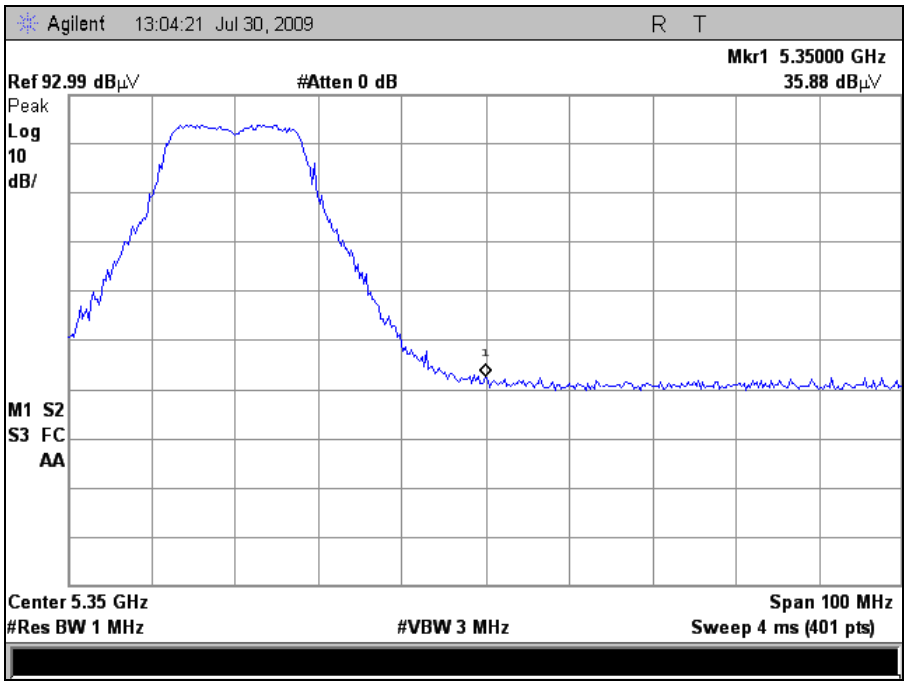
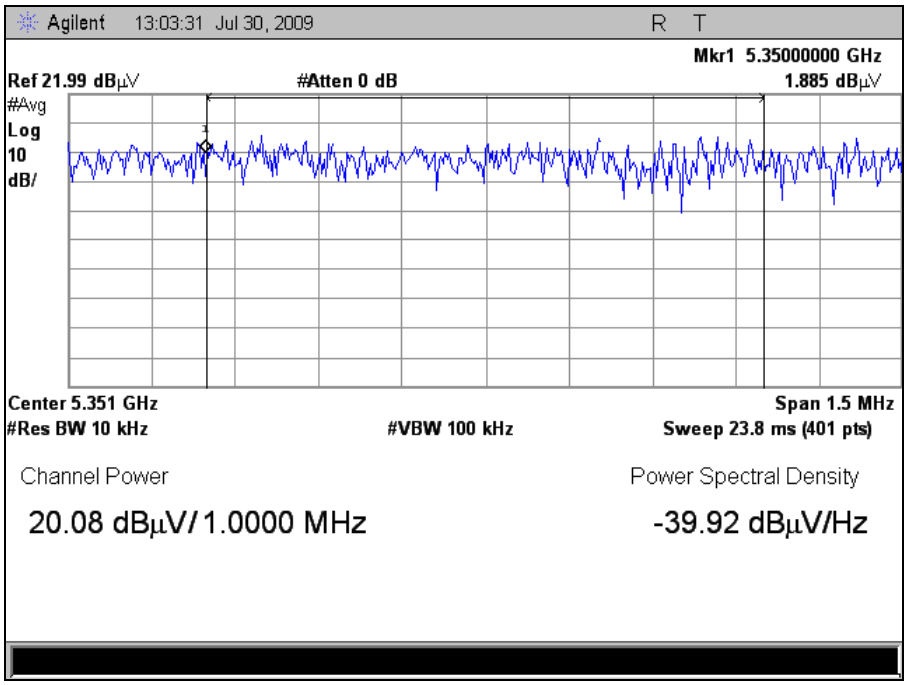
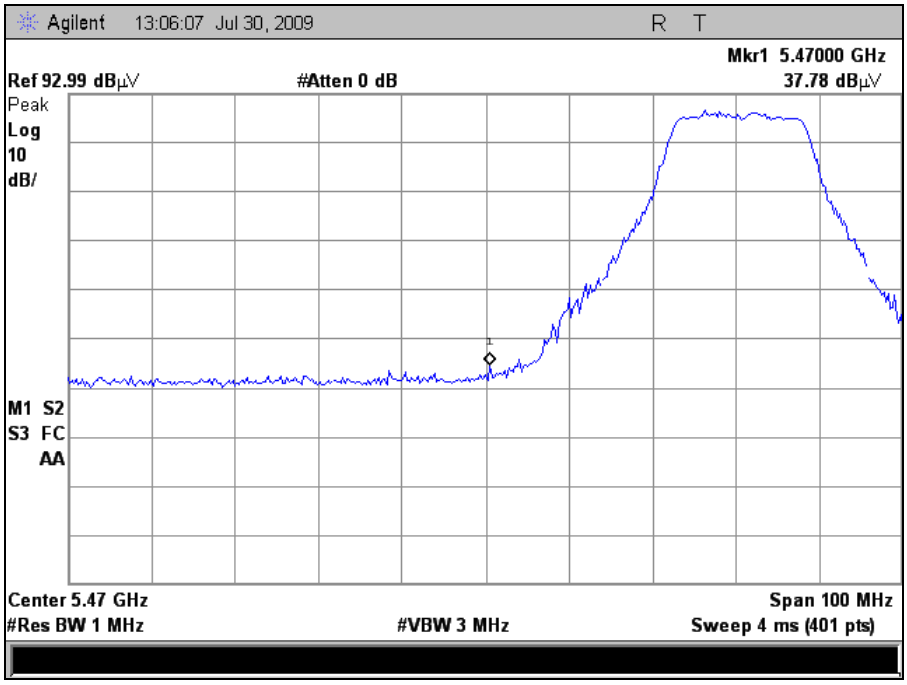


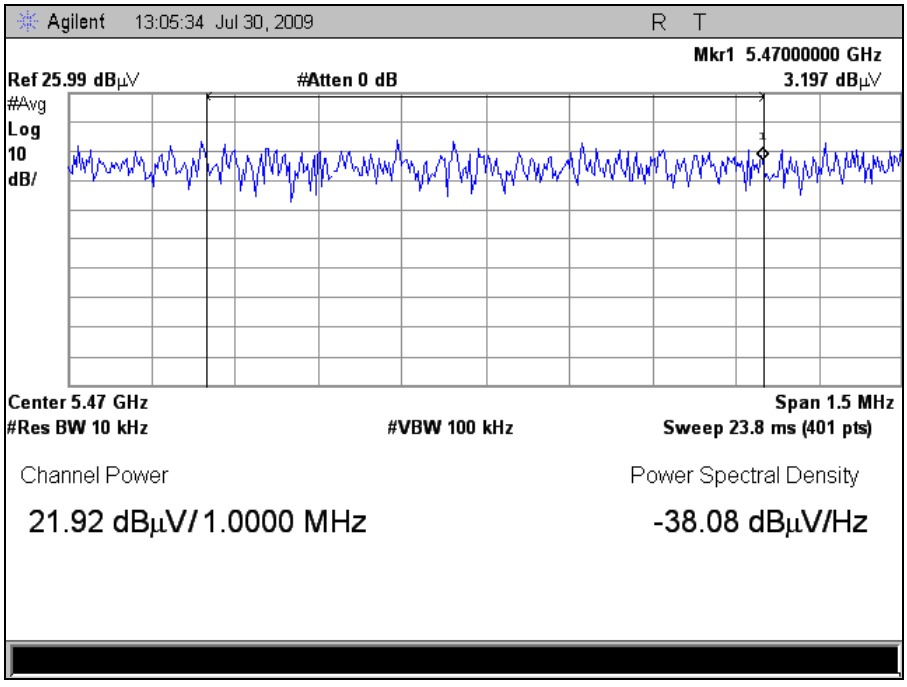
Plot 215. EIRP, Port 1, 802.11a, 5350 MHz Peak, 19 dBi Panel



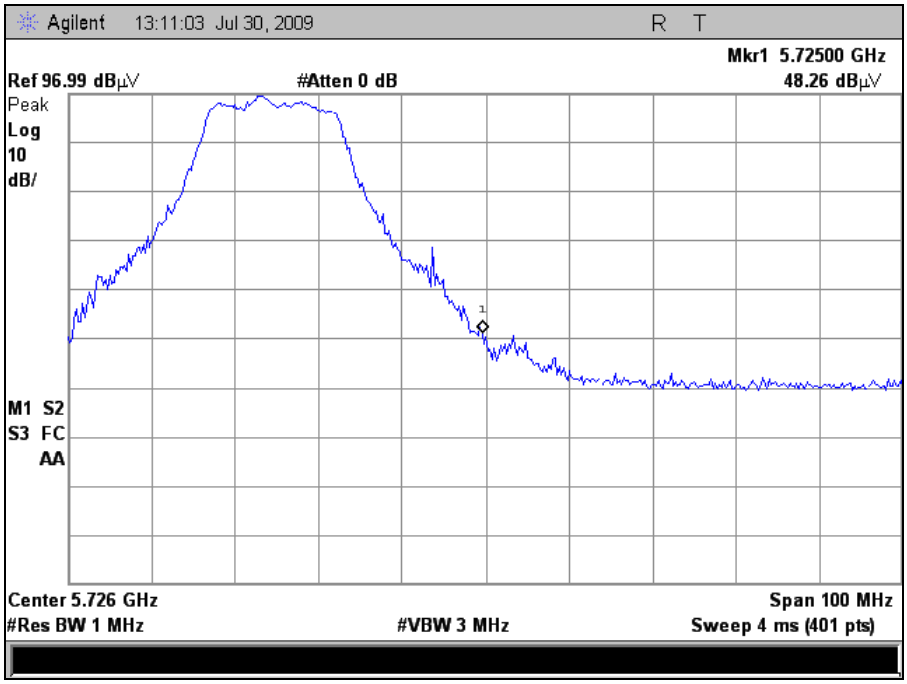
Plot 216. EIRP, Port 1, 802.11a, 5350 MHz Over 1 MHz, 19 dBi Panel



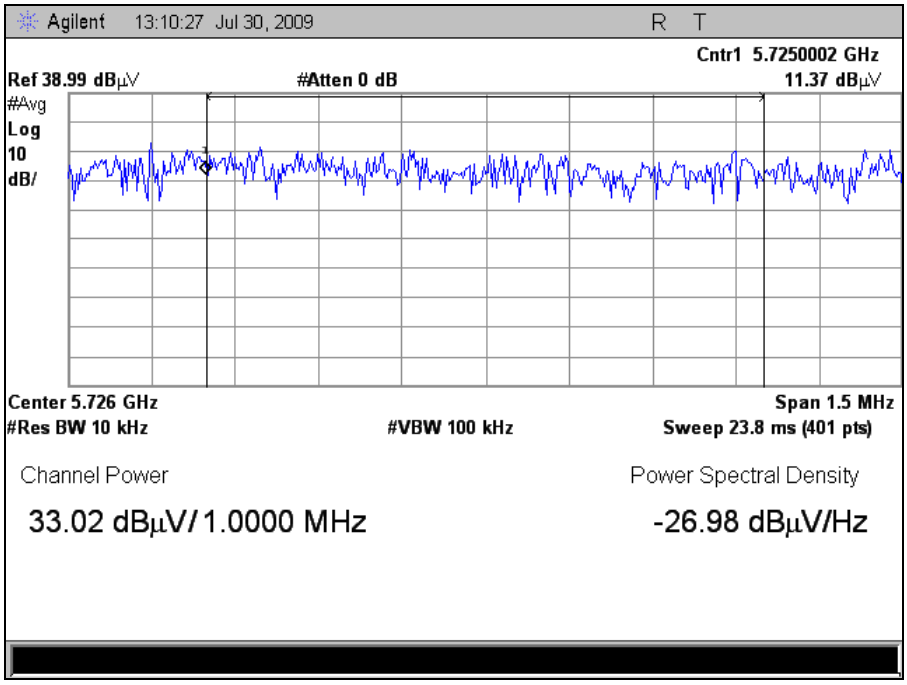
Plot 217. EIRP, Port 1, 802.11a, 5470 MHz Peak, 19 dBi Panel



Plot 218. EIRP, Port 1, 802.11a, 5470 MHz Over 1 MHz, 19 dBi Panel

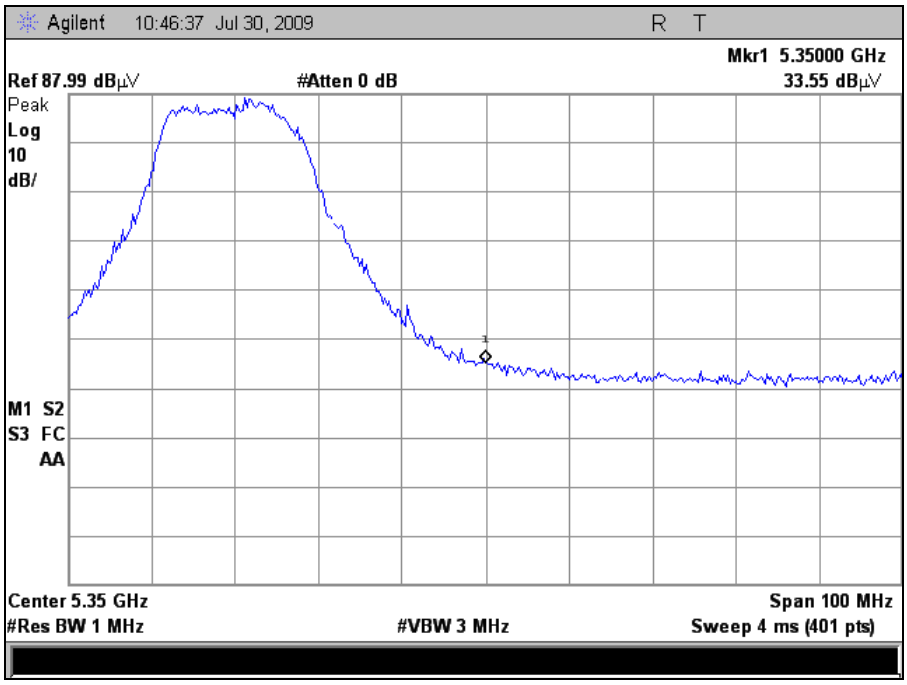


Plot 219. EIRP, Port 1, 802.11a, 5725 MHz Peak, 19 dBi Panel

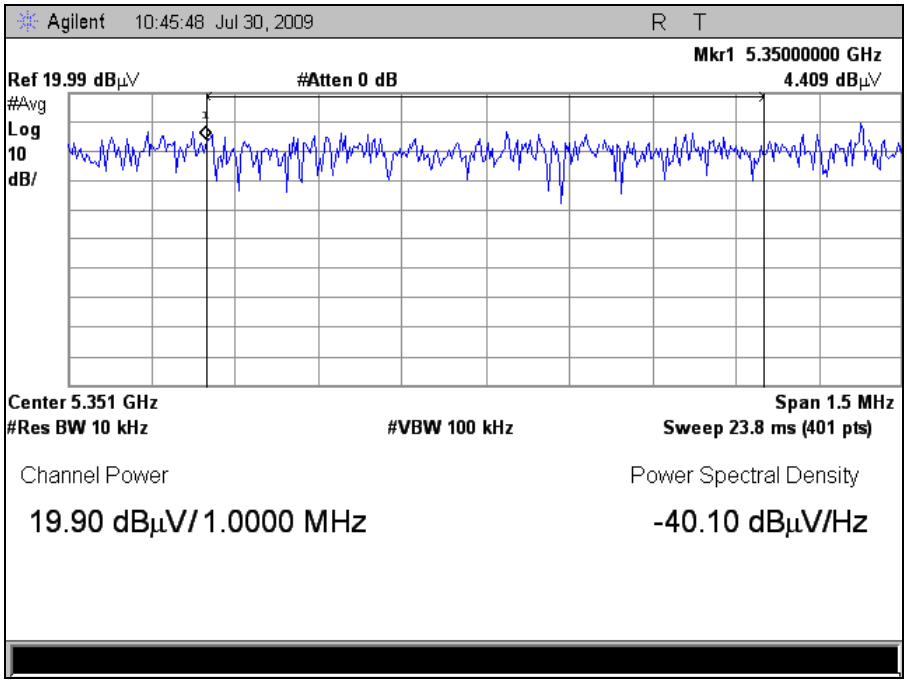


Plot 220. EIRP, Port 1, 802.11a, 5725 MHz Over 1 MHz, 19 dBi Panel

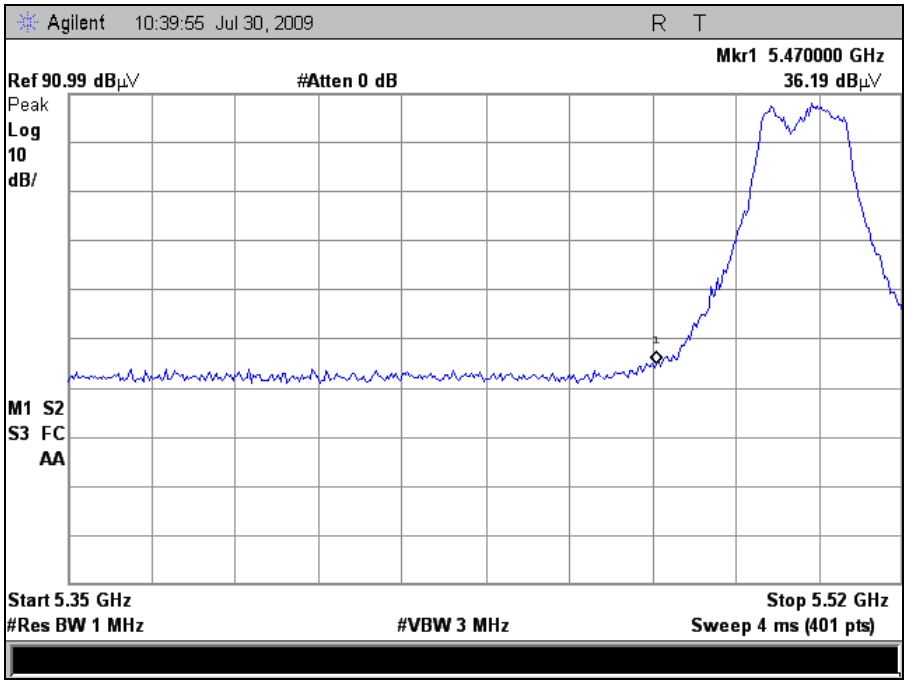
EIRP, 802.11n 20MHz



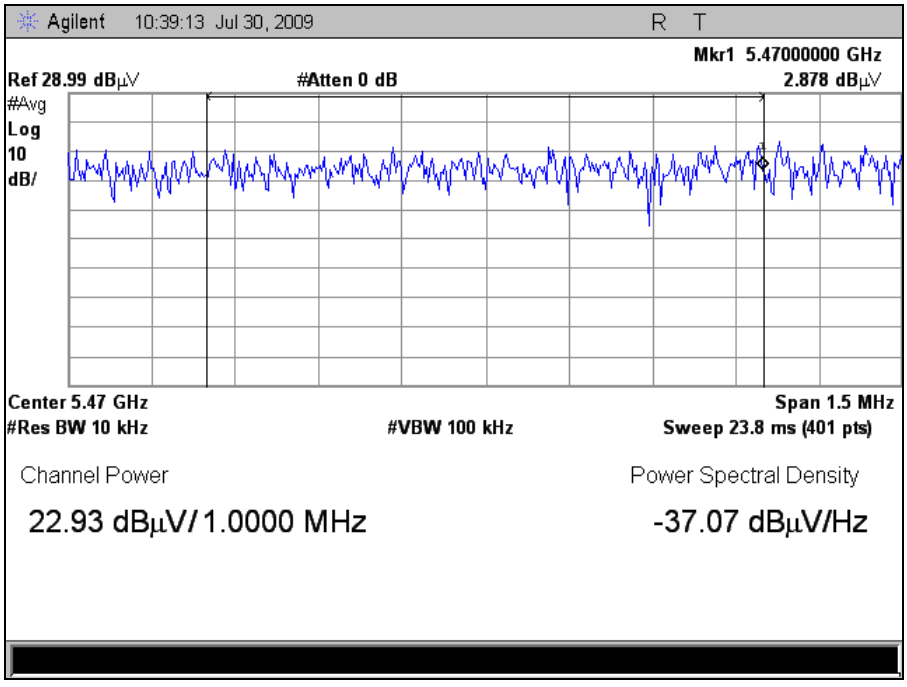
Plot 221. EIRP, 802.11n 20MHz, 5350 MHz Peak, 9 dBi Omni



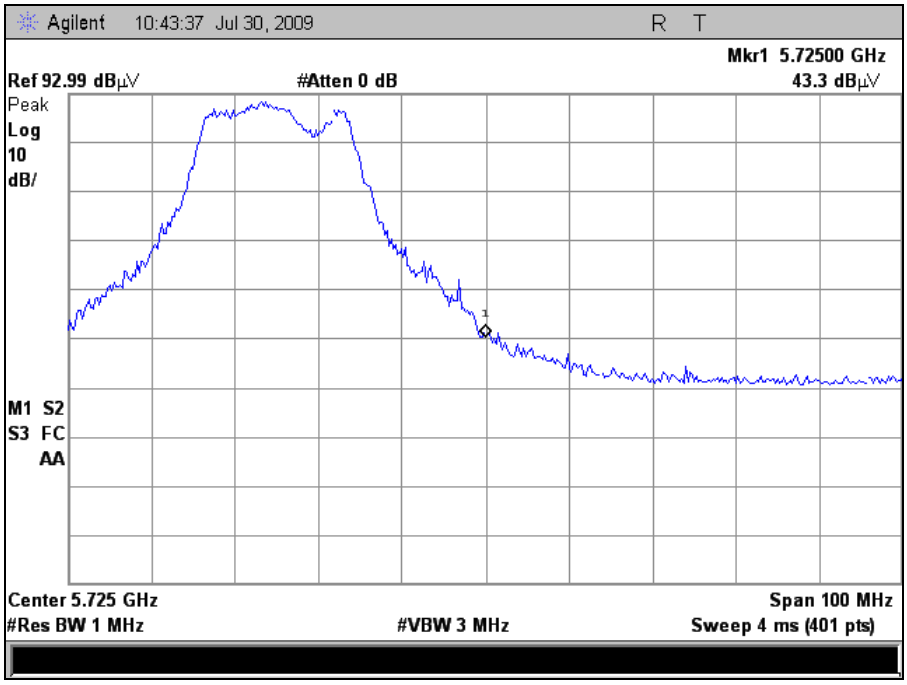
Plot 222. EIRP, 802.11n 20MHz, 5350 MHz Over 1 MHz, 9 dBi Omni



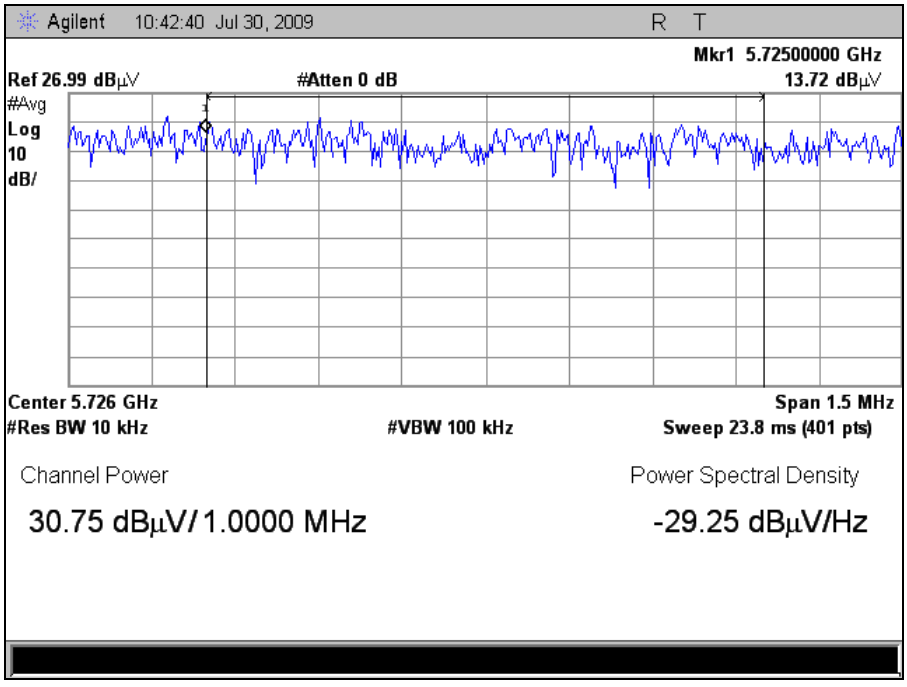
Plot 223. EIRP, 802.11n 20MHz, 5470 MHz Peak, 9 dBi Omni



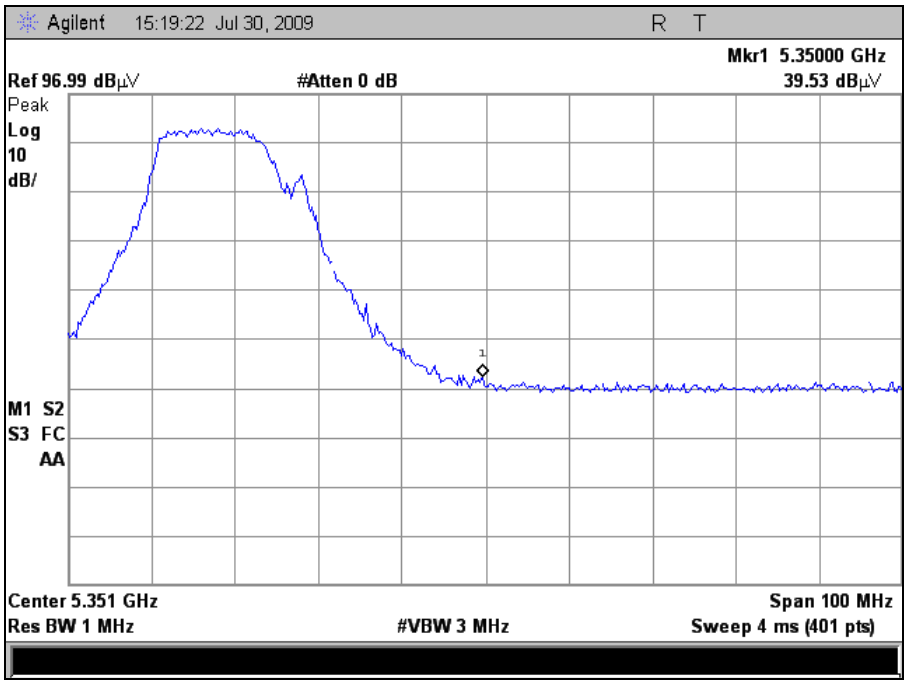
Plot 224. EIRP, 802.11n 20MHz, 5470 MHz Over 1 MHz, 9 dBi Omni



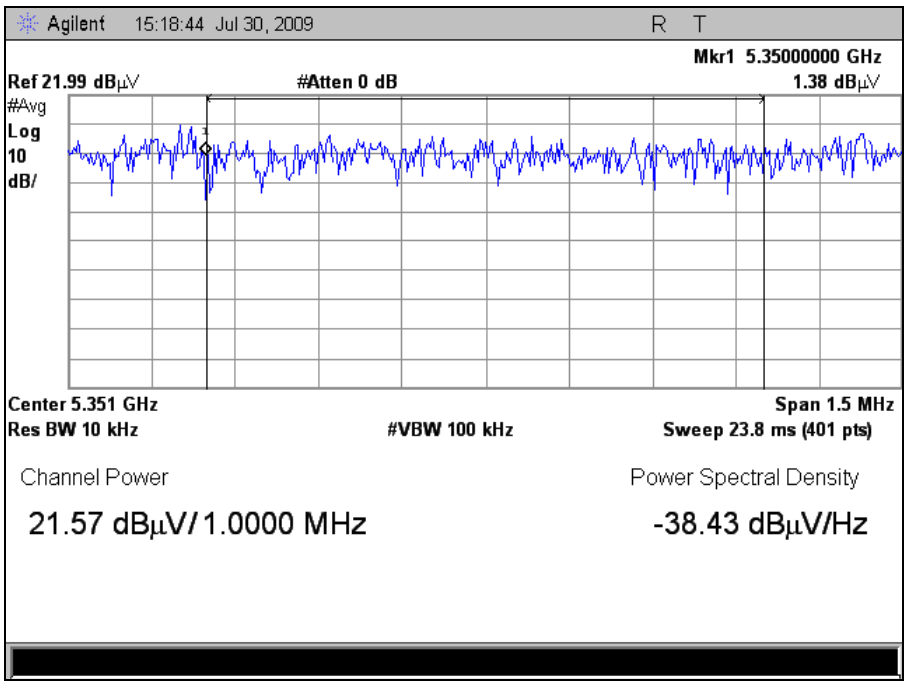
Plot 225. EIRP, 802.11n 20MHz, 5725 MHz Peak, 9 dBi Omni



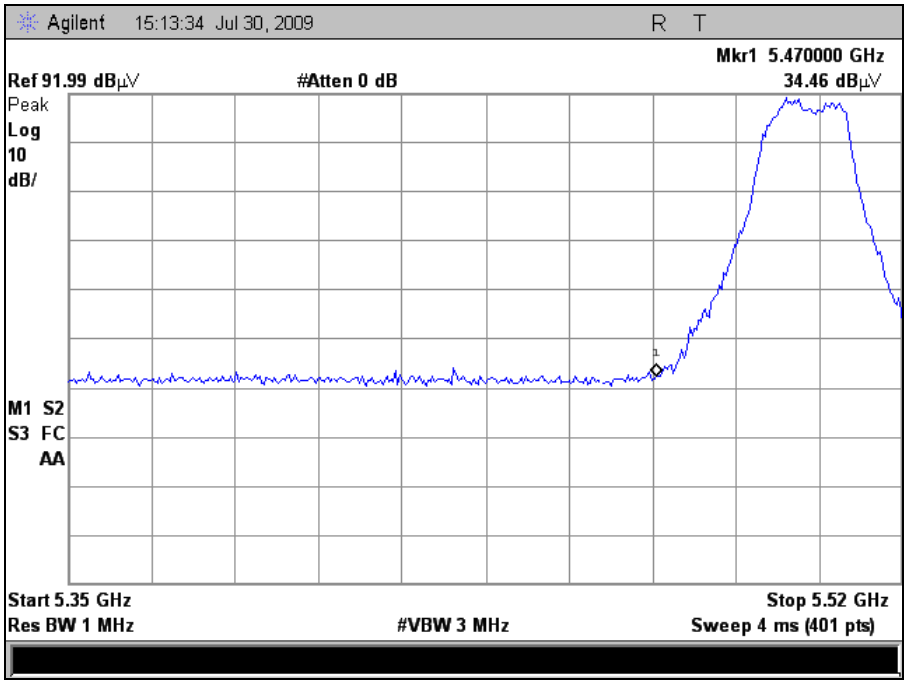
Plot 226. EIRP, 802.11n 20MHz, 5725 MHz Over 1 MHz, 9 dBi Omni



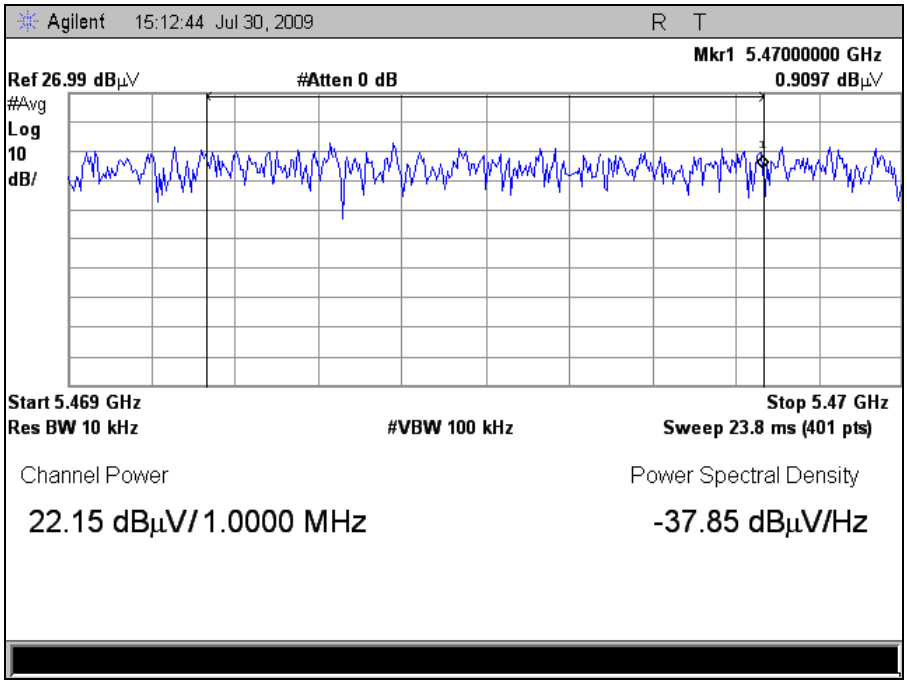
Plot 227. EIRP, 802.11n 20MHz, 5350 MHz Peak, 16 dBi Sector



