7.7.2 In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period

FCC §15.407(h)(2)(iii)

The steps below define the procedure to determine the above mentioned parameters when a radar Burst with a level equal to the DFS Detection Threshold is generated on the Operating Channel of the U-NII device.
A U-NII device operating as a Client Device will associate with the EUT (Master). The requisite MPEG video file ("TestFile.mpg" available on the NTIA website at the following link http://ntiacsd.ntia.doc.gov/dfs/) is streamed from the master device (AP) to the client.

Channel Closing Transmission Time - Measurement

A Type 1 waveform was introduced to the EUT, from which a 12 second transmission record was digitally captured, collecting nearly 250M samples of data, which included in excess of 600 ms of pre-trigger data. This Type 1 waveform had an integral marker built into its construction, marking the start of the radar waveform play, which directly triggered the PXI digitizer's data capture via the PXI backplane trigger bus.
The test system was set-up to capture all transmission data for access point events above a threshold level of -50 dBm. The test equipment time stamps all captured events with respect to T0 (zero time indicating the start of the measurements sequence) starting the 612.1 ms pre-trigger period followed by the radar type 1 burst period.

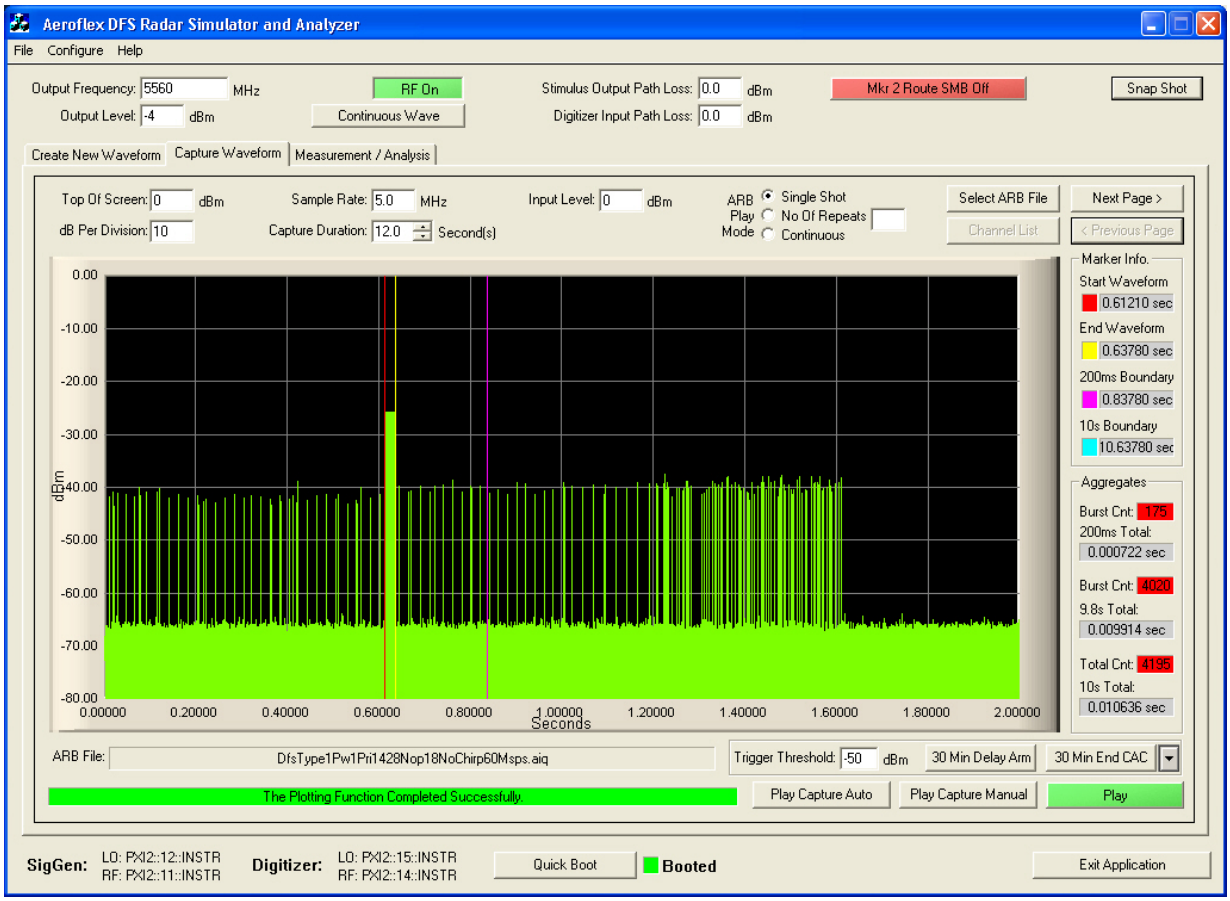
Radar (Type 1) Pre-trigger period =612.1 ms
Type 1 burst period =25.7 ms
Channel Closing Transmission Time starts immediately after the last radar pulse is transmitted i.e. 637.8 ms after the start of the trace capture period.

Therefore, pulses seen after this 637.8 ms boundary are identified and totaled to provide an aggregate total of transmissions in order to determine whether the EUT is compliant with the Channel Closing Transmission Time requirements as described in MO&O FCC 06-96. In this case, it was found that an aggregate total of 10.636 ms of transmission time accrued. This value is found at the right hand side at the foot of the following plot (10s Total).

Channel Closing Transmission Time = **10.636 mSecs (limit 260 mSecs)**

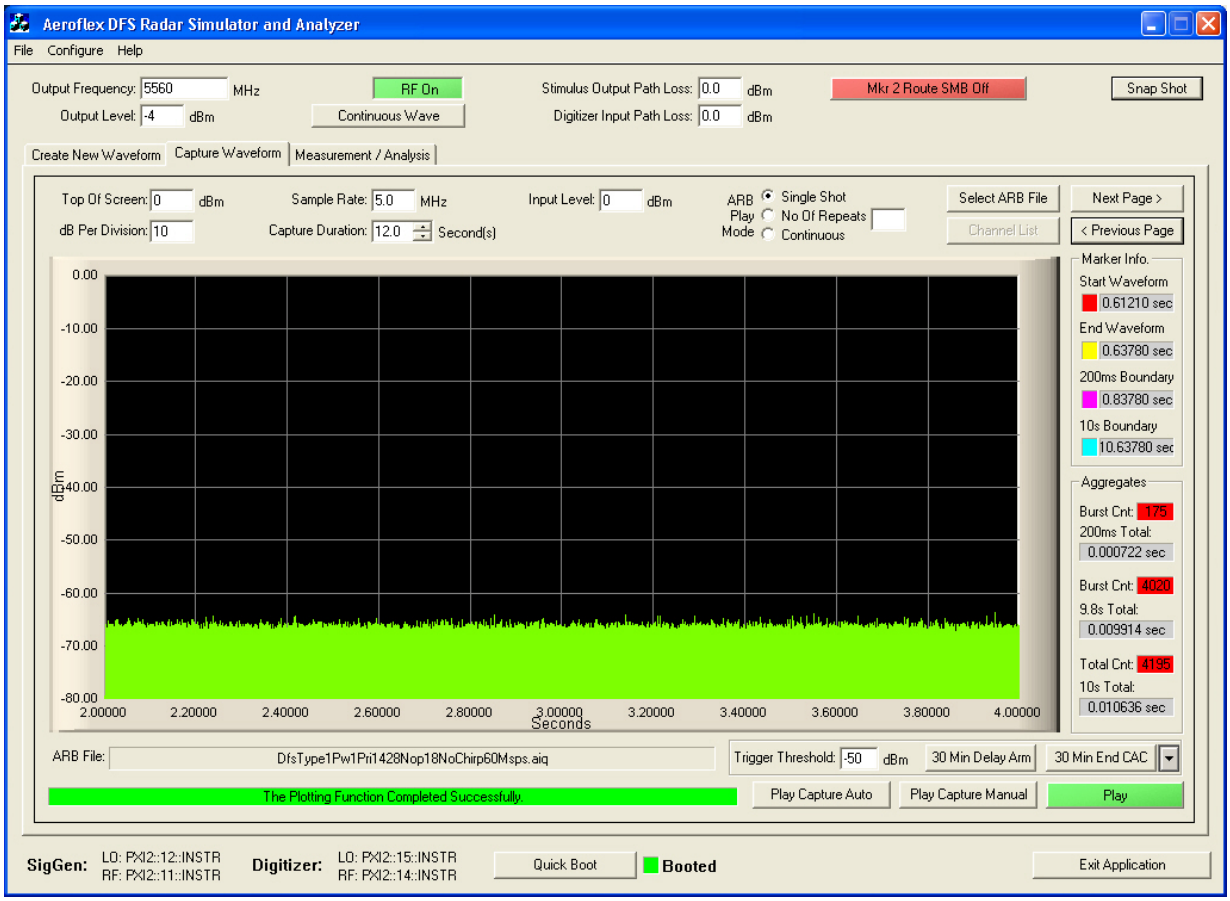
Channel Move Time = **0.9822 Secs (limit 10 Secs)**

Channel Move Time, Channel Closing Transmission Time for Type 1 Radar Captured by the Test System - Plot 1 of 6 (0-2 Seconds) Ch 112

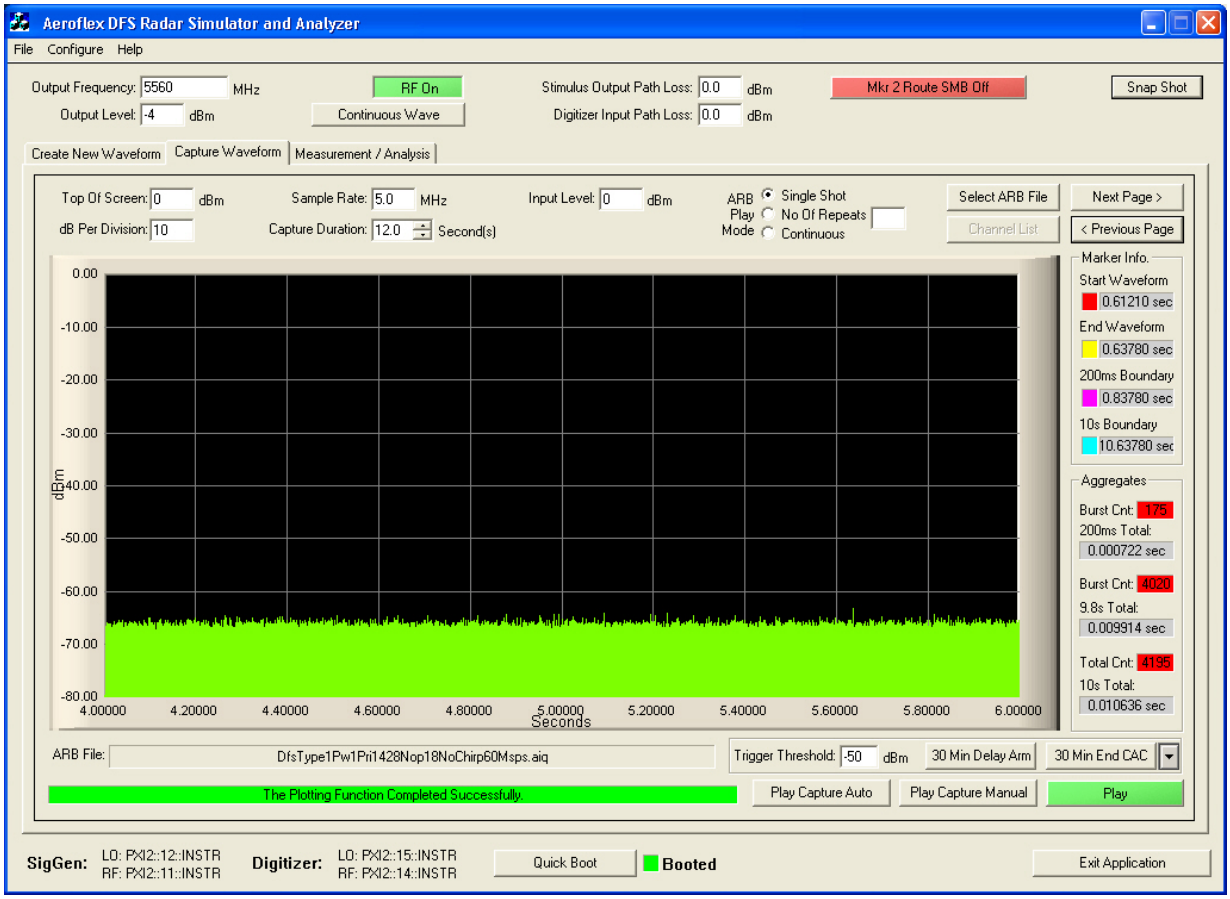


From the plot above it can be seen that the transmission activity within the 200 mS window is 0.722 mS (see 200 mS Total). From the following plots which shows all additional activity within the remained of the 10 sec measurement window it can be determined that the aggregate transmission within this period is 9.914 mS. This is less than the 60 mS limit.

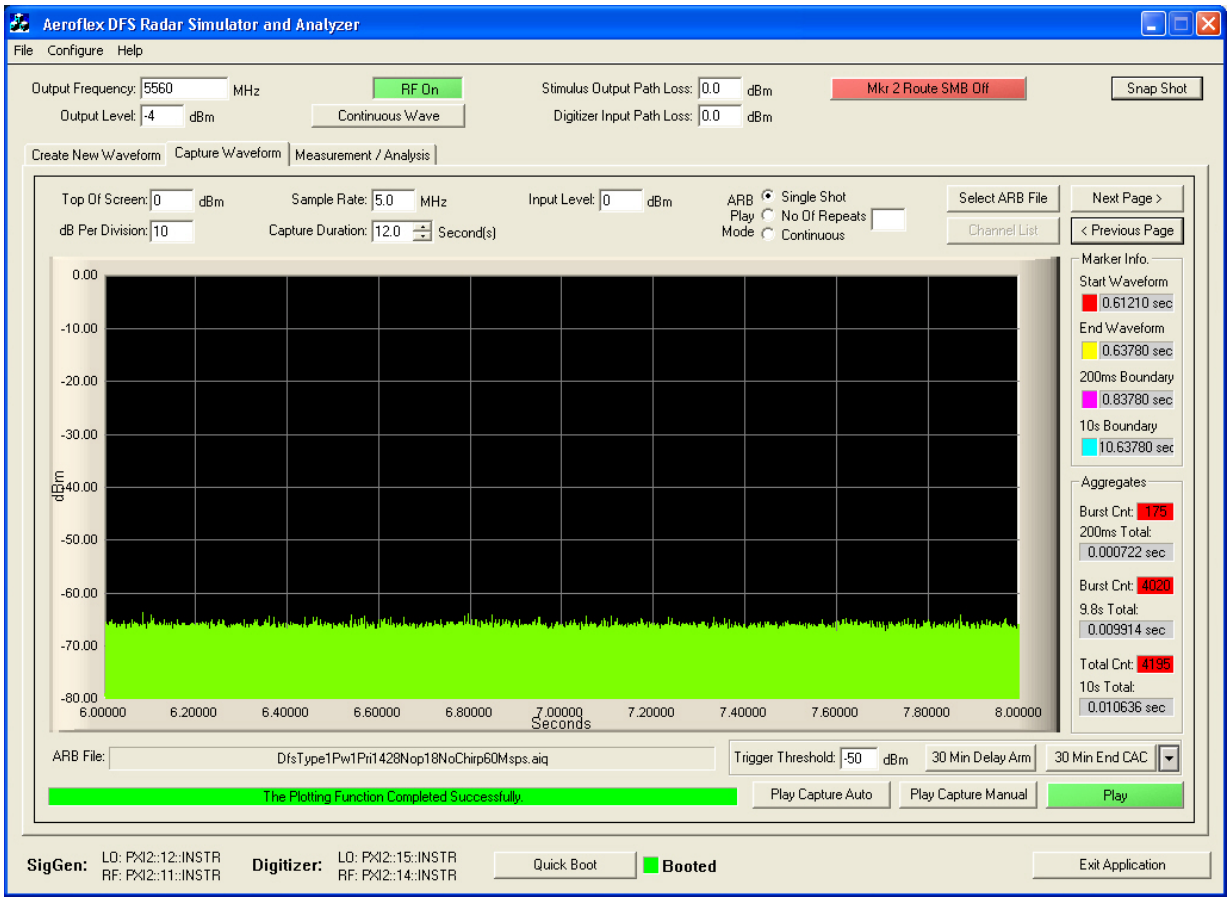
Channel Move Time, Channel Closing Transmission Time for Type 1 Radar Captured by the Test System - Plot 2 of 6 (2-4 Seconds) Ch 112



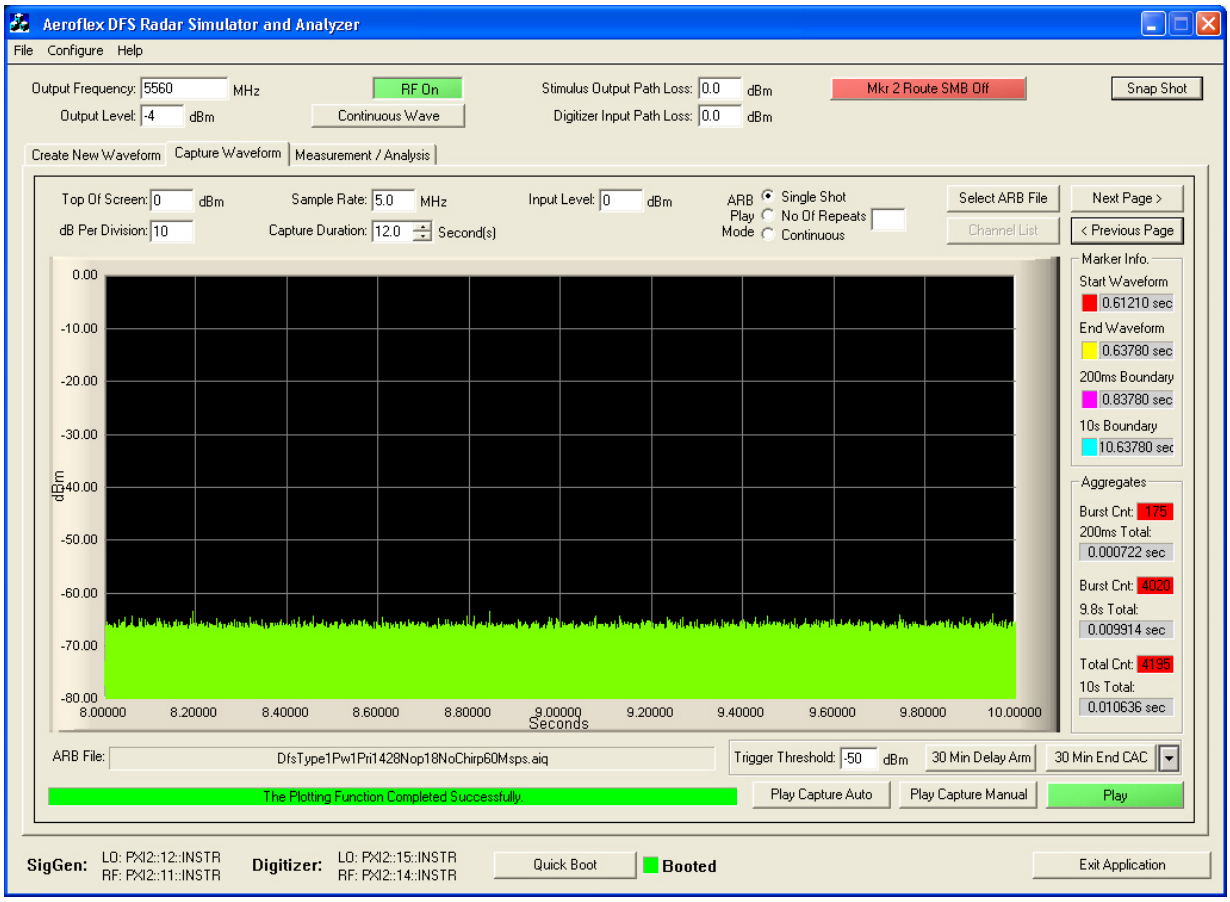
Channel Move Time, Channel Closing Transmission Time for Type 1 Radar Captured by the Test System - Plot 3 of 6 (4-6 Seconds) Ch 112



