	29.59	---	40.00	10.41	100.0	V	288.0	-20.7
104.350500	29.98	---	43.50	13.52	100.0	V	288.0	-18.8
204.212000	28.25	---	43.50	15.26	100.0	V	25.0	-18.9

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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EUT Information

EUT Name: Control Extender
 Model: EL-IO-200
 Test Mode: Wi-Fi 2.4G 11b_Low Channel
 Test Voltage:: 120V/60Hz
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Alano Qu
 Reviewed By: Terry Yin



Critical_Freqs

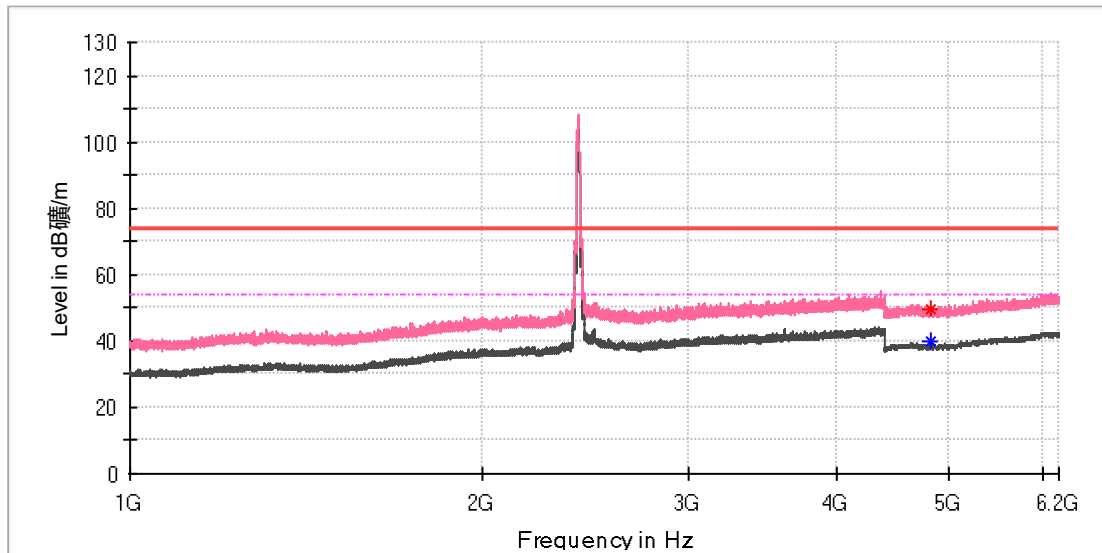
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7234.466667	44.03	---	74.00	29.97	100.0	H	73.0	8.6
7234.958333	---	35.61	54.00	18.39	100.0	H	59.0	8.6

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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EUT Information

EUT Name: Control Extender
 Model: EL-IO-200
 Test Mode: Wi-Fi 2.4G 11b_Low Channel
 Test Voltage:: 120V/60Hz
 Remark: Temp 23 Humi:49%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

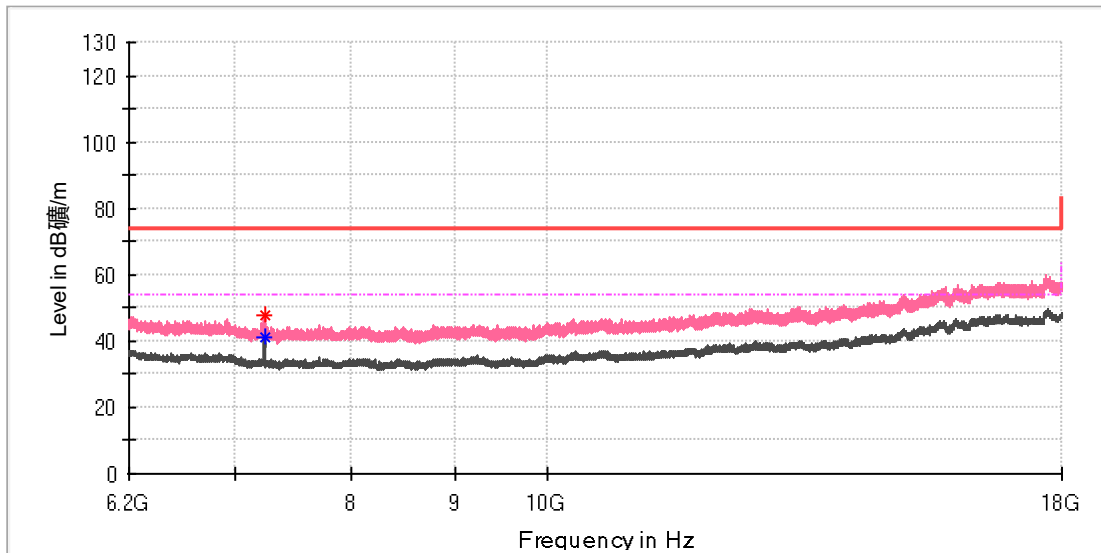
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4823.500000	49.70	---	74.00	24.31	100.0	V	253.0	11.8
4824.000000	---	40.00	54.00	14.00	100.0	V	170.0	11.8