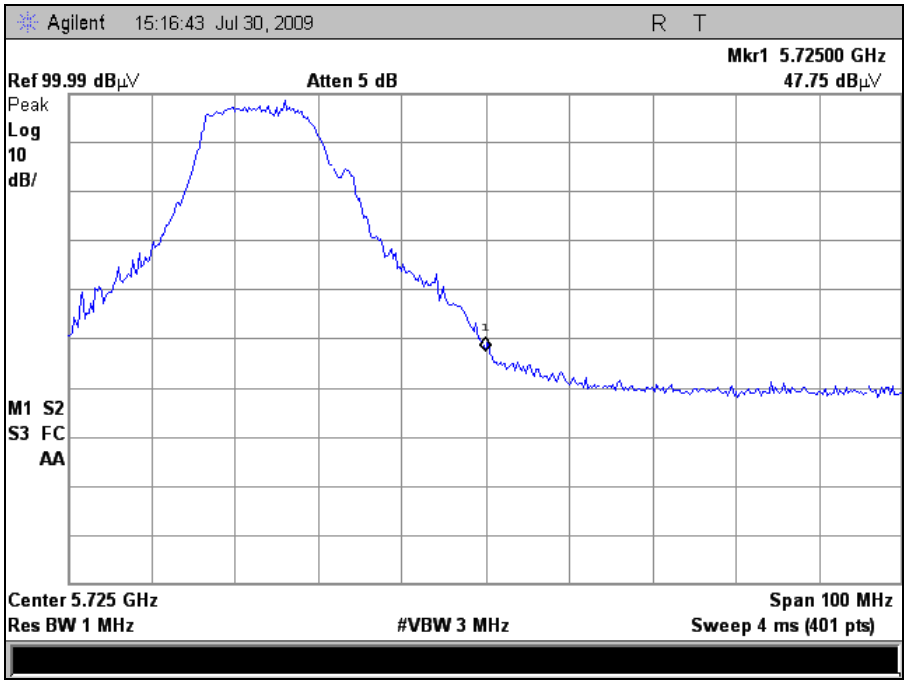
Plot 228. EIRP, 802.11n 20MHz, 5350 MHz Over 1 MHz, 16 dBi Sector



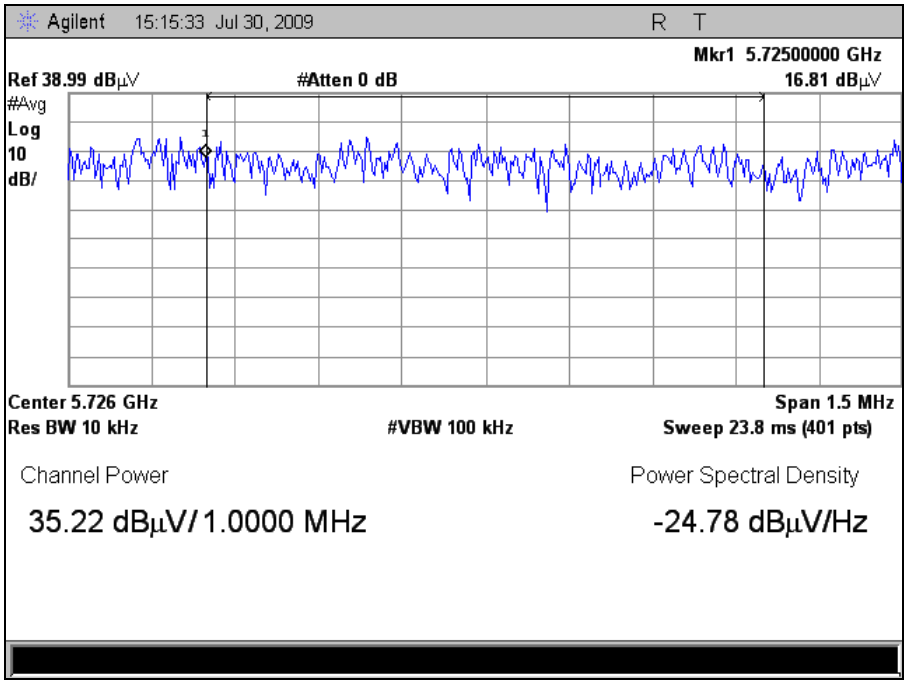
Plot 229. EIRP, 802.11n 20MHz, 5470 MHz Peak, 16 dBi Sector



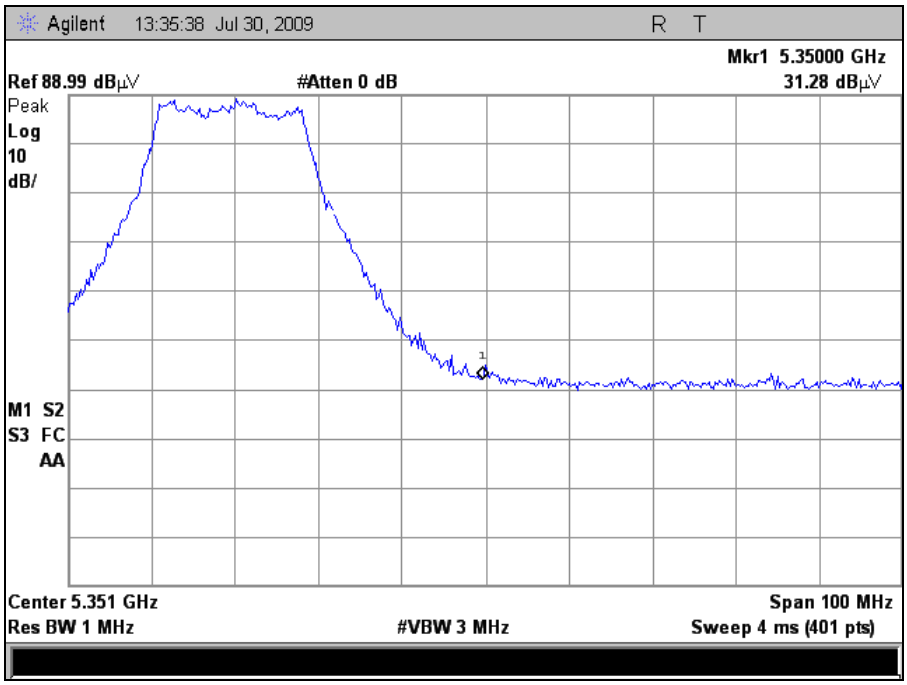
Plot 230. EIRP, 802.11n 20MHz, 5470 MHz Over 1 MHz, 16 dBi Sector



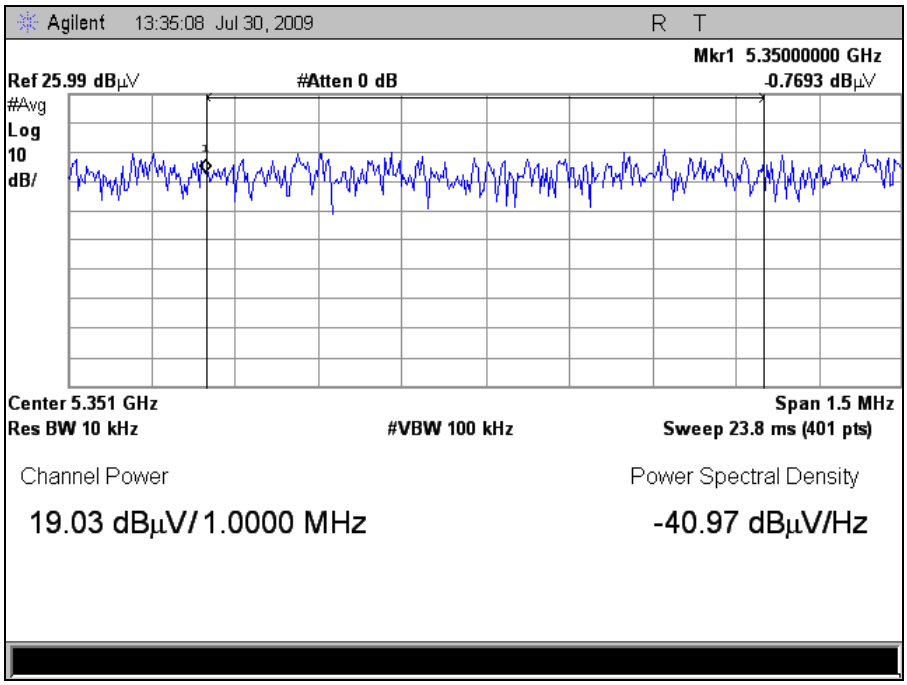
Plot 231. EIRP, 802.11n 20MHz, 5725 MHz Peak, 16 dBi Sector



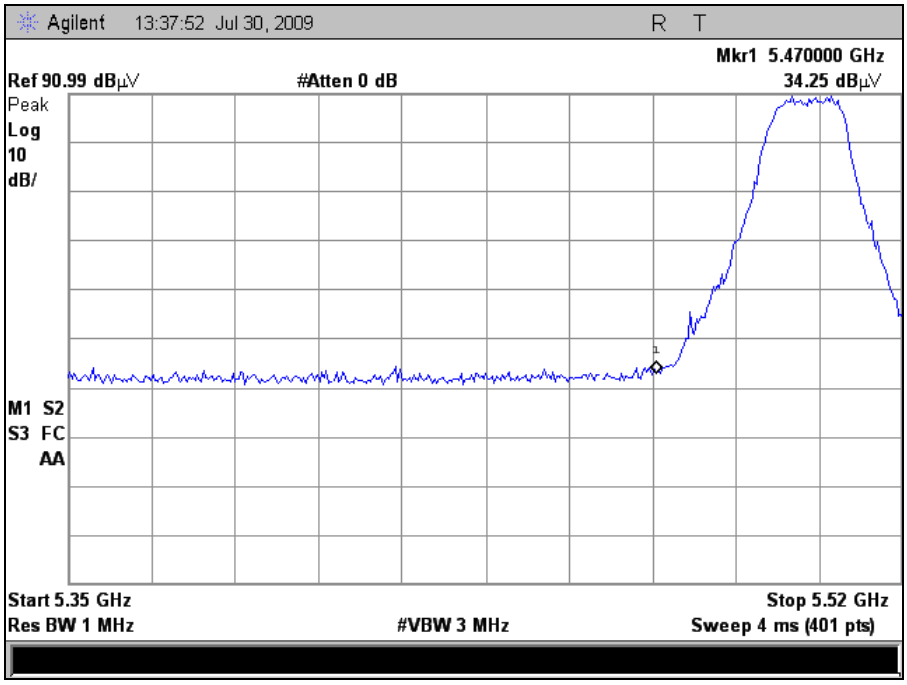
Plot 232. EIRP, 802.11n 20MHz, 5725 MHz Over 1 MHz, 16 dBi Sector



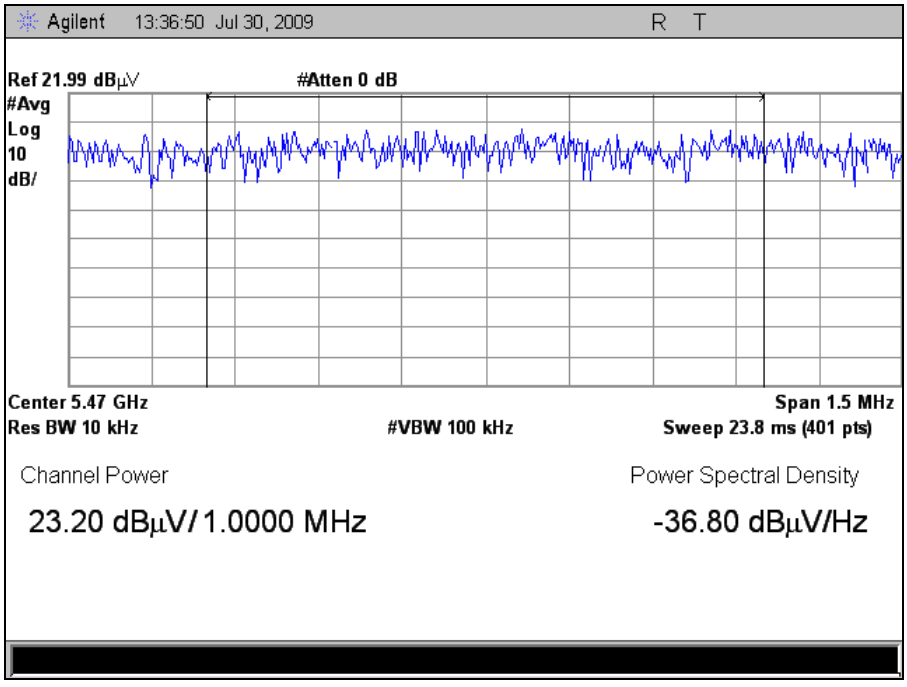
Plot 233. EIRP, 802.11n 20MHz, 5350 MHz Peak, 19 dBi Panel



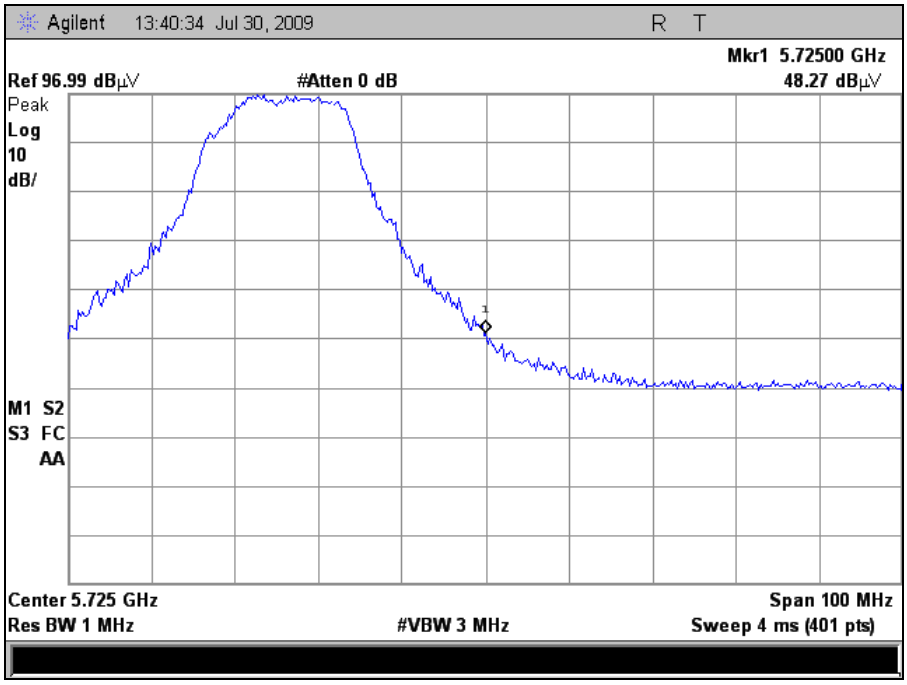
Plot 234. EIRP, 802.11n 20MHz, 5350 MHz Over 1 MHz, 19 dBi Panel



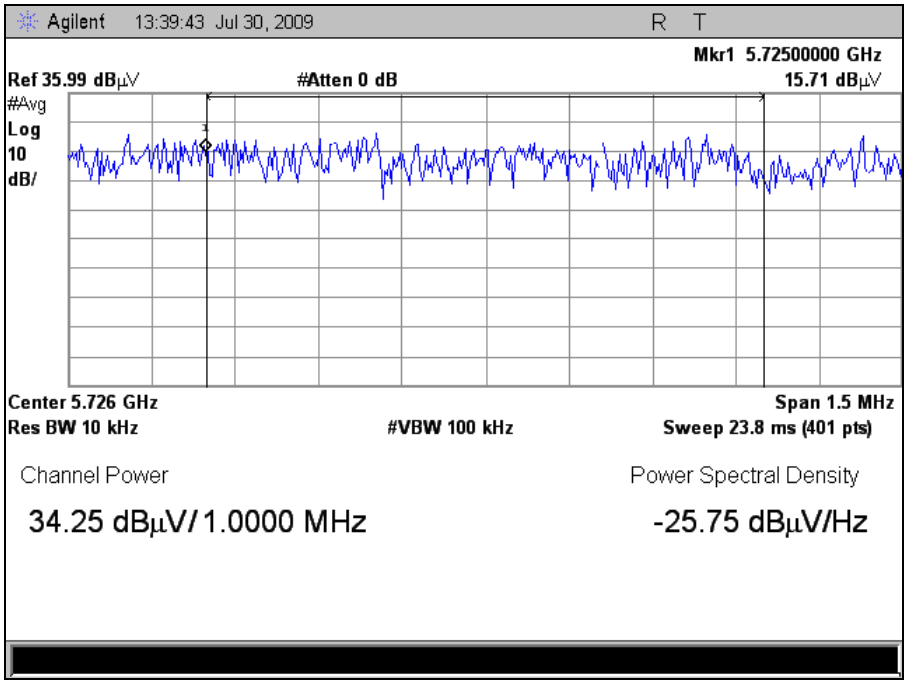
Plot 235. EIRP, 802.11n 20MHz, 5470 MHz Peak, 19 dBi Panel



Plot 236. EIRP, 802.11n 20MHz, 5470 MHz Over 1 MHz, 19 dBi Panel

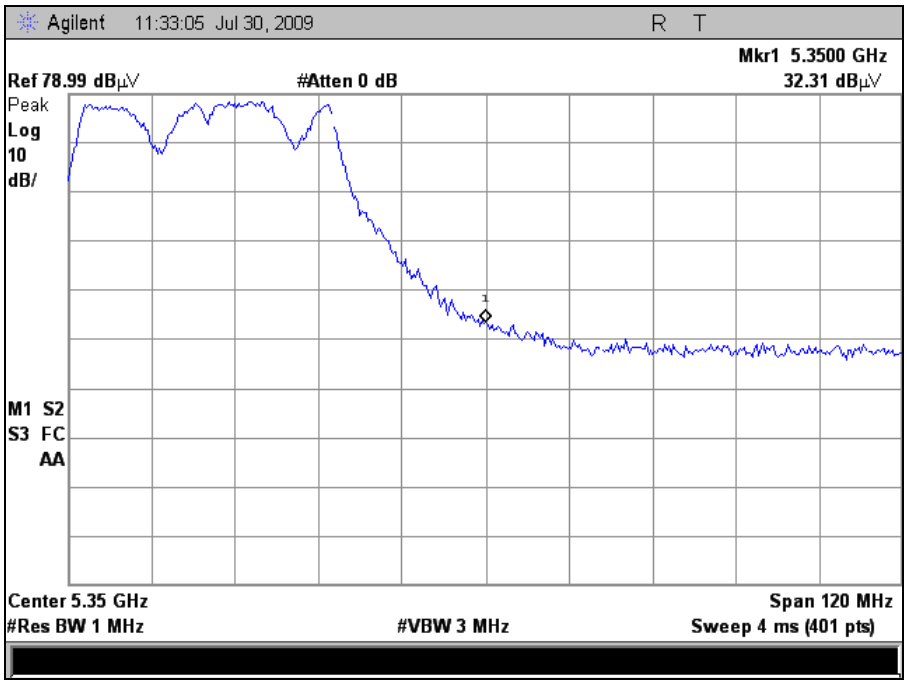


Plot 237. EIRP, 802.11n 20MHz, 5725 MHz Peak, 19 dBi Panel

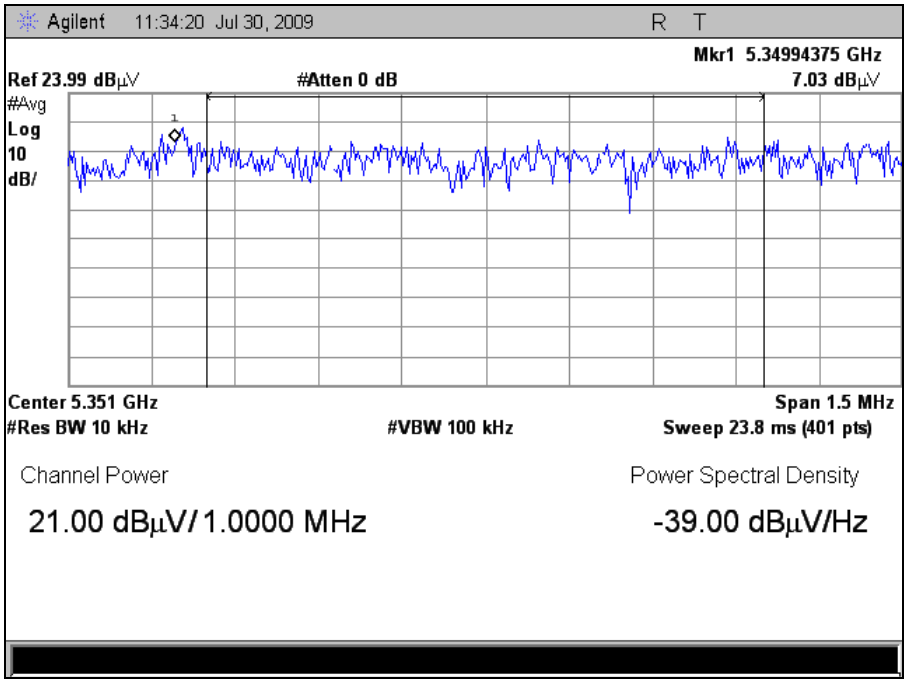


Plot 238. EIRP, 802.11n 20MHz, 5725 MHz Over 1 MHz, 19 dBi Panel

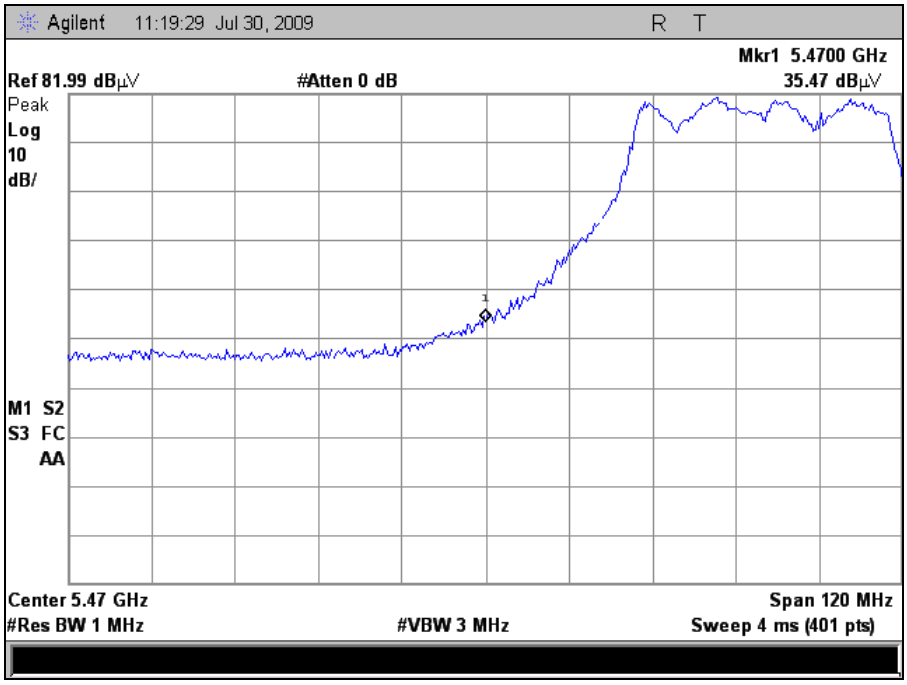
EIRP, 802.11n 40MHz



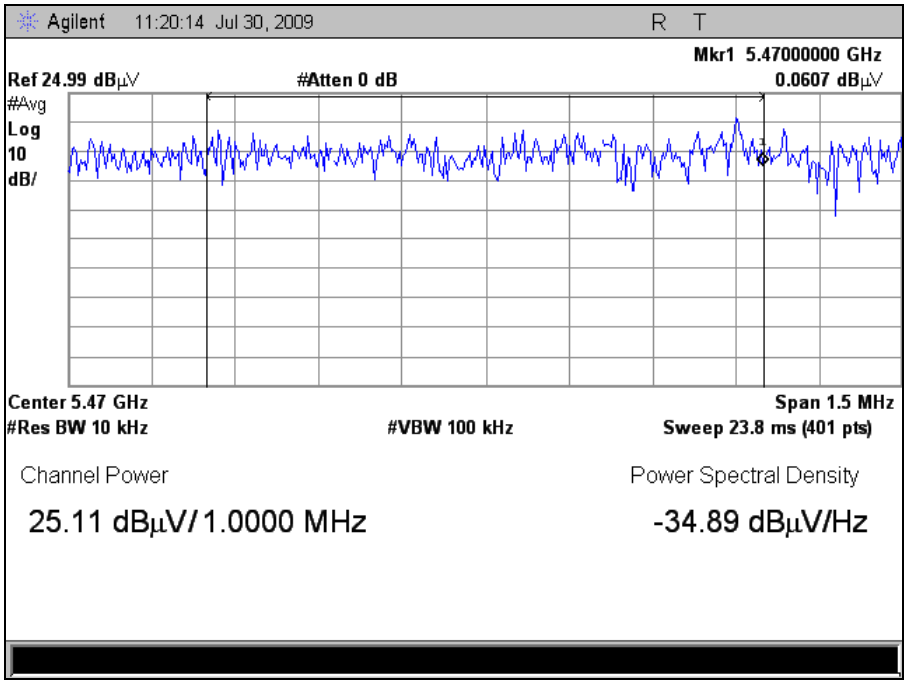
Plot 239. EIRP, 802.11n 40MHz, 5350 MHz Peak, 9 dBi Omni



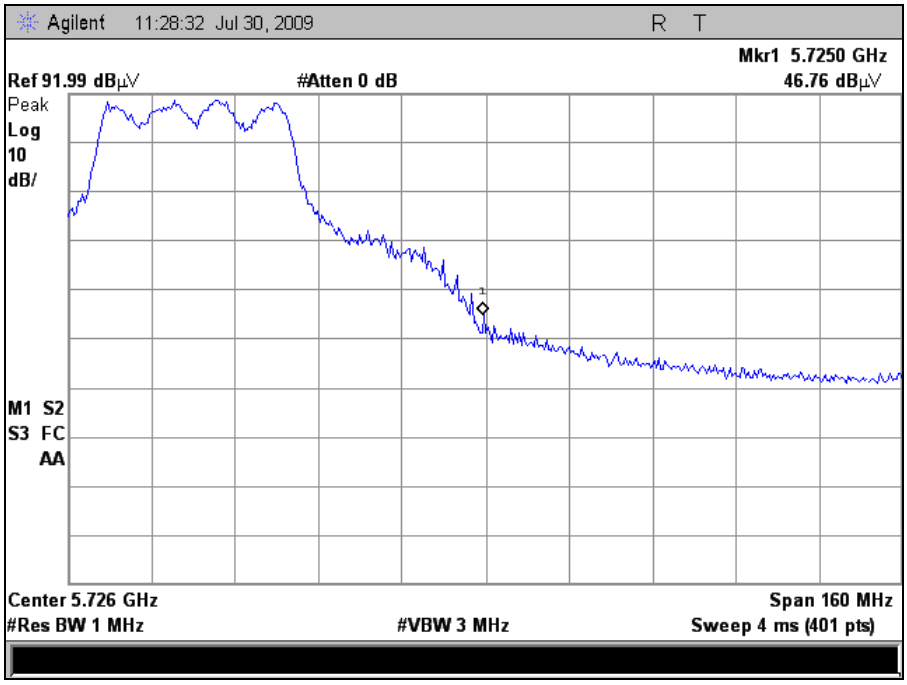
Plot 240. EIRP, 802.11n 40MHz, 5350 MHz Over 1 MHz, 9 dBi Omni



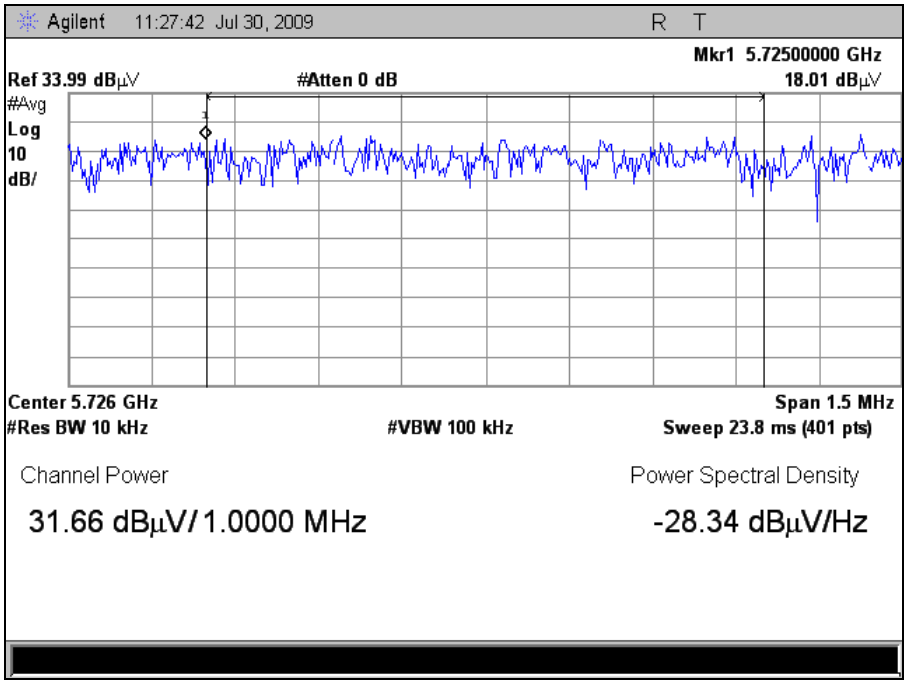
Plot 241. EIRP, 802.11n 40MHz, 5470 MHz Peak, 9 dBi Omni



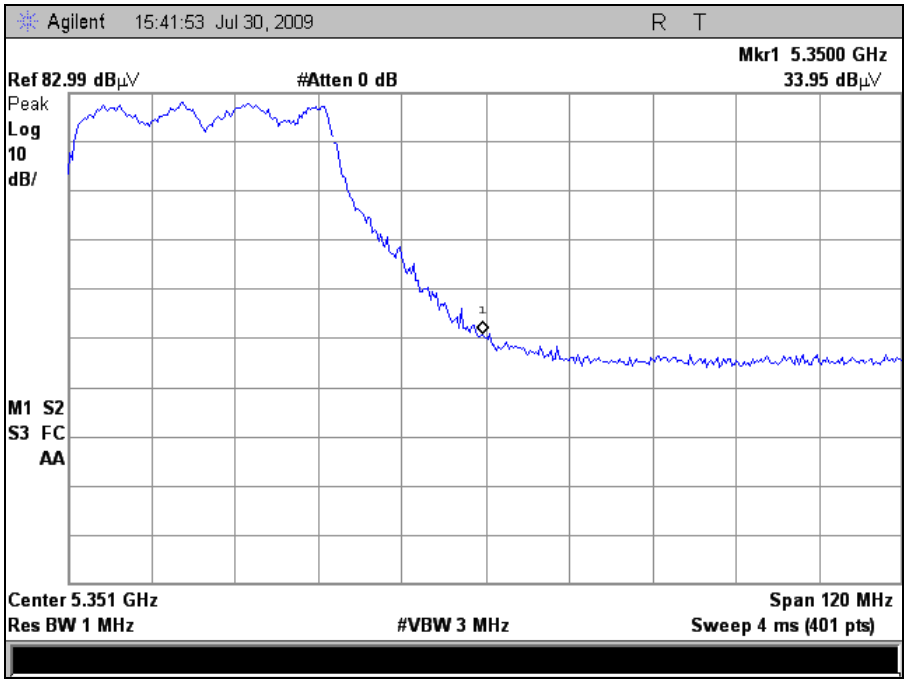
Plot 242. EIRP, 802.11n 40MHz, 5470 MHz Over 1 MHz, 9 dBi Omni



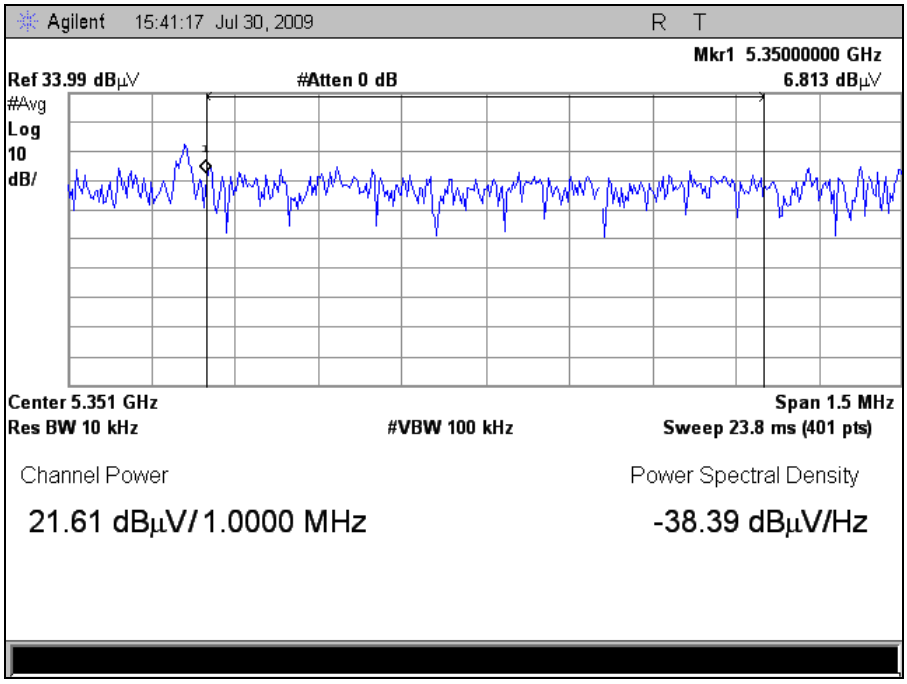
Plot 243. EIRP, 802.11n 40MHz, 5725 MHz Peak, 9 dBi Omni