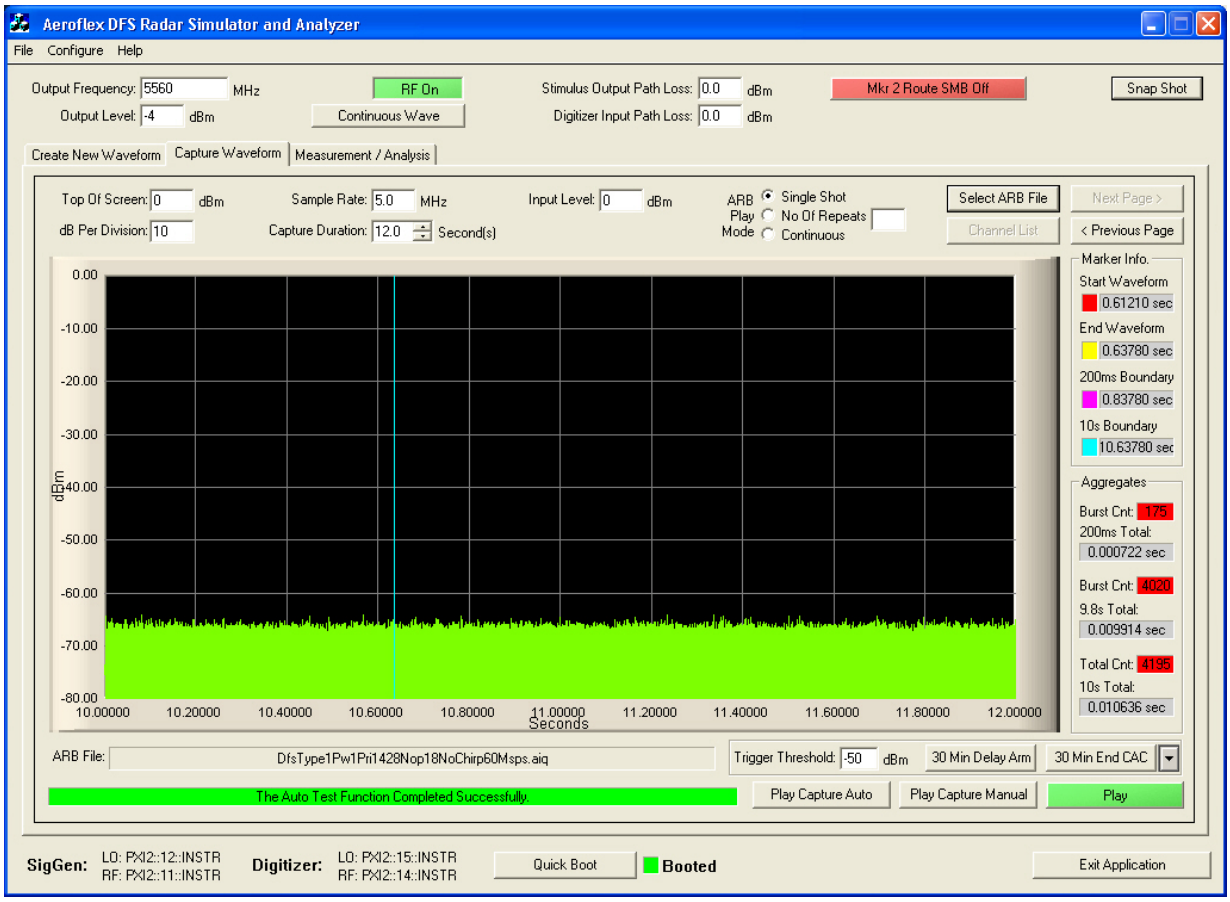
Channel Move Time, Channel Closing Transmission Time for Type 1 Radar Captured by the Test System - Plot 4 of 6 (6-8 Seconds) Ch 112



Channel Move Time, Channel Closing Transmission Time for Type 1 Radar Captured by the Test System - Plot 5 of 6 (8-10 Seconds) Ch 112



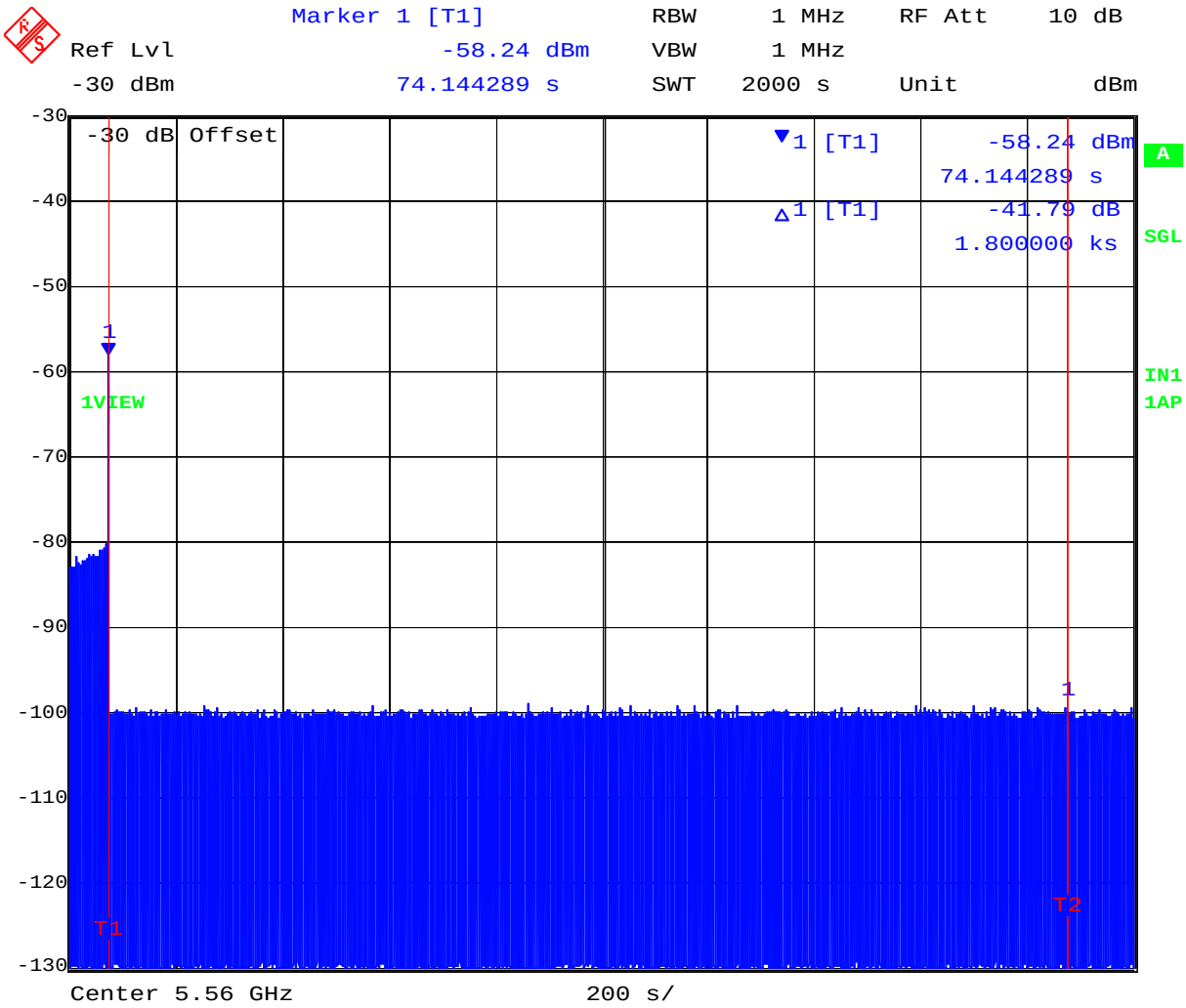
Channel Move Time, Channel Closing Transmission Time for Type 1 Radar Captured by the Test System - Plot 6 of 6 (10-12 Seconds) Ch 112



7.7.3 30 Minute Non-Occupancy Period

The EUT is monitored for more than 30 minutes following the channel close/move time to verify no transmissions resume on this Channel.

30 Minute Non-Occupancy Period Type 1 Radar Ch 112 - 5,560 MHz



Date: 11.JAN.2011 04:00:10

7.8 Radiated Spurious Emissions

Test Procedure

Testing was performed in a 3-meter anechoic chamber. Preliminary radiated emissions were measured on every azimuth and with the receiving antenna in both horizontal and vertical polarizations. Preliminary emissions were recorded with in Spectrum Analyzer mode, using a maximum peak detector while in peak hold mode.

Emissions nearest the limits were chosen for maximization and formal measurement using a CISPR Compliant receiver. Emissions above 1000 MHz are measured utilizing a CISPR compliant average detector with a tuned receiver, using a bandwidth of 1 MHz. Emissions from 30 MHz – 1000 MHz are measured utilizing a CISPR compliant quasi-peak detector with a tuned receiver, using a bandwidth of 120 kHz. Only the highest emissions relative to the limit are listed.

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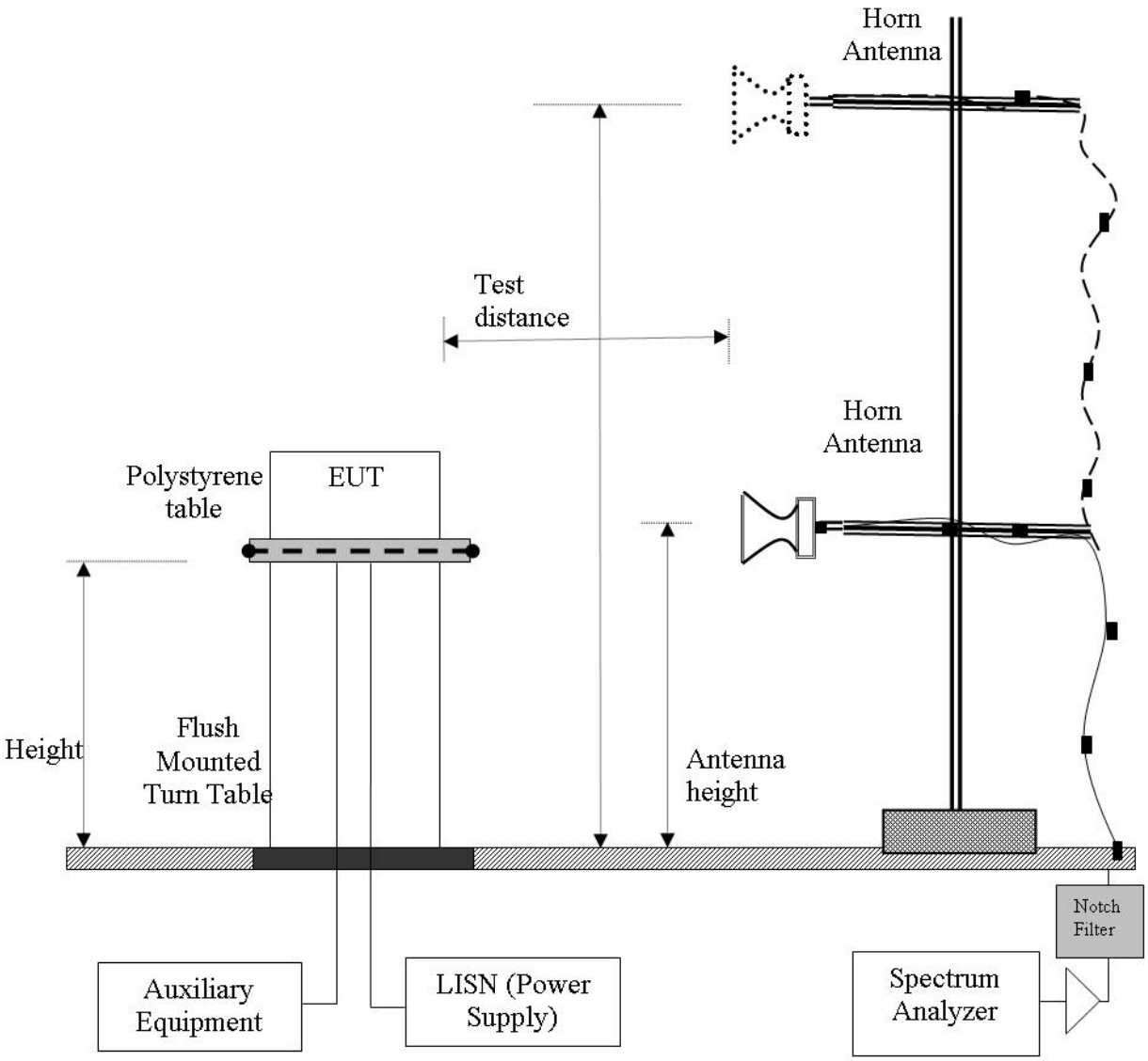
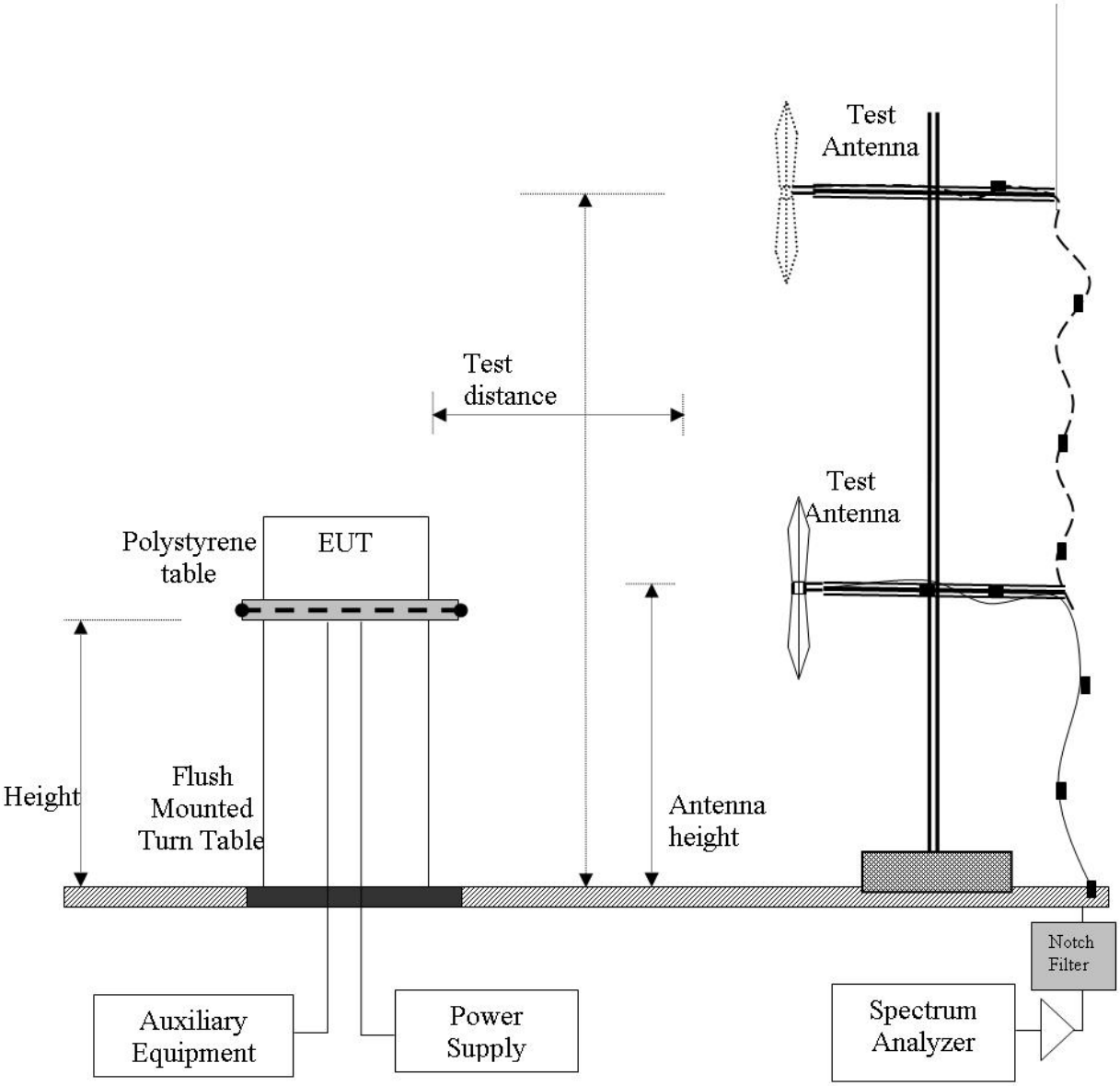
Radiated Emission Measurement Setup – Above 1 GHz



Radiated Emission Measurement Setup – Below 1 GHz



Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. All factors are included in the reported data.

FS = R + AF + CORR – FO

FS = Field Strength
R = Measured Spectrum analyzer Input Amplitude
AF = Antenna Factor
FO = Distance Falloff Factor

CORR = Correction Factor = CL – AG + NFL

CL = Cable Loss
AG = Amplifier Gain
NFL = Notch Filter Loss or Waveguide Loss

Field Strength Calculation Example:

Given receiver input reading of 51.5 dBμV; Antenna Factor of 8.5 dB; Cable Loss of 1.3 dB; Falloff Factor of 0 dB, an Amplifier Gain of 26 dB and Notch Filter Loss of 1 dB. The Field Strength of the measured emission is:

FS = 51.5 + 8.5 + 1.3 - 26.0 +1 = 36.3 dBμV/m

Conversion between dBμV/m (or dBμV) and μV/m (or μV) are done as:

Level (dBμV/m) = 20 * Log (level (μV/m))

40 dBμV/m = 100 μV/m
48 dBμV/m = 250 μV/m

Specification for FCC Part 15 Radiated Spurious Emissions

Limits

§15.407 (b)(2)
All emissions outside of the 5,150-5,350MHz band shall not exceed an EIRP of -27dBm/MHz.

§15.205 (a)
Except as shown in paragraph (d) of 15.205 (a), only spurious emissions are permitted in any of the frequency bands listed.

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

§15.209 (a)
Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table.

RSS-210 §A9.3(2)
For transmitters operating in the 5250-5350 MHz band, all emissions outside the 5150-5350 MHz band shall not exceed -27 dBm/MHz e.i.r.p. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band shall not exceed out of band emission limit of 27 dBm/MHz e.i.r.p. in the 5150-5250 MHz band in order to operate indoor/outdoor, or alternatively shall comply with the spectral power density for operation within the 5150-5250 MHz band and shall be labeled “for indoor use only”.