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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EUT Information

EUT Name: Control Extender
 Model: EL-IO-200
 Test Mode: Wi-Fi 2.4G 11b_Low Channel
 Test Voltage:: 120V/60Hz
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Alano Qu
 Reviewed By: Terry Yin



Critical_Freqs

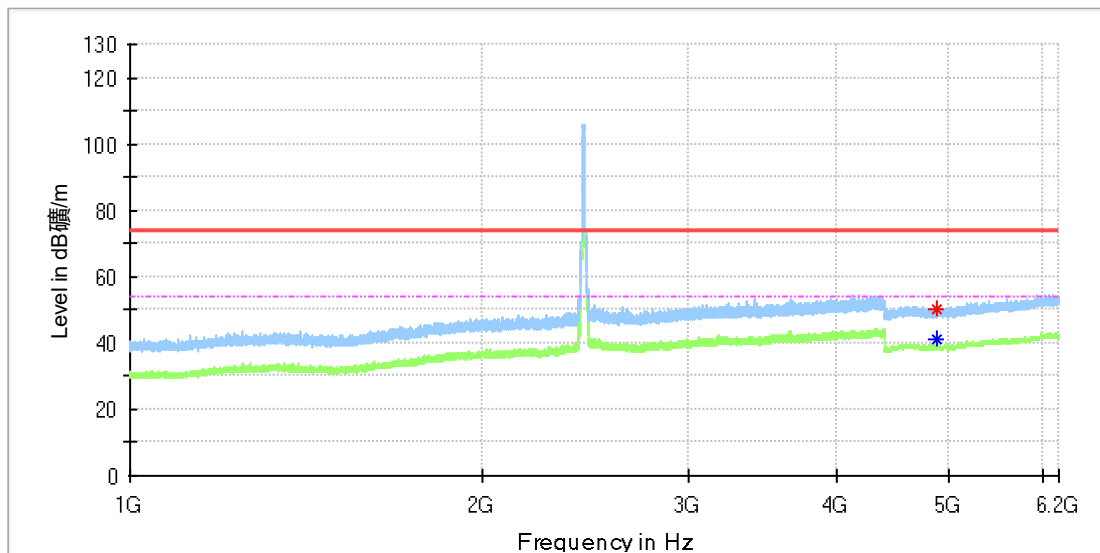
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7236.925000	47.62	---	74.00	26.38	100.0	V	81.0	8.6
7236.925000	---	40.87	54.00	13.13	100.0	V	81.0	8.6

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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EUT Information

EUT Name: Control Extender
 Model: EL-IO-200
 Test Mode: Wi-Fi 2.4G 11b_Mid Channel
 Test Voltage:: 120V/60Hz
 Remark: Temp 23 Humi:49%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