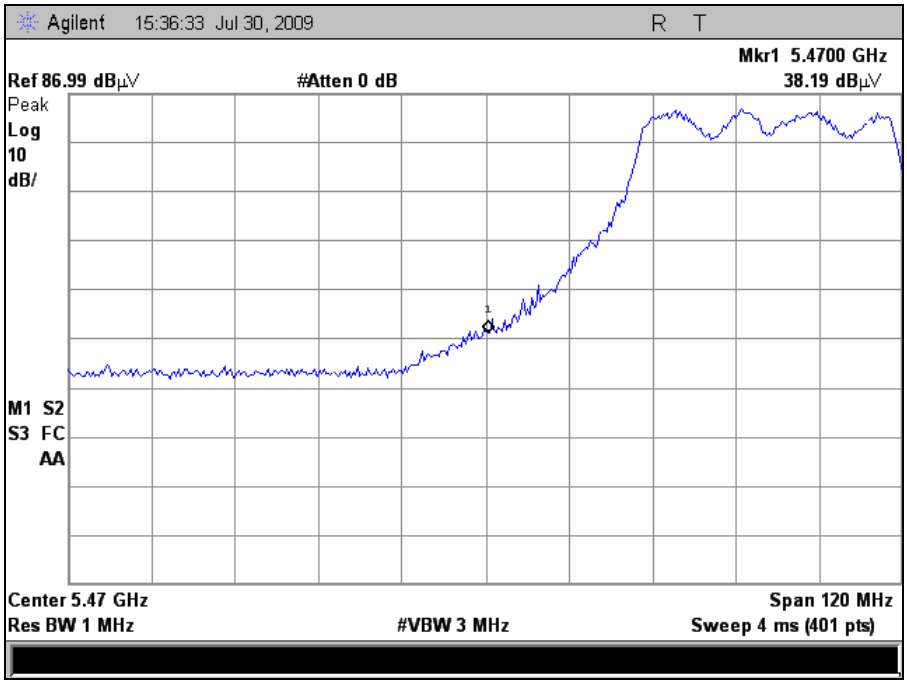
Plot 244. EIRP, 802.11n 40MHz, 5725 MHz Over 1 MHz, 9 dBi Omni



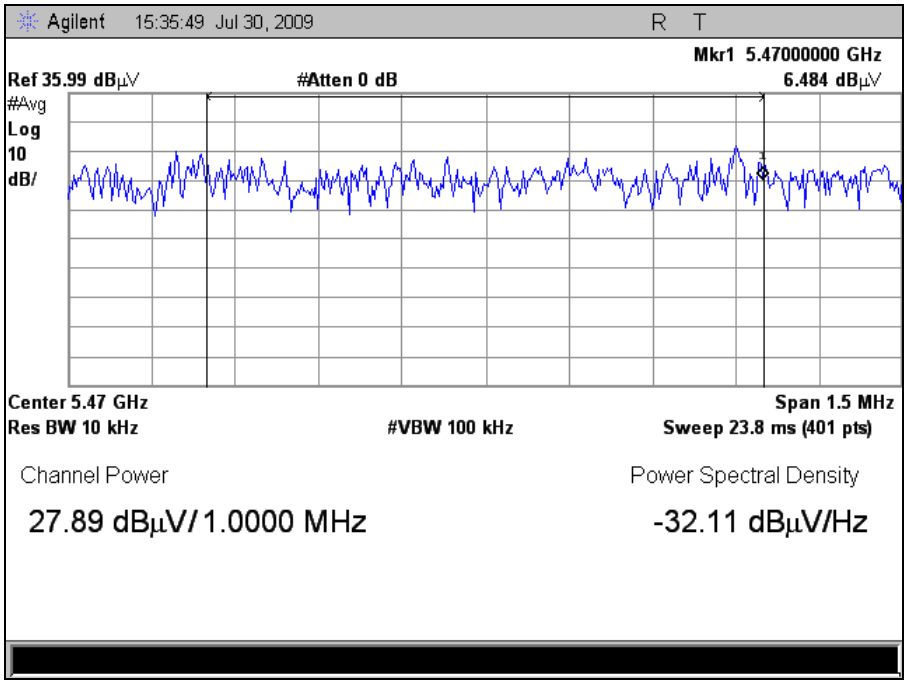
Plot 245. EIRP, 802.11n 40MHz, 5350 MHz Peak, 16 dBi Sector



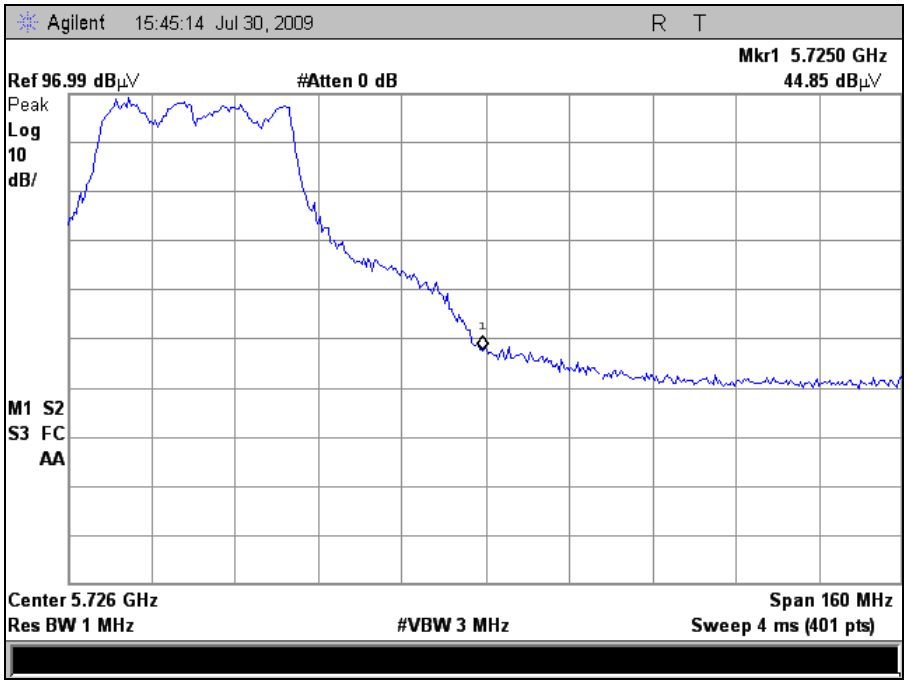
Plot 246. EIRP, 802.11n 40MHz, 5350 MHz Over 1 MHz, 16 dBi Sector



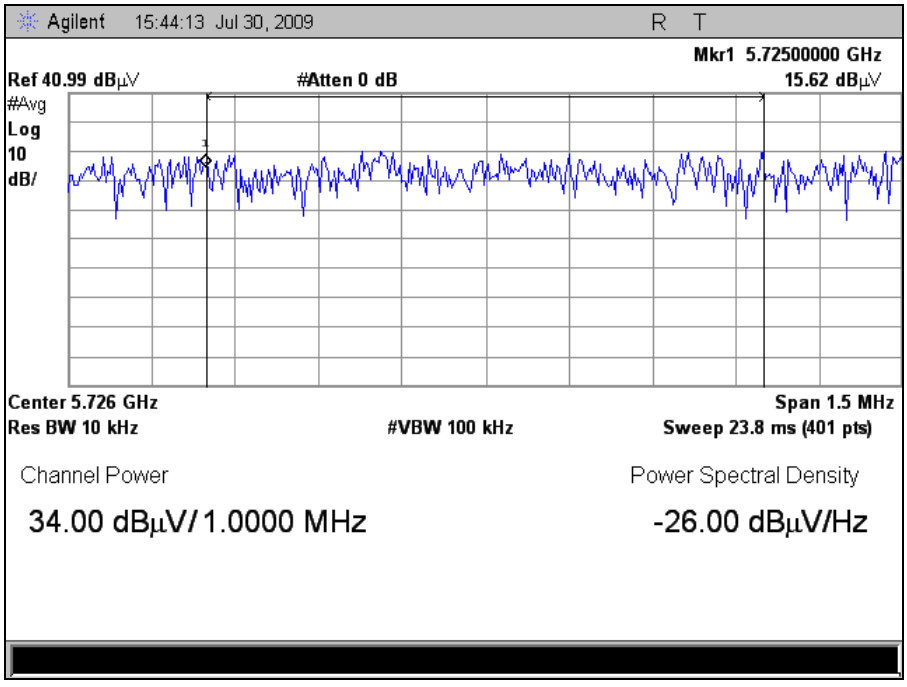
Plot 247. EIRP, 802.11n 40MHz, 5470 MHz Peak, 16 dBi Sector



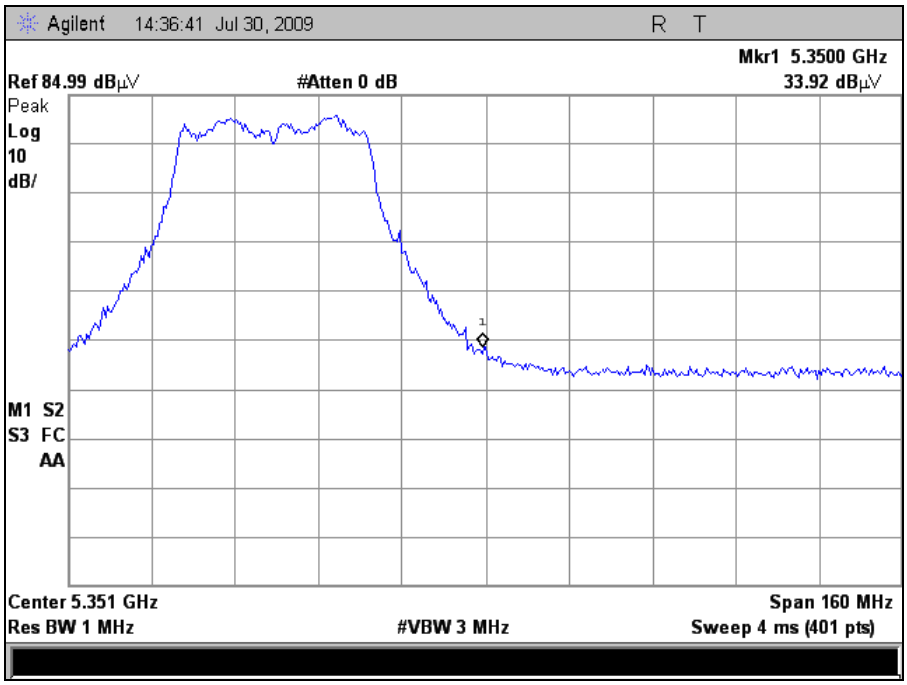
Plot 248. EIRP, 802.11n 40MHz, 5470 MHz Over 1 MHz, 16 dBi Sector



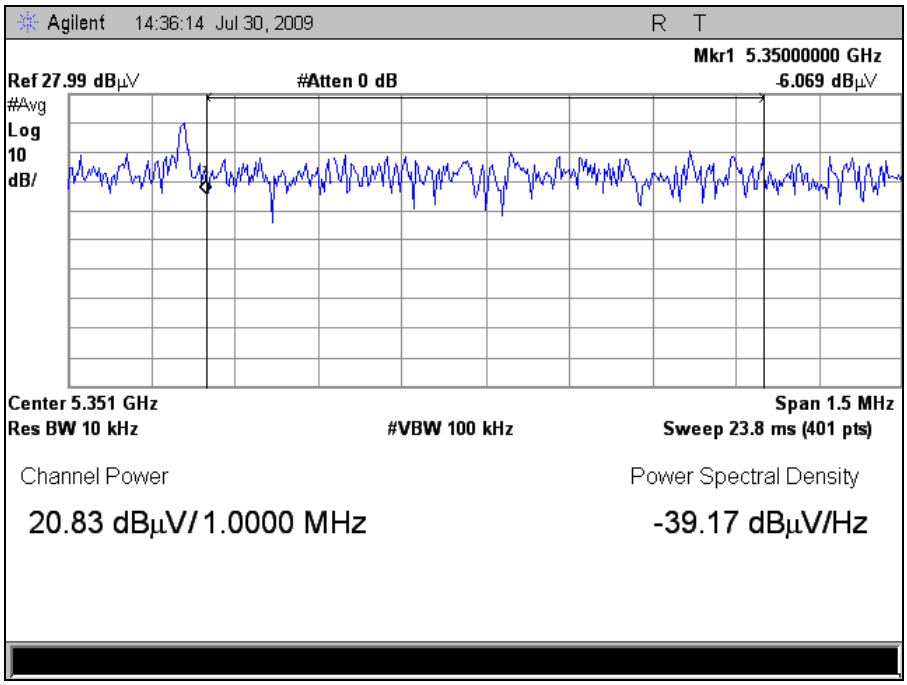
Plot 249. EIRP, 802.11n 40MHz, 5725 MHz Peak, 16 dBi Sector



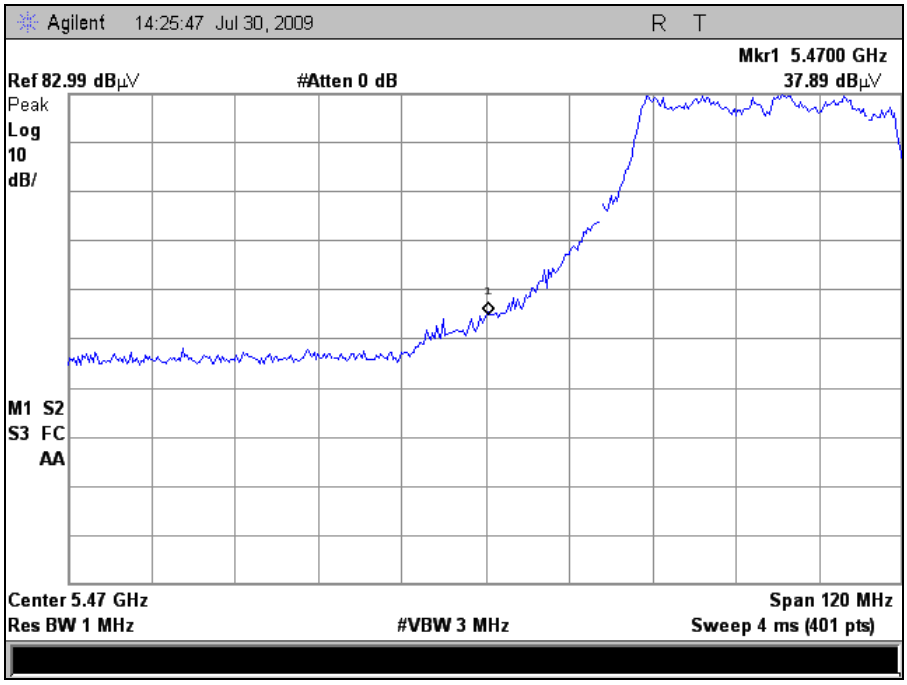
Plot 250. EIRP, 802.11n 40MHz, 5725 MHz Over 1 MHz, 16 dBi Sector



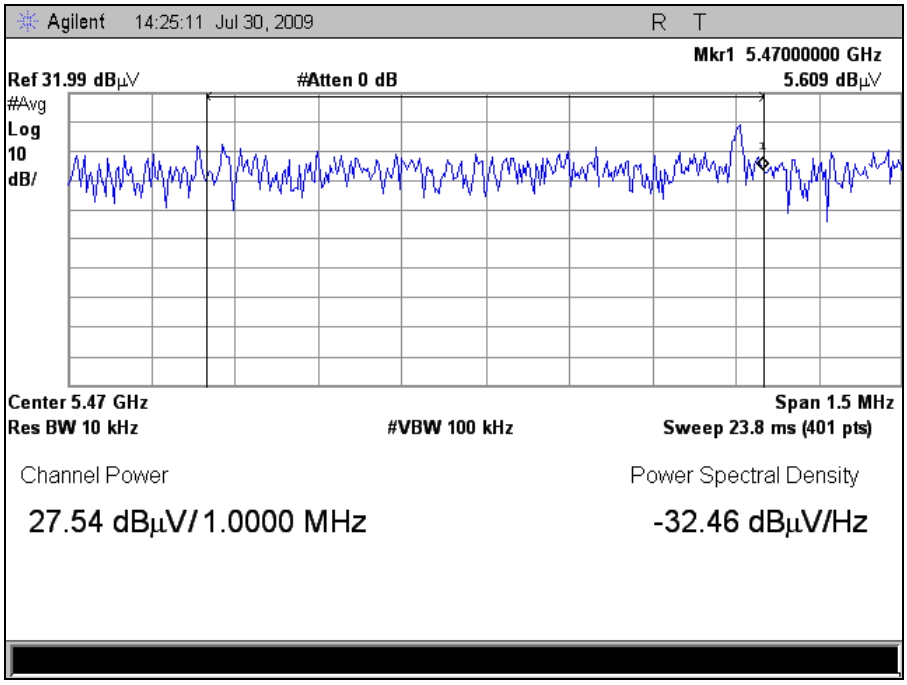
Plot 251. EIRP, 802.11n 40MHz, 5350 MHz Peak, 19 dBi Panel



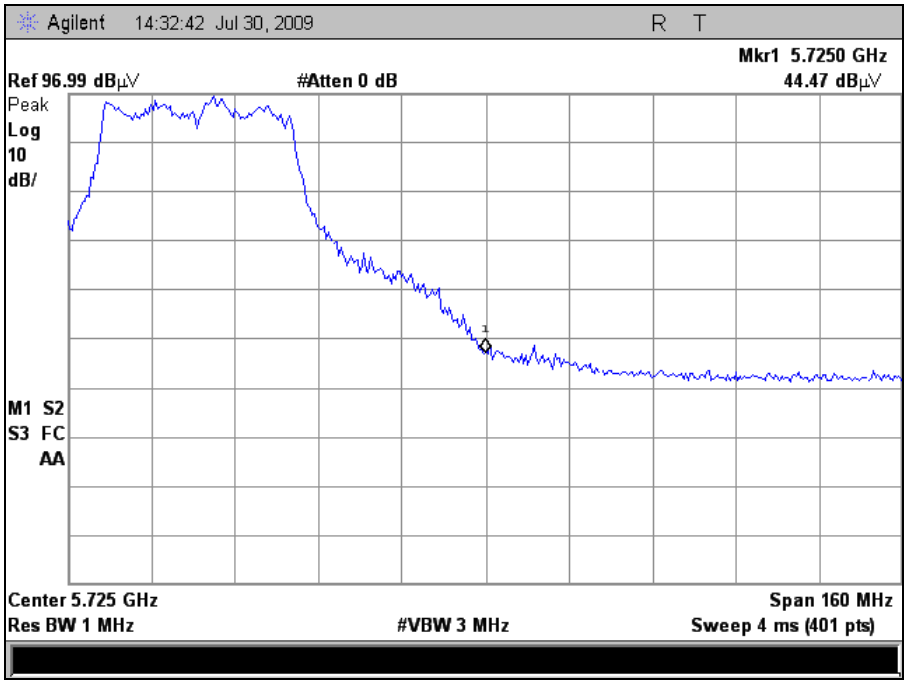
Plot 252. EIRP, 802.11n 40MHz, 5350 MHz Over 1 MHz, 19 dBi Panel



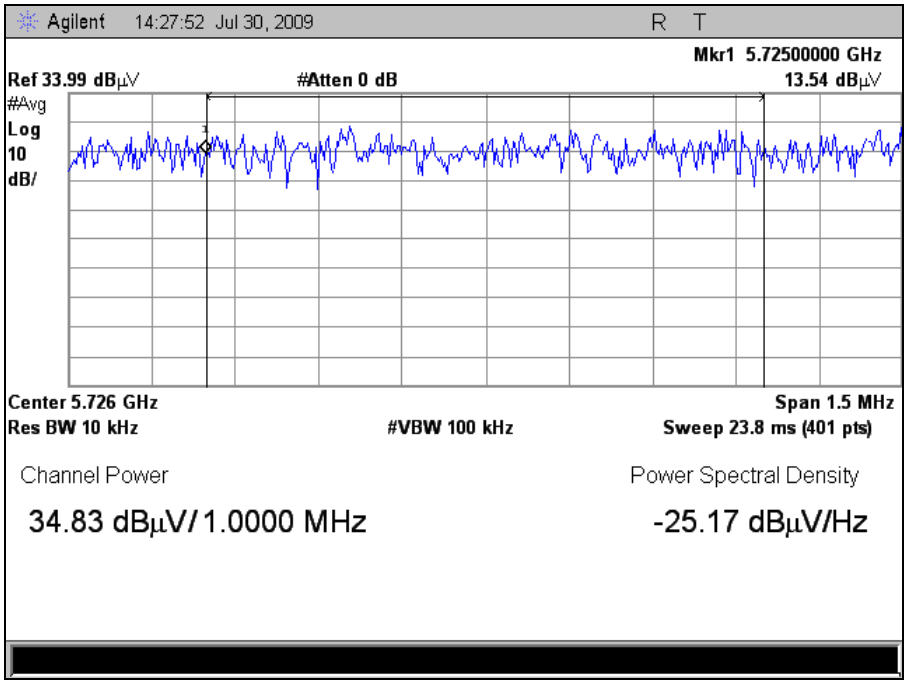
Plot 253. EIRP, 802.11n 40MHz, 5470 MHz Peak, 19 dBi Panel



Plot 254. EIRP, 802.11n 40MHz, 5470 MHz Over 1 MHz, 19 dBi Panel



Plot 255. EIRP, 802.11n 40MHz, 5725 MHz Peak, 19 dBi Panel



Plot 256. EIRP, 802.11n 40MHz, 5725 MHz Over 1 MHz, 19 dBi Panel

Restricted Band

9dBi Omni Antenna									
802.11a	**Restricted Band Freq.**	**Uncorrected Peak (dBuV)**	**Cable Loss**	**ACF**	**DCF**	**Corrected**	**Limit (dBuV/m)**	**Margin**	
	5350 MHz	30.93	7.03	35	9.54	63.42	74	-10.58	Peak
	5350 MHz	19.77	7.03	35	9.54	52.26	54	-1.74	Average
	5460 MHz	31.51	7.03	35	9.54	64	74	-10	Peak
	5460 MHz	19.29	7.03	35	9.54	51.78	54	-2.22	Average
802.11n 20MHz	**Restricted Band Freq.**	**Uncorrected Peak (dBuV)**	**Cable Loss**	**ACF**	**DCF**	**Corrected**	**Limit (dBuV/m)**	**Margin**	
	5350 MHz	33.29	7.03	35	9.54	65.78	74	-8.22	Peak
	5350 MHz	20.85	7.03	35	9.54	53.34	54	-0.66	Average
	5460 MHz	33.04	7.03	35	9.54	65.53	74	-8.47	Peak
	5460 MHz	20.85	7.03	35	9.54	53.34	54	-0.66	Average
802.11n 40MHz	**Restricted Band Freq.**	**Uncorrected Peak (dBuV)**	**Cable Loss**	**ACF**	**DCF**	**Corrected**	**Limit (dBuV/m)**	**Margin**	
	5350 MHz	32.27	7.03	35	9.54	64.76	74	-9.24	Peak
	5350 MHz	20.89	7.03	35	9.54	53.38	54	-0.62	Average
	5460 MHz	30.62	7.03	35	9.54	63.11	74	-10.89	Peak
	5460 MHz	19.81	7.03	35	9.54	52.3	54	-1.7	Average

Table 75. Restricted Band Edge, Radiated, Test Results, 9 dBi Omni

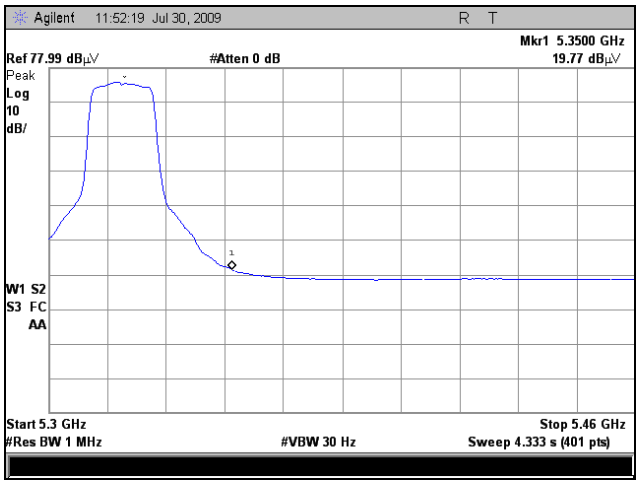
16dBi Sector Antenna									
802.11a	**Restricted Band Freq.**	**Uncorrected Peak (dBuV)**	**Cable Loss**	**ACF**	**DCF**	**Corrected**	**Limit (dBuV/m)**	**Margin**	
	5350 MHz	34.32	7.03	35	9.54	66.81	74	-7.19	Peak
	5350 MHz	20.61	7.03	35	9.54	53.1	54	-0.9	Average
	5460 MHz	33.1	7.03	35	9.54	65.59	74	-8.41	Peak
	5460 MHz	20.21	7.03	35	9.54	52.7	54	-1.3	Average
802.11n 20MHz	**Restricted Band Freq.**	**Uncorrected Peak (dBuV)**	**Cable Loss**	**ACF**	**DCF**	**Corrected**	**Limit (dBuV/m)**	**Margin**	
	5350 MHz	34.65	7.03	35	9.54	67.14	74	-6.86	Peak
	5350 MHz	20.78	7.03	35	9.54	53.27	54	-0.73	Average
	5460 MHz	34.53	7.03	35	9.54	67.02	74	-6.98	Peak
	5460 MHz	21.12	7.03	35	9.54	53.61	54	-0.39	Average
802.11n 40MHz	**Restricted Band Freq.**	**Uncorrected Peak (dBuV)**	**Cable Loss**	**ACF**	**DCF**	**Corrected**	**Limit (dBuV/m)**	**Margin**	
	5350 MHz	32.37	7.03	35	9.54	64.86	74	-9.14	Peak
	5350 MHz	21.48	7.03	35	9.54	53.97	54	-0.03	Average
	5460 MHz	32.44	7.03	35	9.54	64.93	74	-9.07	Peak
	5460 MHz	20.32	7.03	35	9.54	52.81	54	-1.19	Average

Table 76. Restricted Band Edge, Radiated, Test Results, 16 dBi Sector

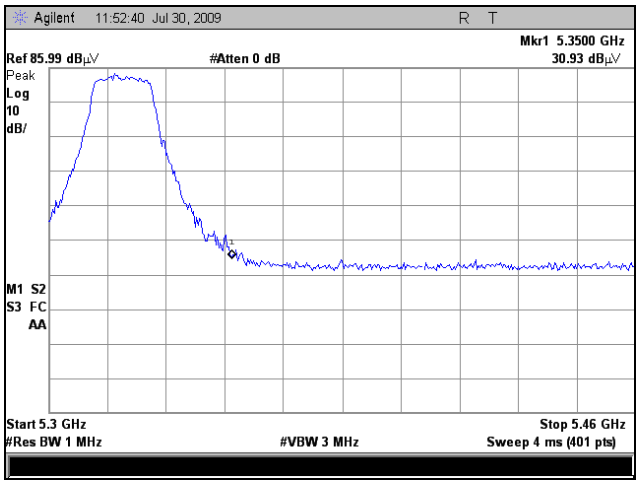
19dBi Panel Antenna									
802.11a	**Restricted Band Freq.**	**Uncorrected Peak (dBuV)**	**Cable Loss**	**ACF**	**DCF**	**Corrected**	**Limit (dBuV/m)**	**Margin**	
	5350 MHz	31.18	7.03	35	9.54	63.67	74	-10.33	Peak
	5350 MHz	19.7	7.03	35	9.54	52.19	54	-1.81	Average
	5460 MHz	32.78	7.03	35	9.54	65.27	74	-8.73	Peak
	5460 MHz	20.8	7.03	35	9.54	53.29	54	-0.71	Average
802.11n 20MHz	**Restricted Band Freq.**	**Uncorrected Peak (dBuV)**	**Cable Loss**	**ACF**	**DCF**	**Corrected**	**Limit (dBuV/m)**	**Margin**	
	5350 MHz	34.47	7.03	35	9.54	66.96	74	-7.04	Peak
	5350 MHz	19.82	7.03	35	9.54	52.31	54	-1.69	Average
	5460 MHz	32.82	7.03	35	9.54	65.31	74	-8.69	Peak
	5460 MHz	21.02	7.03	35	9.54	53.51	54	-0.49	Average
802.11n 40MHz	**Restricted Band Freq.**	**Uncorrected Peak (dBuV)**	**Cable Loss**	**ACF**	**DCF**	**Corrected**	**Limit (dBuV/m)**	**Margin**	
	5350 MHz	21.37	7.03	35	9.54	53.86	74	-20.14	Peak
	5350 MHz	21.37	7.03	35	9.54	53.86	54	-0.14	Average
	5460 MHz	31.71	7.03	35	9.54	64.2	74	-9.8	Peak
	5460 MHz	20.4	7.03	35	9.54	52.89	54	-1.11	Average

Table 77. Restricted Band Edge, Radiated, Test Results, 19 dBi Panel

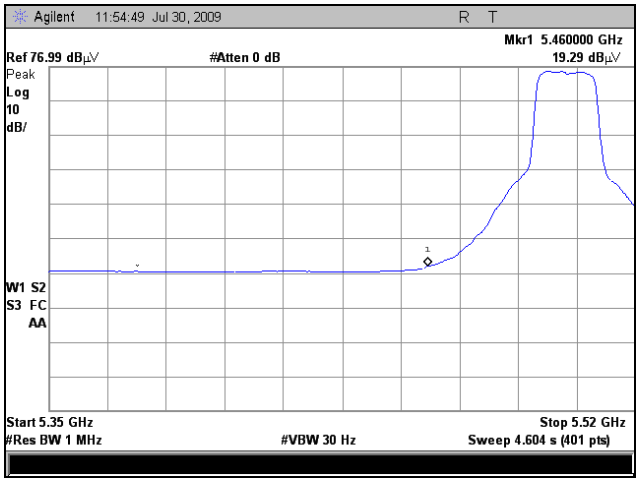
Restricted Band, Combined Ports, 802.11a



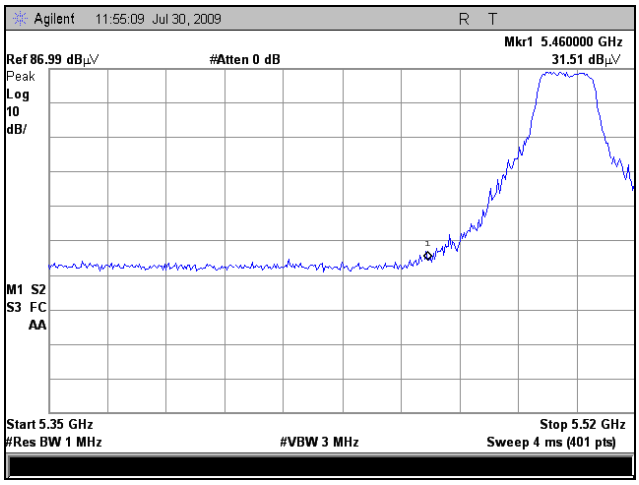
Plot 257. Restricted Band, 802.11a, 5350 Average, 9 dBi Omni



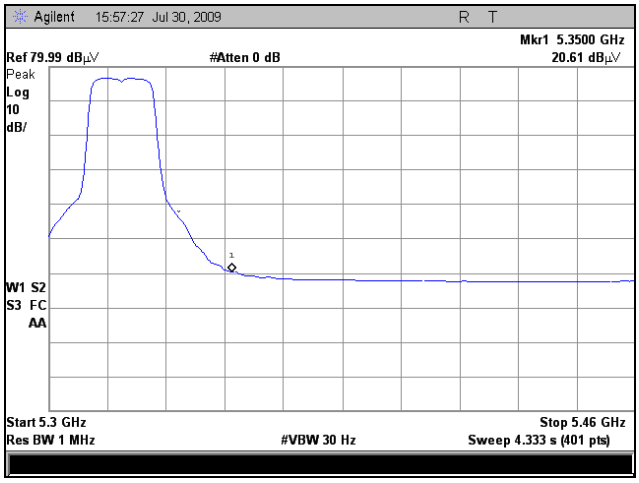
Plot 258. Restricted Band, 802.11a, 5350 Peak, 9 dBi Omni



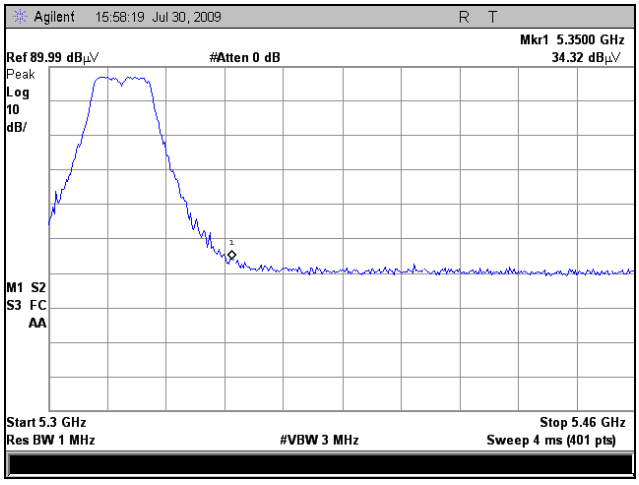
Plot 259. Restricted Band, 802.11a, 5460 Average, 9 dBi Omni



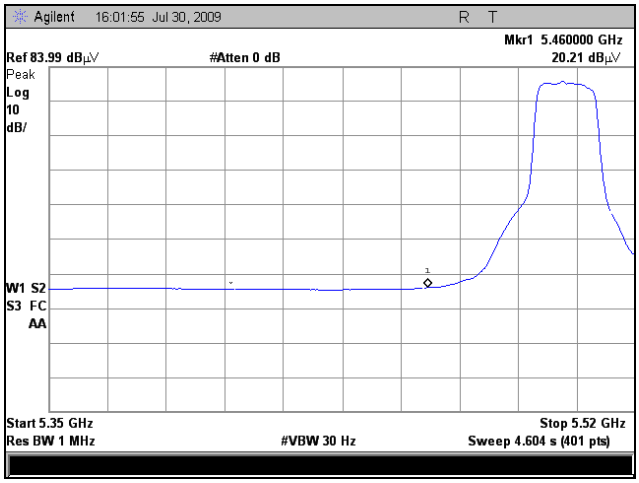
Plot 260. Restricted Band, 802.11a, 5460 Peak, 9 dBi Omni



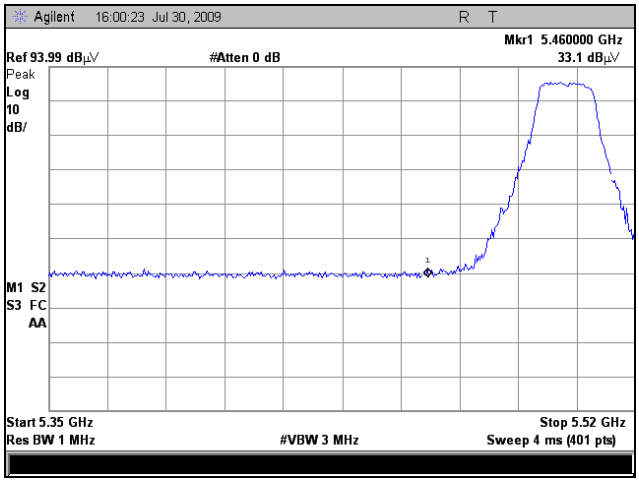
Plot 261. Restricted Band, 802.11a, 5350 Average, 16 dBi Sector