RSS-Gen §4.7
The search for unwanted emissions shall be from the lowest frequency internally generated or used in the device (local oscillator, intermediate of carrier frequency), or from 30 MHz , whichever is the lowest frequency, to the 5th harmonic of the highest frequency generated without exceeding 40 GHz.

RSS-Gen §6
Receiver Spurious Emission Standard
If a radiated measurement is made, all spurious emissions shall comply with the limits of the following Table. The resolution bandwidth of the spectrum analyzer shall be 100 kHz for spurious emission measurements below 1.0 GHz and 1.0 MHz for measurements above 1.0 GHz

§15.209 (a) Limit Matrix

Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance (meters)
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

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Specification for Industry Canada Receiver Spurious Emissions

RSS-Gen §4.8,
The search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (e.g. local oscillator, intermediate or carrier frequency), or 30 MHz, whichever is the higher, to at least 3 times the highest tunable or local oscillator frequency, whichever is the higher, without exceeding 40 GHz.

RSS-Gen §6
The following receiver spurious emission limits shall be complied with;
(a) If a radiated measurement is made, all spurious emissions shall comply with the limits of Table 1.

Frequency (MHz)	Field Strength (µV/m)	Field Strength (dBµV/m)	Measurement Distance (meters)
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Laboratory Measurement Uncertainty for Spectrum Measurement

Measurement Uncertainty	+5.6/ -4.5 dB

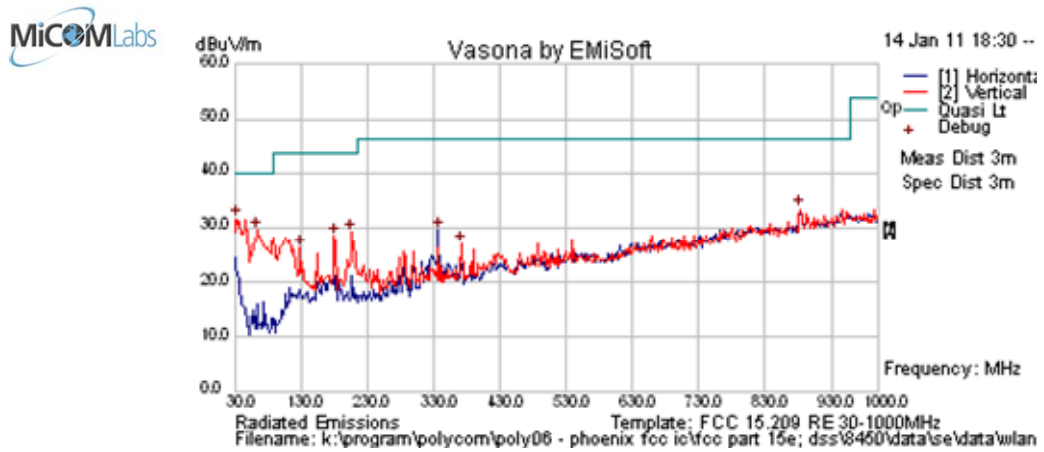
Traceability:

Method	Test Equipment Used
Work instruction WI-03	0287, 0193, 0342, 0158, 0303, 0304, 0134, 0310, 0312

7.8.1 Transmitter Radiated Spurious Emissions

All frequencies and modes were checked per section 15.407 for radio emissions below 1GHz.

Test Freq.	N/A	**Engineer**	EVF
Variant	WLAN: 802.11a; 6 Mbs	**Temp (ºC)**	21
Freq. Range	1000 - 18000 MHz	**Rel. Hum.(%)**	44
Power Setting	Utility Setting 24 - Maximum	**Press. (mBars)**	1013
Antenna	Integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Tx; WLAN=1, BT=0, BC=0, DK=0		

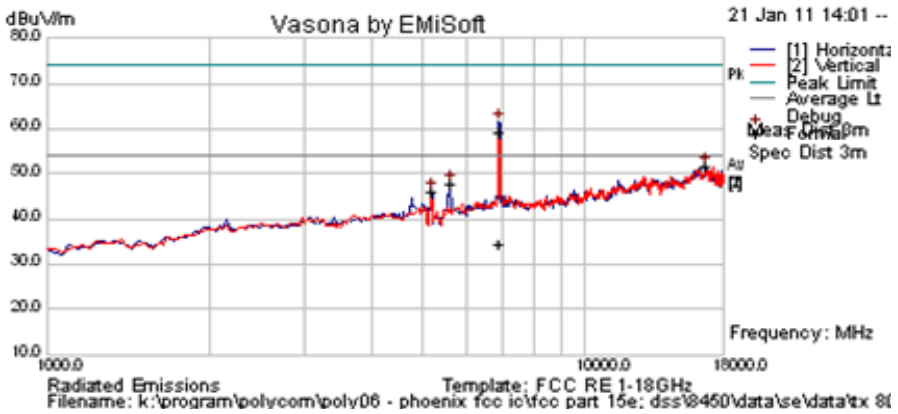


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
33.594	40.1	3.5	-12.0	31.6	Peak [Scan]	V	100	0	40.0	-8.4	Pass	DIG
63.651	48.9	3.9	-23.3	29.5	Peak [Scan]	V	100	0	40.0	-10.5	Pass	DIG
883.367	33.5	7.3	-7.3	33.5	Peak [Scan]	H	300	0	46	-12.6	Pass	AMB
206.905	43.8	4.8	-19.5	29.1	Peak [Scan]	V	100	0	43.5	-14.4	Pass	DIG
180.000	43.5	4.7	-19.7	28.5	Peak [Scan]	V	100	0	43.5	-15.1	Pass	DIG
337.996	40.4	5.4	-16.2	29.6	Peak [Scan]	H	100	0	46	-16.4	Pass	DIG
130.006	39.1	4.4	-17.2	26.3	Peak [Scan]	V	100	0	43.5	-17.2	Pass	DIG
372.273	36.8	5.6	-15.3	27.1	Peak [Scan]	V	400	0	46	-18.9	Pass	DIG

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; AMB-Ambient
	NRB = Non-Restricted Band. RB = Restricted Band.

Test Freq.	5180 MHz	**Engineer**	EVF
Variant	802.11a; 6 Mbs	**Temp (ºC)**	19.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	14 in test utility	**Press. (mBars)**	1005
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 36 Transmit; WLAN=1, BT=0, BC=0, DK=0		

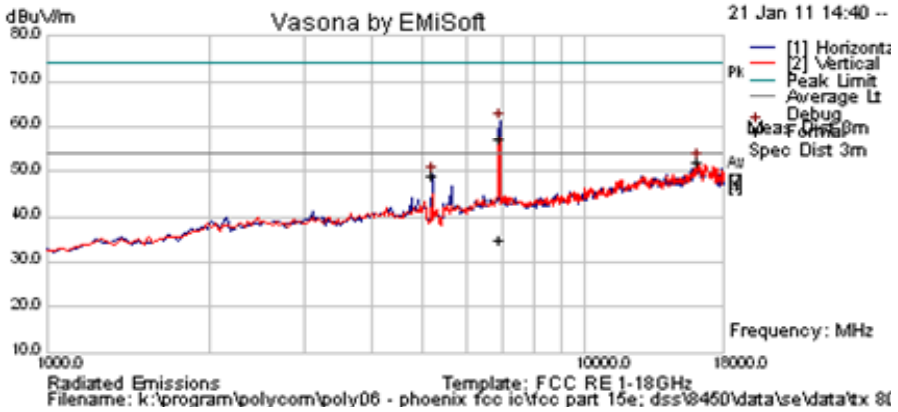


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass / Fail	Comments
6923.126	59.7	5.3	-5.5	59.5	Peak Max	H	135	361	68.2	-8.7	Pass	NRB
16807.615	41.4	8.6	1.6	51.6	Peak [Scan]	H	150	0	54	-2.4	Pass	noise floor
5611.784	51.4	4.7	-8.5	47.6	Peak [Scan]	H	100	0	68.2	-20.6	Pass	NRB
5175.631	51.3	4.6	-9.7	46.2	Peak [Scan]	H	--	--	--	--	n/a	FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5200 MHz	**Engineer**	EVF
Variant	802.11a; 6 Mbs	**Temp (ºC)**	19.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	14 in test utility	**Press. (mBars)**	1005
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 40 Transmit; WLAN=1, BT=0, BC=0, DK=0		

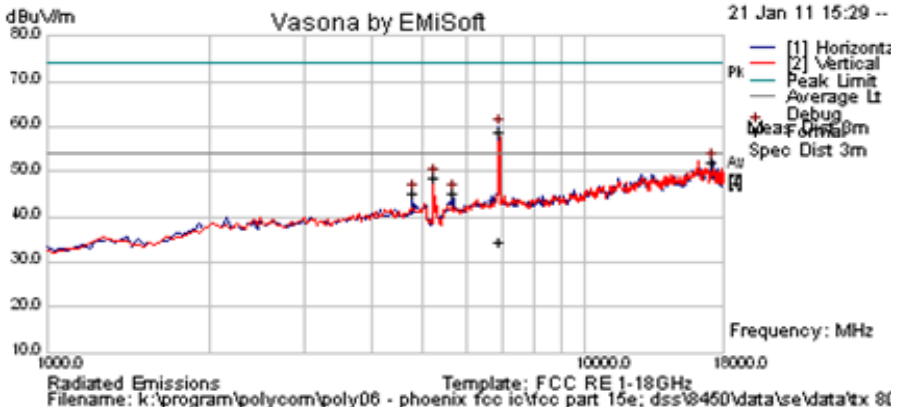


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
6911.022	57.5	5.3	-5.6	57.2	Peak Max	H	201	0	68.2	-11.0	Pass	NRB
16160.321	42.0	9.0	1.0	51.9	Peak [Scan]	V	150	0	54	-2.1	Pass	noise floor
5201.843	54.1	4.6	-9.4	49.2	Peak [Scan]	H	--	--	--	--	n/a	FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5240 MHz	**Engineer**	EVF
Variant	802.11a; 6 Mbs	**Temp (ºC)**	19.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	14 in test utility	**Press. (mBars)**	1005
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 48 Transmit; WLAN=1, BT=0, BC=0, DK=0		

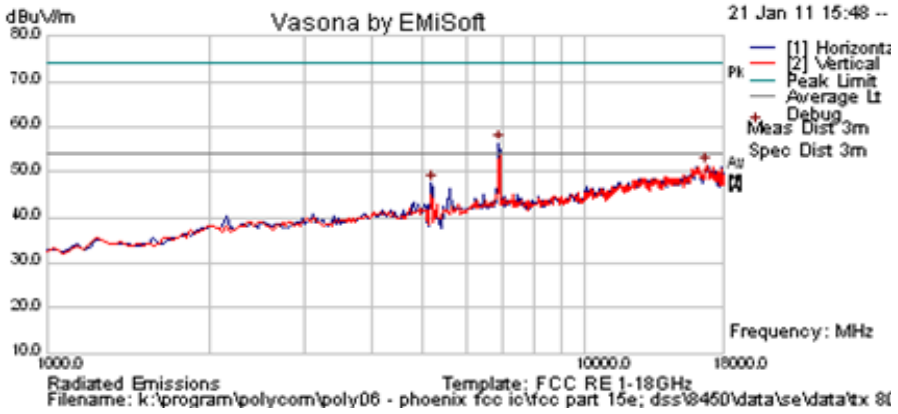


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
6916.793	58.9	5.3	-5.6	58.7	Peak Max	H	180	353	68.2	-9.5	Pass	NRB
17250.501	42.0	8.6	1.6	52.2	Peak [Scan]	H	200	0	54	-1.8	Pass	noise floor
5234.630	53.7	4.6	-9.6	48.7	Peak [Scan]	V	--	--	--	--	n/a	FUND
5676.663	48.8	4.7	-8.1	45.4	Peak [Scan]	H	150	0	68.2	-22.9	Pass	NRB
4783.881	50.1	4.4	-9.5	45.1	Peak [Scan]	H	98	0	54	-8.9	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5180 MHz	**Engineer**	EVF
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	19.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	14 in test utility	**Press. (mBars)**	1005
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 36 Transmit; WLAN=1, BT=0, BC=0, DK=0		

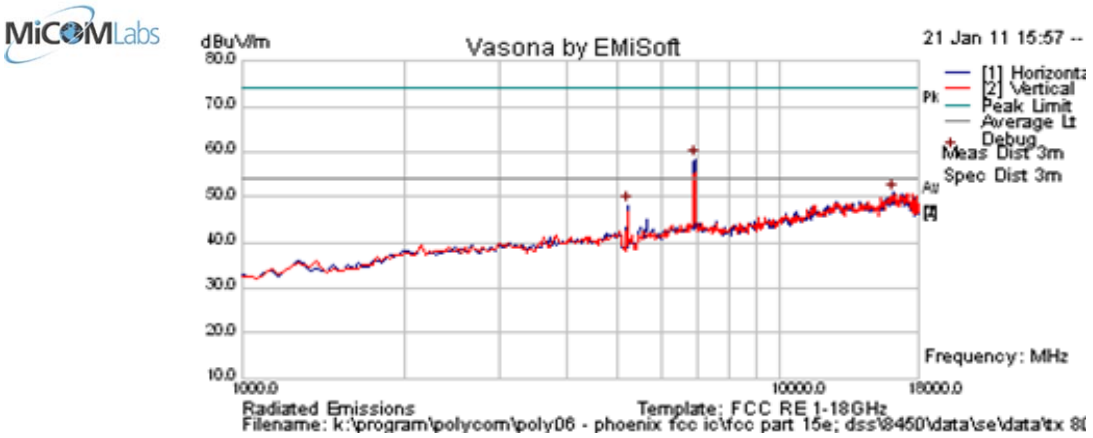


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
6916.473	56.5	5.3	-5.6	56.3	Peak [Scan]	H	150	0	68.2	-12.0	Pass	NRB
16773.547	41.0	8.6	1.7	51.3	Peak [Scan]	V	200	0	54.0	-2.7	Pass	noise floor
5174.028	52.6	4.6	-9.7	47.6	Peak [Scan]	H	--	--	--	--	n/a	FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5200 MHz	**Engineer**	EVF
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	19.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	14 in test utility	**Press. (mBars)**	1005
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 40 Transmit; WLAN=1, BT=0, BC=0, DK=0		

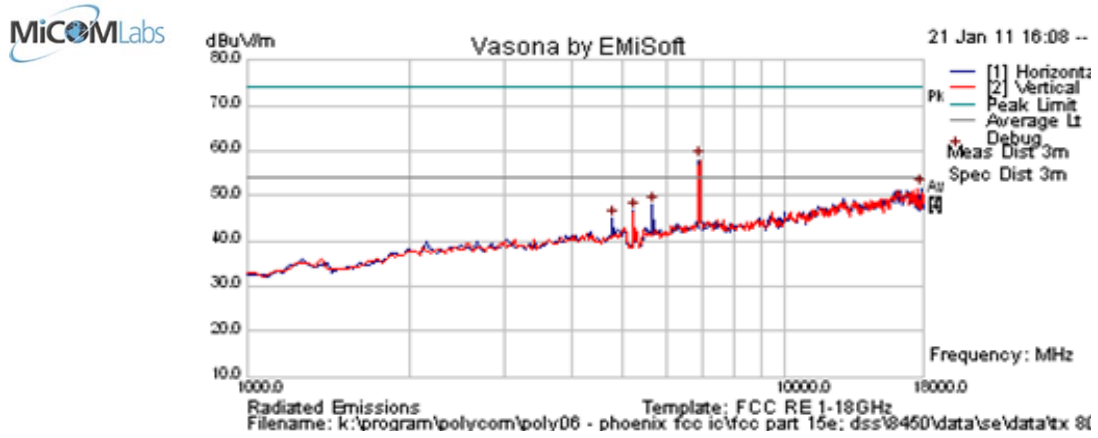


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
6916.954	58.6	5.3	-5.6	58.4	Peak [Scan]	H	150	0	68.2	-9.9	Pass	NRB
16194.389	40.6	8.9	1.3	50.8	Peak [Scan]	H	200	0	54.0	-3.2	Pass	noise floor
5201.363	52.9	4.6	-9.4	48.1	Peak [Scan]	H	--	--	--	--	n/a	FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5240 MHz	**Engineer**	EVF
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	19.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	14 in test utility	**Press. (mBars)**	1005
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 48 Transmit; WLAN=1, BT=0, BC=0, DK=0		

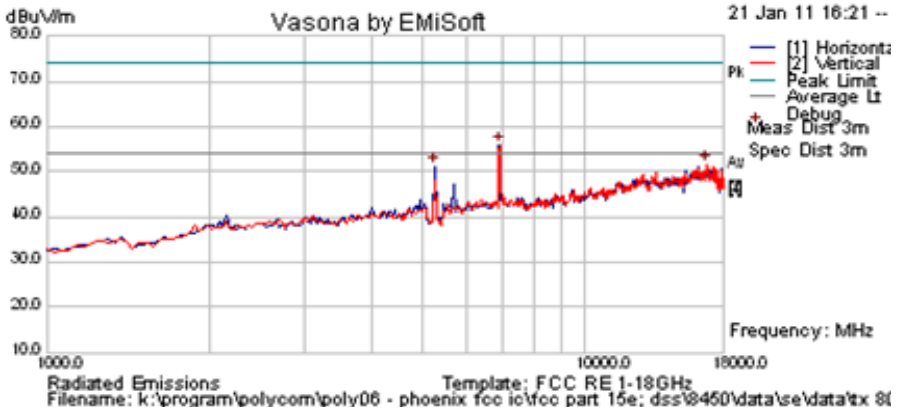


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
6913.507	58.2	5.3	-5.6	58.0	Peak [Scan]	H	150	0	68.2	-10.3	Pass	NRB
17897.796	41.8	8.8	0.9	51.5	Peak [Scan]	H	150	0	54.0	-2.6	Pass	noise floor
5676.673	51.4	4.7	-8.1	48.0	Peak [Scan]	H	150	0	68.2	-20.3	Pass	NRB
5235.190	51.6	4.6	-9.6	46.6	Peak [Scan]	H	--	--	--	--	n/a	FUND
4781.563	50.0	4.4	-9.5	44.9	Peak [Scan]	H	150	0	54	-9.1	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5260 MHz	**Engineer**	EVF
Variant	802.11a; 6 Mbs	**Temp (ºC)**	19.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	38
Power Setting	16 in test utility	**Press. (mBars)**	1005
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 52 Transmit; WLAN=1, BT=0, BC=0, DK=0		

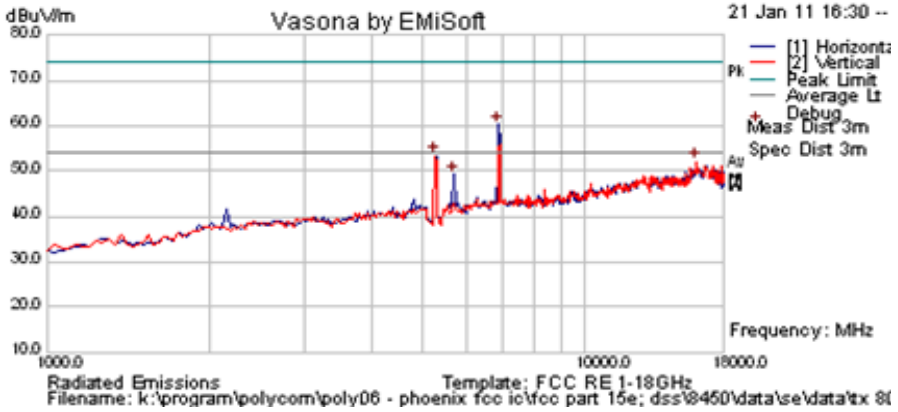


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
6920.200	56.0	5.3	-5.5	55.8	Peak [Scan]	H	150	0	68.2	-12.5	Pass	NRB
16773.547	41.3	8.6	1.7	51.6	Peak [Scan]	V	100	0	54.0	-2.4	Pass	noise floor
5264.128	56.1	4.6	-9.6	51.1	Peak [Scan]	H	--	--	--	--	n/a	FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5280 MHz	**Engineer**	EVF
Variant	802.11a; 6 Mbs	**Temp (ºC)**	19.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	38
Power Setting	16 in test utility	**Press. (mBars)**	1005
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 56 Transmit; WLAN=1, BT=0, BC=0, DK=0		