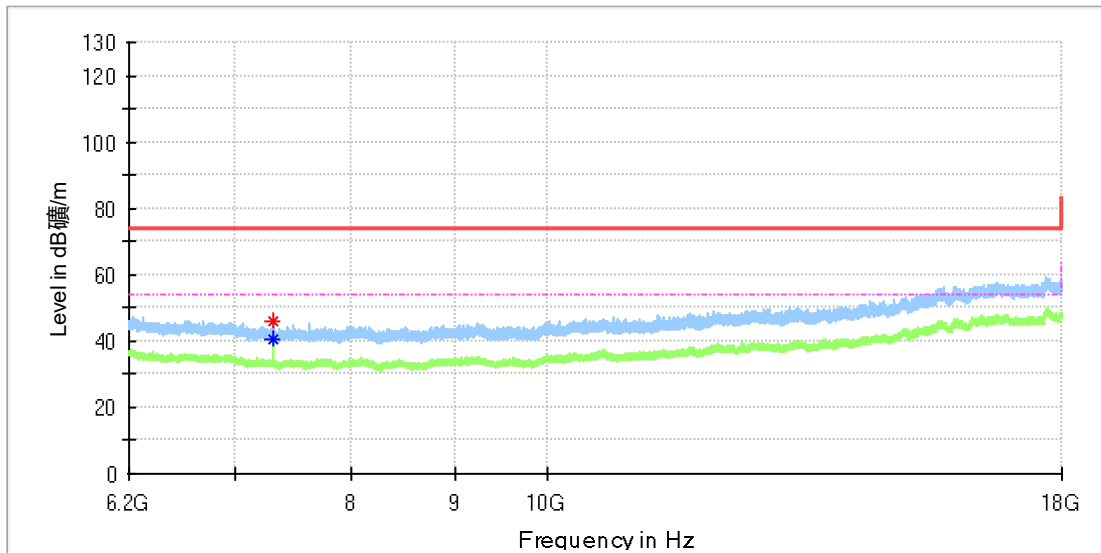
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4873.500000	50.34	---	74.00	23.66	100.0	H	258.0	11.8
4874.000000	---	41.33	54.00	12.67	100.0	H	252.0	11.8

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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EUT Information

EUT Name: Control Extender
 Model: EL-IO-200
 Test Mode: Wi-Fi 2.4G 11b_Mid Channel
 Test Voltage:: 120V/60Hz
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Alano Qu
 Reviewed By: Terry Yin



Critical_Freqs

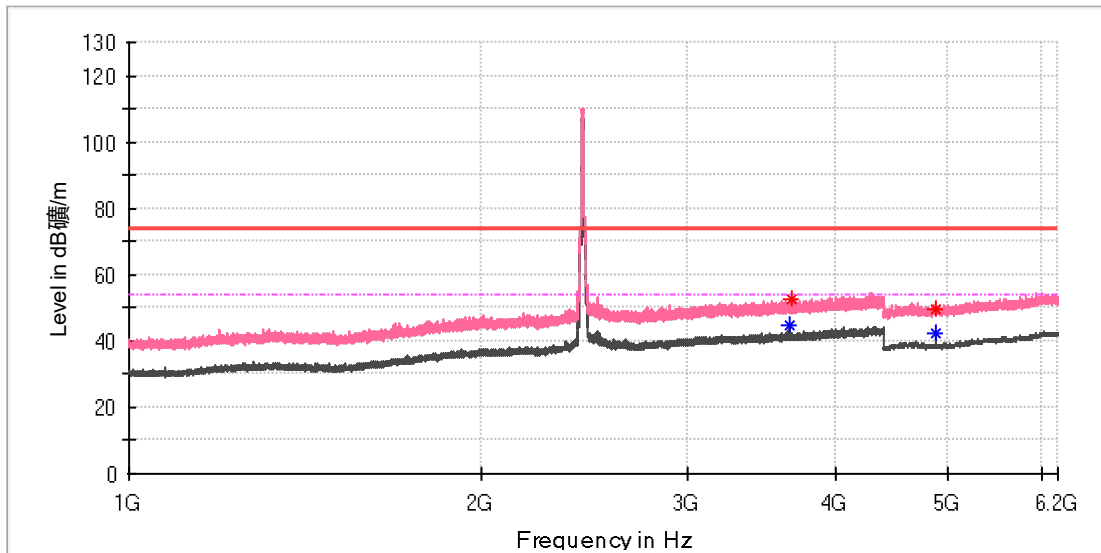
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7312.150000	45.88	---	74.00	28.12	100.0	H	80.0	8.2
7312.150000	---	40.34	54.00	13.66	100.0	H	80.0	8.2