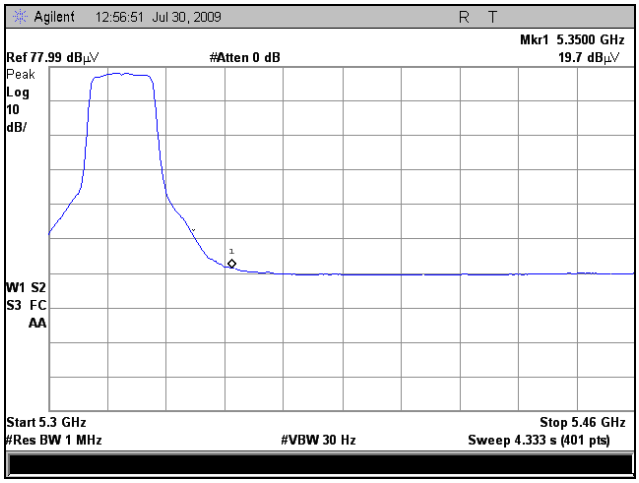
Plot 262. Restricted Band, 802.11a, 5350 Peak, 16 dBi Sector



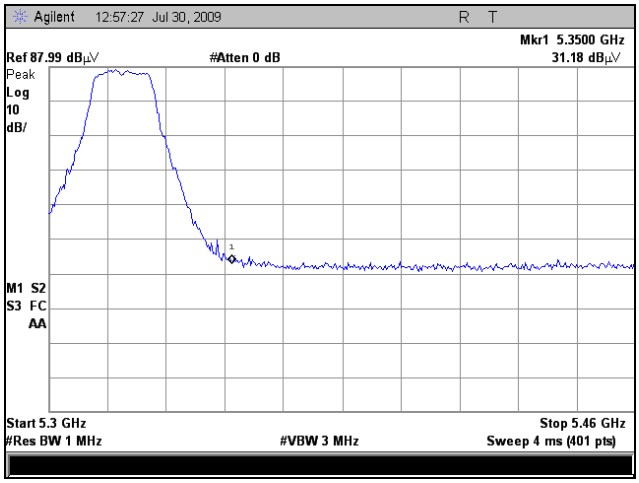
Plot 263. Restricted Band, 802.11a, 5460 Average, 16 dBi Sector



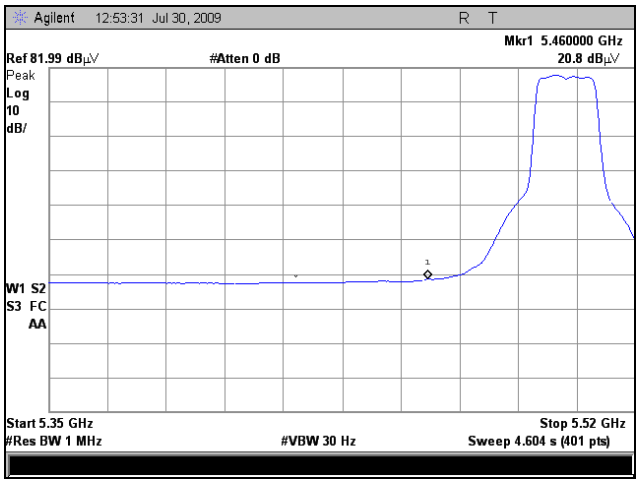
Plot 264. Restricted Band, 802.11a, 5460 Peak, 16 dBi Sector



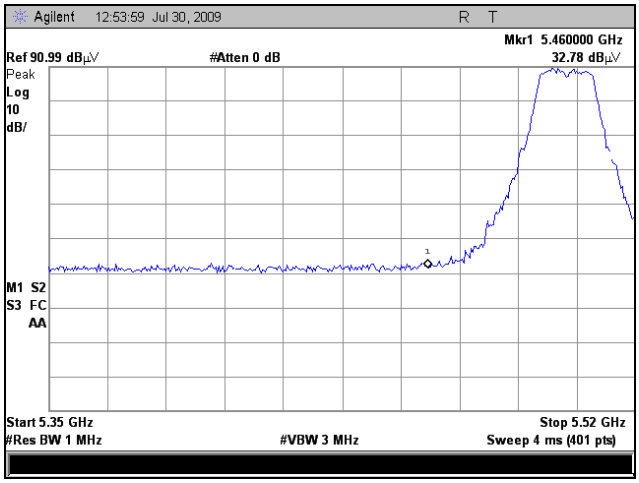
Plot 265. Restricted Band, 802.11a, 5350 Average, 19 dBi Panel



Plot 266. Restricted Band, 802.11a, 5350 Peak, 19 dBi Panel

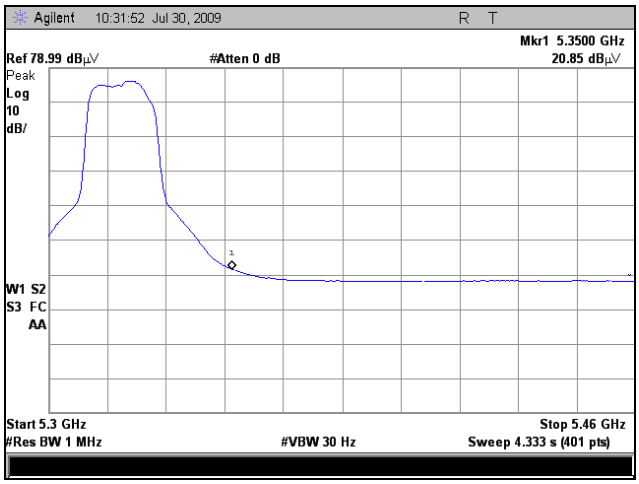


Plot 267. Restricted Band, 802.11a, 5460 Average, 19 dBi Panel

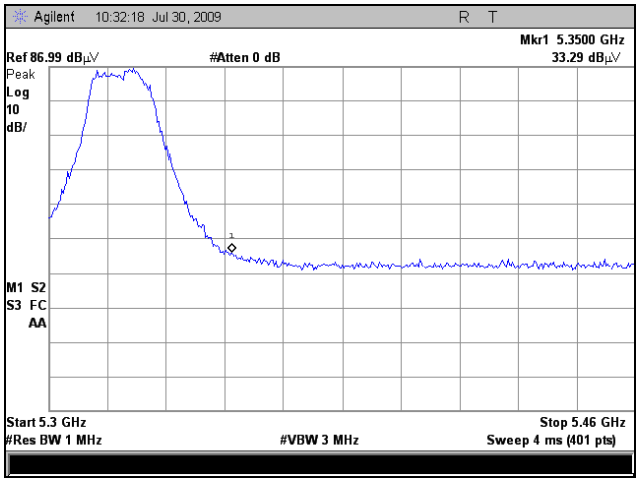


Plot 268. Restricted Band, 802.11a, 5460 Peak, 19 dBi Panel

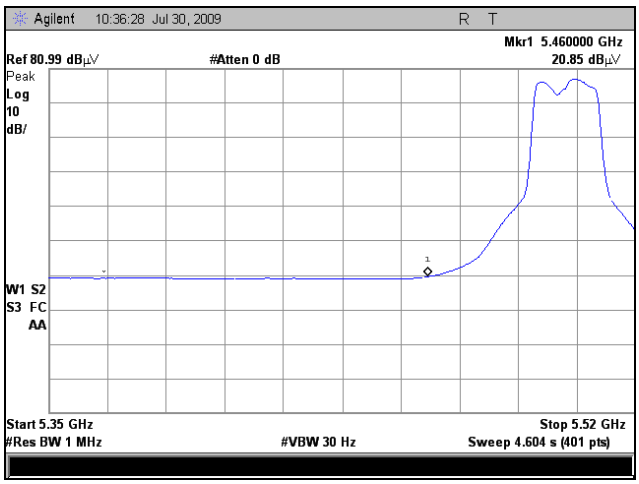
Restricted Band, Combined Ports, 802.11n 20MHz



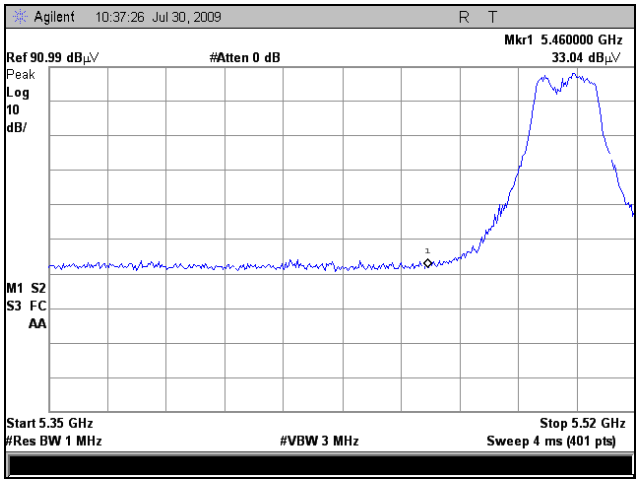
Plot 269. Restricted Band, 802.11n 20MHz, 5350 Average, 9 dBi Omni



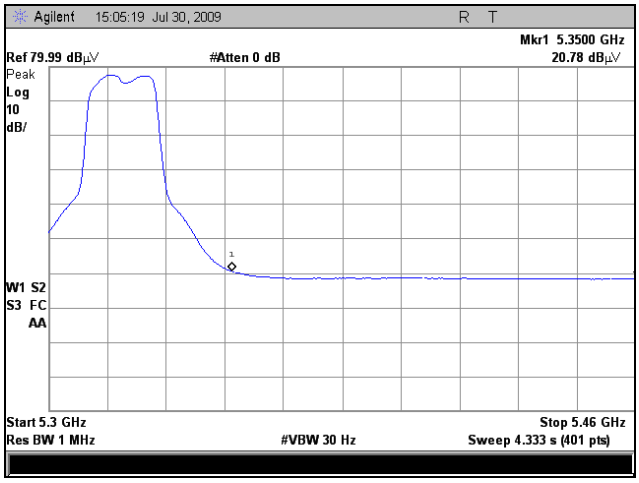
Plot 270. Restricted Band, 802.11n 20MHz, 5350 Peak, 9 dBi Omni



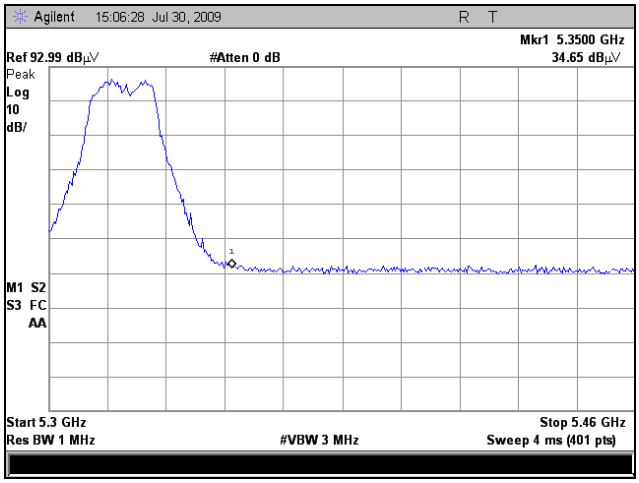
Plot 271. Restricted Band, 802.11n 20MHz, 5460 Average, 9 dBi Omni



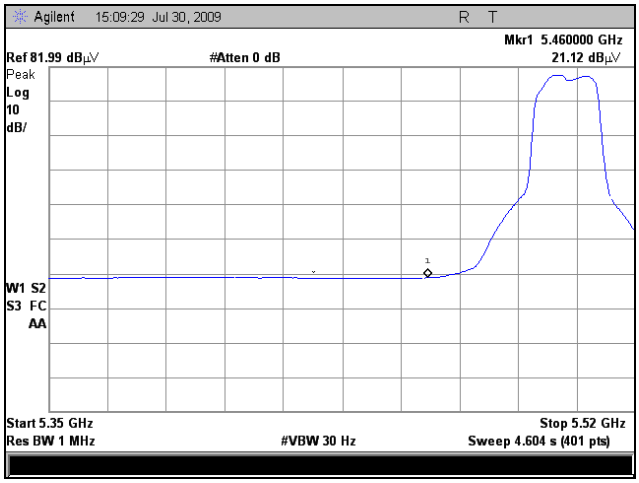
Plot 272. Restricted Band, 802.11n 20MHz, 5460 Peak, 9 dBi Omni



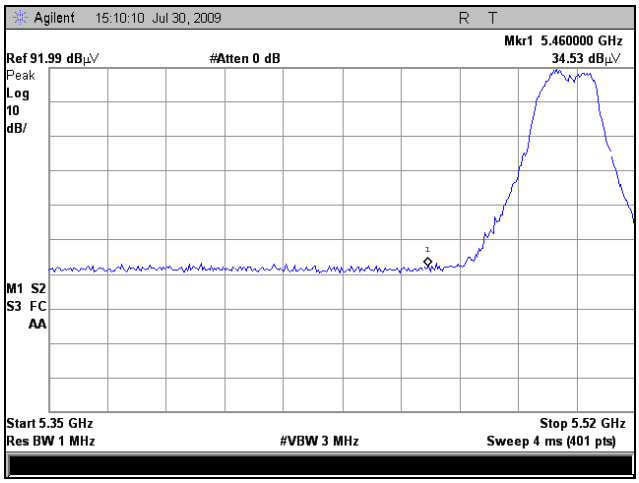
Plot 273. Restricted Band, 802.11n 20MHz, 5350 Average, 16 dBi Sector



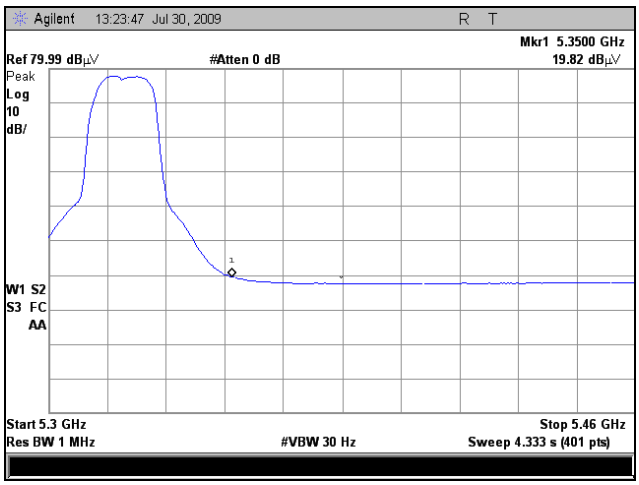
Plot 274. Restricted Band, 802.11n 20MHz, 5350 Peak, 16 dBi Sector



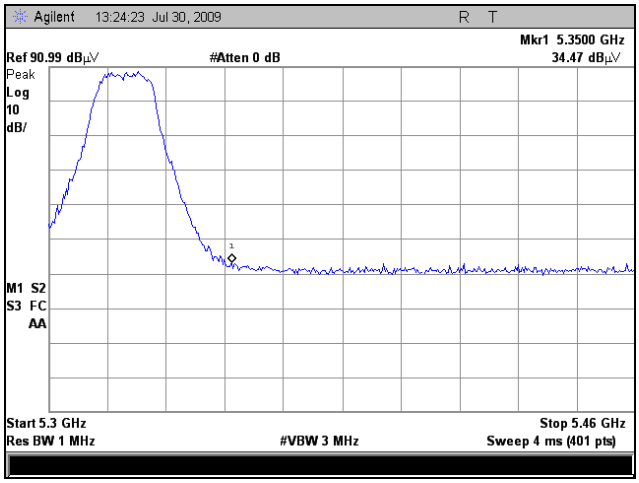
Plot 275. Restricted Band, 802.11n 20MHz, 5460 Average, 16 dBi Sector



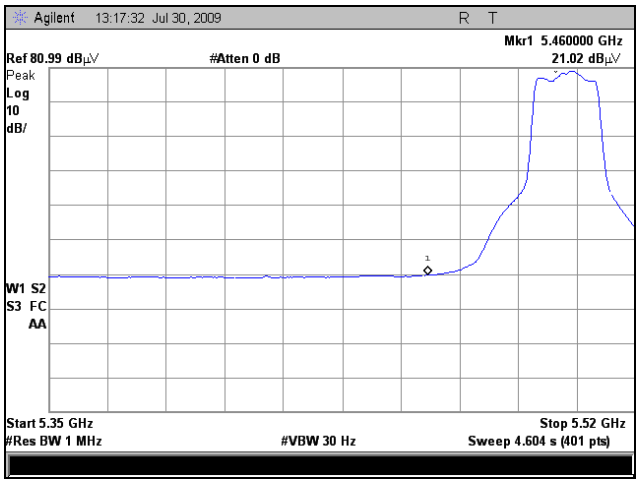
Plot 276. Restricted Band, 802.11n 20MHz, 5460 Peak, 16 dBi Sector



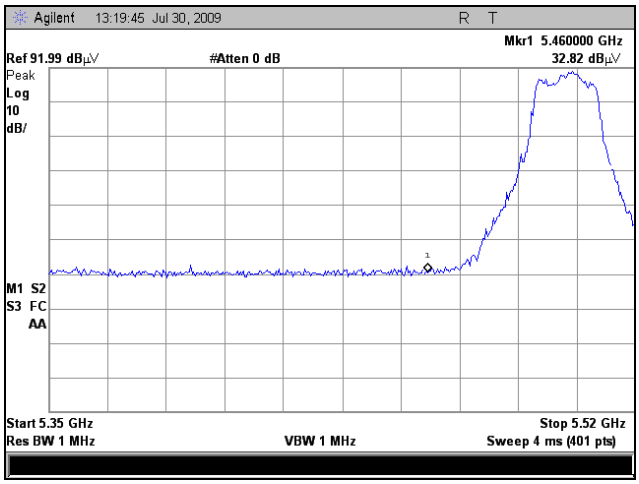
Plot 277. Restricted Band, 802.11n 20MHz, 5350 Average, 19 dBi Panel



Plot 278. Restricted Band, 802.11n 20MHz, 5350 Peak, 19 dBi Panel

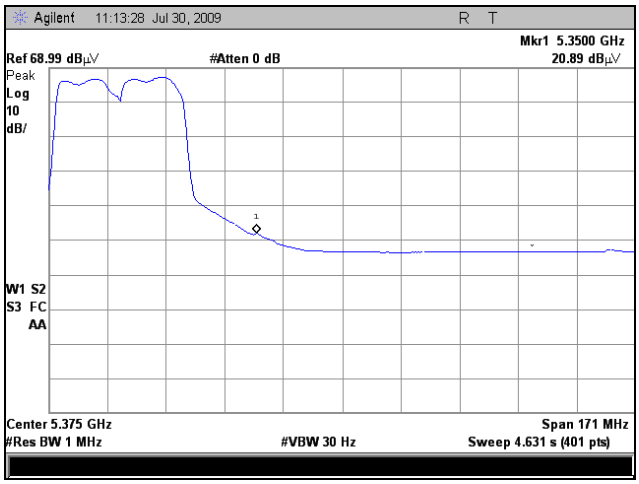


Plot 279. Restricted Band, 802.11n 20MHz, 5460 Average, 19 dBi Panel

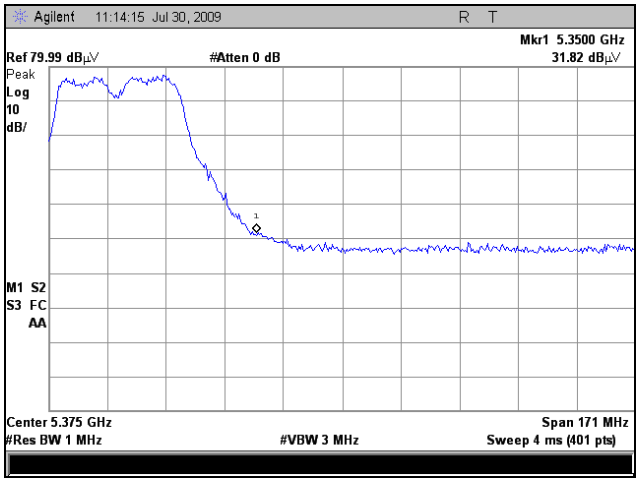


Plot 280. Restricted Band, 802.11n 20MHz, 5460 Peak, 19 dBi Panel

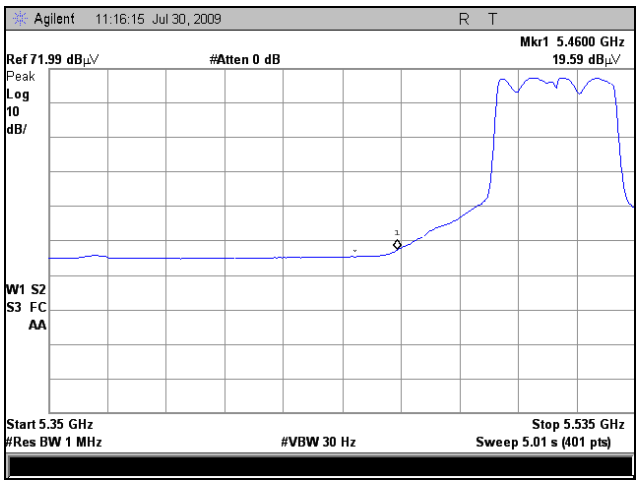
Restricted Band, Combined Ports, 802.11n 40MHz



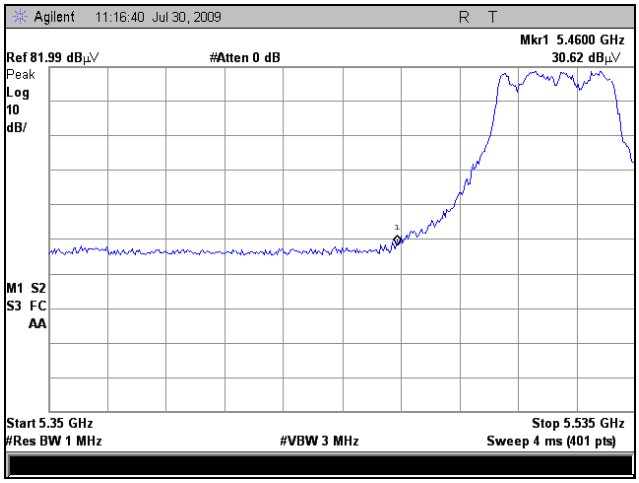
Plot 281. Restricted Band, Combined, 802.11n 40MHz, 5350 Avg., 9 dBi Omni



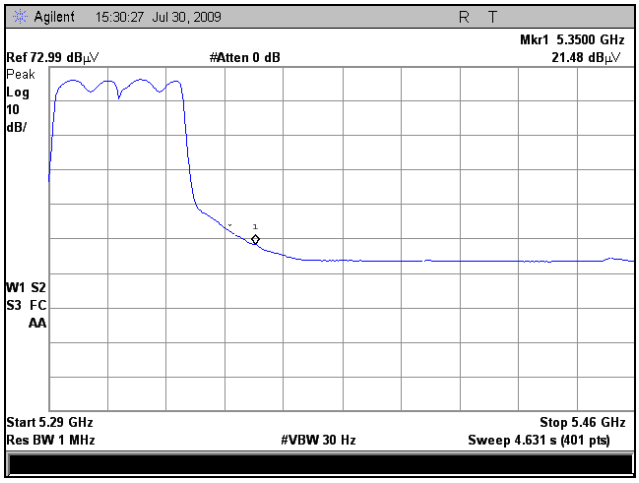
Plot 282. Restricted Band, Combined, 802.11n 40MHz, 5350 Peak, 9 dBi Omni



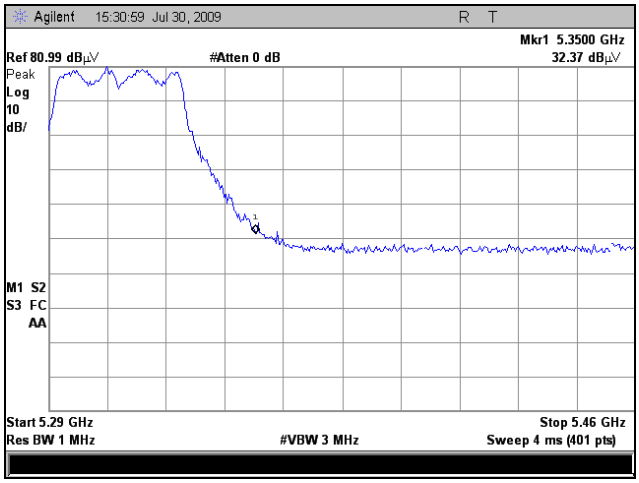
Plot 283. Restricted Band, Combined, 802.11n 40MHz, 5460 Avg., 9 dBi Omni



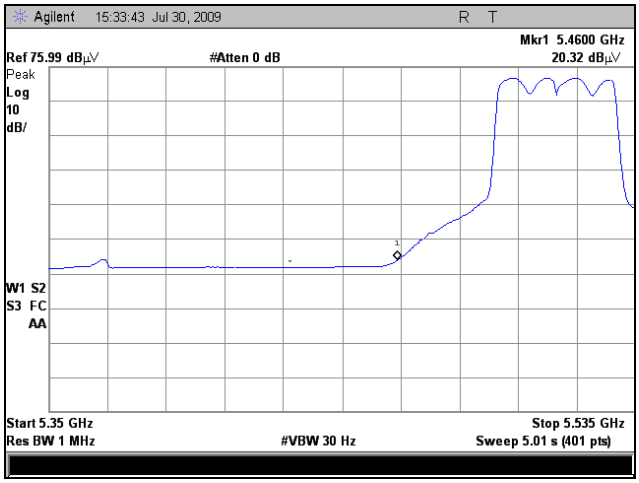
Plot 284. Restricted Band, Combined, 802.11n 40MHz, 5460 Peak, 9 dBi Omni



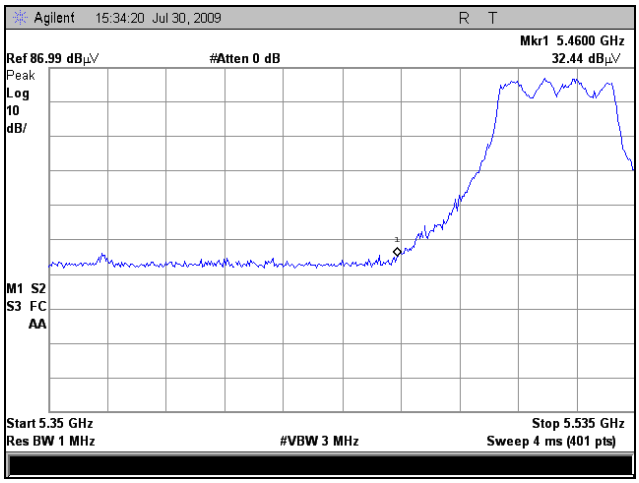
Plot 285. Restricted Band, Combined, 802.11n 40MHz, 5350 Avg., 16 dBi Sector



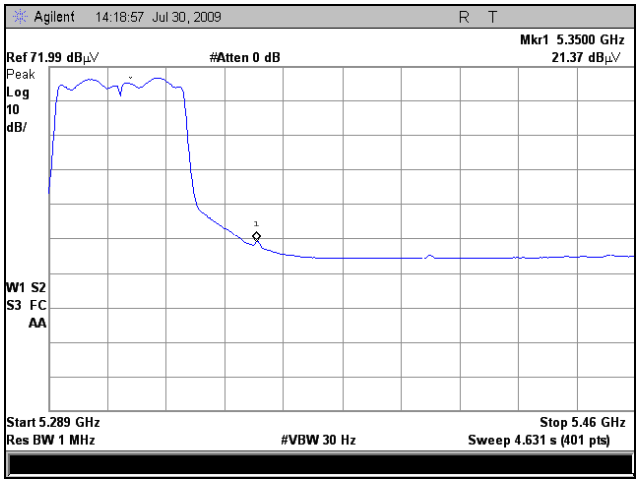
Plot 286. Restricted Band, Combined, 802.11n 40MHz, 5350 Peak, 16 dBi Sector



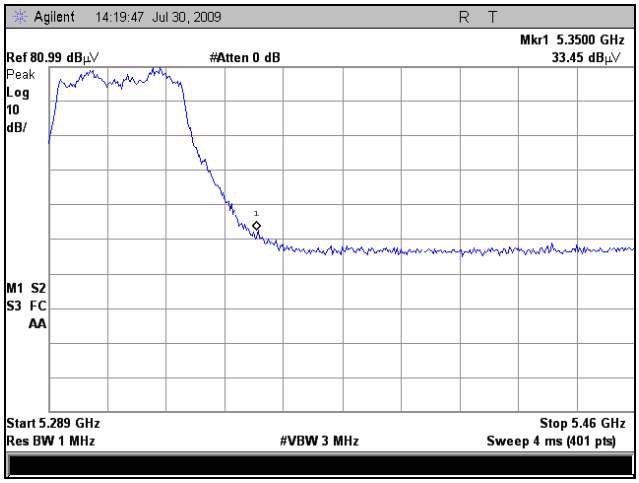
Plot 287. Restricted Band, Combined, 802.11n 40MHz, 5460 Avg., 16 dBi Sector



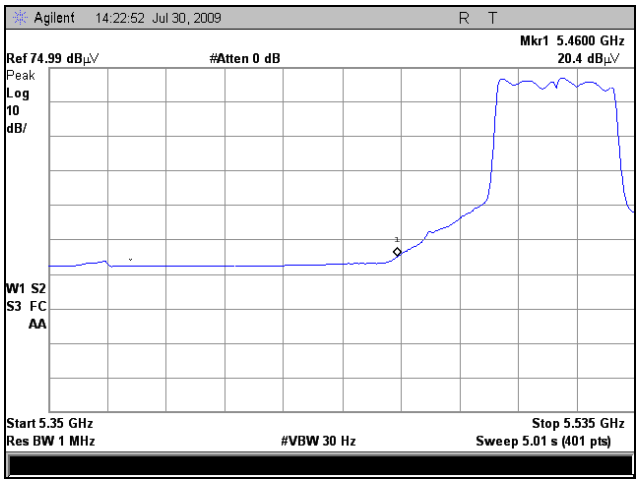
Plot 288. Restricted Band, Combined, 802.11n 40MHz, 5460 Peak, 16 dBi Sector



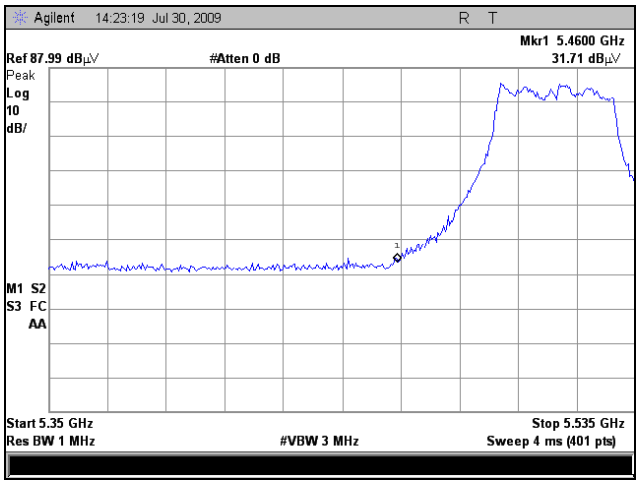
Plot 289. Restricted Band, Combined, 802.11n 40MHz, 5350 Avg., 19 dBi Panel



Plot 290. Restricted Band, Combined, 802.11n 40MHz, 5350 Peak, 19 dBi Panel

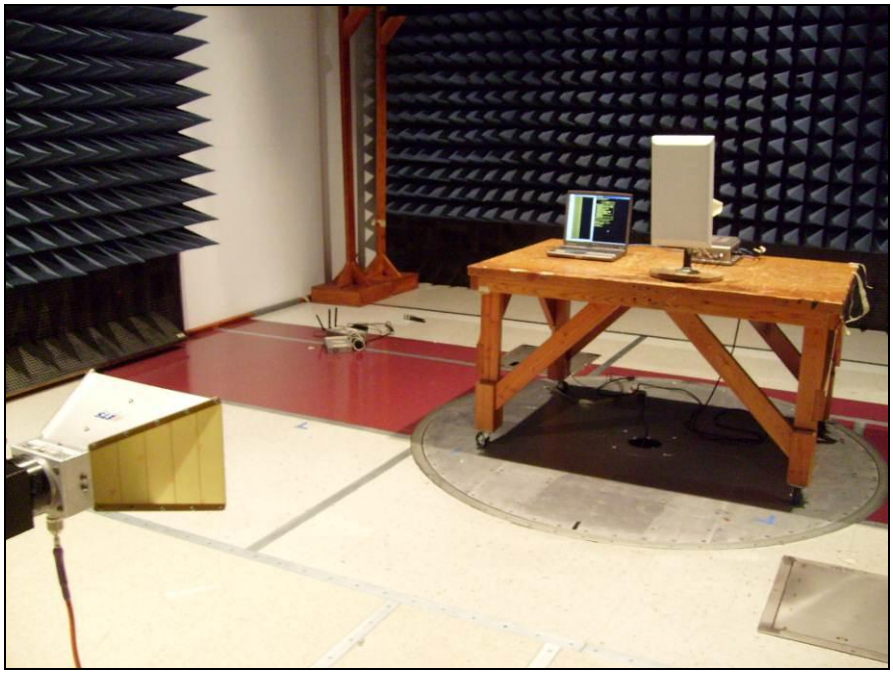


Plot 291. Restricted Band, Combined, 802.11n 40MHz, 5460 Avg., 19 dBi Panel

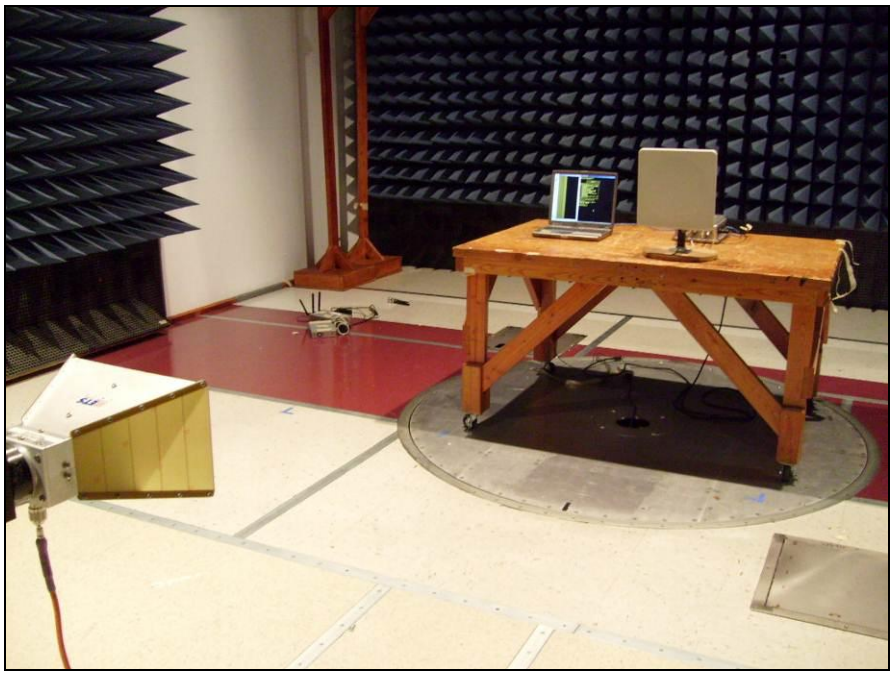


Plot 292. Restricted Band, Combined, 802.11n 40MHz, 5460 Peak, 19 dBi Panel

Photograph 6. Test Equipment and Setup for Various Radiated Measurements, 9 dBi Omni



Photograph 7. Test Equipment and Setup for Various Radiated Measurements, 16 dBi Sector



Photograph 8. Test Equipment and Setup for Various Radiated Measurements, 19 dBi Panel

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.407(f) RF Exposure

RF Exposure Requirements: **§1.1307(b)(1) and §1.1307(b)(2):** Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

RF Radiation Exposure Limit: **§1.1310:** As specified in this section, the Maximum Permissible Exposure (MPE) Limit shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in Sec. 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of Sec. 2.1093 of this chapter.