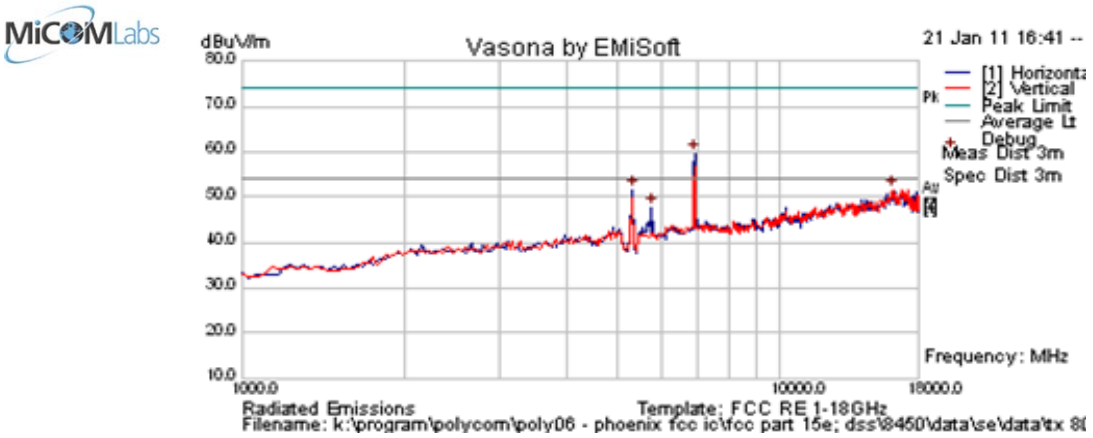


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
6919.760	60.4	5.3	-5.6	60.2	Peak [Scan]	H	100	0	68.2	-8.0	Pass	NRB
5280.802	58.3	4.6	-9.7	53.3	Peak [Scan]	V	--	--	--	--	n/a	FUND
16058.116	42.3	9.0	0.8	52.0	Peak [Scan]	V	100	0	54	-2.0	Pass	noise floor
5720.120	52.9	4.7	-8.4	49.2	Peak [Scan]	H	100	0	68.2	-19.0	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5320 MHz	**Engineer**	EVF
Variant	802.11a; 6 Mbs	**Temp (ºC)**	19.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	38
Power Setting	16 in test utility	**Press. (mBars)**	1005
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 64 Transmit; WLAN=1, BT=0, BC=0, DK=0		

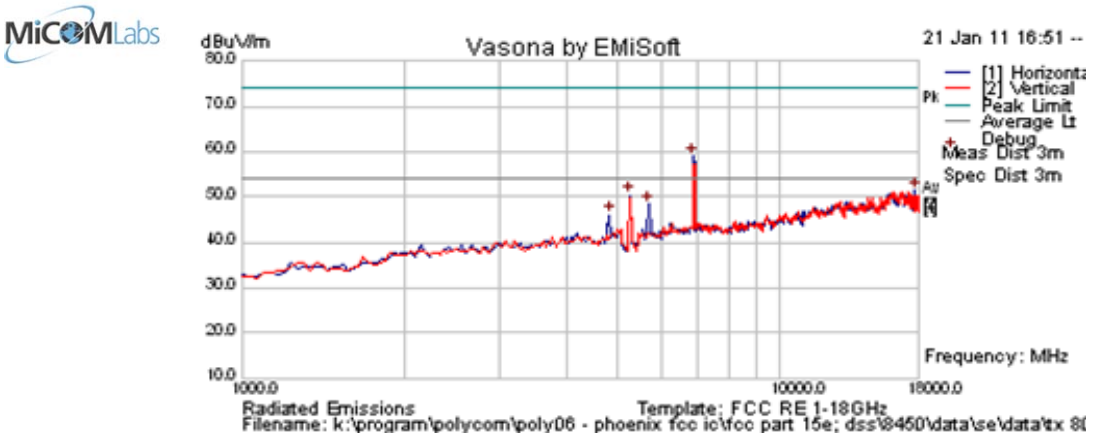


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
6922.725	59.9	5.3	-5.5	59.7	Peak [Scan]	H	150	0	68.2	-8.5	Pass	NRB
5317.675	56.6	4.6	-9.6	51.6	Peak [Scan]	H	--	--	--	--	n/a	FUND
16228.457	41.6	8.9	1.1	51.6	Peak [Scan]	V	100	0	54	-2.4	Pass	noise floor
5763.367	51.3	4.8	-8.3	47.7	Peak [Scan]	H	150	0	68.2	-20.5	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5260 MHz	**Engineer**	EVF
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	38
Power Setting	16 in test utility	**Press. (mBars)**	1005
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 52 Transmit; WLAN=1, BT=0, BC=0, DK=0		

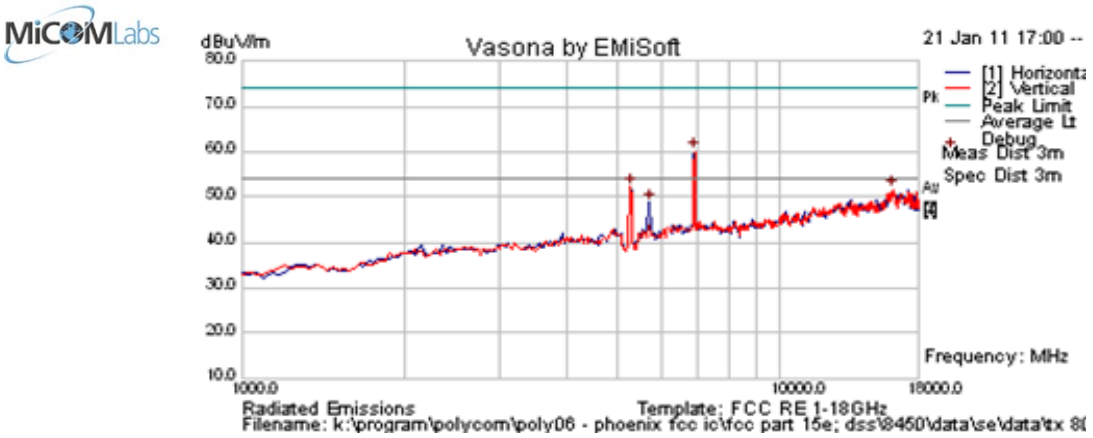


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
6921.844	59.3	5.3	-5.5	59.1	Peak [Scan]	H	100	0	68.2	-9.1	Pass	NRB
17795.591	42.0	8.8	0.5	51.3	Peak [Scan]	H	100	0	54.0	-2.7	Pass	noise floor
5265.371	55.2	4.6	-9.6	50.2	Peak [Scan]	H	--	--	--	--	n/a	FUND
5698.417	51.7	4.7	-8.1	48.3	Peak [Scan]	H	100	0	68.2	-20.0	Pass	NRB
4815.631	50.8	4.5	-9.3	45.9	Peak [Scan]	H	150	0	54	-8.1	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5280 MHz	**Engineer**	EVF
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	38
Power Setting	16 in test utility	**Press. (mBars)**	1005
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 56 Transmit; WLAN=1, BT=0, BC=0, DK=0		

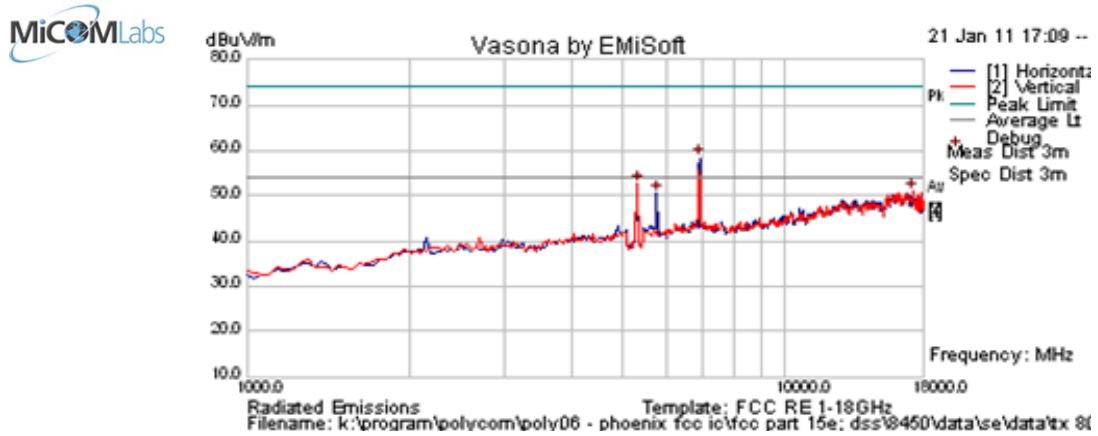


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
6920.000	60.3	5.3	-5.6	60.1	Peak [Scan]	V	200	0	68.2	-8.1	Pass	NRB
5282.164	57.3	4.6	-9.7	52.2	Peak [Scan]	H	--	--	--	--	n/a	FUND
16228.457	41.6	8.9	1.1	51.6	Peak [Scan]	V	200	0	54	-2.4	Pass	noise floor
5720.000	52.4	4.7	-8.4	48.7	Peak [Scan]	H	100	0	68.2	-19.5	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5320 MHz	**Engineer**	EVF
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	38
Power Setting	16 in test utility	**Press. (mBars)**	1005
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 64 Transmit; WLAN=1, BT=0, BC=0, DK=0		

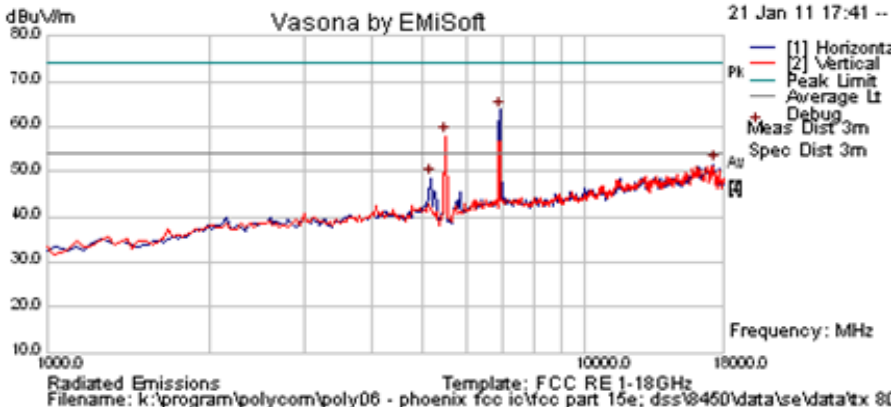


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
6918.798	58.7	5.3	-5.6	58.5	Peak [Scan]	H	150	0	68.2	-9.8	Pass	NRB
5321.202	57.5	4.6	-9.6	52.5	Peak [Scan]	V	--	--	--	--	n/a	FUND
17250.501	40.7	8.6	1.6	50.9	Peak [Scan]	V	100	0	54	-3.1	Pass	noise floor
5769.033	54.0	4.8	-8.3	50.5	Peak [Scan]	V	98	360	68.2	-17.8	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5500 MHz	**Engineer**	EVF
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	38
Power Setting	16 in test utility	**Press. (mBars)**	1005
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 100 Transmit; WLAN=1, BT=0, BC=0, DK=0		

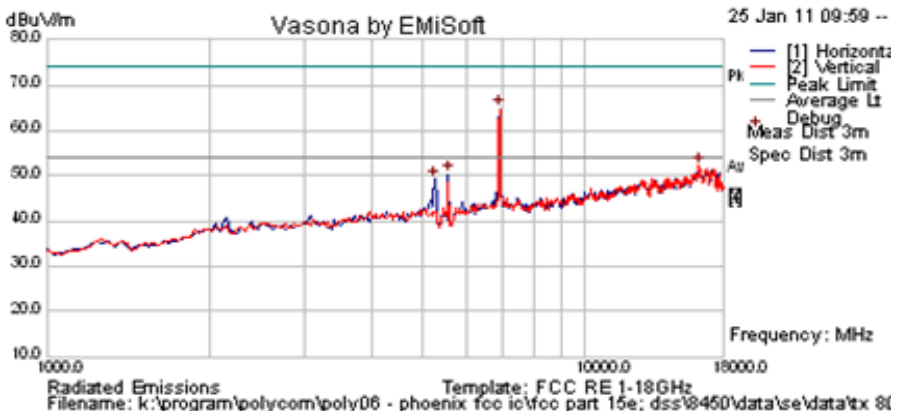


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
6920.321	63.9	5.3	-5.5	63.7	Peak [Scan]	H	100	0	68.2	-4.5	Pass	NRB
5498.236	62.1	4.6	-8.7	58.0	Peak [Scan]	H	--	--	--	--	n/a	FUND
17284.569	41.3	8.6	1.6	51.5	Peak [Scan]	H	200	0	54	-2.5	Pass	noise floor
5156.152	52.9	4.6	-9.0	48.6	Peak [Scan]	H	100	0	68.2	-19.7	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5580 MHz	**Engineer**	EVF
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	38
Power Setting	16 in test utility	**Press. (mBars)**	1005
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 116 Transmit; WLAN=1, BT=0, BC=0, DK=0		

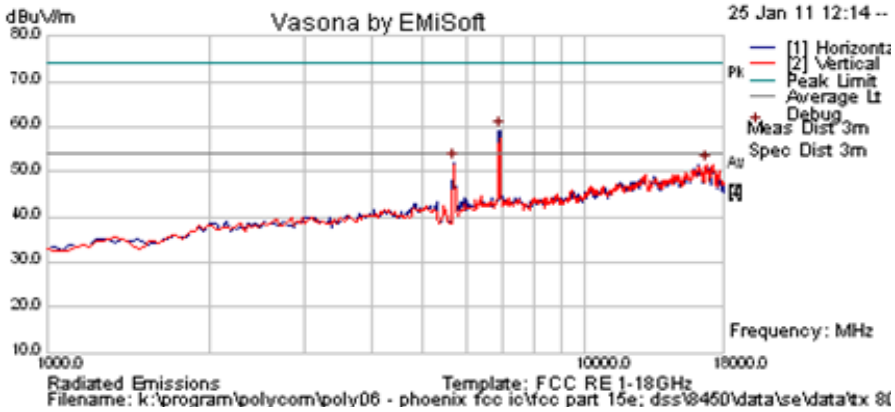


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
6915.591	65.6	5.3	-5.6	65.4	Peak	H	98	0	68.2	-2.8	Pass	NRB
16262.525	42.2	8.9	1.0	52.2	Peak [Scan]	V	100	0	54.0	-1.8	Pass	noise floor
5573.868	54.0	4.7	-8.5	50.2	Peak [Scan]	H	--	--	--	--	n/a	FUND
5231.102	54.1	4.6	-9.5	49.2	Peak [Scan]	H	150	0	68.2	-19.1	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5700 MHz	**Engineer**	EVF
Variant	802.11a; 6 Mbs	**Temp (ºC)**	20
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	38
Power Setting	16 in test utility	**Press. (mBars)**	1005
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 140 Transmit; WLAN=1, BT=0, BC=0, DK=0		

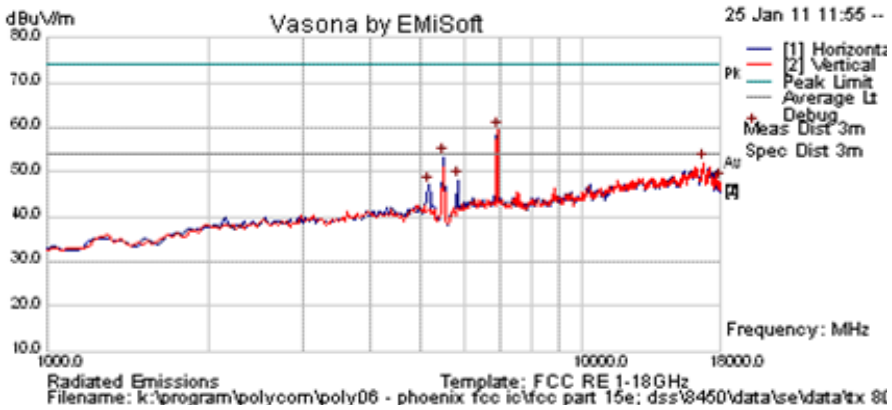


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
6927.134	64.4	5.3	-5.5	64.2	Peak	H	98	0	68.2	-4.0	Pass	NRB
5701.343	55.3	4.7	-8.1	51.9	Peak [Scan]	H	--	--	--	--	n/a	FUND
16807.615	41.4	8.6	1.6	51.6	Peak [Scan]	V	200	0	54	-2.4	Pass	noise floor

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5500 MHz	**Engineer**	EVF
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	19.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	35
Power Setting	16 in test utility	**Press. (mBars)**	1007
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 100 Transmit; WLAN=1, BT=0, BC=0, DK=0		

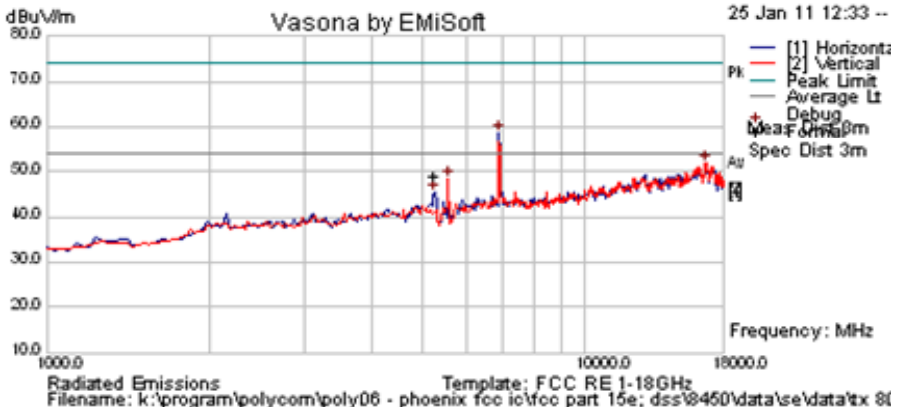


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass / Fail	Comments
6917.515	65.6	5.3	-5.6	65.4	Peak	H	98	0	68.2	-2.8	Pass	NRB
5495.11	57.3	4.6	-8.8	53.2	Peak [Scan]	H	--	--	--	--	n/a	FUND
16807.615	41.8	8.6	1.6	52.0	Peak [Scan]	V	100	0	54	-2.0	Pass	noise floor
5843.727	51.8	4.8	-8.5	48.1	Peak [Scan]	H	100	0	68.2	-20.2	Pass	NRB
5156.373	51.4	4.6	-9.0	47.1	Peak [Scan]	H	100	0	68.2	-21.2	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5580 MHz	**Engineer**	EVF
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	19.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	35
Power Setting	16 in test utility	**Press. (mBars)**	1007
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 116 Transmit; WLAN=1, BT=0, BC=0, DK=0		