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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EUT Information

EUT Name: Control Extender
 Model: EL-IO-200
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Critical_Freqs

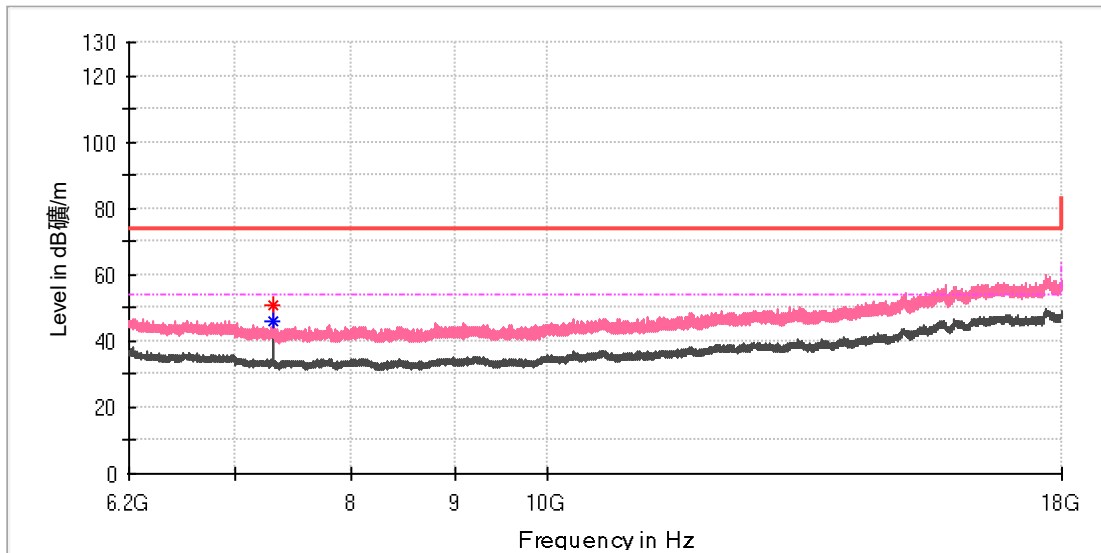
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3653.912500	---	44.69	54.00	9.31	100.0	V	189.0	9.4
3679.412500	52.76	---	74.00	21.24	100.0	V	81.0	9.5
4873.500000	49.76	---	74.00	24.24	100.0	V	252.0	11.8
4874.000000	---	42.36	54.00	11.64	100.0	V	245.0	11.8

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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EUT Information

EUT Name: Control Extender
 Model: EL-IO-200
 Test Mode: Wi-Fi 2.4G 11b_Mid Channel
 Test Voltage:: 120V/60Hz
 Remark: Temp 23 Humi:48%
 Test Standard: FCC 15.247
 Tested By: Alano Qu
 Reviewed By: Terry Yin



Critical_Freqs

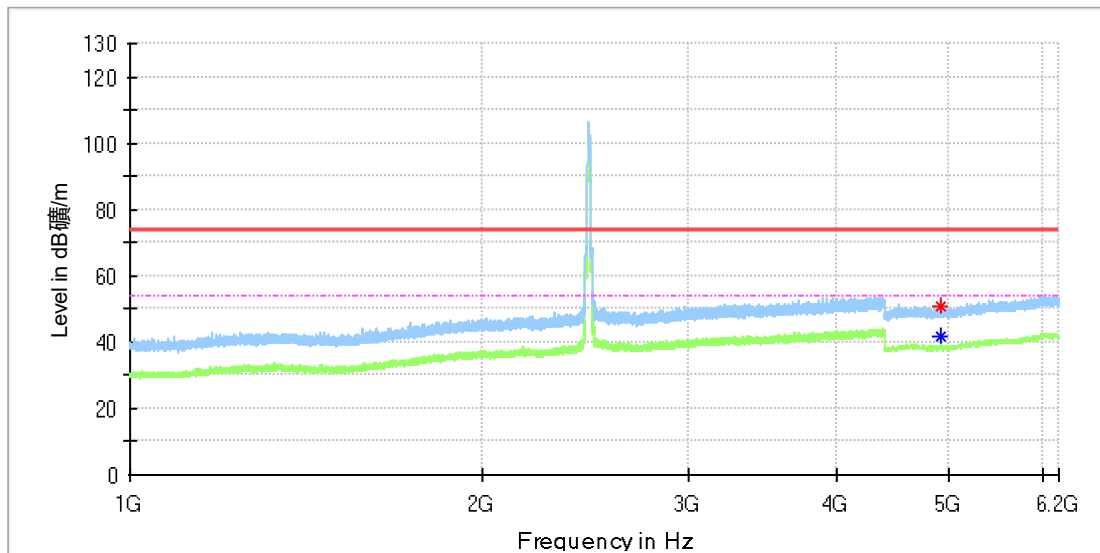
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7311.658333	50.85	---	74.00	23.15	100.0	V	12.0	8.2
7312.150000	---	45.88	54.00	8.12	100.0	V	12.0	8.2