MPE Limit Calculation: EUT's operating frequencies @ 5250-5350MHz and 5470-5725MHz; highest conducted power = 20.21dBm (peak);therefore, **Limit for Uncontrolled exposure: 1 mW/cm^2 or 10 W/m^2**

Equation from page 18 of OET 65, Edition 97-01

$S = PG / 4\pi R^2$ or $R = \sqrt{PG / 4\pi S}$

EUT maximum antenna gain = 9.47dBi Combined (EUT is deployed with three 5dBi Gain Omnis)

where, S = Power Density (1 mW/cm^2)
P = Power Input to antenna (104.95 mW)
G = Antenna Gain (9.48 numeric)

S = (104.95*9.48 / 4*3.14*20.0) = (995.41 / 5024) = **0.19mW/cm^2**@ 20cm separation

EUT maximum antenna gain = 9 dBi Omni

where, S = Power Density (1 mW/cm^2)
P = Power Input to antenna (104.95 mW)
G = Antenna Gain (7.943 numeric)

S = (104.95*7.9432 / 4*3.14*20.0^2) = (833.68 / 5024) = **0.16mW/cm^2**@ 20cm separation

EUT maximum antenna gain = 16 dBi Sector

where, S = Power Density (1 mW/cm^2)
P = Power Input to antenna (104.95 mW)
G = Antenna Gain (39.81 numeric)

S = (104.95*39.81 / 4*3.14*20.0^2) = (4178.30 / 5024) = **0.83mW/cm^2**@ 20cm separation

EUT maximum antenna gain = 19 dBi Panel

where, S = Power Density (1 mW/cm^2)
P = Power Input to antenna (226.98 mW)
G = Antenna Gain (79.43 numeric)

R = $\sqrt{((104.95*79.432) / 4*3.14))}$ = $\sqrt{(8336.81 / 12.56)}$ = **25.76 cm**

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.407(g) Frequency Stability

Test Requirements: **§ 15.407(g):** Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

Test Procedure: The EUT was placed in an environmental chamber and the RF port was connected directly to a spectrum analyzer through an attenuator. Depending on which band was being investigated, the EUT was set to transmit at the low, mid, and high with the appropriate power level. If the EUT was capable of transmitting a CW carrier then the spectrum analyzer's frequency counting function was used to measure the actual frequency. If only a modulated carrier was available then the frequency relative to -10dBc above and below the carrier was measured and the carrier frequency was determined using (f1+f2)/2. The frequency of the carrier was measured at normal and extreme conditions. The resulting carrier frequencies were tabulated below with the temperature range of -40°C to +60°C .

Test Results: The EUT was found compliant with the requirements of **§15.407(g)**

Test Engineer(s): 08/19/09 – 08/20/09

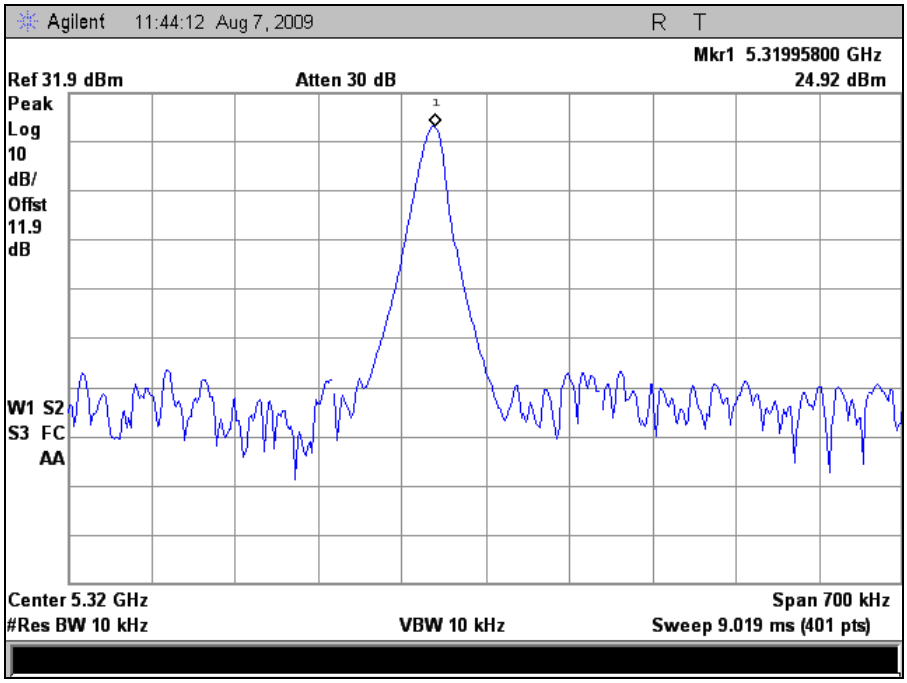
Test Date(s): Anderson Soungpanya

Port	Frequency (MHz)	Voltage	Temperature (C)	Measured (MHz)	Δ ppm
Port 1	5320	Low	-40	5319.95800	7.89
	5320	High	-40	5319.95625	8.22
	5500	Low	-40	5499.95275	8.59
	5500	High	-40	5499.95450	8.27
	5700	Low	-40	5699.95100	8.60
	5700	High	-40	5699.94750	9.21
	5320	Low	60	5320.14175	26.64
	5320	High	60	5320.14875	27.96
	5500	Low	60	5500.15750	28.64
	5500	High	60	5500.15750	28.64
	5700	Low	60	5700.16275	28.55
	5700	High	60	5700.13475	23.64

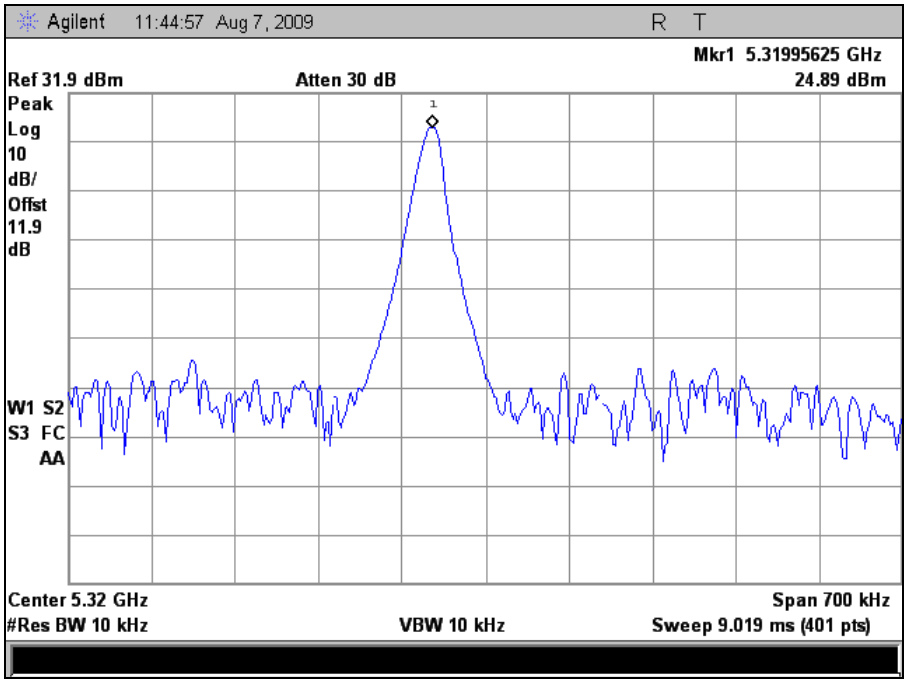
	Frequency (MHz)	Voltage	Temperature (C)	Measured (MHz)	Δ ppm
Port 2	5320	Low	-40	5319.94925	9.54
	5320	High	-40	5319.95450	8.55
	5500	Low	-40	5499.94750	9.55
	5500	High	-40	5499.94925	9.23
	5700	Low	-40	5699.94400	9.82
	5700	High	-40	5699.94750	9.21
	5320	Low	60	5320.04025	7.57
	5320	High	60	5320.05425	10.20
	5500	Low	60	5500.05075	9.23
	5500	High	60	5500.05075	9.23
	5700	Low	60	5700.05250	9.21
	5700	High	60	5700.06300	11.05

	Frequency (MHz)	Voltage	Temperature (C)	Measured (MHz)	Δ ppm
Port 3	5320	Low	-40	5319.95100	9.21
	5320	High	-40	5319.94925	9.54
	5500	Low	-40	5499.94750	9.55
	5500	High	-40	5499.94925	9.23
	5700	Low	-40	5699.94575	9.52
	5700	High	-40	5699.94575	9.52
	5320	Low	60	5320.12950	24.34
	5320	High	60	5320.14700	27.63
	5500	Low	60	5500.11725	21.32
	5500	High	60	5500.15400	28.00
	5700	Low	60	5700.12075	21.18
	5700	High	60	5700.09800	17.19

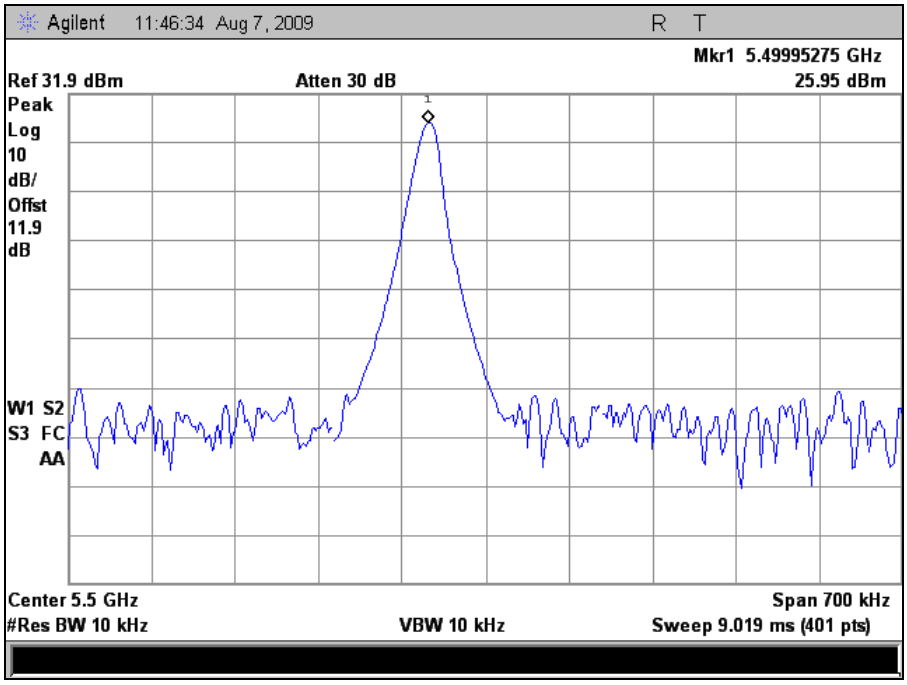
Frequency Stability, Port 1



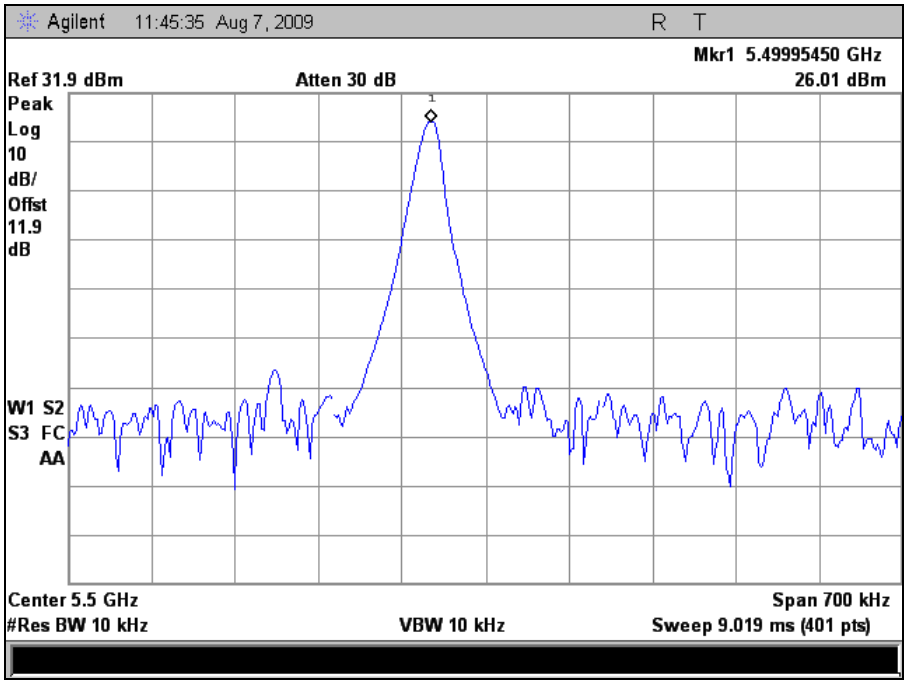
Plot 293. Freq. Stability, Port 1, 5320 MHz @-40C Low Volt.



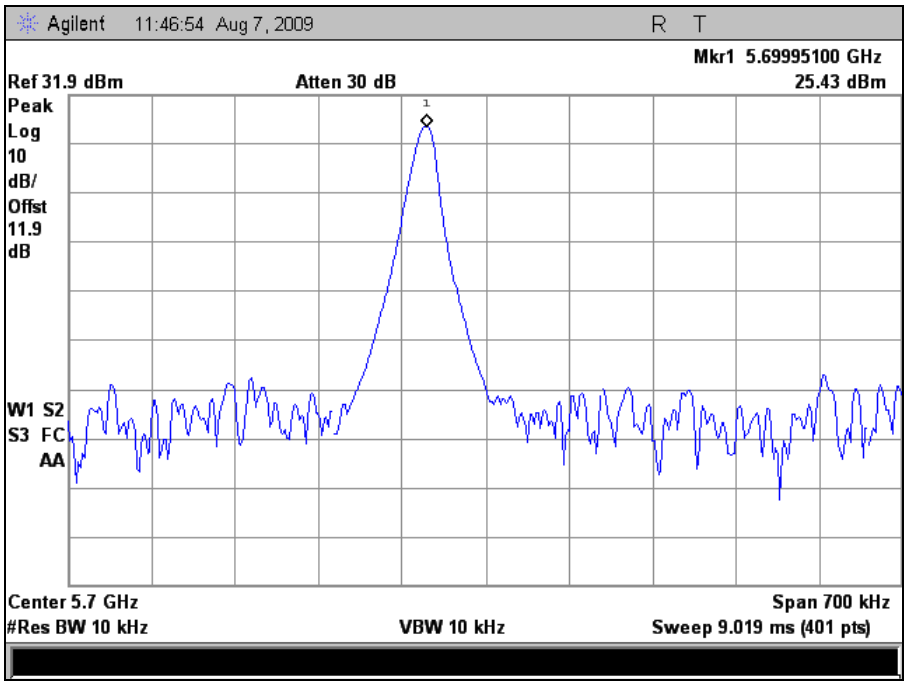
Plot 294. Freq. Stability, Port 1, 5320 MHz @-40C High Volt.



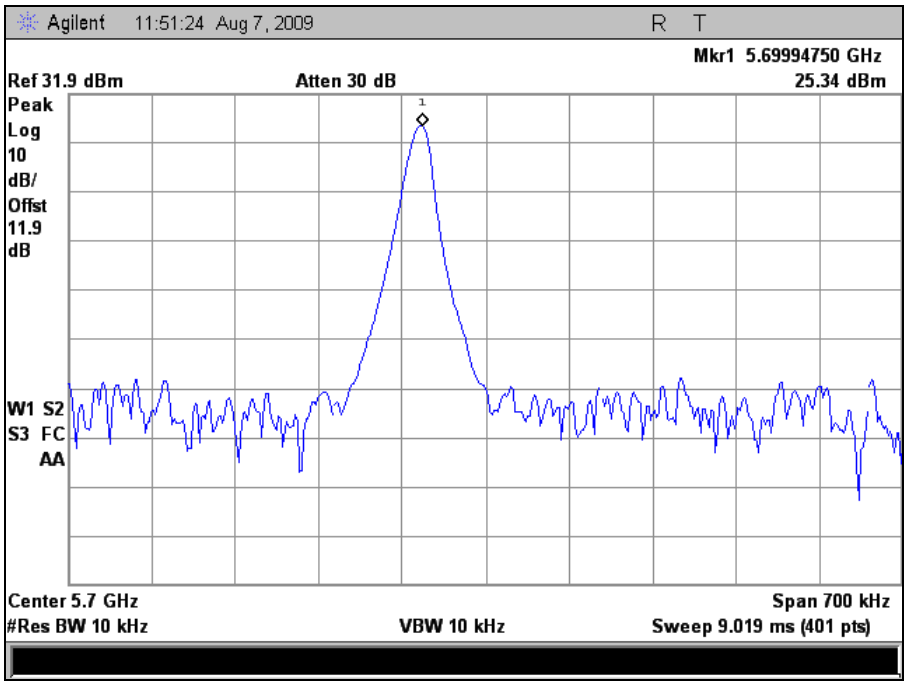
Plot 295. Freq. Stability, Port 1, 5500 MHz @-40C Low Volt.



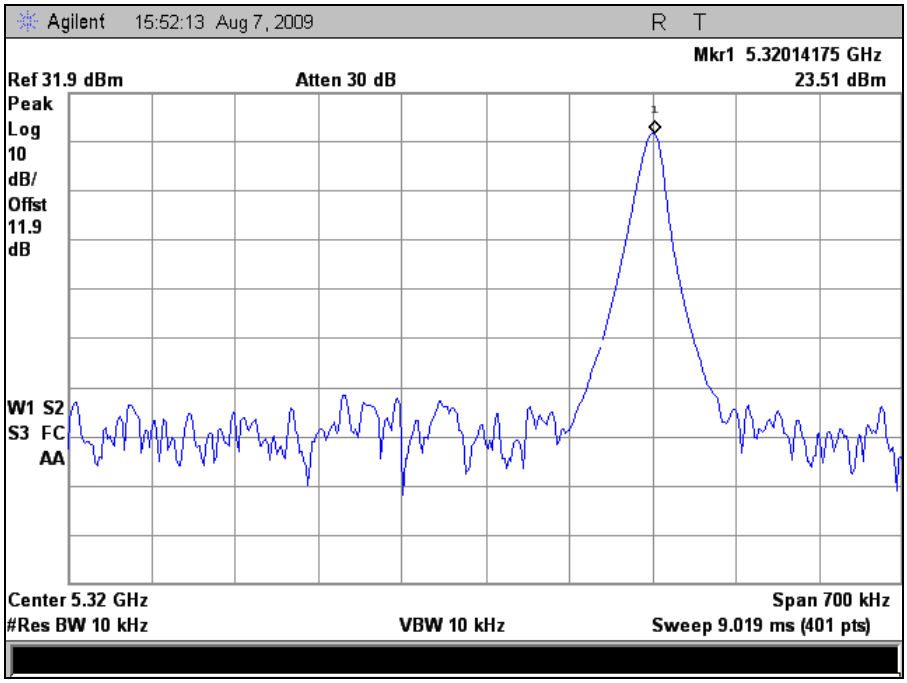
Plot 296. Freq. Stability, Port 1, 5500 MHz @-40C High Volt.



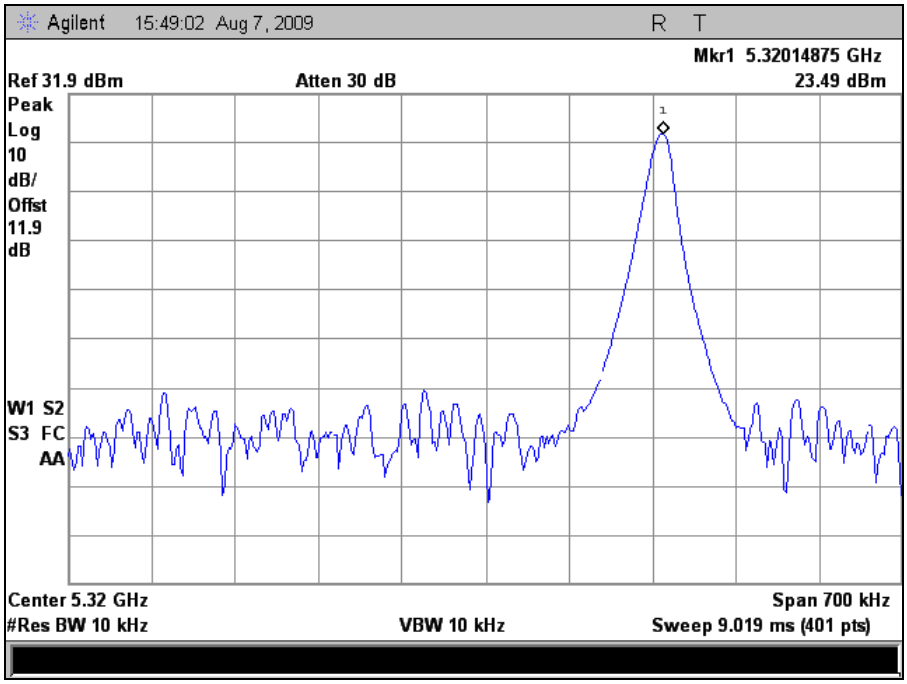
Plot 297. Freq. Stability, Port 1, 5700 MHz @-40C Low Volt.



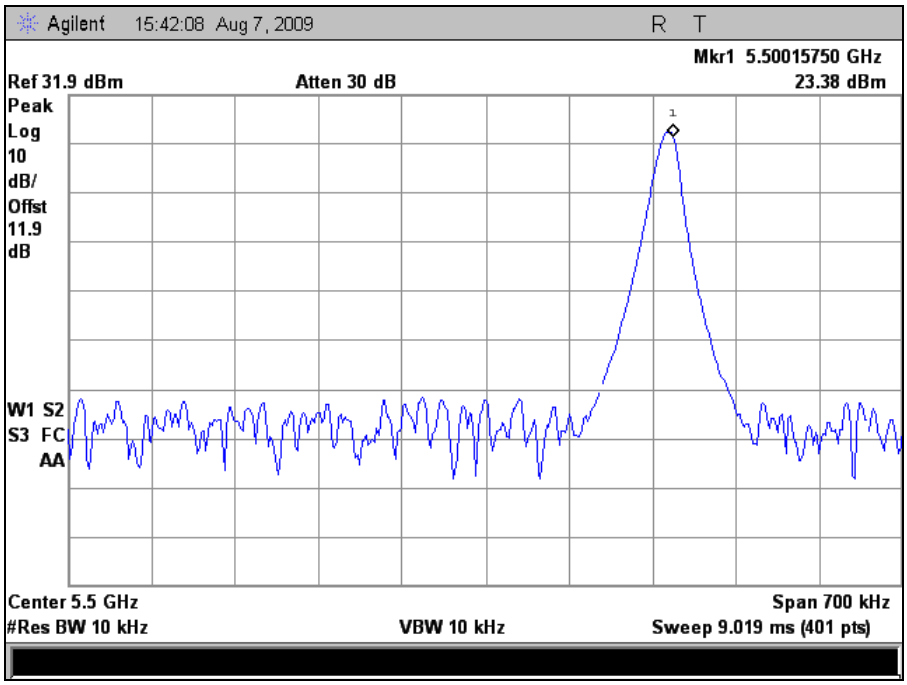
Plot 298. Freq. Stability, Port 1, 5700 MHz @-40C High Volt.



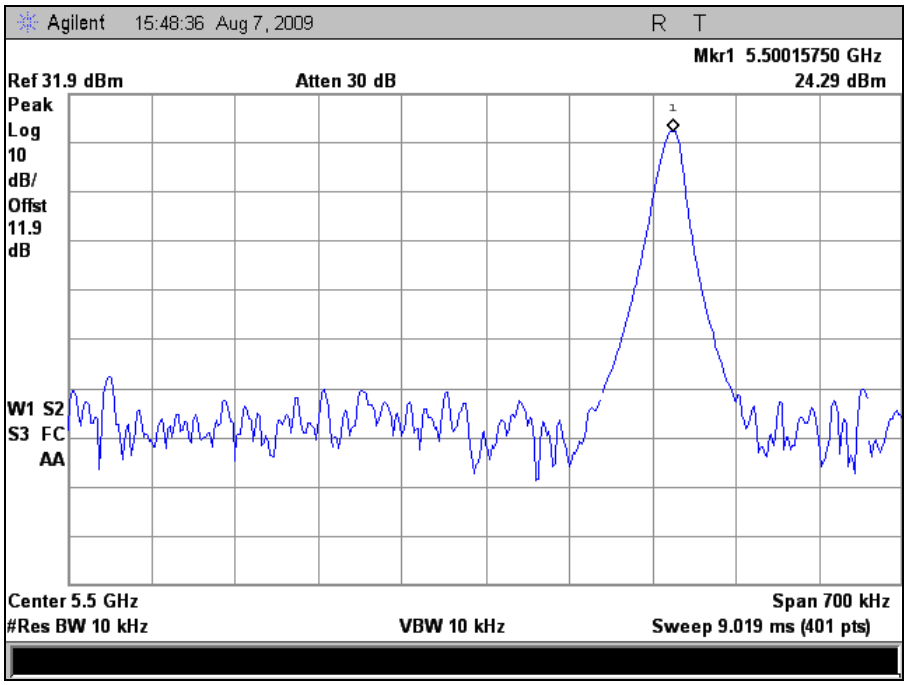
Plot 299. Freq. Stability, Port 1, 5320 MHz @+60C Low Volt.



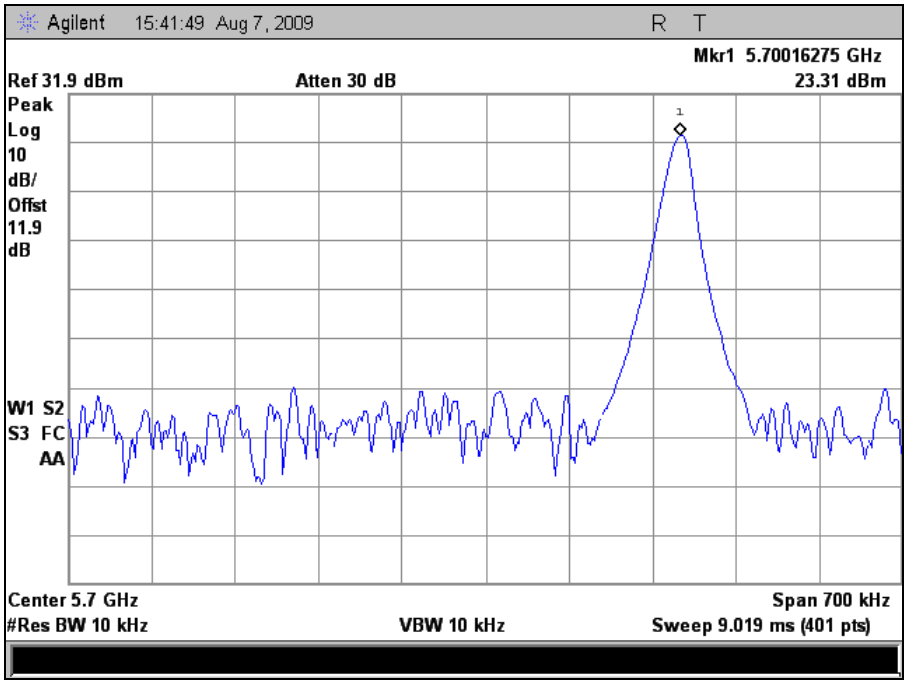
Plot 300. Freq. Stability, Port 1, 5320 MHz @+60C High Volt.



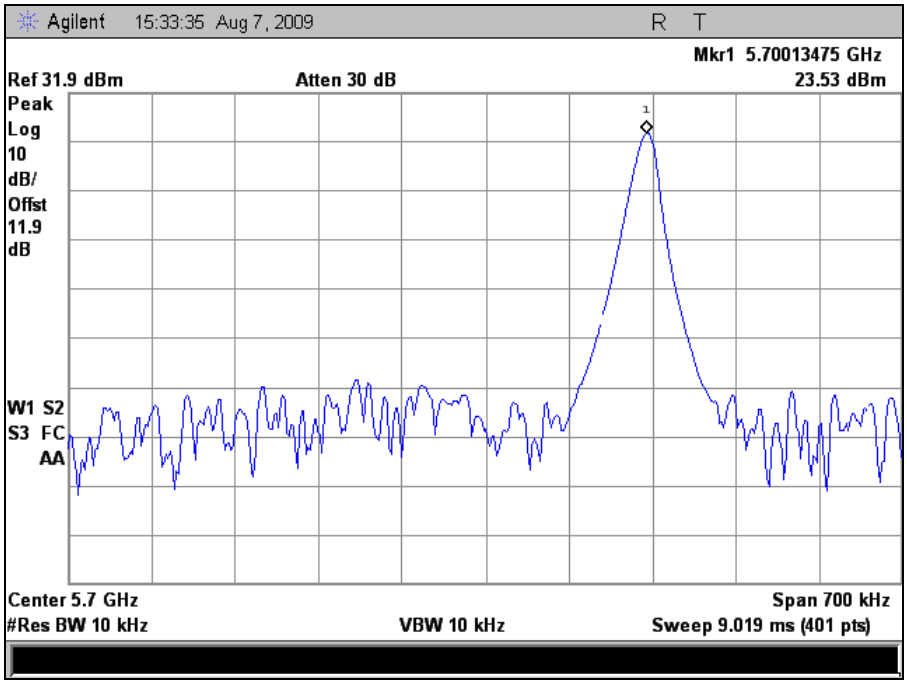
Plot 301. Freq. Stability, Port 1, 5500 MHz @+60C Low Volt.



Plot 302. Freq. Stability, Port 1, 5500 MHz @+60C High Volt.

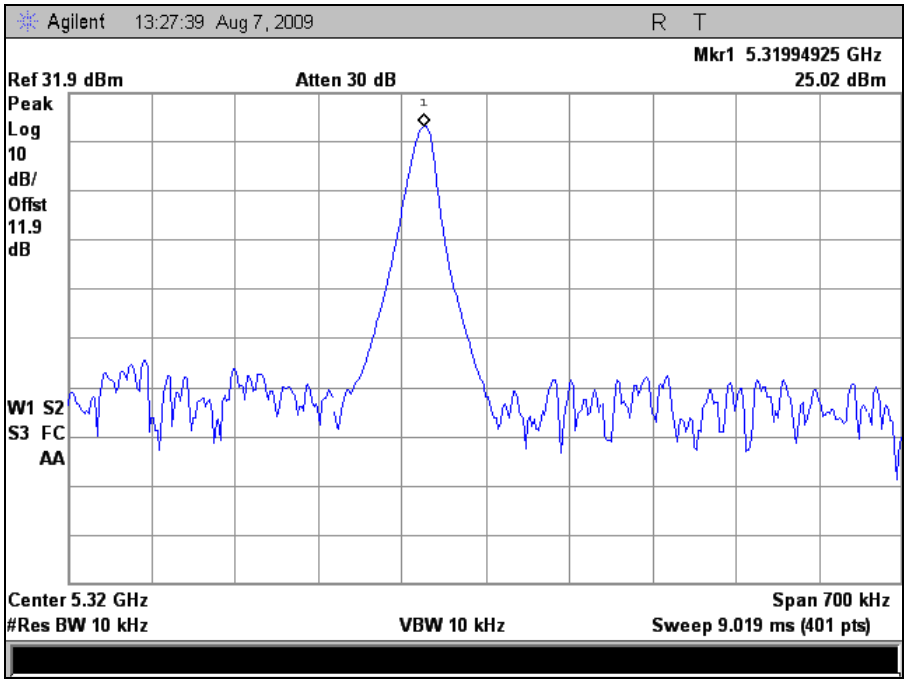


Plot 303. Freq. Stability, Port 1, 5700 MHz @+60C Low Volt.