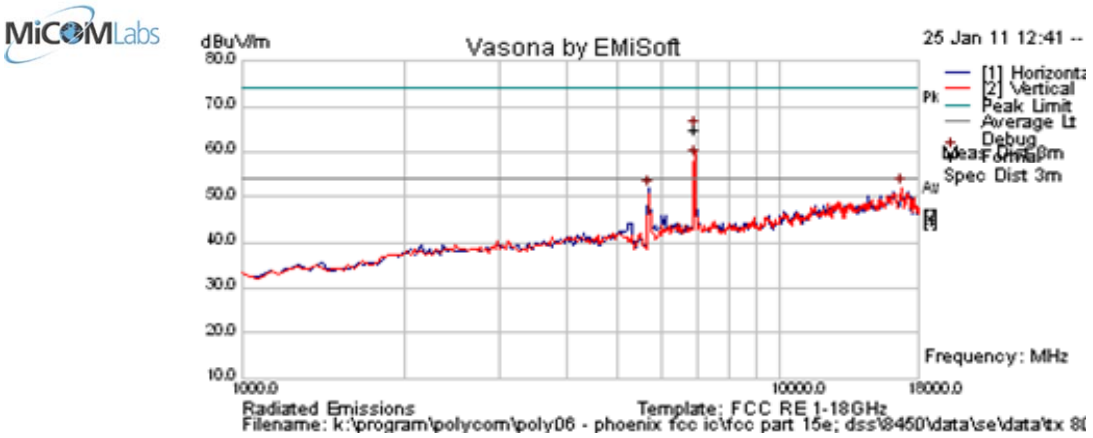


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
6919.279	58.8	5.3	-5.6	58.6	Peak [Scan]	H	150	0	68.2	-9.7	Pass	NRB
16773.547	41.4	8.6	1.7	51.7	Peak [Scan]	V	150	0	54.0	-2.3	Pass	noise floor
5576.152	52.0	4.7	-8.5	48.2	Peak [Scan]	V	--	--	--	--	n/a	FUND
5231.343	50.4	4.6	-9.6	45.4	Peak [Scan]	H	100	0	68.2	-22.8	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Test Freq.	5700 MHz	**Engineer**	EVF
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	19.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	35
Power Setting	16 in test utility	**Press. (mBars)**	1007
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 140 Transmit; WLAN=1, BT=0, BC=0, DK=0		



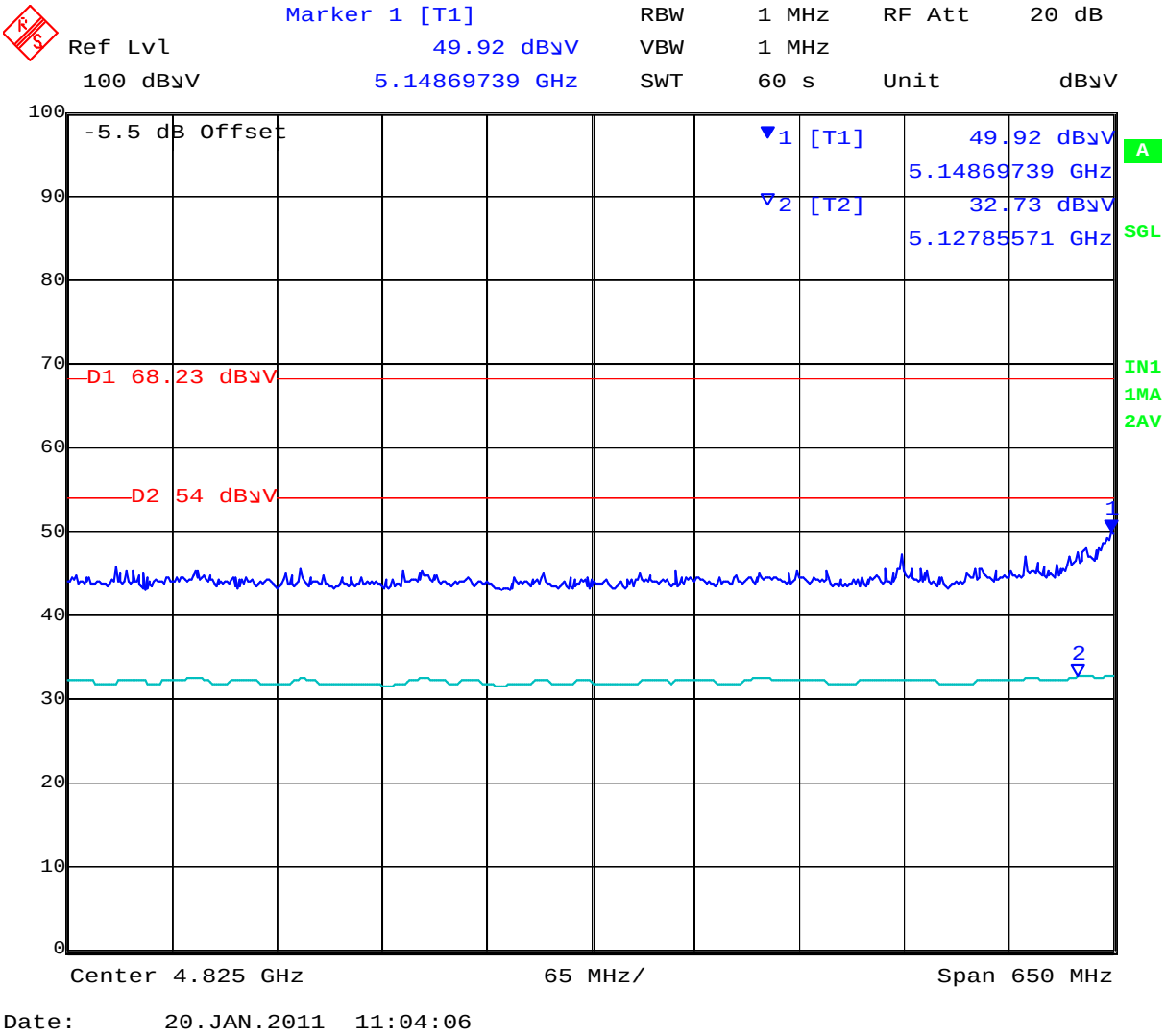
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
16773.547	41.7	8.6	1.7	52.0	Peak [Scan]	V	100	0	54.0	-2.0	Pass	noise floor
5701.844	55.2	4.7	-8.1	51.8	Peak [Scan]	H	--	--	--	--	n/a	FUND
6924.502	65.0	5.3	-5.5	64.8	Peak	H	98	0	68.2	-3.4	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