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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EUT Information

EUT Name: Control Extender
 Model: EL-IO-200
 Test Mode: Wi-Fi 2.4G 11b_High Channel
 Test Voltage:: 120V/60Hz
 Remark: Temp 23 Humi:49%
 Test Standard: FCC 15.247
 Tested By: Kei Zhang
 Reviewed By: Terry Yin



Critical_Freqs

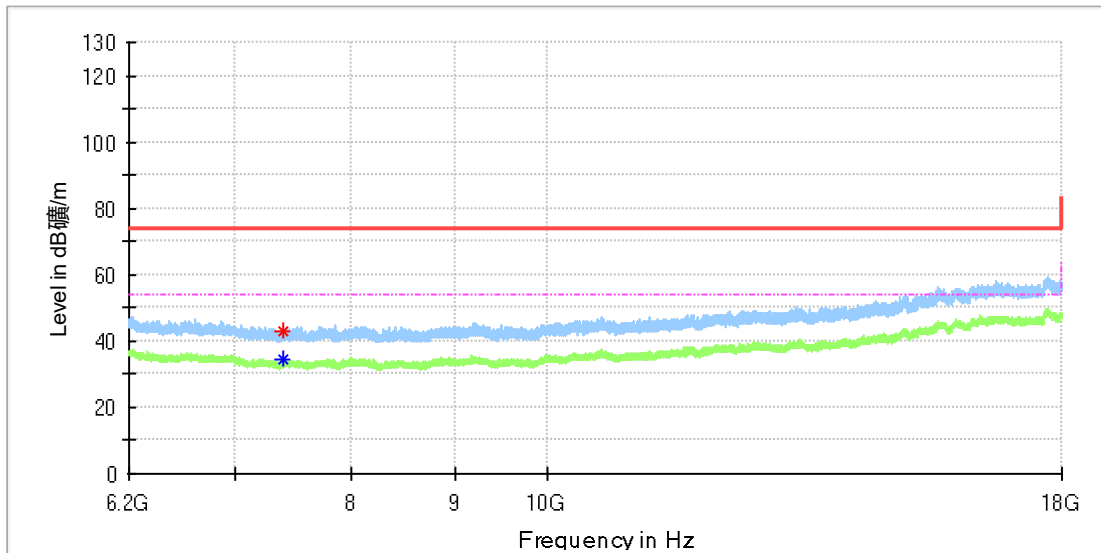
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4924.000000	50.97	---	74.00	23.03	100.0	H	257.0	11.8
4924.000000	---	41.83	54.00	12.17	100.0	H	257.0	11.8

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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EUT Information

EUT Name:	Control Extender
Model:	EL-IO-200
Test Mode:	Wi-Fi 2.4G 11b_High Channel
Test Voltage::	120V/60Hz
Remark:	Temp 23 Humi:48%
Test Standard:	FCC 15.247
Tested By:	Alano Qu
Reviewed By:	Terry Yin



Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
7388.358333	---	34.31	54.00	19.69	100.0	H	72.0	8.2
7394.750000	43.10	---	74.00	30.90	100.0	H	97.0	8.3

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
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