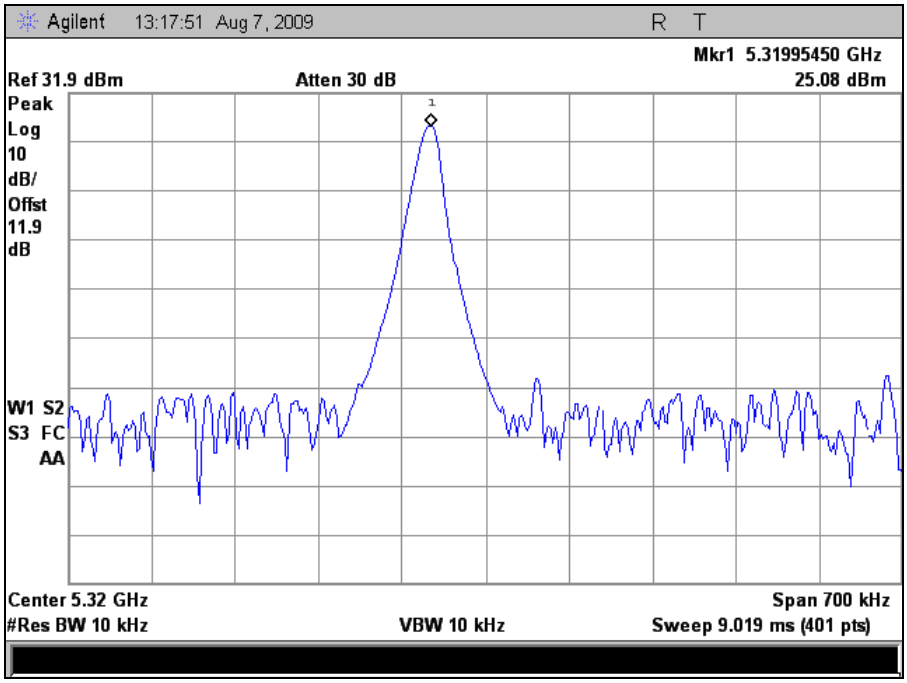


Plot 304. Freq. Stability, Port 1, 5700 MHz @+60C High Volt.

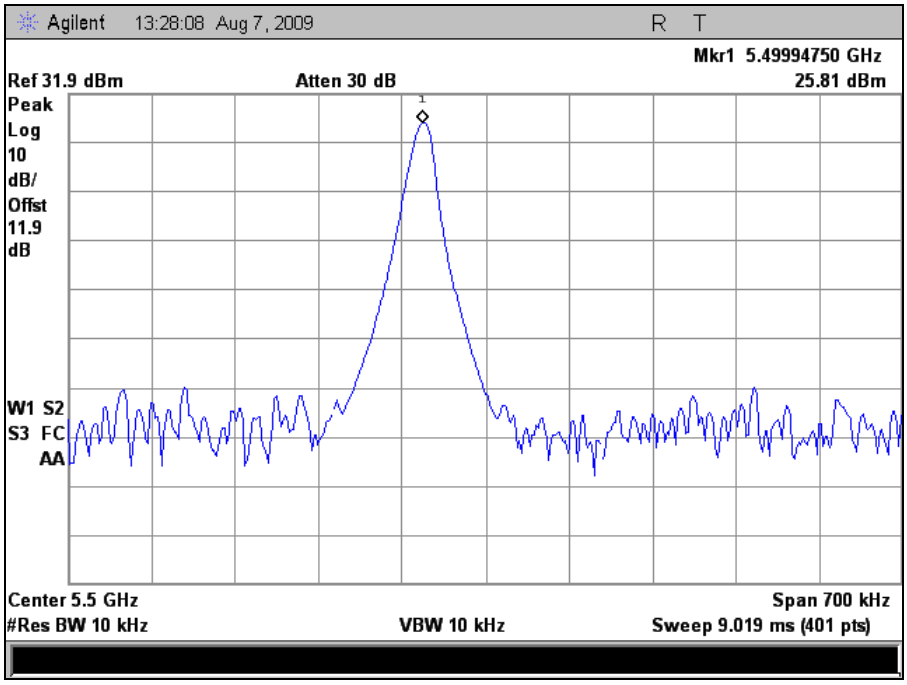
Frequency Stability, Port 2



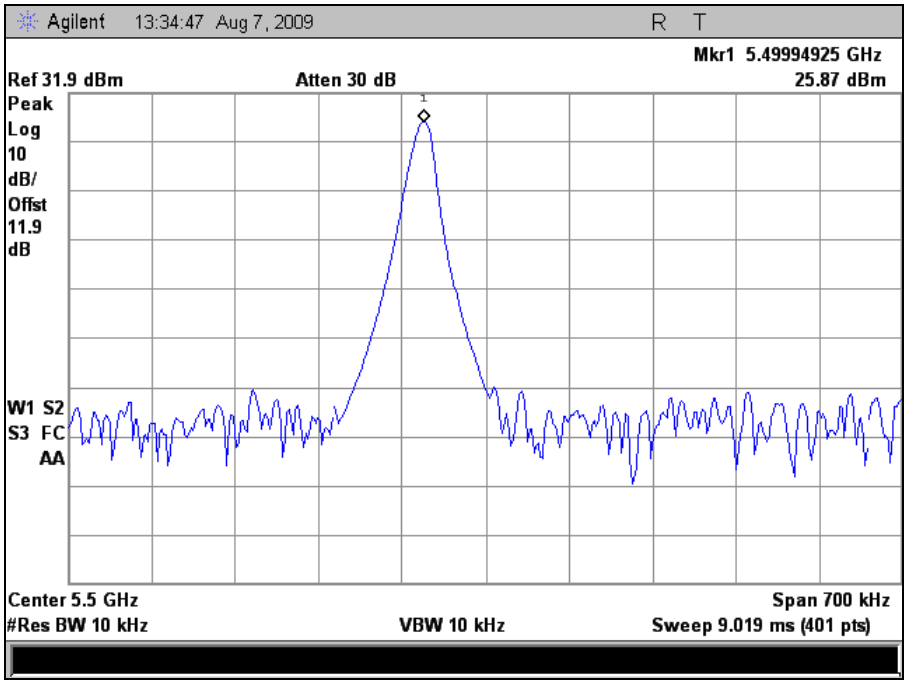
Plot 305. Freq. Stability, Port 2, 5320 MHz @-40C Low Volt.



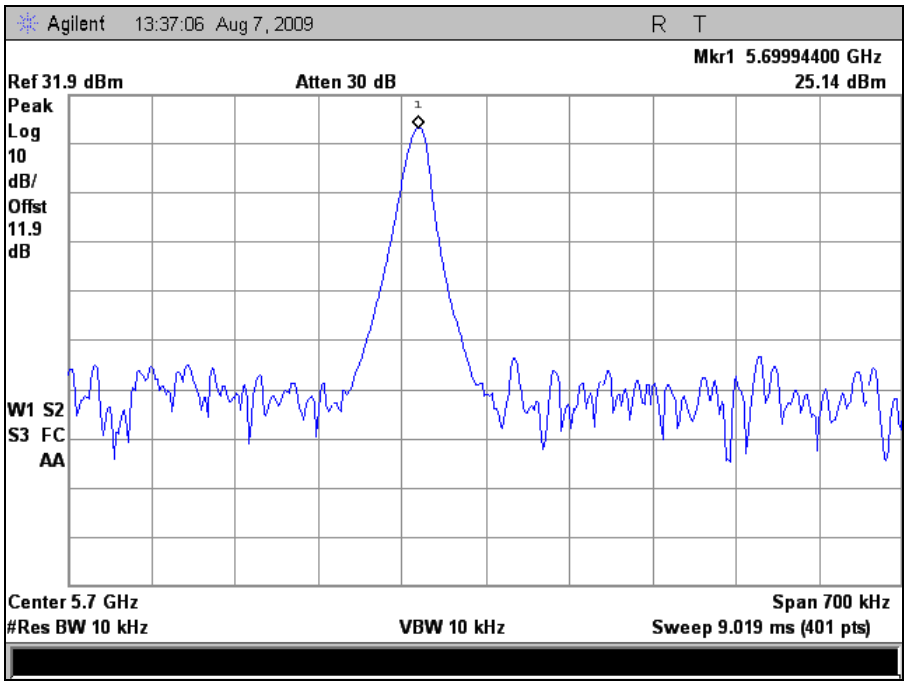
Plot 306. Freq. Stability, Port 2, 5320 MHz @-40C High Volt.



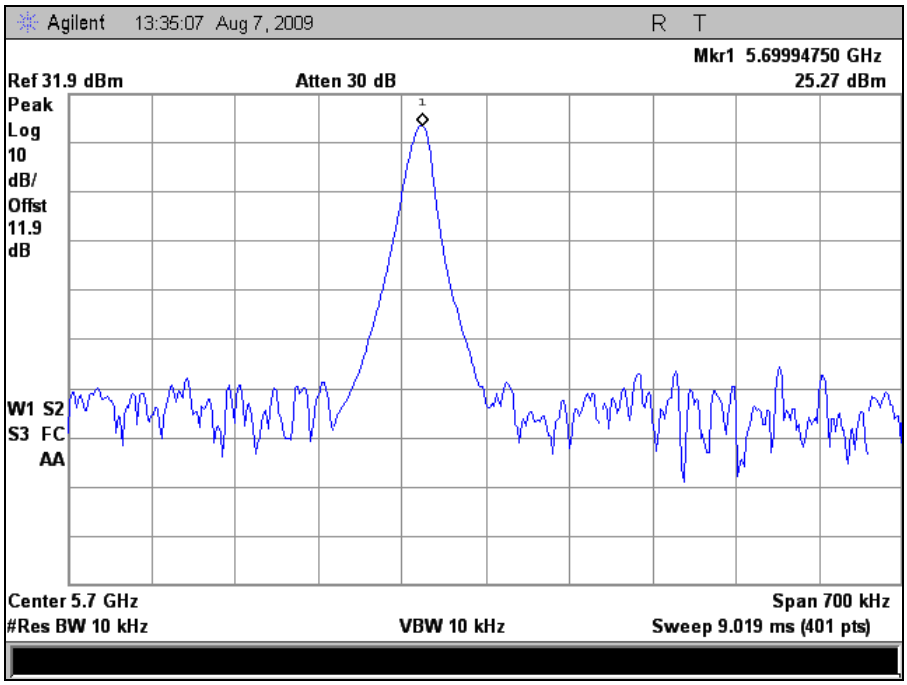
Plot 307. Freq. Stability, Port 2, 5500 MHz @-40C Low Volt.



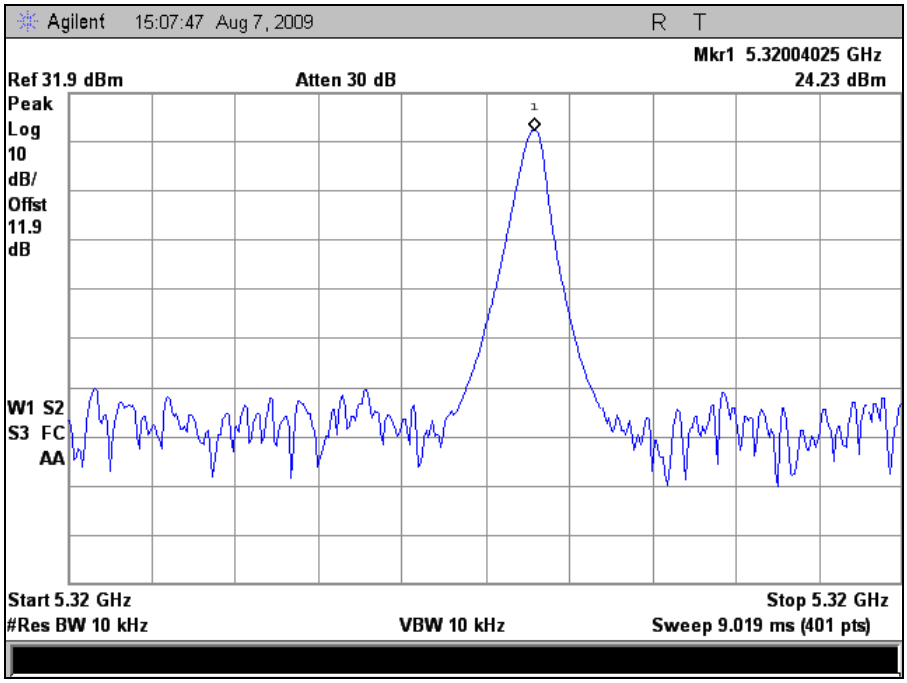
Plot 308. Freq. Stability, Port 2, 5500 MHz @-40C High Volt.



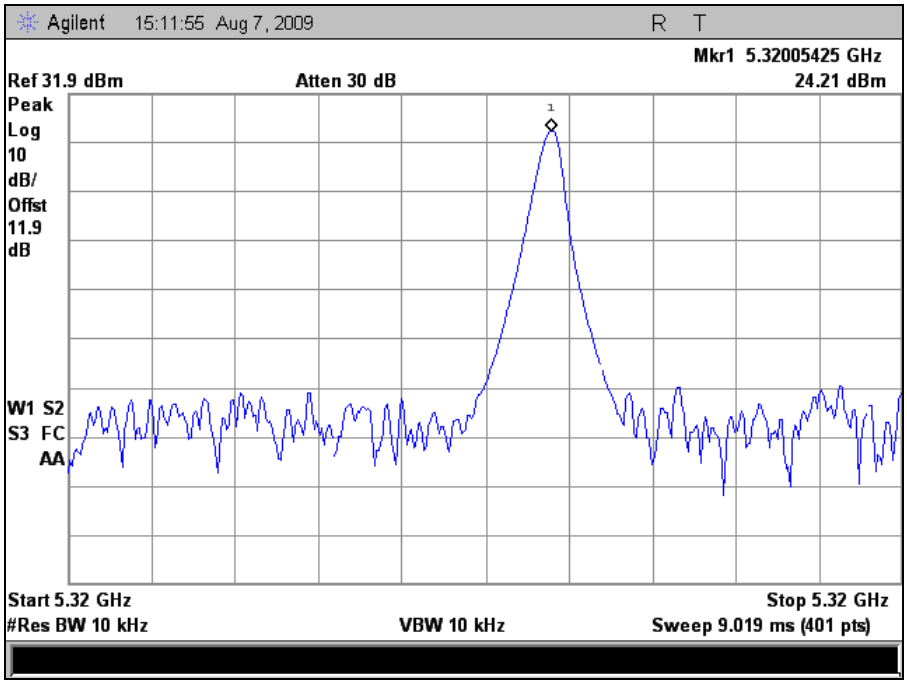
Plot 309. Freq. Stability, Port 2, 5700 MHz @-40C Low Volt.



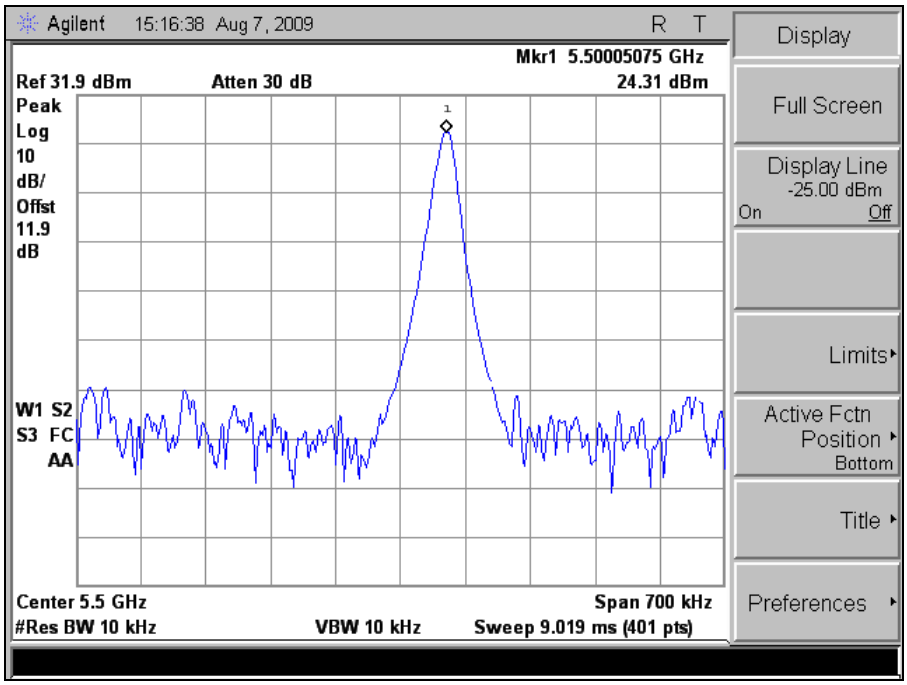
Plot 310. Freq. Stability, Port 2, 5700 MHz @-40C High Volt.



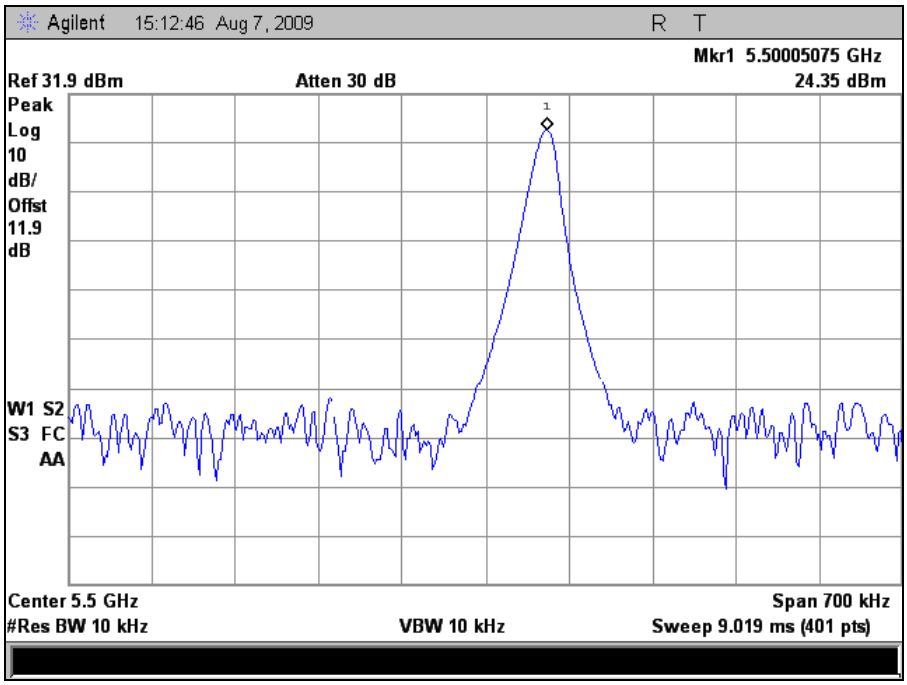
Plot 311. Freq. Stability, Port 2, 5320 MHz @+60C Low Volt.



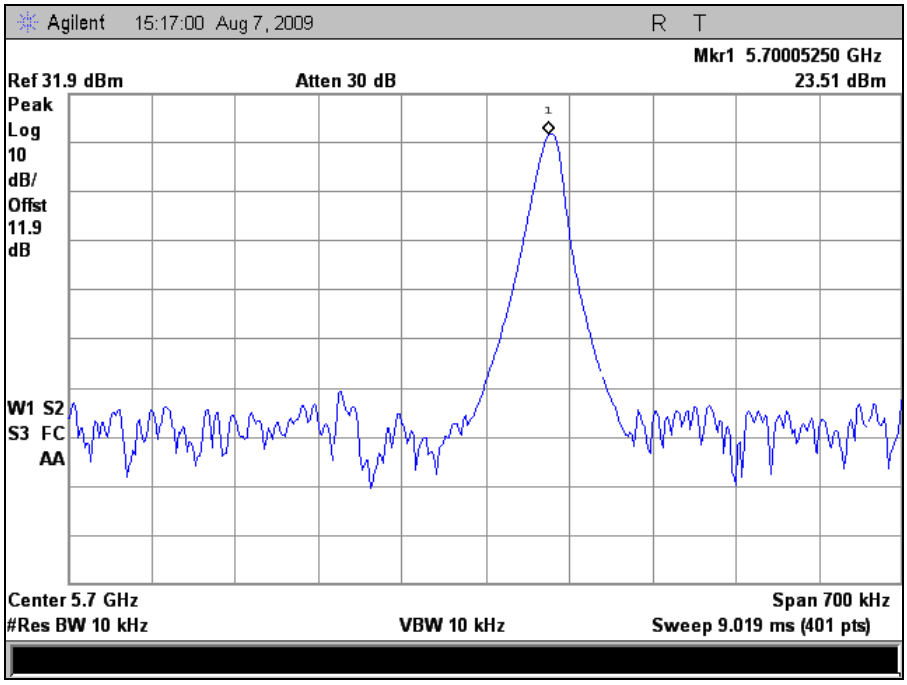
Plot 312. Freq. Stability, Port 2, 5320 MHz @+60C High Volt.



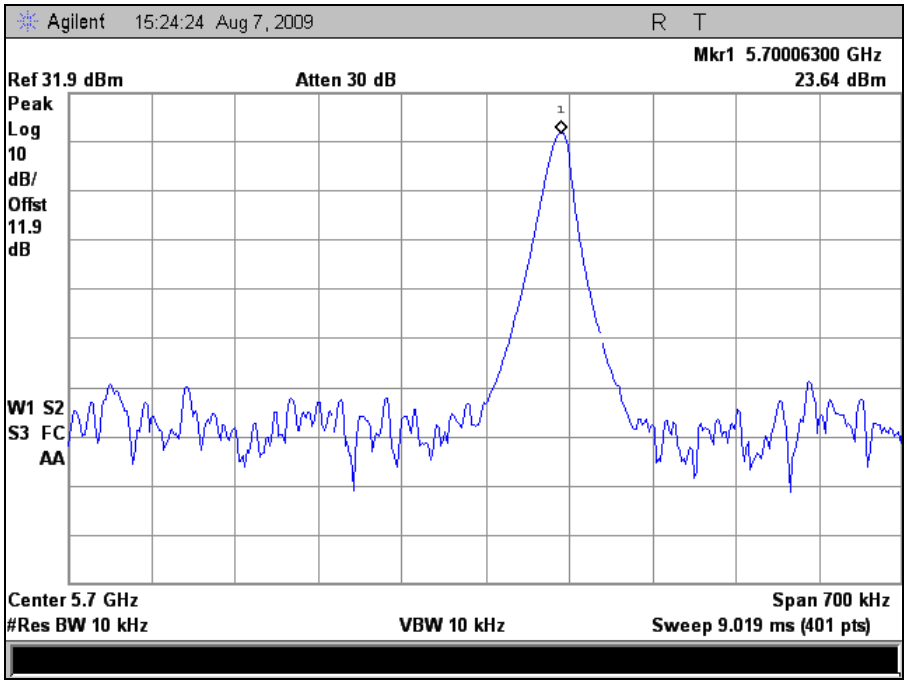
Plot 313. Freq. Stability, Port 2, 5500 MHz @+60C Low Volt.



Plot 314. Freq. Stability, Port 2, 5500 MHz @+60C High Volt.

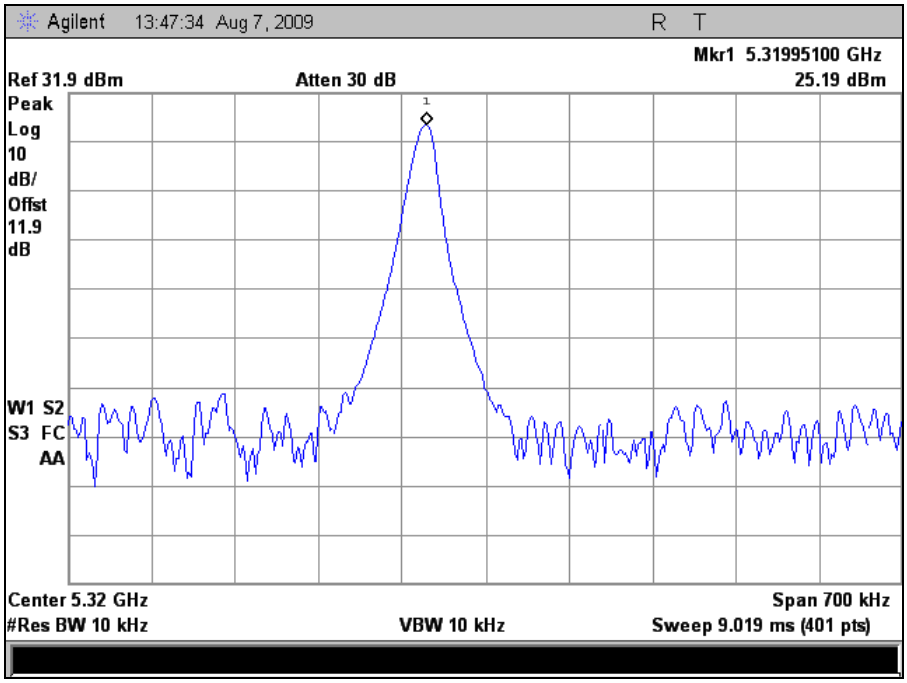


Plot 315. Freq. Stability, Port 2, 5700 MHz @+60C Low Volt.

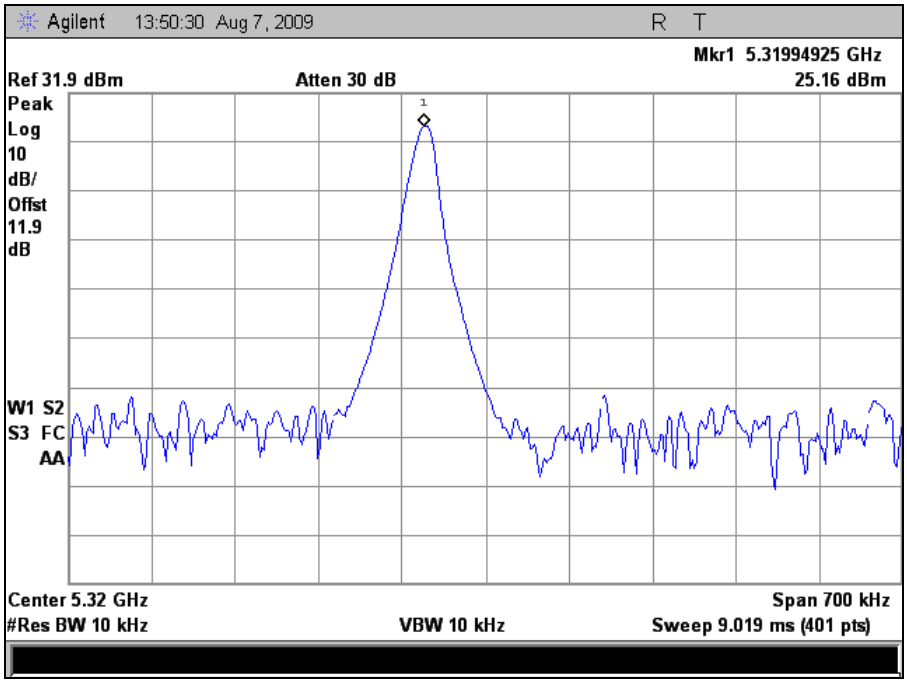


Plot 316. Freq. Stability, Port 2, 5700 MHz @+60C High Volt.

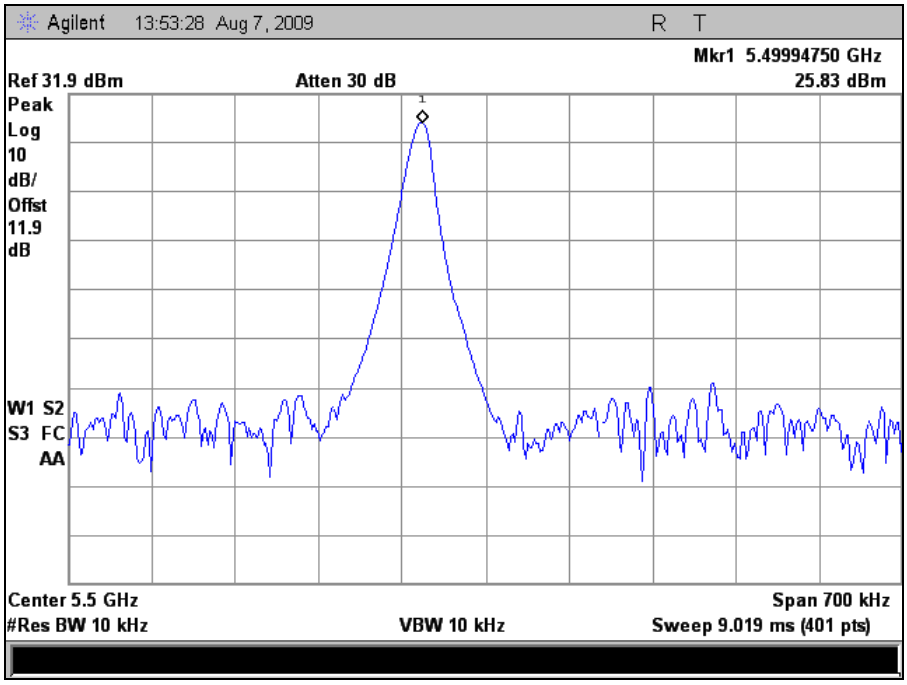
Frequency Stability, Port 3



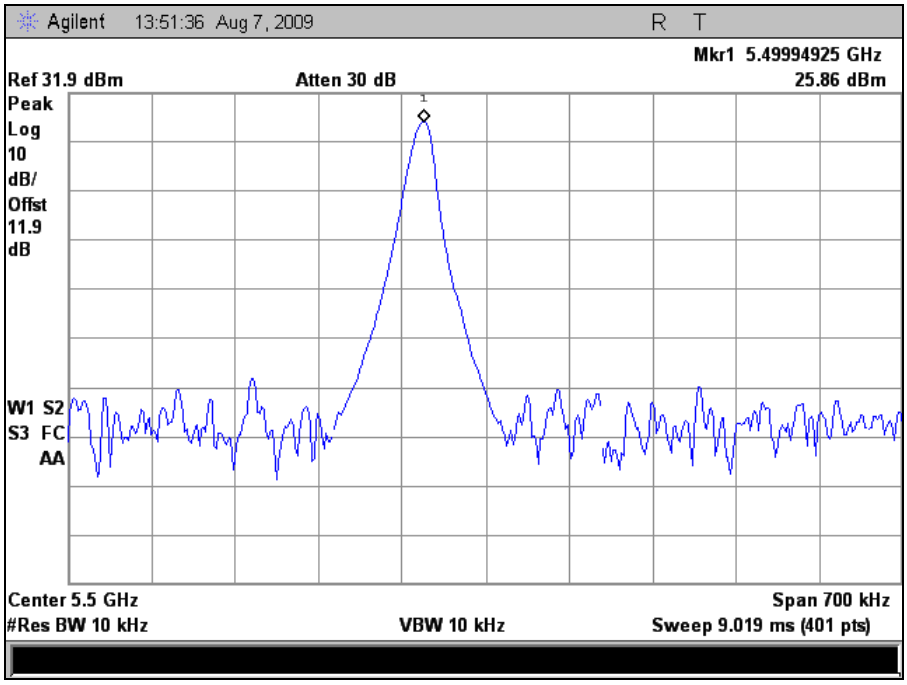
Plot 317. Freq. Stability, Port 3, 5320 MHz @-40C Low Volt.



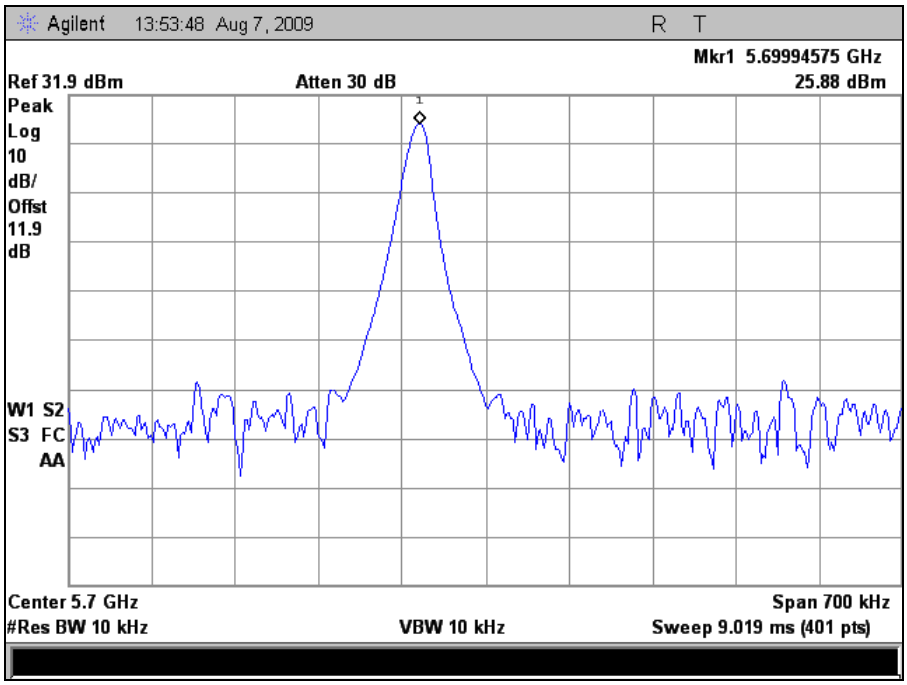
Plot 318. Freq. Stability, Port 3, 5320 MHz @-40C High Volt.



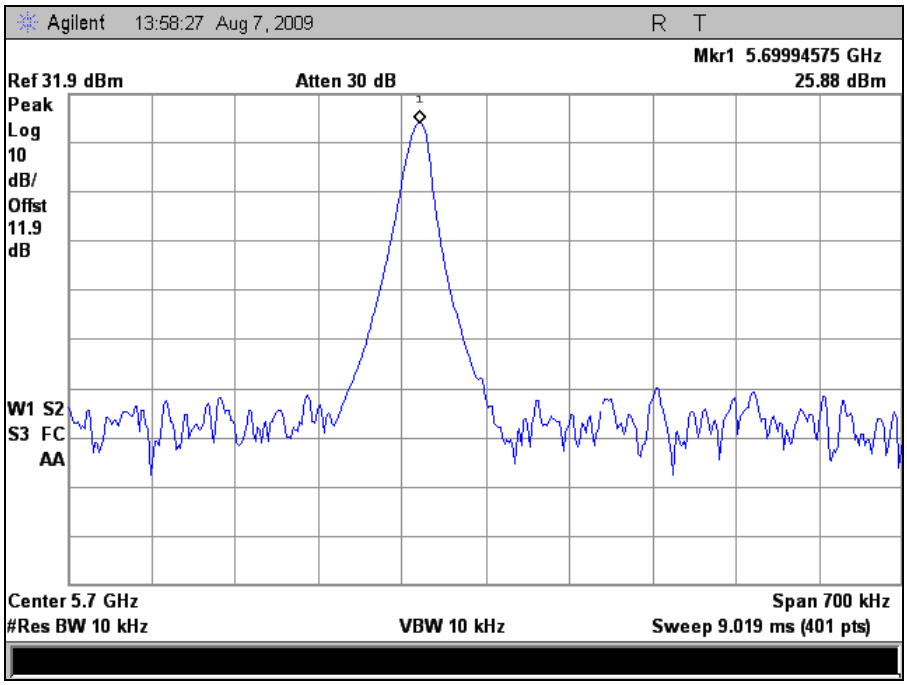
Plot 319. Freq. Stability, Port 3, 5500 MHz @-40C Low Volt.