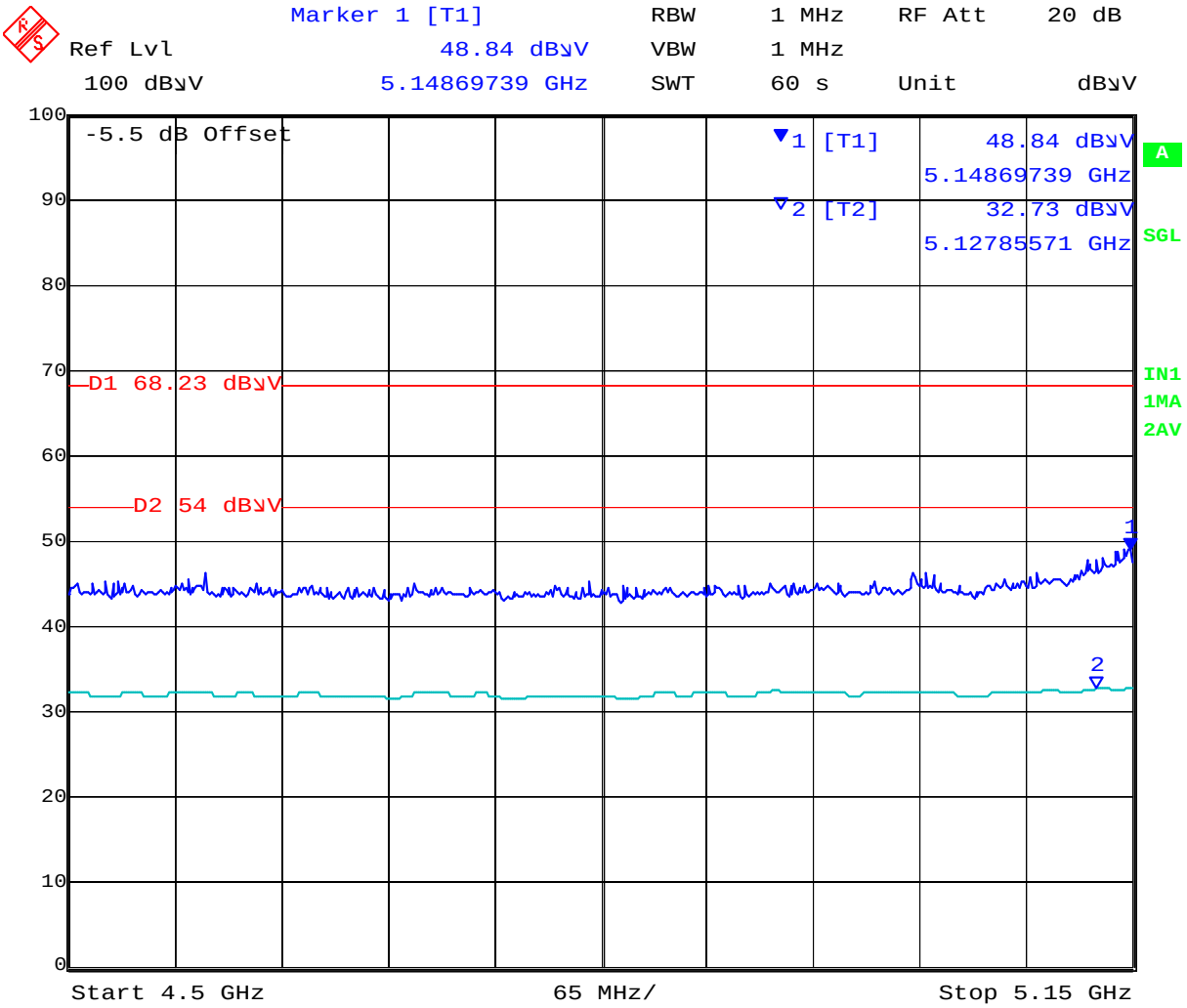
7.8.2 Band-Edge Measurements

8450 Band Edge Channel 36 - 5180 MHz 802.11a 4500-5150 MHz Pwr=14 Hor Hght=98 Ang=-10



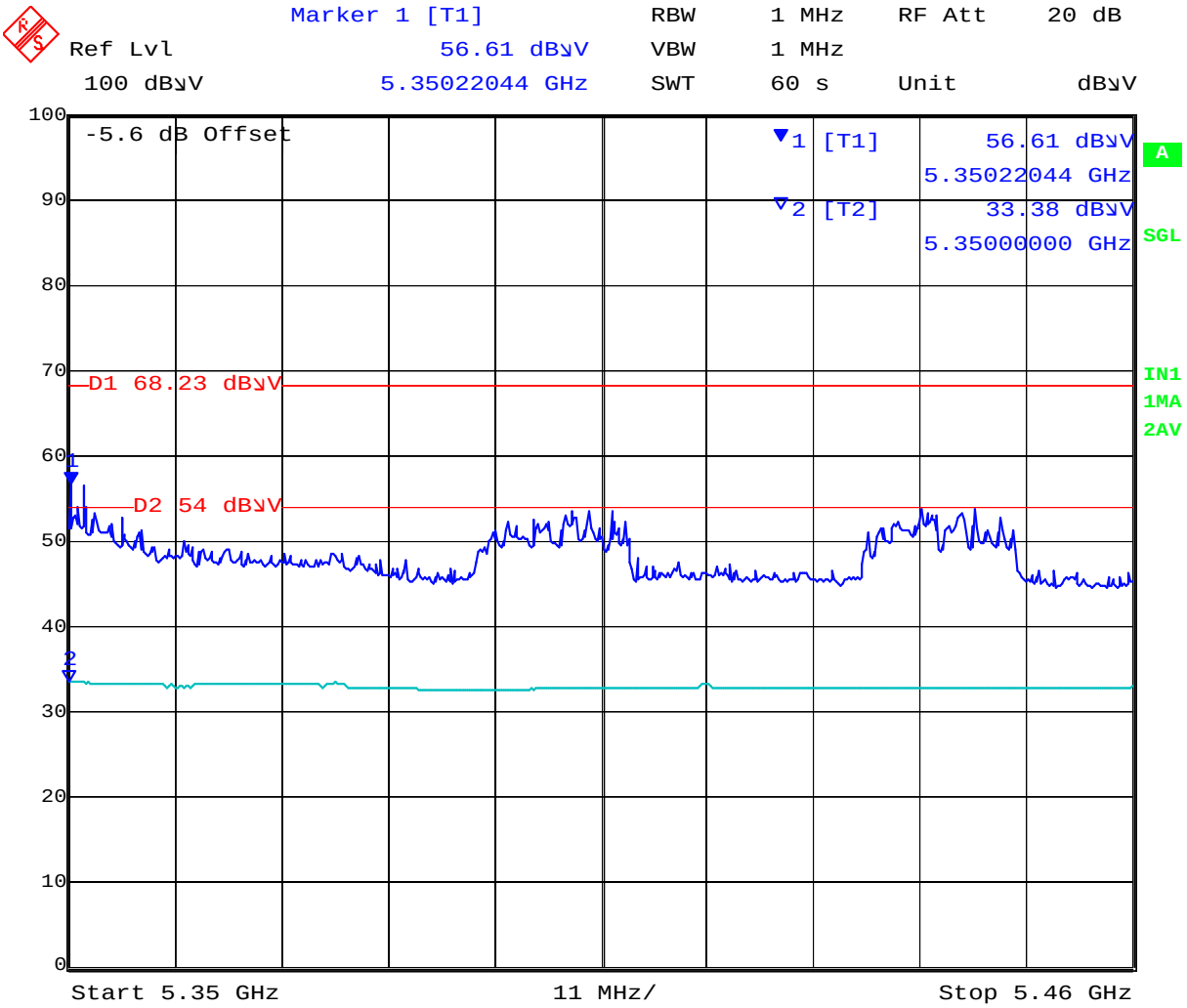
Date: 20.JAN.2011 11:04:06

8450 Band Edge Channel 36 - 5180 MHz 802.11n HT-20 4500-5150 MHz Pwr=14 Hor Hght=98 Ang=-10



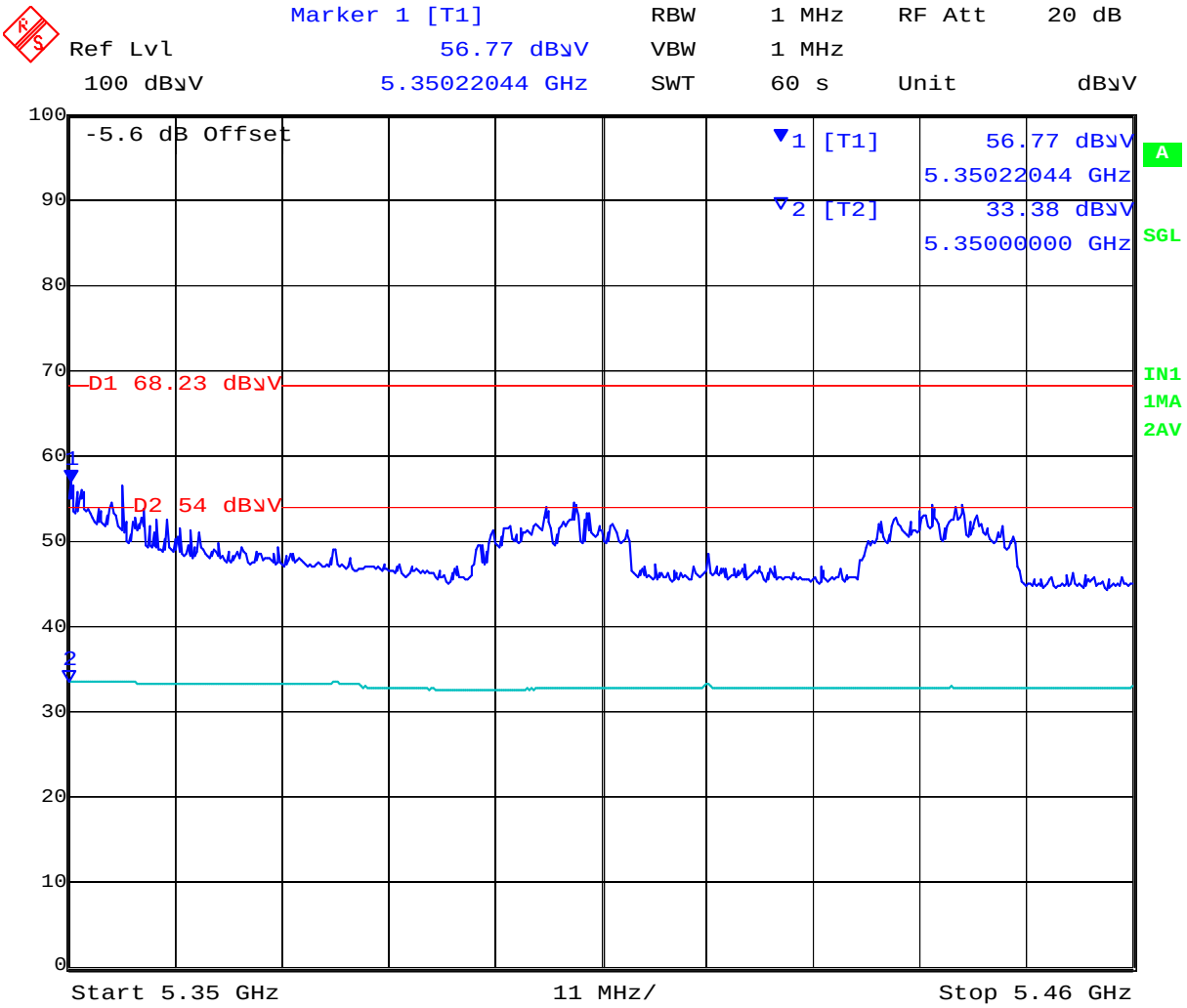
Date: 20.JAN.2011 11:40:38

8450 Band Edge Channel 64 - 5320 MHz 802.11a 5350-5460 MHz Pwr=16 Hor Hght=98 Ang=194



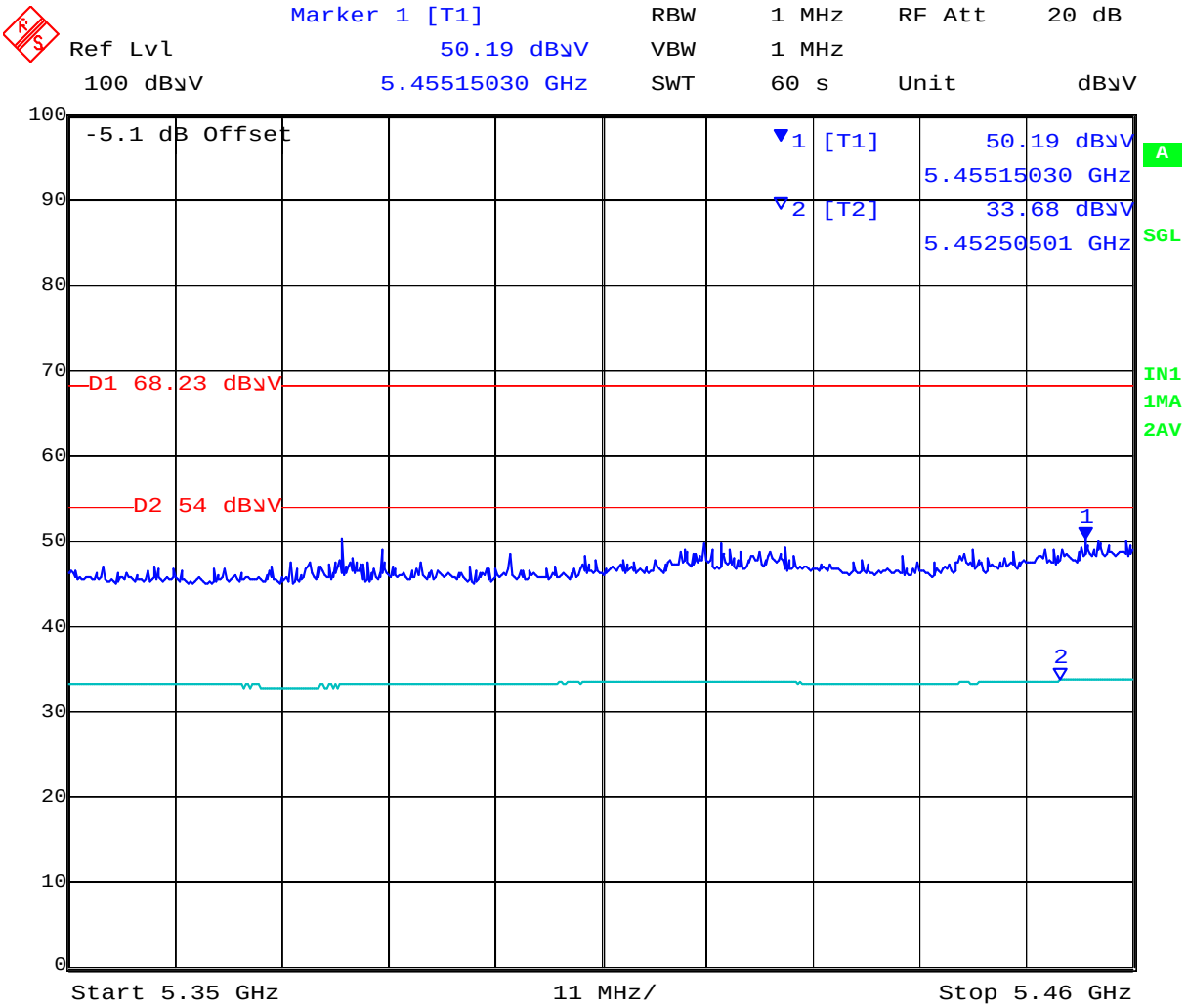
Date: 20.JAN.2011 12:17:47

8450 Band Edge Channel 64 - 5320 MHz 802.11n HT-20 5350-5460 MHz Pwr=16 Hor Hght=148 Ang=325



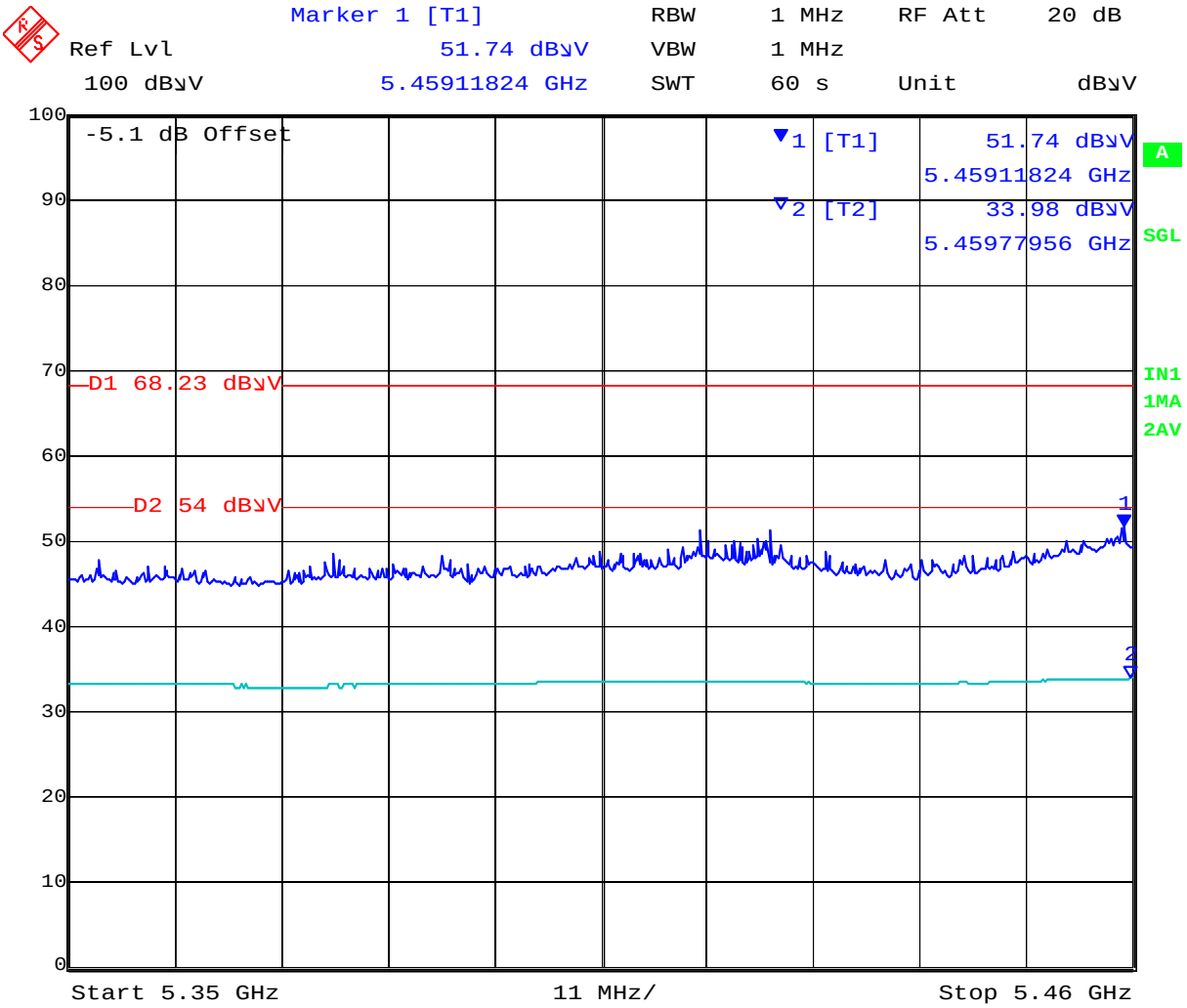
Date: 20.JAN.2011 12:27:56

8450 Band Edge Channel 100 - 5500 MHz 802.11a 5350-5460 MHz Pwr=16 Hor Hght=117 Ang=366



Date: 20.JAN.2011 12:43:16

8450 Band Edge Channel 100 - 5500 MHz 802.11n HT-20 5350-5460 MHz Pwr=16 Hor Hght=144 Ang=346

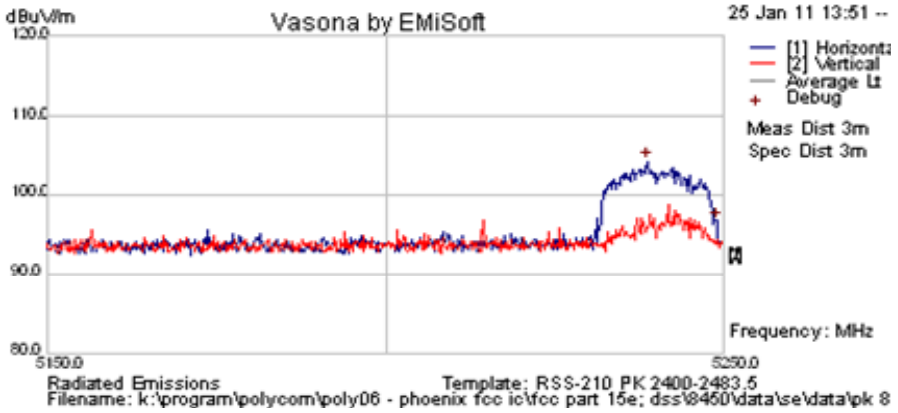


Date: 20.JAN.2011 12:52:45

7.8.3 Peak Emissions

Peak Emissions are measured only on frequencies with the most output power (channel: L, M or H).

Test Freq.	5240 MHz	**Engineer**	EVF
Variant	802.11a; 6 Mbs	**Temp (ºC)**	19.5
Freq. Range	5150 - 5250 MHz	**Rel. Hum.(%)**	35
Power Setting	14 in test utility	**Press. (mBars)**	1006
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Handset (Model: 8450 with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 48 Tx; WLAN=1, BT=0, BC=0, DK=0		

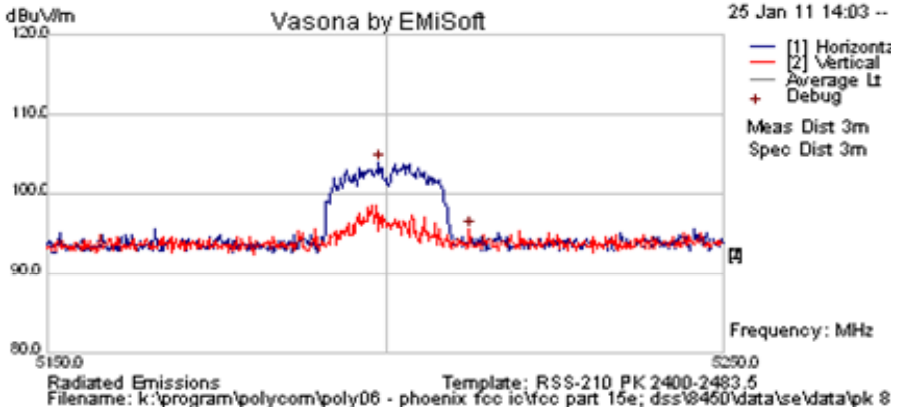


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5240.902	55.2	14.6	34.4	104.2	Peak [Scan]	H						FUND

Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission

Test Freq.	5200 MHz	**Engineer**	EVF
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	18
Freq. Range	5150 - 5250 MHz	**Rel. Hum.(%)**	39
Power Setting	14 in test utility	**Press. (mBars)**	1006
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 40 Tx; WLAN=1, BT=0, BC=0, DK=0		

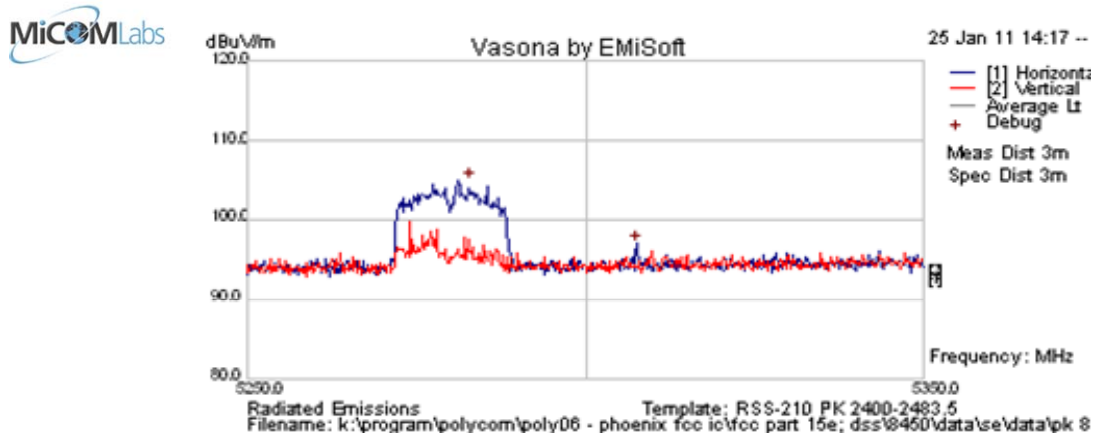


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5203.467	54.8	14.6	34.4	103.8	Peak [Scan]	H						FUND

Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission

Test Freq.	5280 MHz	**Engineer**	EVF
Variant	802.11a; 6.5 Mbs	**Temp (ºC)**	18
Freq. Range	5250 - 5350 MHz	**Rel. Hum.(%)**	39
Power Setting	16 in test utility	**Press. (mBars)**	1006
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 56 Tx; WLAN=1, BT=0, BC=0, DK=0		

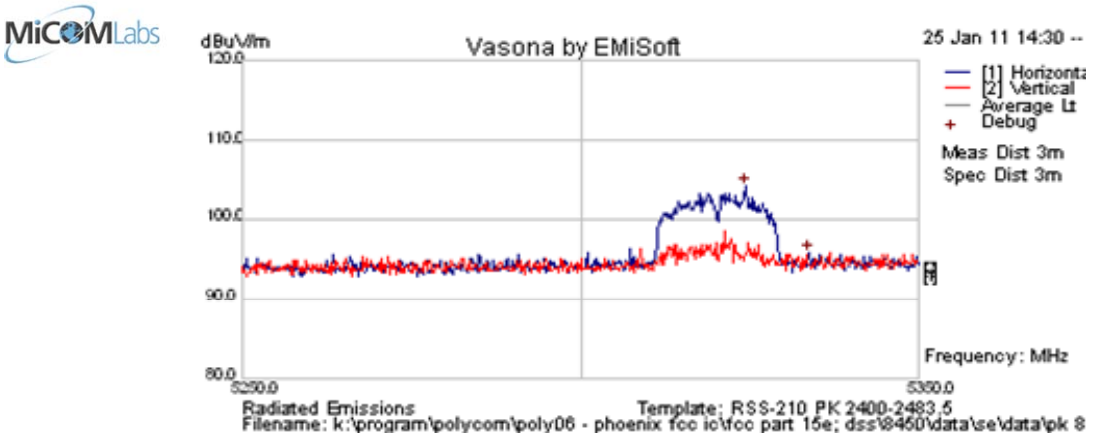


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5282.906	55.8	14.6	34.5	104.9	Peak [Scan]	H						FUND

Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission

Test Freq.	5320 MHz	**Engineer**	EVF
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	18
Freq. Range	5250 - 5350 MHz	**Rel. Hum.(%)**	39
Power Setting	16 in test utility	**Press. (mBars)**	1006
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA10		
Test Notes 2	Mode: WLAN Channel 64 Tx; WLAN=1, BT=0, BC=0, DK=0		

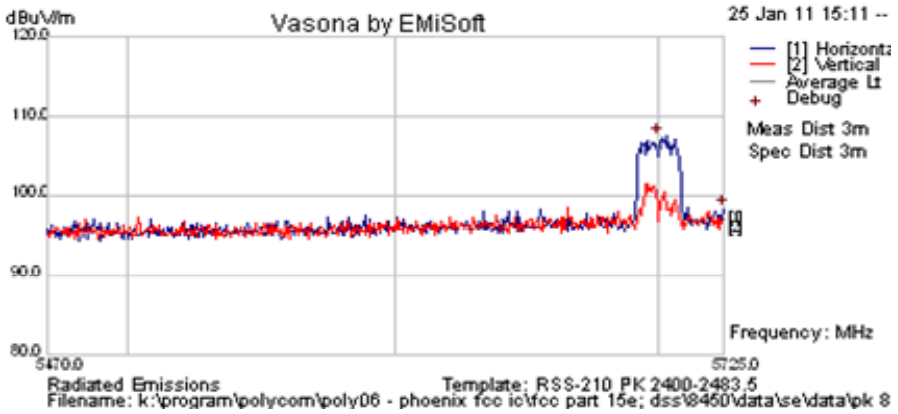


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5318.136	55.0	14.6	34.5	104.1	Peak [Scan]	H	100	0	54.0	50.1	Fail	FUND

Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission

Test Freq.	5700 MHz	**Engineer**	EVF
Variant	802.11a; 6 Mbs	**Temp (ºC)**	18
Freq. Range	5470 - 5725 MHz	**Rel. Hum.(%)**	39
Power Setting	16 in test utility	**Press. (mBars)**	1006
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Handset (Model: 8440) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 140 Tx; WLAN=1, BT=0, BC=0, DK=0		

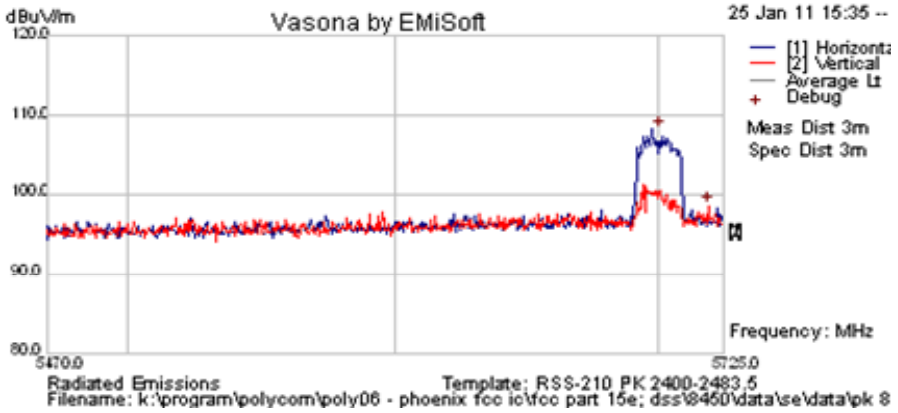


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5700.050	57.9	14.7	35.0	107.6	Peak [Scan]	H	100	0	54.0	53.6	Fail	FUND

Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission

Test Freq.	5700 MHz	**Engineer**	EVF
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	18
Freq. Range	5470 - 5725 MHz	**Rel. Hum.(%)**	39
Power Setting	16 in test utility	**Press. (mBars)**	1006
Antenna	integral	**Duty Cycle (%)**	10
Test Notes 1	Handset (Model: 8440) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 140 Tx; WLAN=1, BT=0, BC=0, DK=0		



Formally measured emission peaks

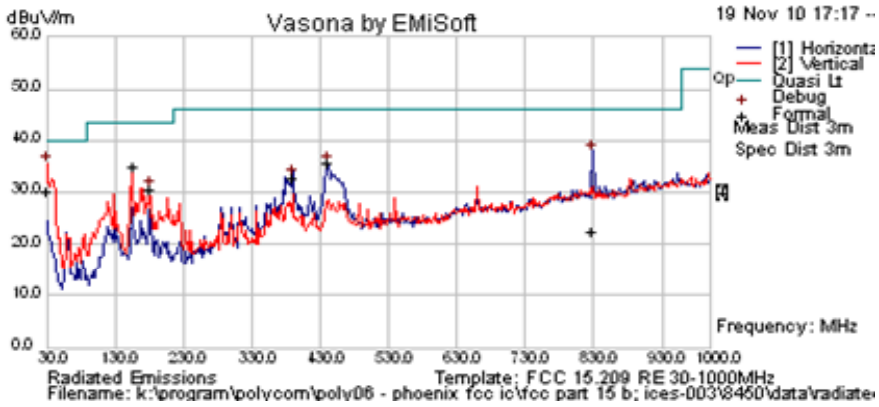
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5700.962	58.5	14.7	35.0	108.2	Peak [Scan]	H	100	0	54.0	54.2	Fail	FUND

Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission

7.8.4 Receiver Radiated Emissions

Stand alone Charger (SA106B-05) - Measurement Results for Radiated Spurious Emissions – Receiver

Test Freq.	N/A	**Engineer**	EVF
Variant	Digital Emissions	**Temp (ºC)**	22.5
Freq. Range	30 MHz - 1000 MHz	**Rel. Hum.(%)**	34
Power Setting	Charger: 120VAC/ 60Hz	**Press. (mBars)**	99.7
Antenna	Integral		
Test Notes 1	Cordless telephone (Model:8450) with discharged battery (SN: AC1010320232) , headset connected, also connected to charger (Model: SA106B-05)/ Mode: BT Channel 39 Receive; WLAN Channel 06 Receive; WLAN=1, BT=1, BC=1, DK=1		
Test Notes 2	Preliminary testing performed. EUT tested in horizontal position		

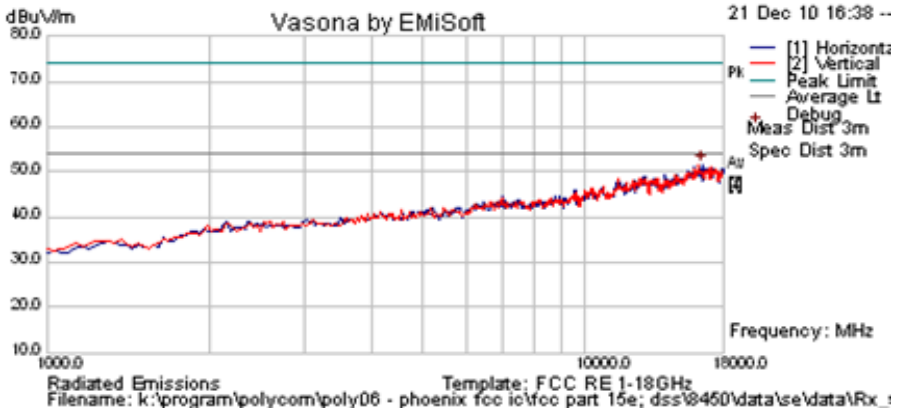


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
30.297	36.0	3.4	-9.4	30.0	Quasi Max	V	151	90	40	-10.0	Pass	
155.996	48.7	4.5	-18.4	34.9	Quasi Max	V	98	87	43.5	-8.7	Pass	
829.047	23.3	7.2	-7.9	22.6	Quasi Max	H	332	173	46	-23.4	Pass	
179.994	45.6	4.7	-19.7	30.5	Peak [Scan]	V	98	360	43.5	-13.0	Pass	
389.992	42.1	5.6	-14.9	32.8	Peak [Scan]	H	98	360	46	-13.2	Pass	
441.988	43.5	5.8	-13.8	35.5	Peak [Scan]	H	98	360	46	-10.5	Pass	

Legend:	DIG = Digital Device Emission; TX = Transmitter Emission; FUND = Fundamental Frequency
	NRB = Non-Restricted Band, Limit is 20 dB below Fundamental; RB = Restricted Band

Test Freq.	5200 MHz	**Engineer**	EVF
Variant	Receive in Test Utility	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	35
Power Setting	Not Applicable in Receive Mode	**Press. (mBars)**	993
Antenna	integral		
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 40 Receive; WLAN=1, BT=0, BC=0, DK=0		

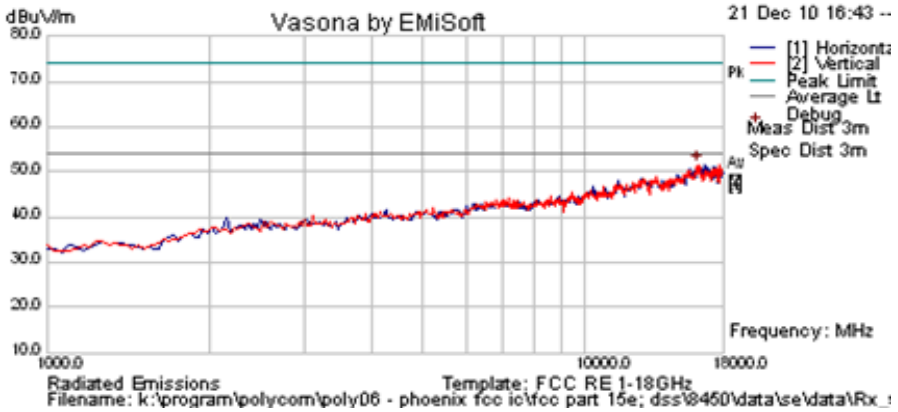


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Receiver Emissions Within 6dB of limit.												

Legend:	RB = Restricted Band; NRB = Non-Restricted Band; FUND = Fundamental Freq.
	BE = Emission in Restricted Band Nearest Transmission Band Edge;

Test Freq.	5280 MHz	**Engineer**	EVF
Variant	Receive in Test Utility	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	35
Power Setting	Not Applicable in Receive Mode	**Press. (mBars)**	993
Antenna	integral		
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 56 Receive; WLAN=1, BT=0, BC=0, DK=0		

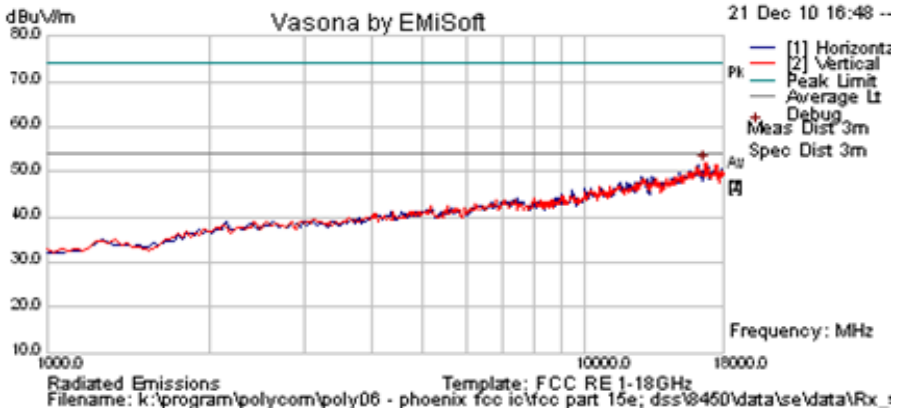


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Receiver Emissions Within 6dB of limit.												

Legend:	RB = Restricted Band; NRB = Non-Restricted Band; FUND = Fundamental Freq.
	BE = Emission in Restricted Band Nearest Transmission Band Edge;

Test Freq.	5600 MHz	**Engineer**	EVF
Variant	Receive in Test Utility	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	35
Power Setting	Not Applicable in Receive Mode	**Press. (mBars)**	993
Antenna	integral		
Test Notes 1	Fundamental attenuated by band-stop filter. Handset (Model: 8450) with battery (SN: AC1010320232) , also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: WLAN Channel 120 Receive; WLAN=1, BT=0, BC=0, DK=0		



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Receiver Emissions Within 6dB of limit.												

Legend:	RB = Restricted Band; NRB = Non-Restricted Band; FUND = Fundamental Freq.
	BE = Emission in Restricted Band Nearest Transmission Band Edge;

7.9 Conducted Disturbance at Mains Terminal (150 kHz – 30 MHz)

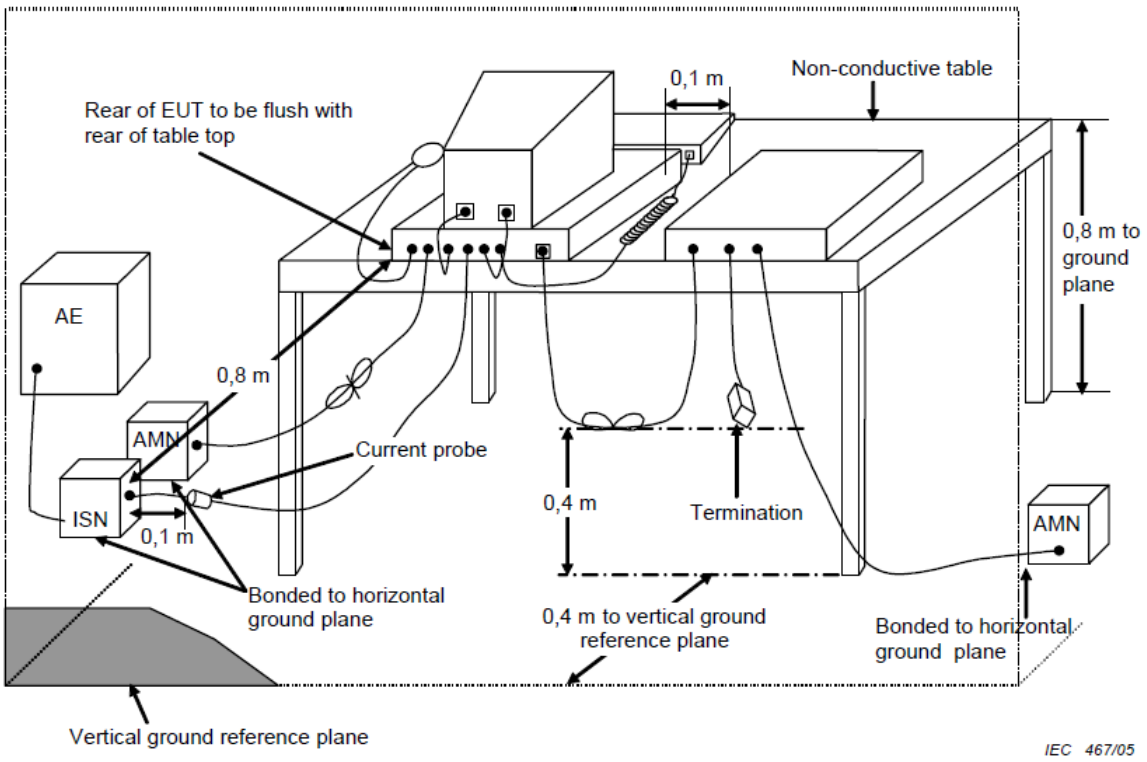
Test Procedure

The EUT is configured in accordance with ANSI C63.4. The conducted emissions are measured in a shielded room with a spectrum analyzer in peak hold in the first instance. Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation. The highest emissions relative to the limit are listed.

If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

If the reading of the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the higher reading shall be recorded with the exception of any brief isolated high reading which shall be ignored.

Test Measurement Setup



Measurement setup for Conducted Disturbance at Mains Terminals

Specification for Conducted Disturbance at Mains Terminal

§15.407 (b)(6)

Any U-NII devices using an AC power line are required to comply also with the limits set forth in Section 15.207.

§15.207 (a)

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

Limits

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency

Traceability

Laboratory Measurement Uncertainty for Conducted Emissions

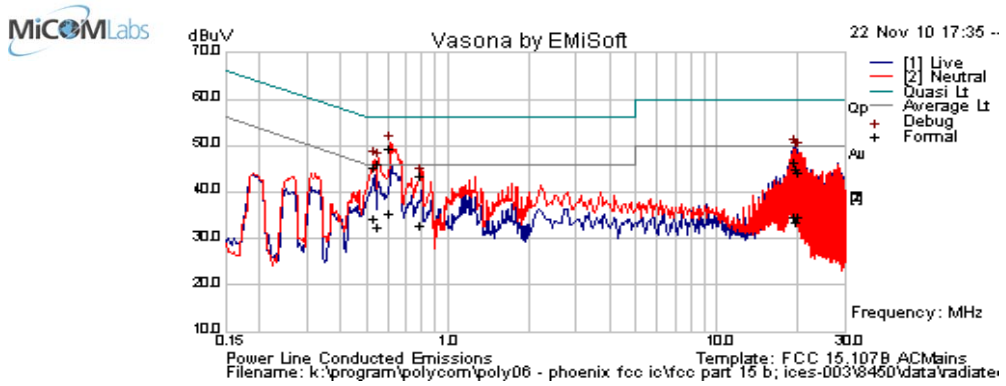
Measurement uncertainty	±2.64 dB

Traceability

Method	Test Equipment Used
Work instruction WI-EMC-01	0158, 0184, 0193, 0190, 0293, 0307

7.9.1 Stand Alone Charger - Conducted Disturbance at Mains Terminal (150 kHz – 30 MHz)

Test Freq.	N/A	**Engineer**	EVF
Variant	AC Line Emissions	**Temp (ºC)**	21.5
Freq. Range	0.150 MHz - 30 MHz	**Rel. Hum. (%)**	34
Power Setting	Charger: 120VAC/60Hz	**Press. (mBars)**	1007
Antenna	Intergal		
Test Notes 1	Handset (Model: 8450) with discharged battery (S/N: AC10103200B7) , headset connected, also connected to charger (Model: SA106B-05)		
Test Notes 2	Mode: BT Channel 39 Receive; WLAN Channel 06 Receive; WLAN=1, BT=1, BC=1, DK=1		



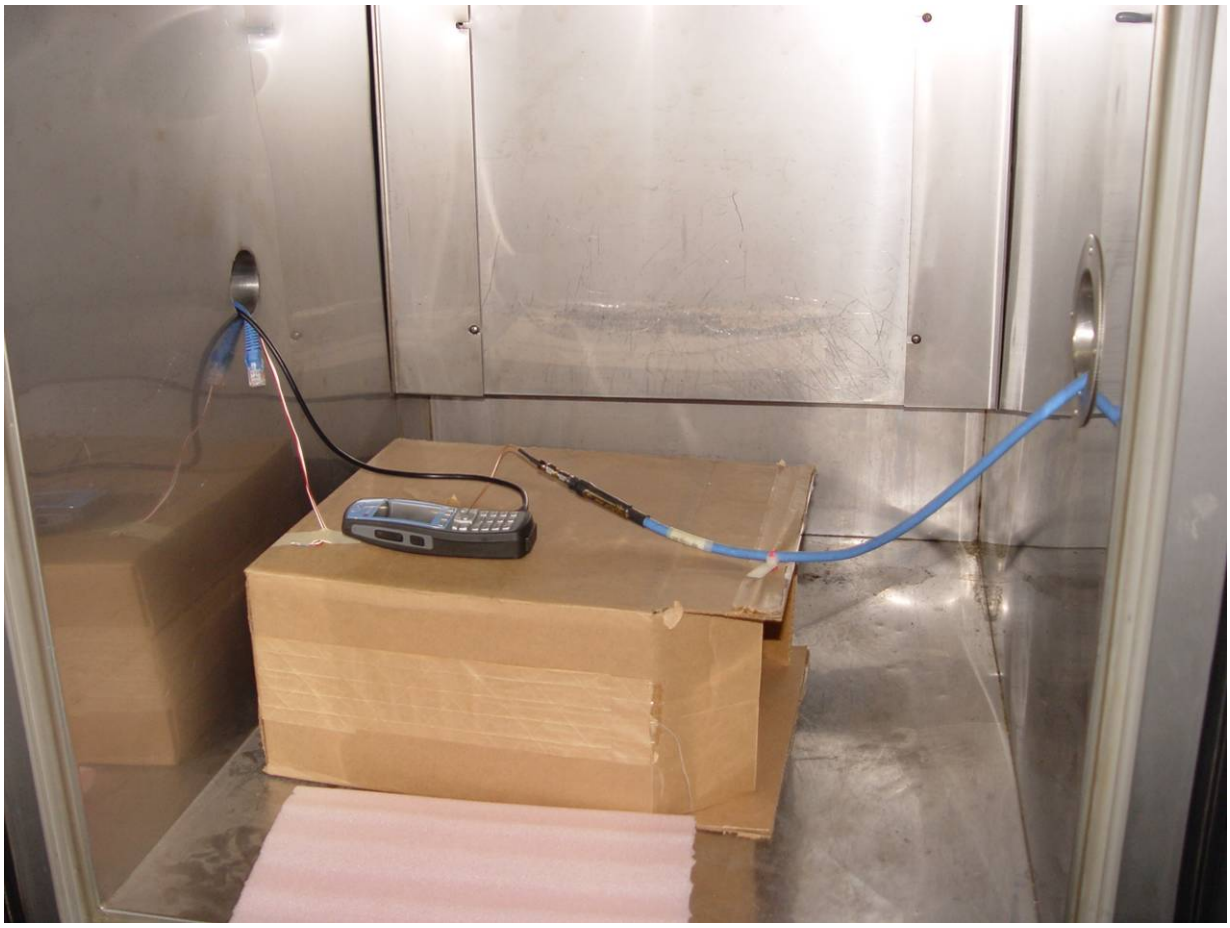
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	Factors dB	Level dBuV	Measurement Type	Line	Limit dBuV	Margin dB	Pass /Fail	Comments
0.535	35.2	9.9	0.1	45.2	Quasi Peak	Neutral	56	-10.8	Pass	
0.535	24.4	9.9	0.1	34.5	Average	Neutral	46	-11.5	Pass	
0.553	36.1	9.9	0.1	46.1	Quasi Peak	Neutral	56	-9.9	Pass	
0.553	22.3	9.9	0.1	32.3	Average	Neutral	46	-13.7	Pass	
0.615	25.3	10.0	0.1	35.3	Average	Neutral	46	-10.7	Pass	
0.615	39.3	10.0	0.1	49.3	Quasi Peak	Neutral	56	-6.7	Pass	
0.800	33.5	10.0	0.1	43.5	Quasi Peak	Neutral	56	-12.5	Pass	
0.800	22.7	10.0	0.1	32.7	Average	Neutral	46	-13.3	Pass	
19.462	35.1	10.5	0.7	46.3	Quasi Peak	Live	60	-13.7	Pass	
19.462	23.4	10.5	0.7	34.6	Average	Live	50	-15.4	Pass	
19.727	33.5	10.5	0.7	44.8	Quasi Peak	Neutral	60	-15.2	Pass	
19.727	22.3	10.5	0.7	33.6	Average	Neutral	50	-16.4	Pass	
20.070	32.9	10.5	0.7	44.2	Quasi Peak	Live	60	-15.8	Pass	
20.070	23.3	10.5	0.7	34.5	Average	Live	50	-15.5	Pass	