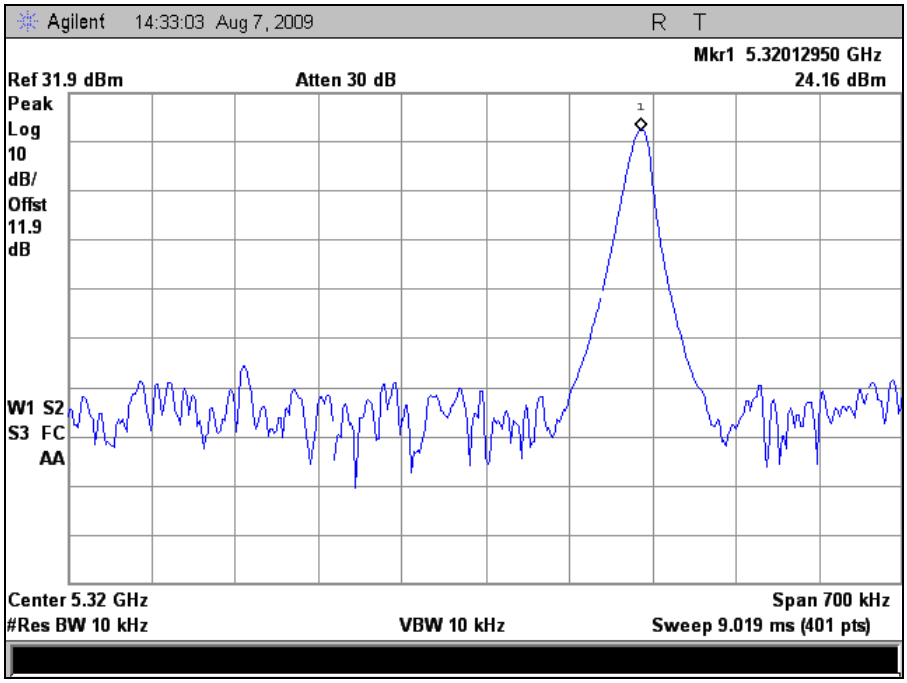
Plot 320. Freq. Stability, Port 3, 5500 MHz @-40C High Volt.



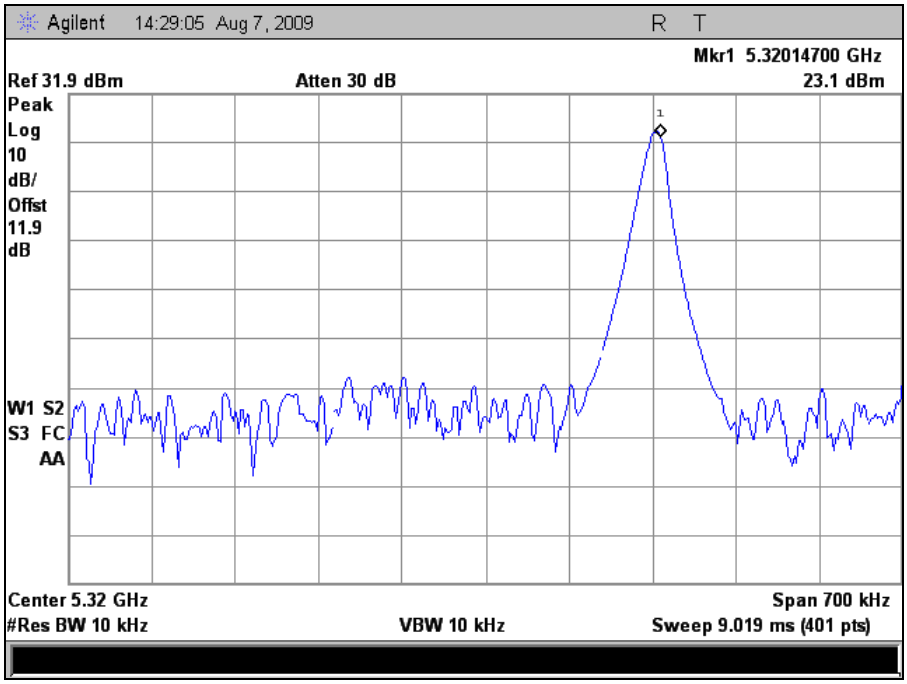
Plot 321. Freq. Stability, Port 3, 5700 MHz @-40C Low Volt.



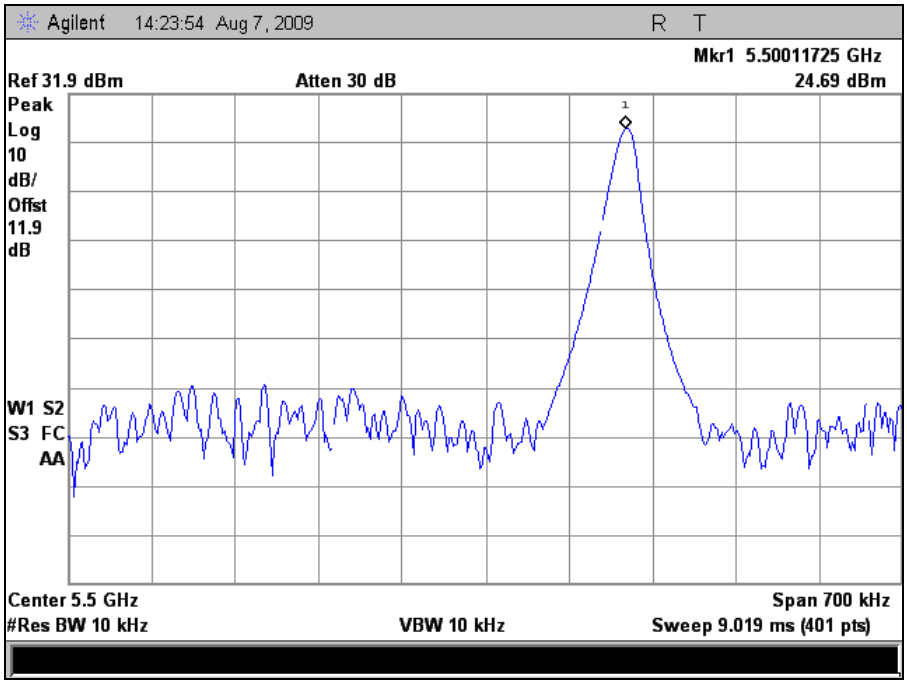
Plot 322. Freq. Stability, Port 3, 5700 MHz @-40C High Volt.



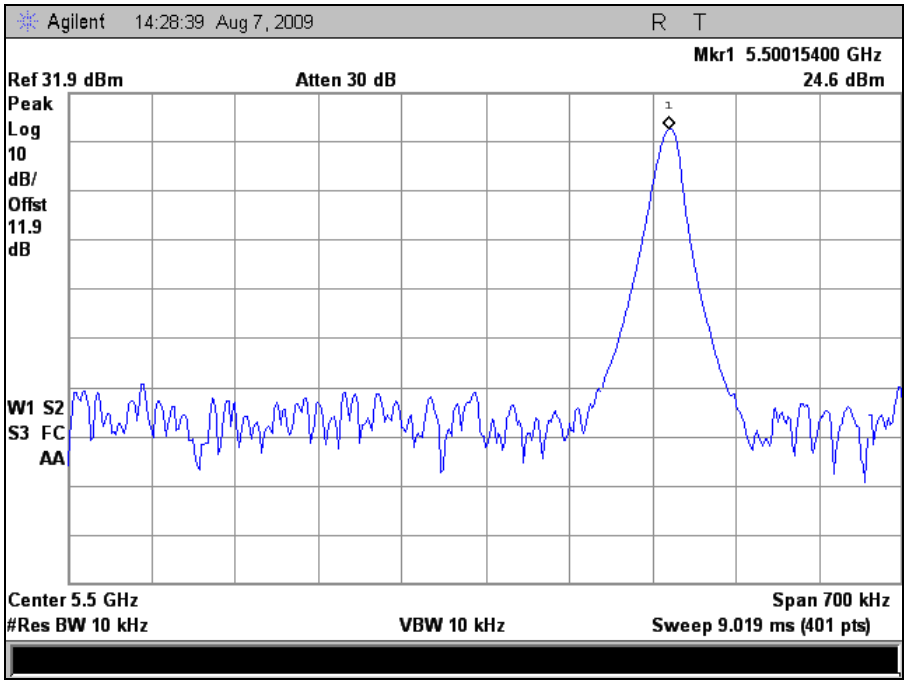
Plot 323. Freq. Stability, Port 3, 5320 MHz @+60C Low Volt.



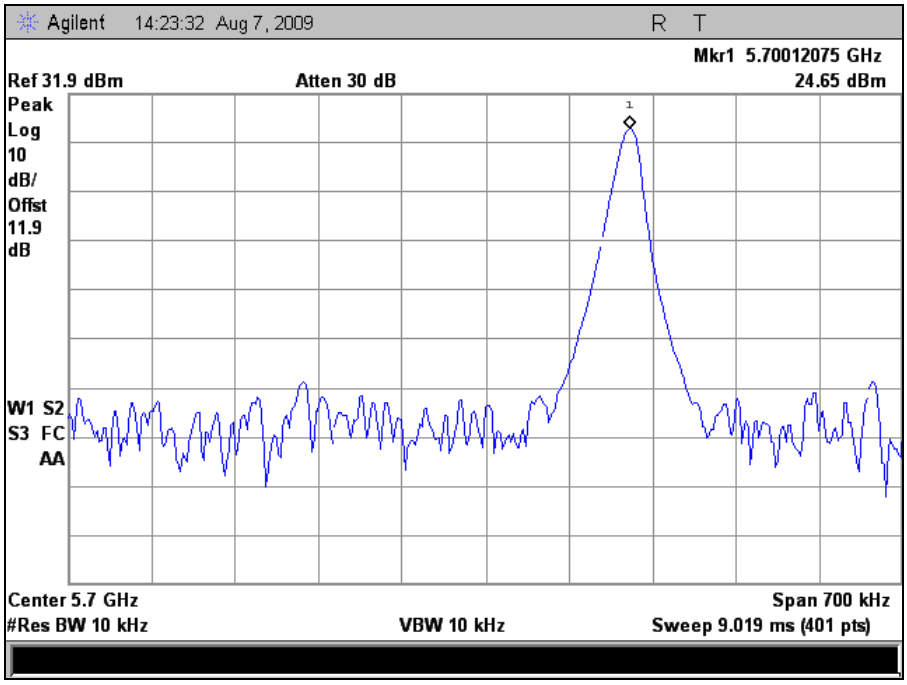
Plot 324. Freq. Stability, Port 3, 5320 MHz @+60C High Volt.



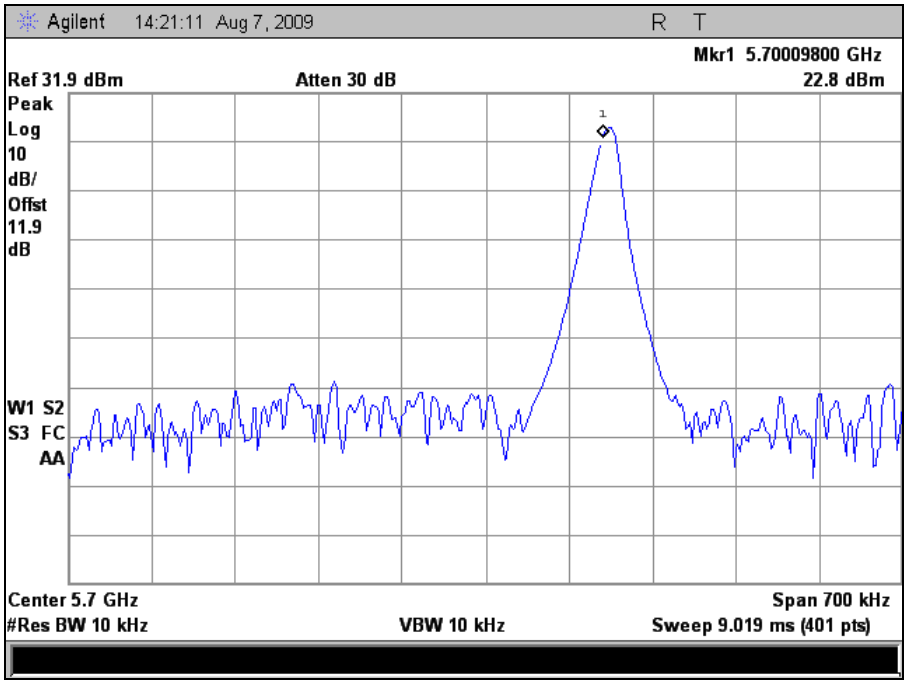
Plot 325. Freq. Stability, Port 3, 5500 MHz @+60C Low Volt.



Plot 326. Freq. Stability, Port 3, 5500 MHz @+60C High Volt.



Plot 327. Freq. Stability, Port 3, 5700 MHz @+60C Low Volt.



Plot 328. Freq. Stability, Port 3, 5700 MHz @+60C High Volt.

Electromagnetic Compatibility Criteria for Intentional Radiators

RSS-GEN Receiver Spurious Emissions

Test Requirement: 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 78.

Spurious Frequency (MHz)	Field Strength (microvolt/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960	500

Table 78. Spurious Emission Limits for Receivers

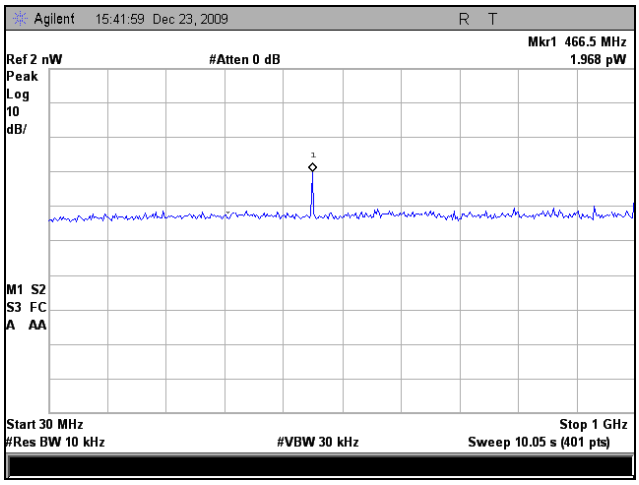
b) If a conducted measurement is made, no spurious output signals appearing at the antenna terminals shall exceed 2 nanowatts per any 4 kHz spurious frequency in the band 30-1000 MHz, or 5 nanowatts above 1 GHz.

Test Procedure: The receiver spurious emissions were tested in compliance with the limits of Table 12. The testing was performed conducted.

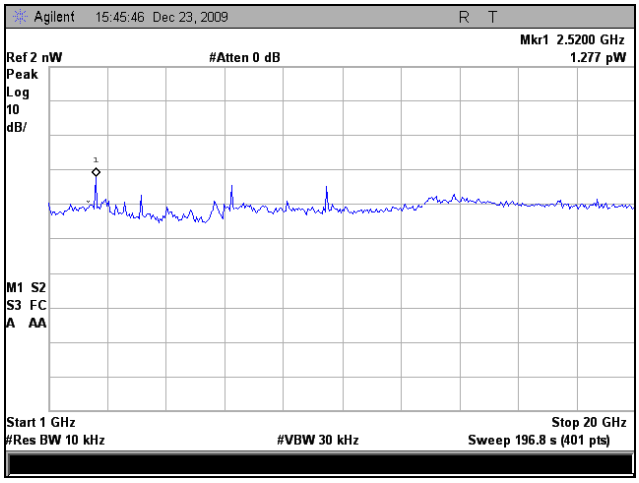
Test Results: The EUT was compliant with the Receiver Spurious Emission limits of this requirement.

Test Engineer(s): Anderson Soungpanya

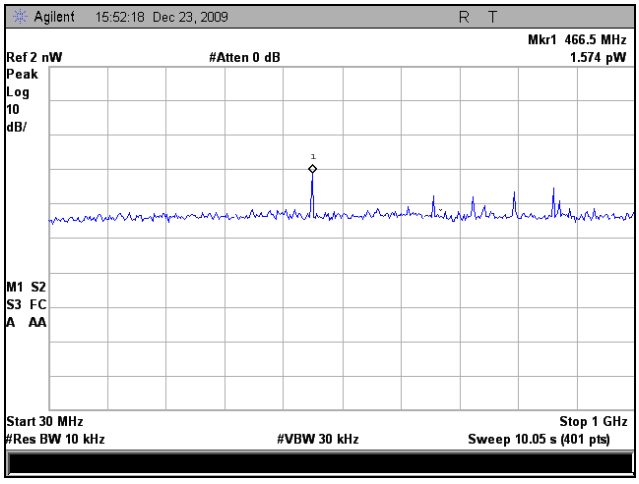
Test Date(s): 09/11/09



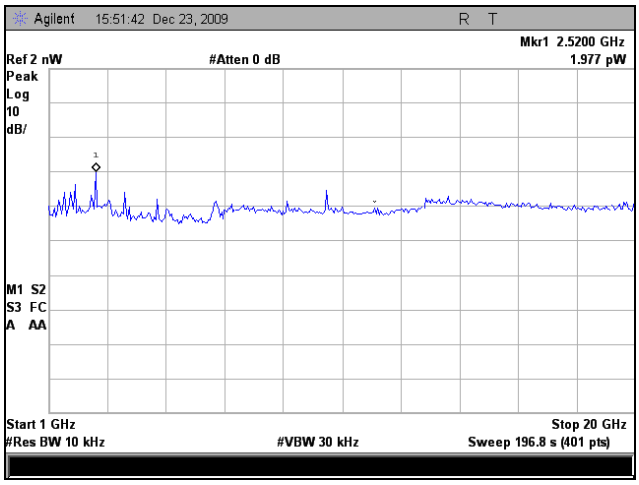
Plot 329. Conducted Receiver Spurious Emissions, Port 1, 30 MHz – 1 GHz



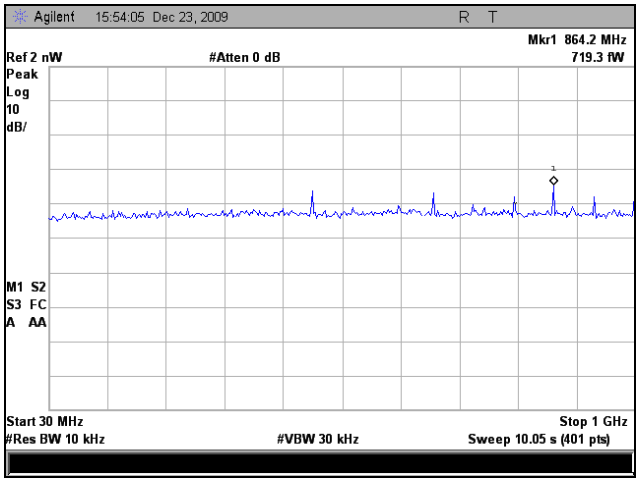
Plot 330. Conducted Receiver Spurious Emissions, Port 1, 1 GHz – 20 GHz



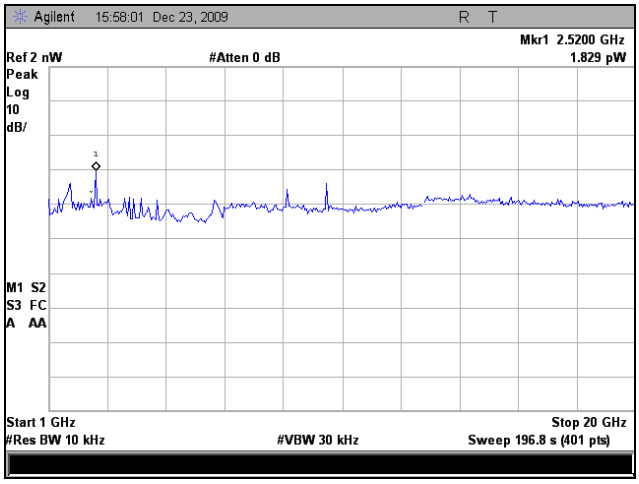
Plot 331. Conducted Receiver Spurious Emissions, Port 2, 30 MHz – 1 GHz



Plot 332. Conducted Receiver Spurious Emissions, Port 2, 1 GHz – 20 GHz



Plot 333. Conducted Receiver Spurious Emissions, Port 3, 30 MHz – 1 GHz



Plot 334. Conducted Receiver Spurious Emissions, Port 3, 1 GHz – 20 GHz

V. DFS Requirements and Radar Waveform Description & Calibration

A. DFS Requirements

DFS Detection Thresholds for Master or Client Devices Incorporating DFS

Maximum Transmit Power	Value
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna
Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

DFS Response Requirement Values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2
U-NII Detection Bandwidth	Minimum 80% of the 99% power bandwidth. See Note 3.

Note 1: The instant that the *Channel Move Time* and the *Channel Closing Transmission Time* begins is as follows:

- For the Short pulse radar Test Signals this instant is the end of the *Burst*.
- For the Frequency Hopping radar Test Signal, this instant is the end of the last radar *Burst* generated.
- For the Long Pulse radar Test Signal this instant is the end of the 12 second period defining the radar transmission.

Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required facilitating *Channel* changes (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.
Note 3: During the *U-NII Detection Bandwidth* detection test, radar type 1 is used and for each frequency step the minimum percentage of detection is 90%. Measurements are performed with no data traffic.

B. Radar Test Waveforms

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Trials
1	1	1428	18	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

A minimum of 30 unique waveforms are required for each of the short pulse radar types 2 through 4. For short pulse radar type 1, the same waveform is used a minimum of 30 times. If more than 30 waveforms are used for short pulse radar types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. The aggregate is the average of the percentage of successful detections of short pulse radar types 1-4.

Long Pulse Radar Test Waveform

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per Bursts	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse radar test signal. If more than 30 waveforms are used for the Long Pulse radar test signal, then each additional waveform must also be unique and not repeated from the previous waveforms.

Each waveform is defined as follows:

1) The transmission period for the Long Pulse Radar test signal is 12 seconds.
2) There are a total of 8 to 20 Bursts in the 12 second period, with the number of Bursts being randomly chosen. This number is Burst_Count.
3) Each Burst consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each Burst within the 12 second sequence may have a different number of pulses.
4) The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a Burst will have the same pulse width. Pulses in different Bursts may have different pulse widths.
5) Each pulse has a linear FM chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a Burst will have the same chirp width. Pulses in different Bursts may have different chirp widths. The chirp is centered on the pulse. For example, with radar frequency of 5300 MHz and a 20 MHz chirped signal, the chirp starts at 5290 MHz and ends at 5310 MHz.
6) If more than one pulse is present in a Burst, the time between the pulses will be between 1000 and 2000 microseconds, with the time being randomly chosen. If three pulses are present in a Burst, the time between the first and second pulses is chosen independently of the time between the second and third pulses.
7) The 12 second transmission period is divided into even intervals. The number of intervals is equal to Burst_Count. Each interval is of length (12,000,000 / Burst_Count) microseconds. Each interval contains one Burst. The start time for the Burst, relative to the beginning of the interval, is between 1 and [(12,000,000 / Burst_Count) – (Total Burst Length) + (One Random PRI Interval)] microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The start time for each Burst is chosen independently.

A representative example of a Long Pulse radar test waveform:

1) The total test signal length is 12 seconds.
2) 8 Bursts are randomly generated for the Burst_Count.
3) Burst 1 has 2 randomly generated pulses.
4) The pulse width (for both pulses) is randomly selected to be 75 microseconds.
5) The PRI is randomly selected to be at 1213 microseconds.
6) Bursts 2 through 8 are generated using steps 3 – 5.
7) Each Burst is contained in even intervals of 1,500,000 microseconds. The starting location for Pulse 1, Burst 1 is randomly generated (1 to 1,500,000 minus the total Burst 1 length + 1 random PRI interval) at the 325,001 microsecond step. Bursts 2 through 8 randomly fall in successive 1,500,000 microsecond intervals (i.e. Burst 2 falls in the 1,500,001 – 3,000,000 microsecond range).

Graphical Representation of a Long Pulse radar Test Waveform

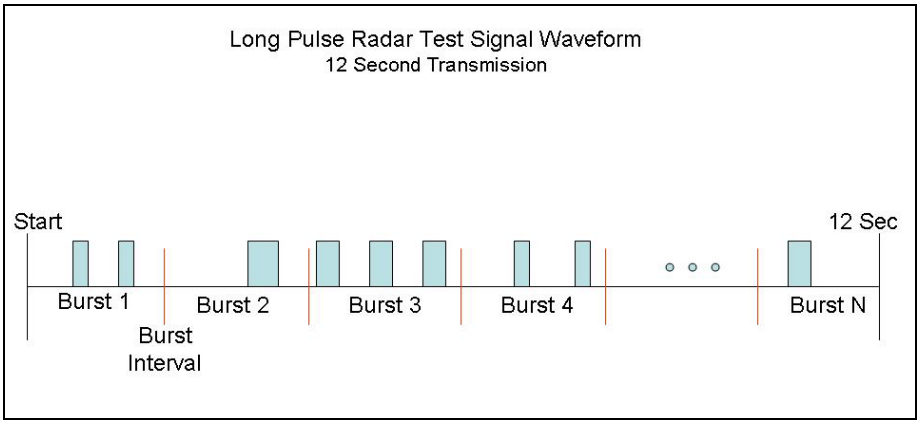


Figure 5. Long Pulse Radar Test Signal Waveform

Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	9	.333	300	70%	30

For the Frequency Hopping Radar Type, the same *Burst* parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected1 from the hopping sequence defined by the following algorithm:

The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely.

C. Radar Waveform Calibration

The following equipment setup was used to calibrate the conducted Radar Waveform. A spectrum analyzer was used to establish the test signal level for each radar type. During this process there were no transmissions by either the Master or Client Device. The spectrum analyzer was switched to the zero span (Time Domain) mode at the frequency of the Radar Waveform generator. Peak detection was utilized. The spectrum analyzer's resolution bandwidth (RBW) was set to 3 MHz and the video bandwidth (VBW) was set to 3 MHz. The calibration setup is diagrammed in Figure 6, and the radar test signal generator is shown in Figure 6.

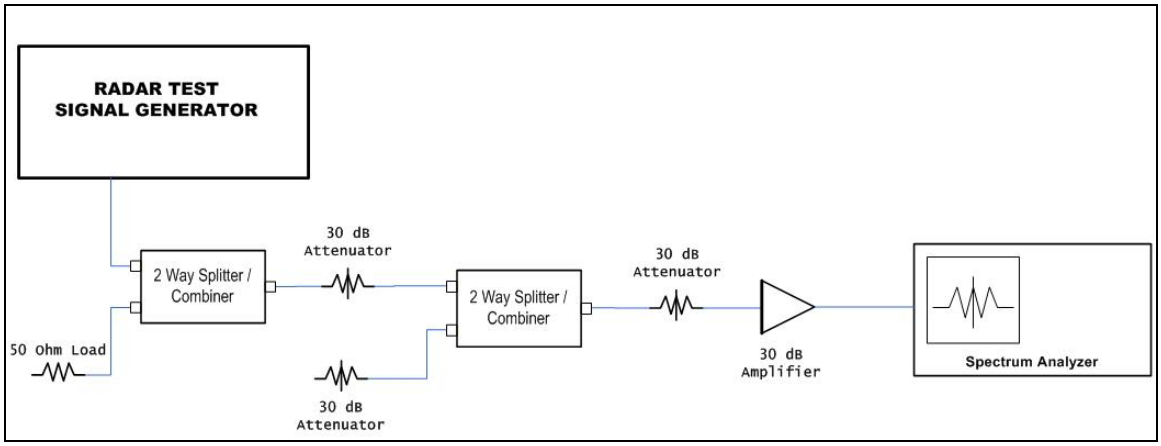
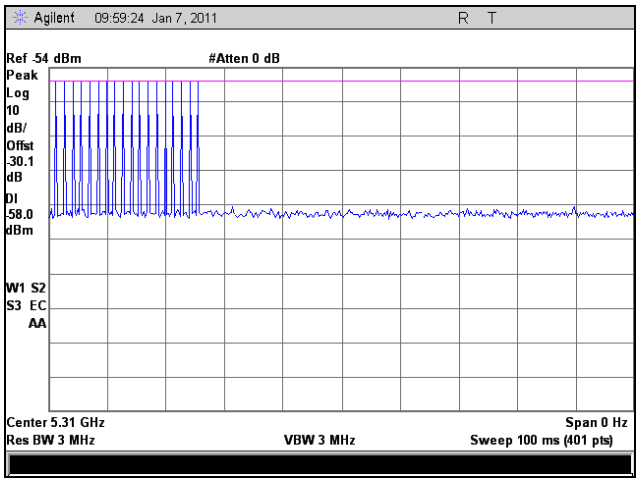
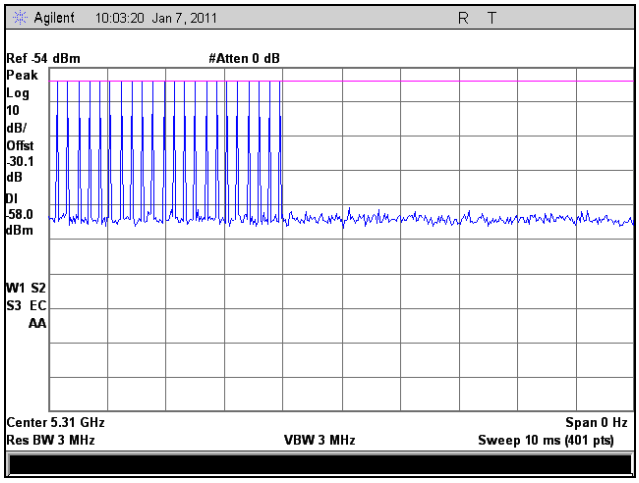


Figure 6. DFS Radar Waveform Calibration Setup

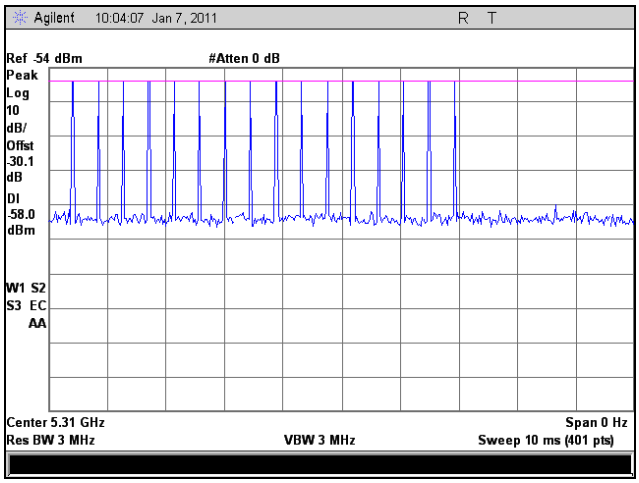
Radar Waveform Calibration, 5310 MHz (Probabilities and Bandwidth only)