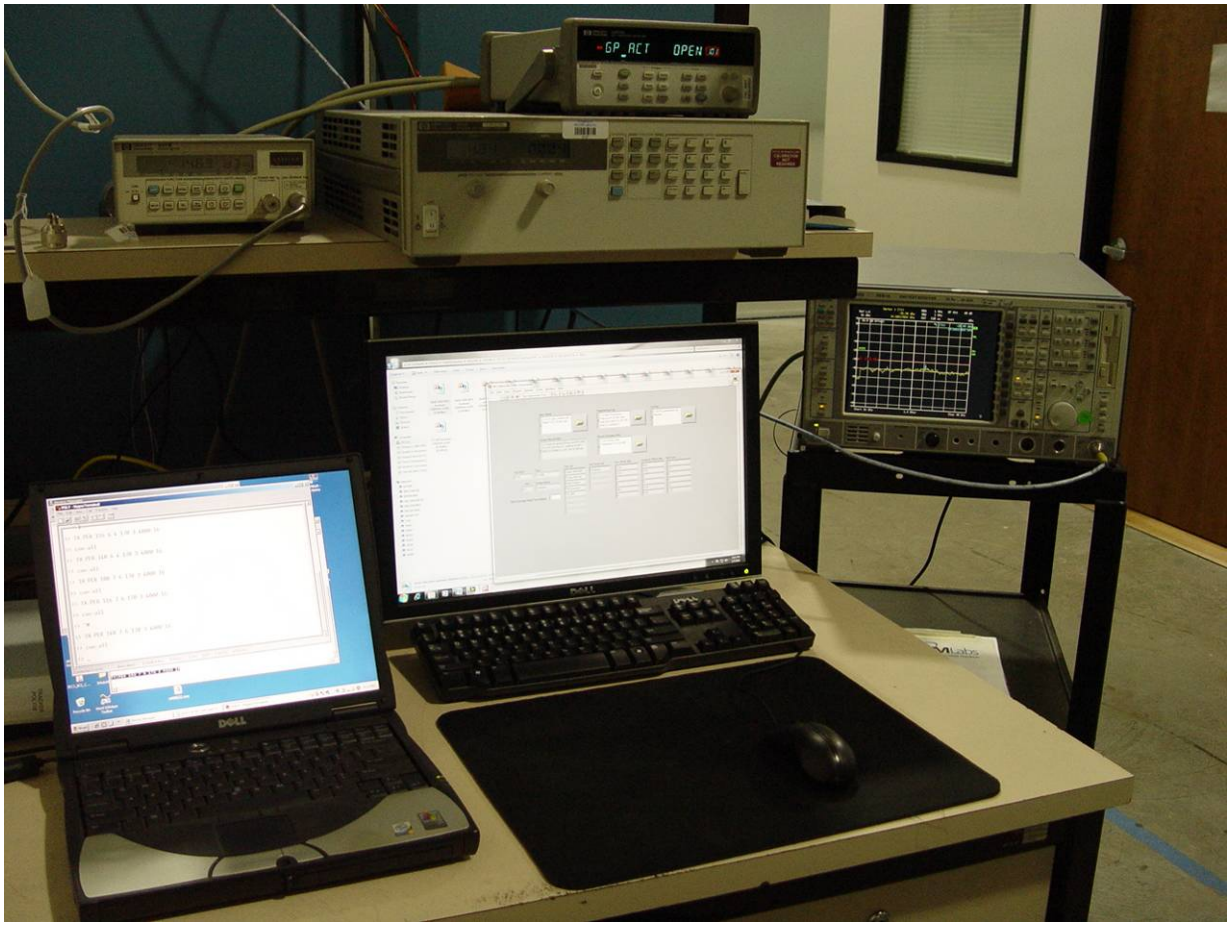
Legend:	DIG = Digital Device Emission; TX = Transmitter Emission; FUND = Fundamental Frequency
	NRB = Non-Restricted Band, Limit is 20 dB below Fundamental; RB = Restricted Band

8 PHOTOGRAPHS

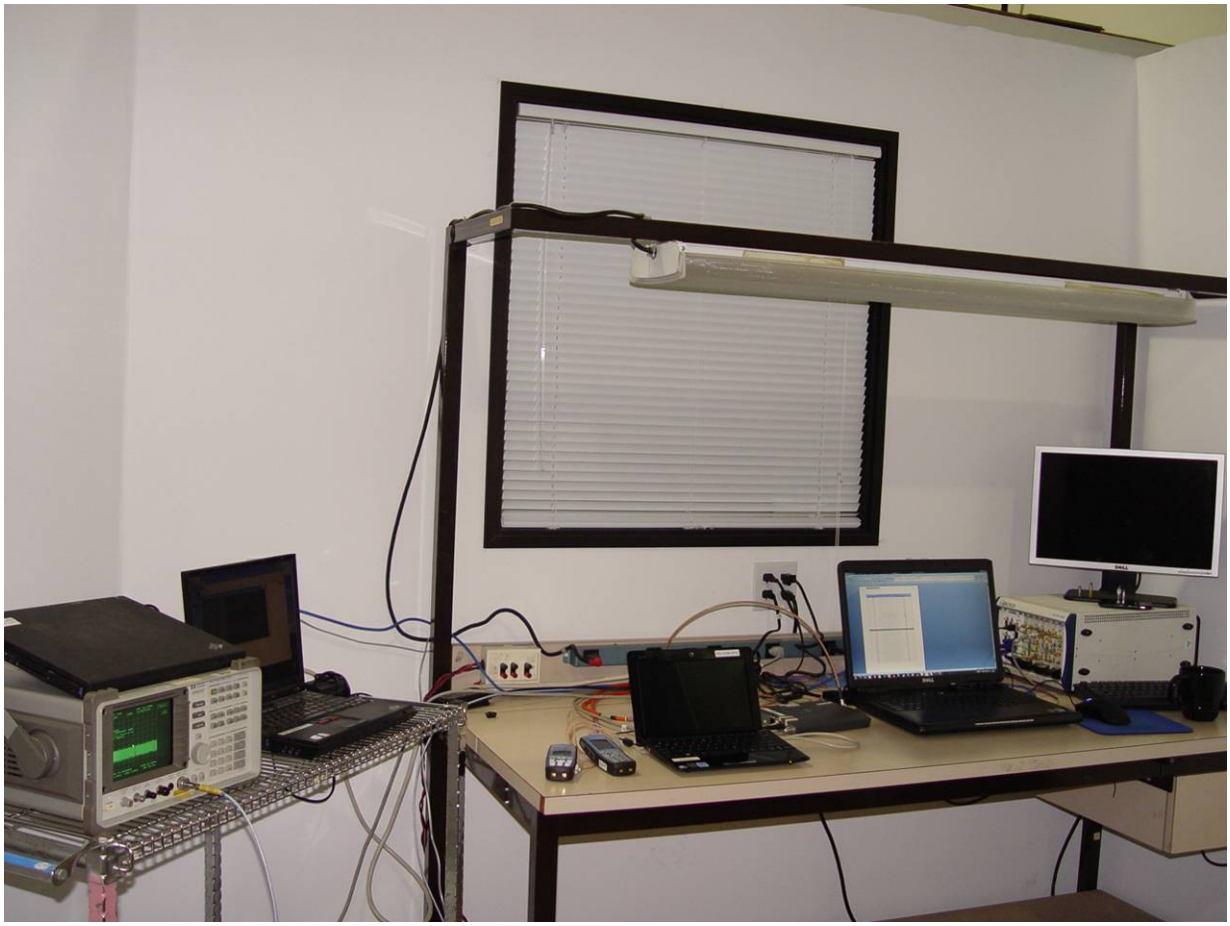
8.1 Conducted RF Emissions - EUT



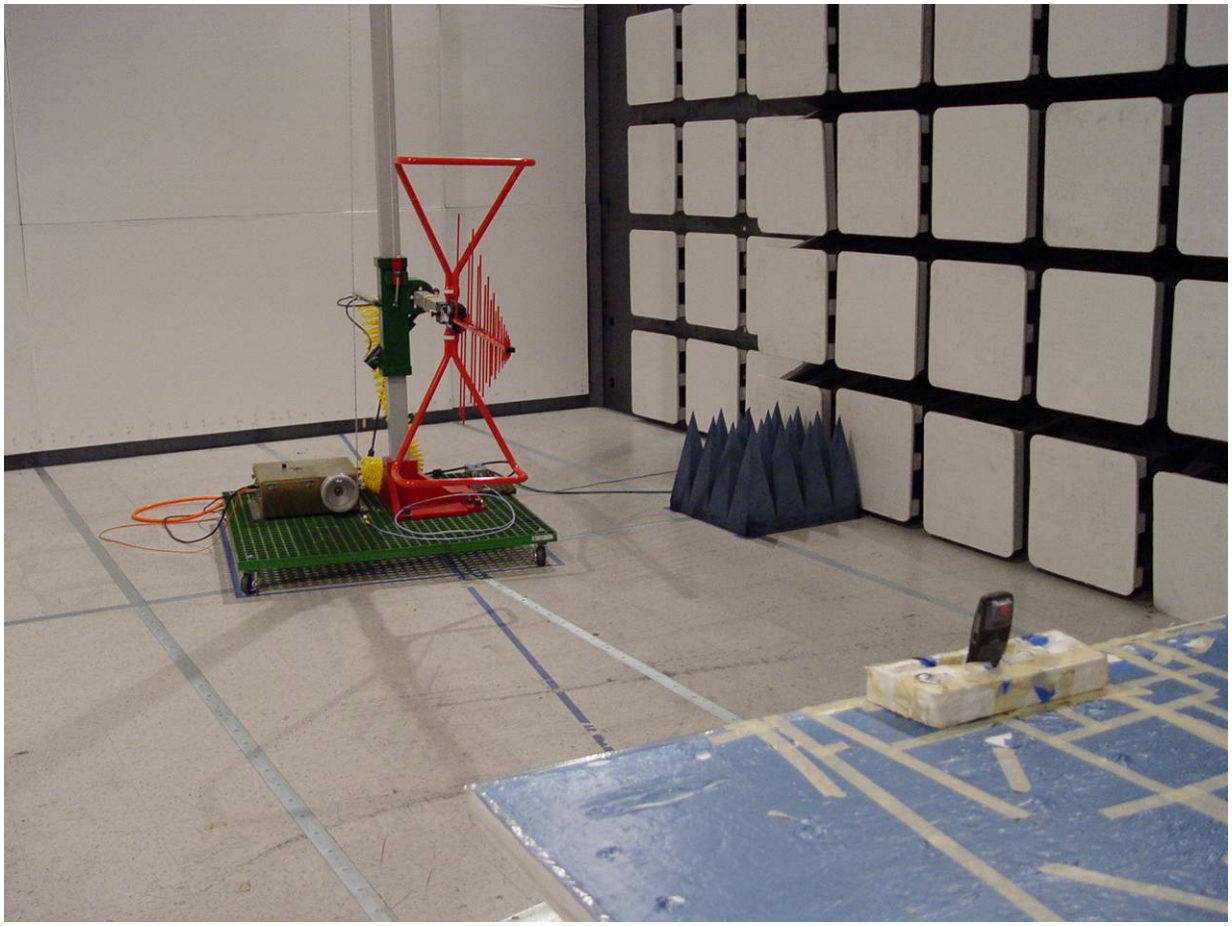
8.2 Conducted RF Emissions - Test Equipment



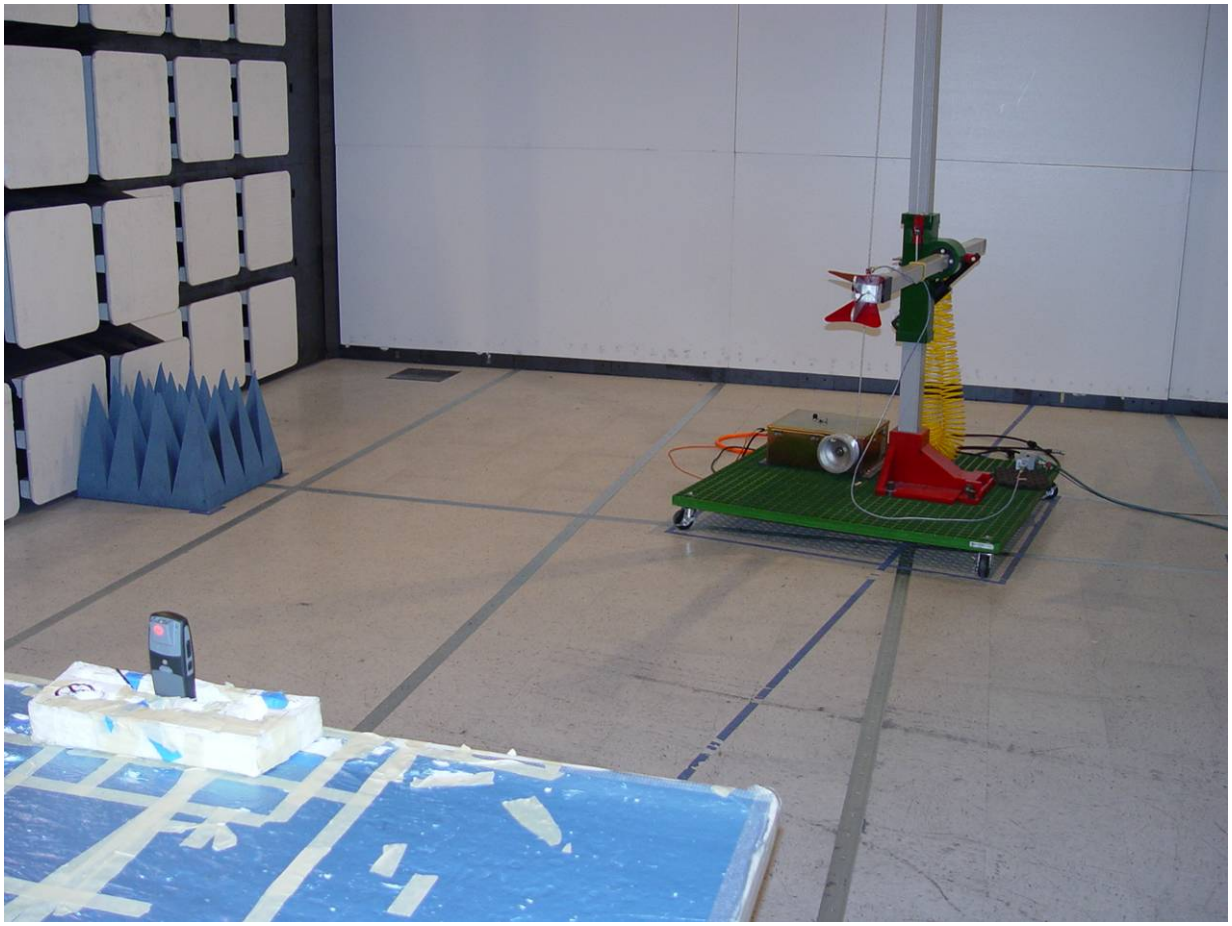
8.3 Dynamic Frequency Selection Test Setup



8.4 Transmitter Radiated Spurious Emission below 1 GHz with Charger



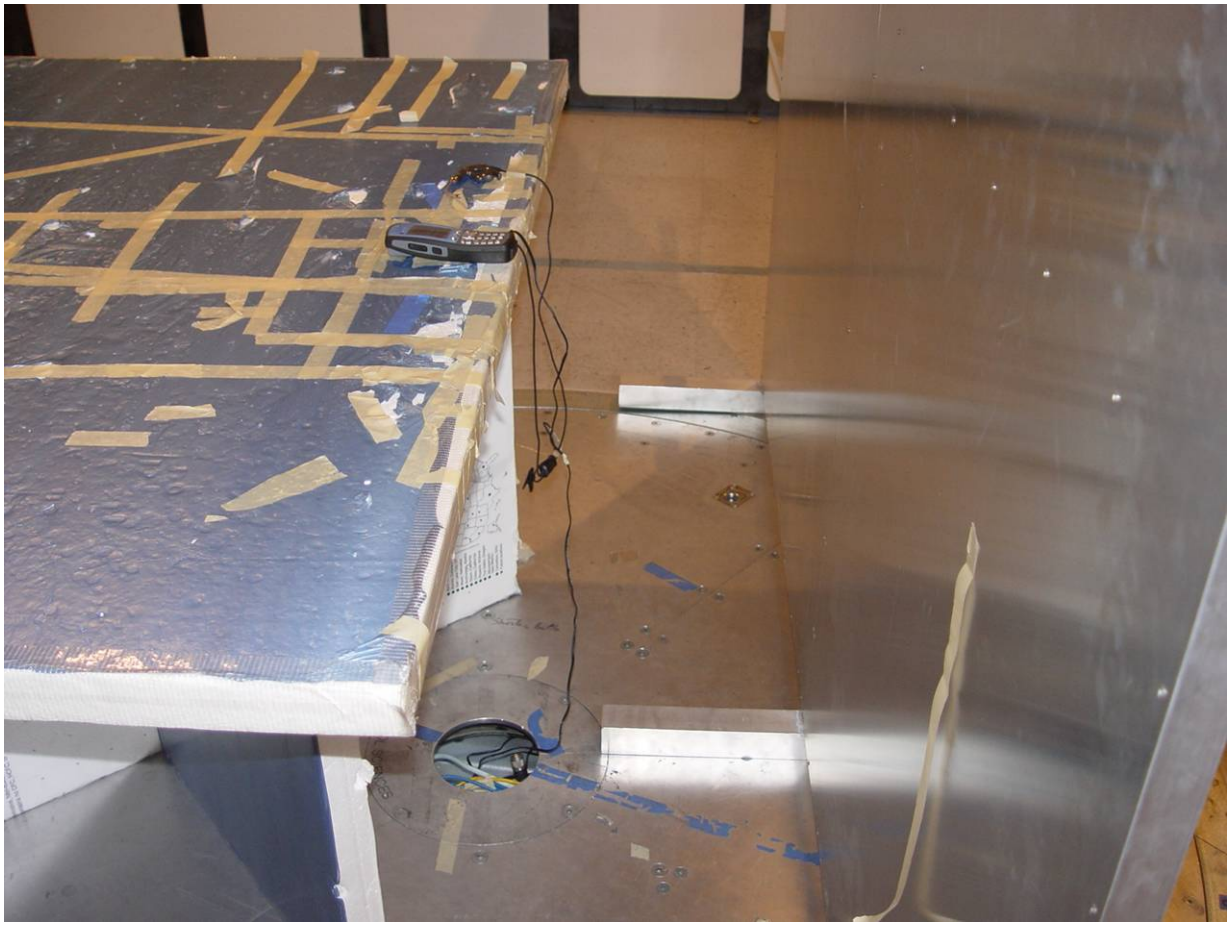
8.5 Transmitter Radiated Spurious Emission above 1 GHz with Charger



8.6 Receiver Radiated Emissions below 1 GHz with Charger

8.7 Receiver Radiated Emissions above 1 GHz with Charger

8.8 AC Mains Conducted Emissions with Charger



1. TEST EQUIPMENT DETAILS

Asset #	Instrument	Manufacturer	Part #	Serial #
0134	Amplifier	Com Power	PA 122	181910
0158	Barometer /Thermometer	Control Co.	4196	E2846
0287	EMI Receiver	Rhode & Schwartz	ESIB 40	100201
0252	SMA Cable	Megaphase	Sucoflex 104	None
0310	2m SMA Cable	Micro-Coax	UFA210A-0-0787-3G03G0	209089-001
0312	3m SMA Cable	Micro-Coax	UFA210A-1-1181-3G0300	209092-001
0313	Coupler	Hewlett Packard	86205A	3140A01285
0314	30dB N-Type Attenuator	ARRA	N9444-30	1623
0070	Power Meter	Hewlett Packard	437B	3125U11552
0116	Power Sensor	Hewlett Packard	8485A	3318A19694
0117	Power Sensor	Hewlett Packard	8487D	3318A00371
0184	Pulse Limiter	Rhode & Schwartz	ESH3Z2	357.8810.52
0190	LISN	Rhode & Schwartz	ESH3Z5	836679/006
0293	BNC Cable	Megaphase	1689 1GVT4	15F50B001
0301	5.6 GHz Notch Filter	Micro-Tronics	RBC50704	001
0302	5.25 GHz Notch Filter	Micro-Tronics	BRC50703	002
0303	5.8 GHz Notch Filter	Micro-Tronics	BRC50705	003
0304	2.4GHzHz Notch Filter	Micro-Tronics	--	001
0307	BNC Cable	Megaphase	1689 1GVT4	15F50B002
0335	1-18GHz Horn Antenna	ETS- Lindgren	3117	00066580
0337	Amplifier	MiCOM Labs	--	--
0338	Antenna	Sunol Sciences	JB-3	A052907

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