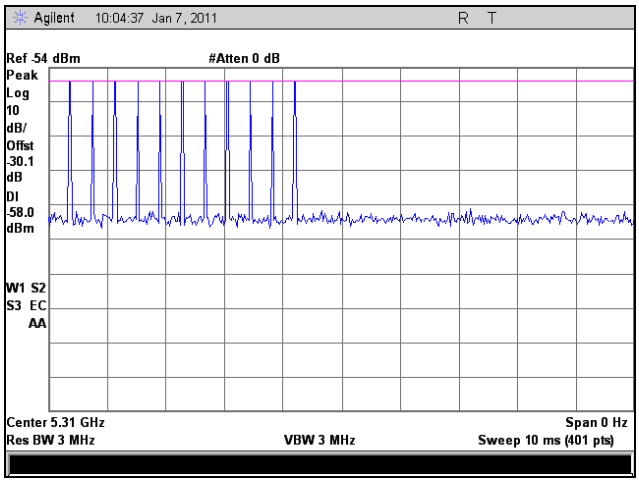
Radar Type 1 Calibration, 5310 MHz



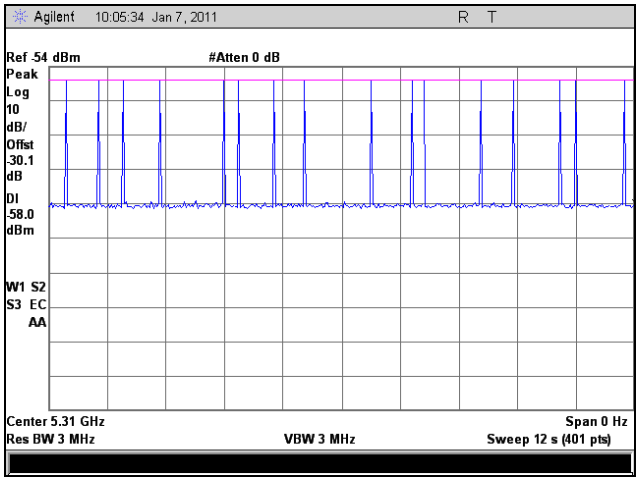
Radar Type 2 Calibration, 5310 MHz



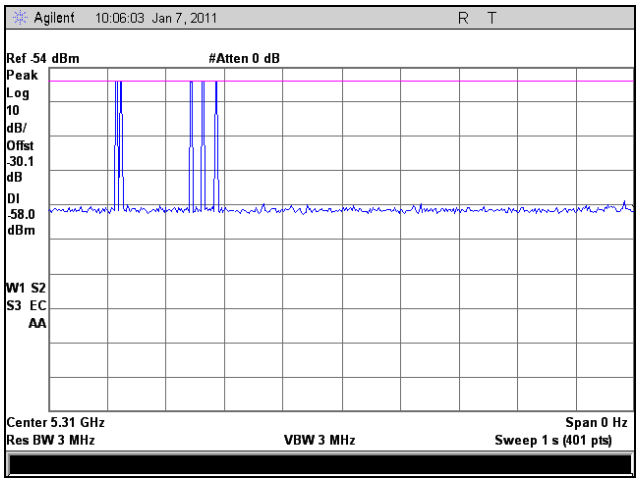
Radar Type 3 Calibration, 5310 MHz



Radar Type 4 Calibration, 5310 MHz

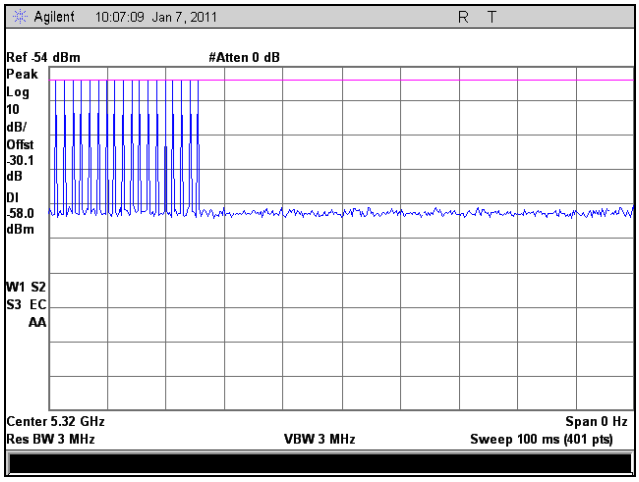


Radar Type 5 Calibration, 5310 MHz

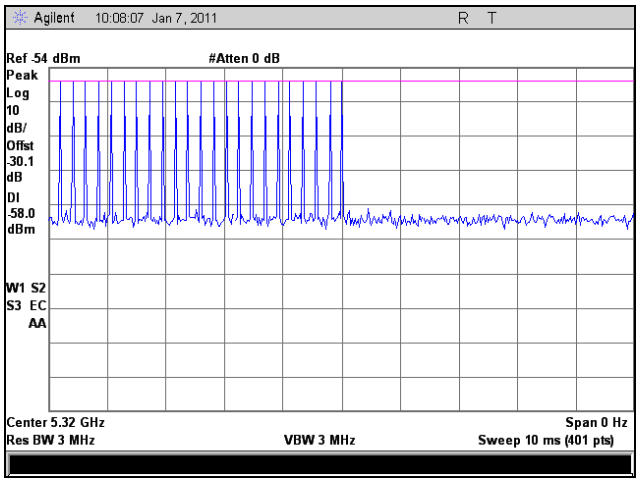


Radar Type 6 Calibration, 5310 MHz

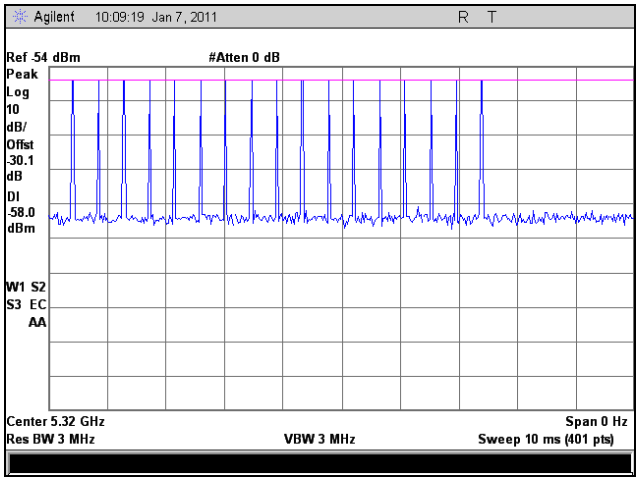
Radar Waveform Calibration, 5320 MHz (Probabilities only)



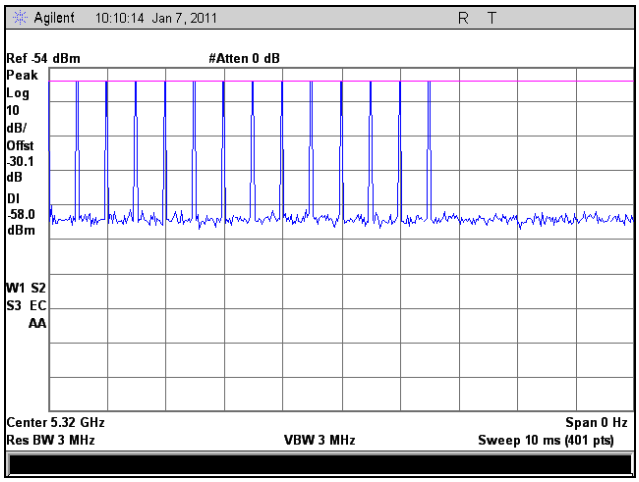
Radar Type 1 Calibration, 5320 MHz



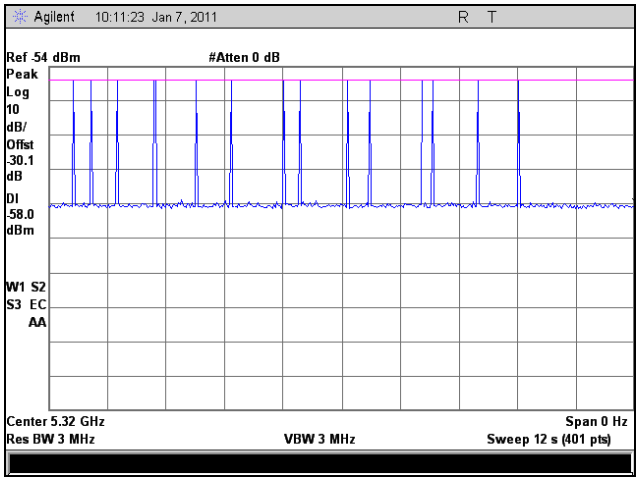
Radar Type 2 Calibration, 5320 MHz



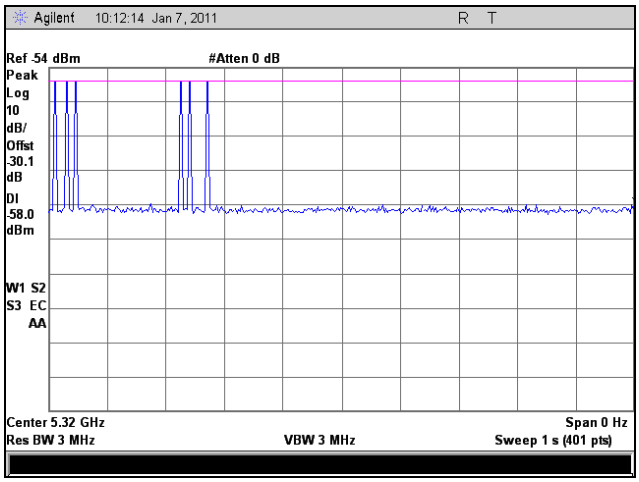
Radar Type 3 Calibration, 5320 MHz



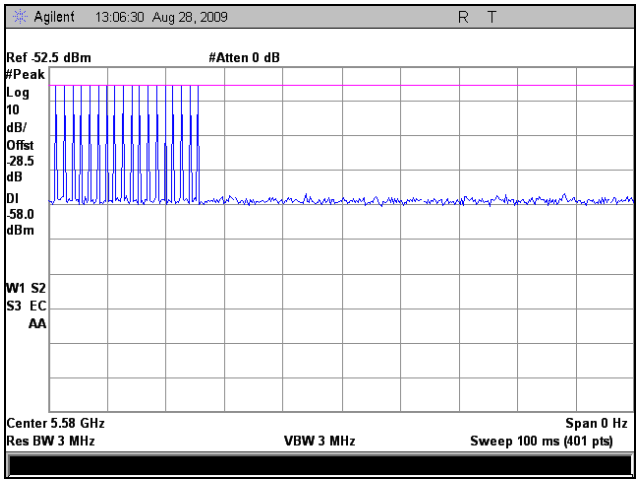
Radar Type 4 Calibration, 5320 MHz



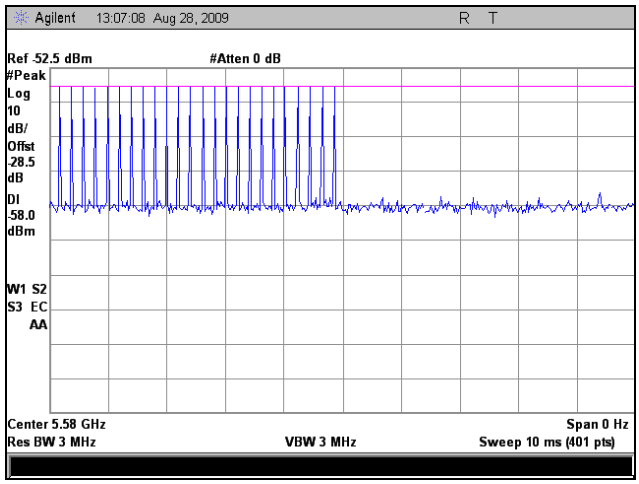
Radar Type 5 Calibration, 5320 MHz



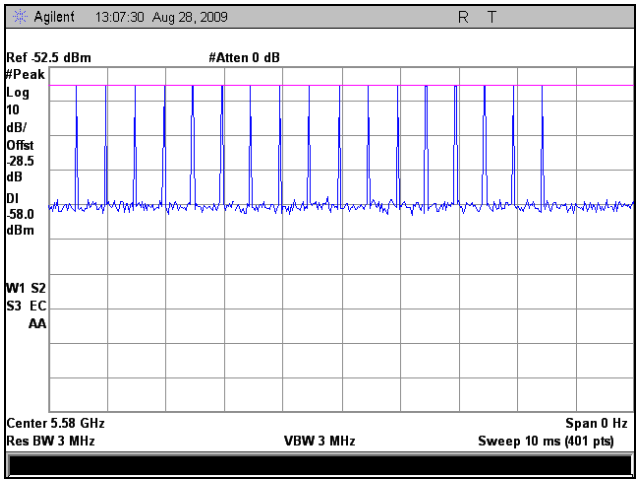
Radar Type 6 Calibration, 5320 MHz



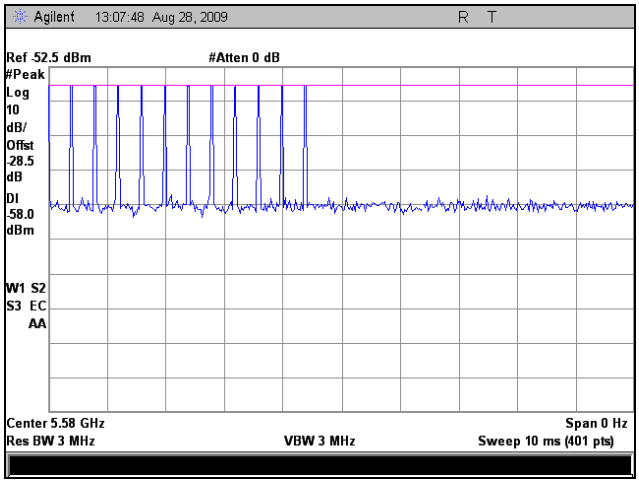
Calibration Plot, Bin 1, 5580 MHz (used for CACT, Bandwidth, Non Occupancy, Close Time & Move Time)



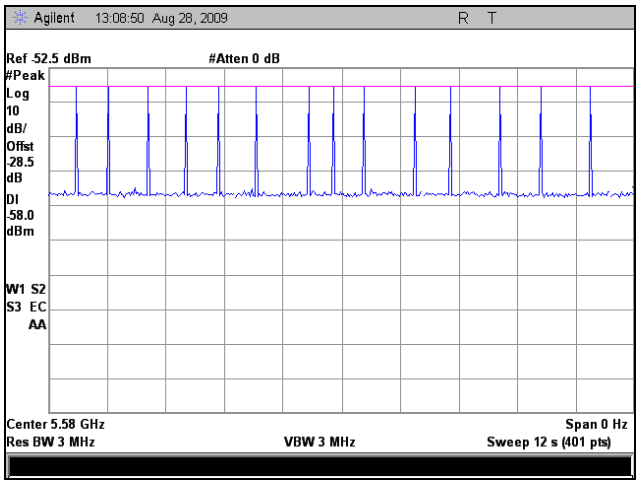
Calibration Plot, Bin 2, 5580 MHz (used for CACT, Bandwidth, Non Occupancy, Close Time & Move Time)



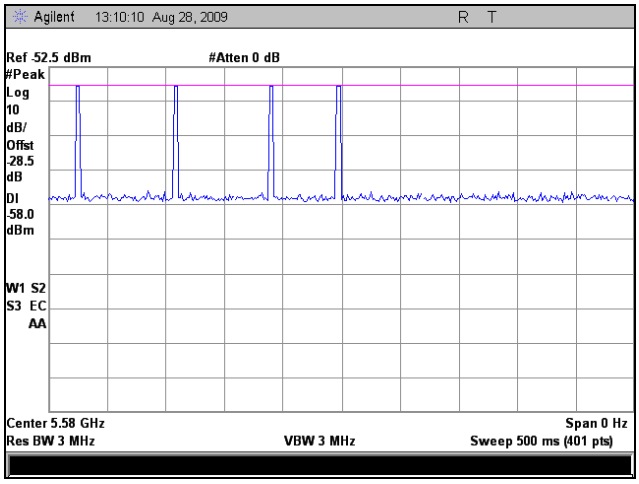
Calibration Plot, Bin 3, 5580 MHz (used for CACT, Bandwidth, Non Occupancy, Close Time & Move Time)



Calibration Plot, Bin 4, 5580 MHz (used for CACT, Bandwidth, Non Occupancy, Close Time & Move Time)



Calibration Plot, Bin 5, 5580 MHz (used for CACT, Bandwidth, Non Occupancy, Close Time & Move Time)



Calibration Plot, Bin 6, 5580 MHz (used for CACT, Bandwidth Non Occupancy, Close Time & Move Time)

VI. DFS Test Procedure and Test Results

A. DFS Test Setup

1. A spectrum analyzer is used as a monitor to verify that the Unit Under Test (UUT) has vacated the Channel within the Channel Closing Transmission Time and Channel Move Time, and does not transmit on a Channel during the Non-Occupancy Period after the detection and subsequent Channel move. It is also used to monitor UUT transmissions during the Channel Availability Check Time.
2. The test setup, which consists of test equipment and equipment under test (EUT), is diagrammed in Figure 7 and pictured in Figure 7. Test Setup Diagram.

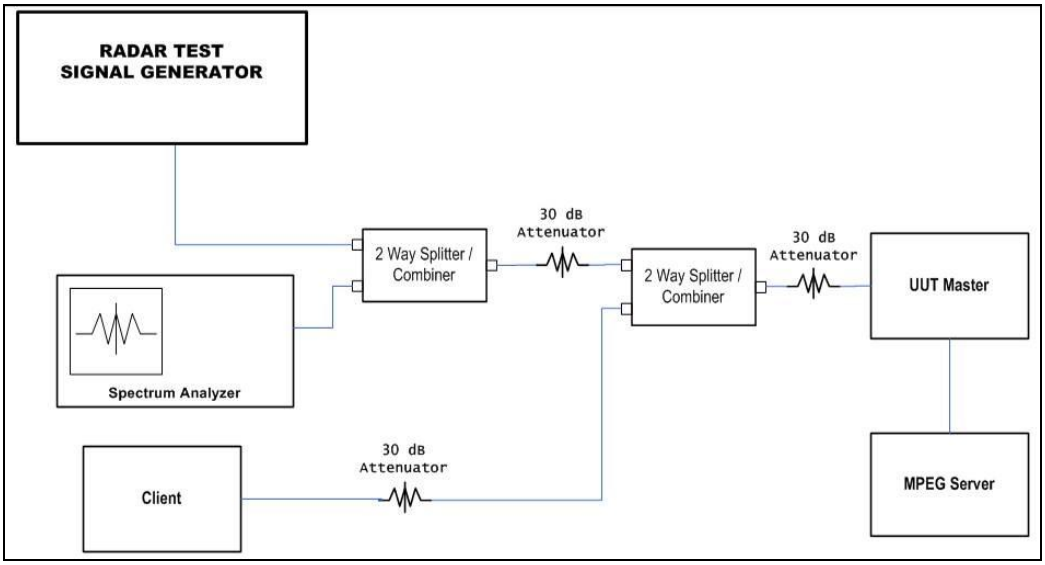


Figure 7. Test Setup Diagram

B. Description of Master Device

1. Operating Frequency Range – 5500-5700 MHz
2. Modes of Operation – 802.11a/802.11n
3. Highest and Lowest EIRP – Highest: 29.98 dBm; Lowest: 21.60 dBm
4. List all antennas and associated gains –

   MA-WA55-MIMO.pdf
   Gain is 19

   MA-WD55-MIMOFT16.pdf
   Gain is 16

   MA-WO55-9NHFT3.pdf
   Gain is 9

   C812-510012-A.pdf
   Gain is 5

5. List output power ranges – 11.83dBm - 20.21 dBm
6. List antenna impedance – 50 ohms
7. Antenna gain verification - Use antenna data sheet
8. State test file that is transmitted – 6 and ½ Magic Hours
9. Time for master to complete its power-on-cycle – 78 seconds

C. UNII Detection Bandwidth

Test Requirement(s): **§ 15.407** A minimum 80% detection rate is required across an EUT's 99% bandwidth.

Test Procedure: All UNII channels for this device have two channel bandwidths. Therefore, DFS testing was done at 20 MHz bandwidth at 5580 MHz and 40 MHz bandwidth at 5310 MHz.

A single burst of the short pulse radar type 1 is produced at 5580 and 5310 MHz, at the -63dBm test level. The UUT is set up as a standalone device (no associated client, and no data traffic).

A single radar burst is generated for a minimum of 10 trials, and the response of the UUT is recorded. The UUT must detect the radar waveform 90% or more of the time.

The radar frequency is increased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The highest frequency at which detection is greater than or equal to 90% is denoted F_H.

The radar frequency is decreased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The lowest frequency at which detection is greater than or equal to 90% is denoted F_L.

The U-NII Detection Bandwidth is calculated as follows:

$$\text{U-NII Detection Bandwidth} = F_H - F_L$$

Test Engineer: Anderson Soungpanya

Test Date: 08/26/09 – 09/02/09

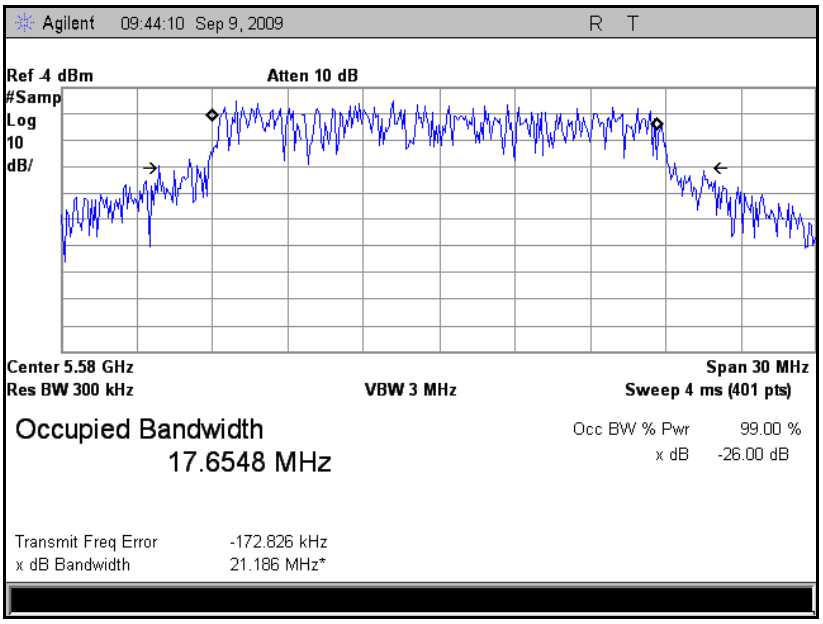
UNII Detection Bandwidth – Test Results

EUT Frequency- 5580MHz											
	DFS Detection Trials (1=Detection, 0= No Detection)										
Radar Frequency (MHz)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Detection Rate (%)**
5566	1	1	1	1	0	1	0	1	0	0	60
5567(FL)	1	1	1	1	1	1	1	1	1	0	90
5568	1	1	1	1	1	1	1	1	1	1	100
5569	1	1	1	1	1	1	1	1	1	1	100
5570	1	1	1	1	1	1	1	1	1	1	100
5571	1	1	1	1	1	1	1	1	1	1	100
5572	1	1	1	1	1	1	1	1	1	1	100
5573	1	1	1	1	1	1	1	1	1	1	100
5574	1	1	1	1	1	1	1	1	1	1	100
5575	1	1	1	1	1	1	1	1	1	1	100
5576	1	1	1	1	1	1	1	1	1	1	100
5577	1	1	1	1	1	1	1	1	1	1	100
5578	1	1	1	1	1	1	1	1	1	1	100
5579	1	1	1	1	1	1	1	1	1	1	100
5580	1	1	1	1	1	1	1	1	1	1	100
5581	1	1	1	1	1	1	1	1	1	1	100
5582	1	1	1	1	1	1	1	1	1	1	100
5583	1	1	1	1	1	1	1	1	1	1	100
5584	1	1	1	1	1	1	1	1	1	1	100
5585	1	1	1	1	1	1	1	1	1	1	100
5586	1	1	1	1	1	1	1	1	1	1	100
5587	1	1	1	1	1	1	1	1	1	1	100
5588	1	1	1	1	1	1	1	1	1	1	100
5589	1	1	1	1	1	1	1	1	1	1	100
5590	1	1	1	1	1	1	1	1	1	1	100
5591	1	1	1	1	1	1	1	1	1	1	100
5592	1	1	1	1	1	1	1	1	1	1	100
5593	1	1	1	1	1	1	1	1	1	1	100
5594	1	1	1	1	1	0	1	1	1	1	90
5595 (FH)	1	1	1	1	1	1	1	0	1	1	90
5596	1	1	1	0	1	0	1	0	1	0	60
Overall Detection Percentage											89.42%
Detection Bandwidth = f_h - f_l = 5595MHz-5567MHz = 28MHz											
EUT 99% Bandwidth = 17.6548 MHz											
OBW* 80% = 14.1238 MHz (Detection Bandwidth shall not be less than 14.1238MHz. Measured Detection Bandwidth is 28MHz.)											

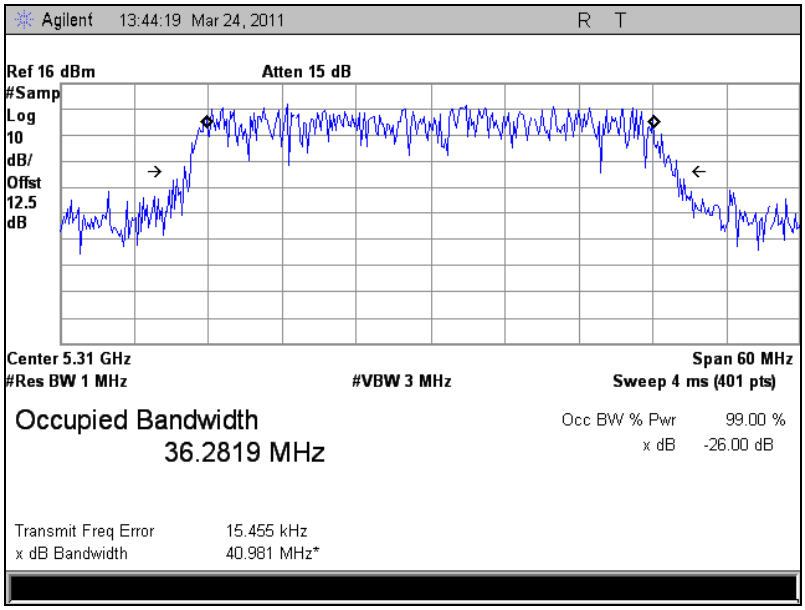
Table 79. UNII Detection Bandwidth, Test Results, 5580 MHz, 802.11a

EUT Frequency- 5980MHz 40MHz BW											
	DFS Detection Trials (1=Detection, 0= No Detection)										
Radar Frequency (MHz)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Detection Rate (%)**
5288	0	1	1	0	0	1	0	1	1	1	60
5289 (fL)	1	1	1	1	1	1	1	1	1	1	100
5290	1	1	1	1	1	1	1	1	1	1	100
5291	1	1	1	1	1	1	1	1	1	1	100
5292	1	1	1	1	1	1	1	1	1	1	100
5293	1	1	1	1	1	1	1	1	1	1	100
5294	1	1	1	1	1	1	1	1	1	1	100
5295	1	1	1	1	1	1	1	1	1	1	100
5296	1	1	1	1	1	1	1	1	1	1	100
5297	1	1	1	1	1	1	1	1	1	1	100
5298	1	1	1	1	1	1	1	1	1	1	100
5299	1	1	1	1	1	1	1	1	1	1	100
5300	1	1	1	1	1	1	1	1	1	1	100
5301	1	1	1	1	1	1	1	1	1	1	100
5302	1	1	1	1	1	1	1	1	1	1	100
5303	1	1	1	1	1	1	1	1	1	1	100
5304	1	1	1	1	1	1	1	1	1	1	100
5305	1	1	1	1	1	1	1	1	1	1	100
5306	1	1	1	1	1	1	1	1	1	1	100
5307	1	1	1	1	1	1	1	1	1	1	100
5308	1	1	1	1	1	1	1	1	1	1	100
5309	1	1	1	1	1	1	1	1	1	1	100
5310	1	1	1	1	1	1	1	1	1	1	100
5311	1	1	1	1	1	1	1	1	1	1	100
5312	1	1	1	1	1	1	1	1	1	1	100
5313	1	1	1	1	1	1	1	1	1	1	100
5314	1	1	1	1	1	1	1	1	1	1	100
5315	1	1	1	1	1	1	1	1	1	1	100
5316	1	1	1	1	1	1	1	1	1	1	100
5317	1	1	1	1	1	1	1	1	1	1	100
5318	1	1	1	1	1	1	1	1	1	1	100
5319	1	1	1	1	1	1	1	1	1	1	100
5320	1	1	1	1	1	1	1	1	1	1	100
5321	1	1	1	1	1	1	1	1	1	1	100
5322	1	1	1	1	1	1	1	1	1	1	100
5323	1	1	1	1	1	1	1	1	1	1	100
5324	1	1	1	1	1	1	1	1	1	1	100
5325	1	1	1	1	1	1	1	1	1	1	100
5326	1	1	1	1	1	1	1	1	1	1	100
5327	1	1	1	1	1	1	1	1	1	1	100
5328	1	1	1	1	1	1	1	1	1	1	100
5329	1	1	1	1	1	1	1	1	1	1	100
5330	1	1	1	1	1	1	1	1	1	1	100
5331 (fH)	1	1	1	1	1	1	1	1	1	1	100
5332	0	1	1	1	1	1	0	0	1	0	60
Overall Detection Percentage											86.23%
Detection Bandwidth = f_h - f_l = 5331MHz-5288MHz = 42MHz											
EUT 99% Bandwidth = 36.2819 MHz											
OBW* 80% = 29.03 MHz (Detection Bandwidth Limit shall not be under 29..03MHz. Measured Detection Bandwidth is 42MHz.)											

Table 80. UNII Detection Bandwidth, Test Results,5310 MHz, 802.11n 40MHz



Plot 335. Occupied Bandwidth, 802.11a, 5580 MHz



Plot 336. Occupied Bandwidth, 802.11n 40MHz, 5310 MHz

D. Initial Channel Availability Check Time

Test Requirements: **§ 15.407** The Initial Channel Availability Check Time tests that the UUT does not emit beacon, control, or data signals on the test channel until the power-up sequence has been completed and the U-NII device has checked for radar waveforms, for one minute, on the test channel. This test does not use any of the radar waveforms and only needs to be performed once.

The UUT should not make any transmissions over the test channel, for at least 1 minute after completion of its power-on cycle.

Test Procedure: The U-NII device is powered on and instructed to operate at 5580 MHz At the same time the UUT is powered on, the spectrum analyzer is set to 5580MHz with a zero span and a 2.5 minute sweep time. The analyzer is triggered at the same time power is applied to the U-NII device.

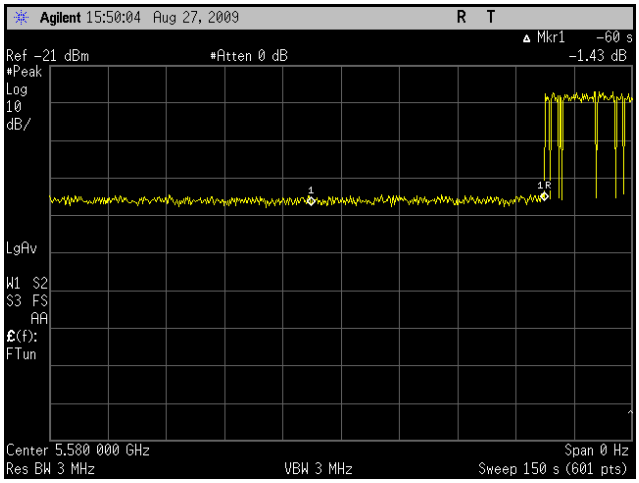
Test Results: The initial power up time of the EUT is indicated by marker 1R on Plot 337. Initial beacon/data transmission is indicated by marker 1.

The Equipment complies with § 15.407 Initial Channel Availability Check Time.

Test Engineer: Anderson Soungpanya

Test Date: 08/26/09 – 09/02/09

Initial Channel Availability Check Time – Plot



Plot 337. Initial Channel Availability Check Time, 150 seconds, 5580 MHz, 802.11a

E. Radar Burst at the Beginning of Channel Availability Check Time

Test Requirements: **§ 15.407** A Radar Burst at the Beginning of the Channel Availability Check Time tests that the UUT does not emit beacon, control, or data signals on the test Channel if it has detected a radar burst during that time period until the power-up sequence has been completed and the U-NII device checks for Radar Waveforms for one minute on the test Channel. The steps below define the procedure to verify successful radar detection on the selected Channel during a period equal to the Channel Availability Check Time and avoidance of operation on that Channel when a radar Burst with a level equal to the DFS Detection Threshold + 1 dB (-63dBm) occurs at the beginning of the Channel Availability Check Time.

Test Procedure: The UUT is powered on at T0. T1 denotes the instant when the UUT has completed its power-up sequence. The Channel Availability Check Time commences at instant T1 and will end no sooner than T1 + 60 seconds.

A single Burst of short pulse radar type 1, at -63 dBm, will commence within a 6 second window starting at T1.

Visual indication of the UUT of successful detection of the radar Burst will be recorded and reported. Observation of transmission at 5580MHz will continue for 2.5 minutes after the radar Burst has been generated.

Verify that during the 2.5 minute measurement window, no UUT transmissions occur at 5580MHz.

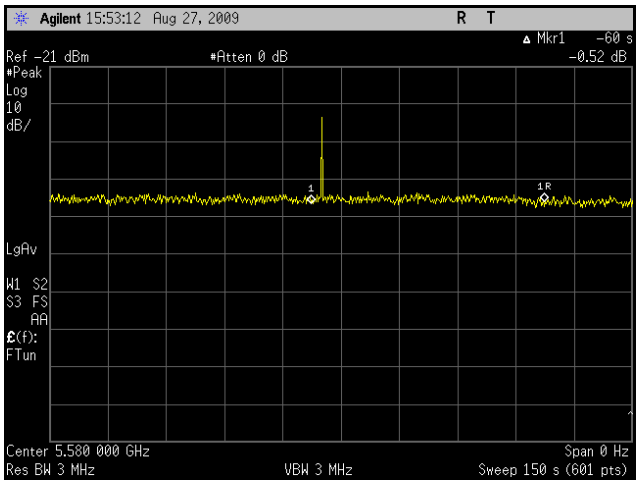
Test Results Plot 338 below indicates that there were no UUT transmissions during the 2.5 minute measurement window. Marker 1R indicates completion of the power-on cycle. Marker 1 indicates the end of the 60-second channel availability check time.

The equipment complies with § 15.407 Radar Burst at the Beginning of the Channel Availability Check Time.

Test Engineer: Anderson Soungpanya

Test Date: 08/26/09 – 09/02/09

Radar Burst at the Beginning of Channel Availability Check Time – Plot



Plot 338. Radar Burst at the Beginning of CACT, 250 seconds, 5580 MHz, 802.11a

F. Radar Burst at the End of Channel Availability Check Time

Test Requirements: **§ 15.407** A Radar Burst at the End of the Channel Availability Check Time tests that the UUT does not emit beacon, control, or data signals on the test Channel if it has detected a radar burst during that time period until the power-up sequence has been completed and the U-NII device checks for Radar Waveforms for one minute on the test Channel. The steps below define the procedure to verify successful radar detection on the selected Channel during a period equal to the Channel Availability Check Time and avoidance of operation on that Channel when a radar Burst with a level equal to the DFS Detection Threshold + 1 dB (-63dBm) occurs at the end of the Channel Availability Check Time.

Test Procedure: The steps below define the procedure to verify successful radar detection on the selected Channel during a period equal to the Channel Availability Check Time and avoidance of operation on that Channel when a radar Burst with a level equal to the DFS Detection Threshold + 1 dB (-63dBm) occurs at the end of the Channel Availability Check Time.

The UUT is powered on at T0. T1 denotes the instant when the UUT has completed its power-up sequence. The Channel Availability Check Time commences at instant T1 and will end no sooner than T1 + 60 seconds.

A single Burst of short pulse of radar type 1 at -63 dBm will commence within a 6 second window starting at T1+ 54 seconds.

Visual indication on the UUT of successful detection of the radar Burst will be recorded and reported. Observation of emissions at 5580 MHz will continue for 2.5 minutes after the radar Burst has been generated.

Verify that during the 2.5 minute measurement window no UUT transmissions occurred at 5580MHz.

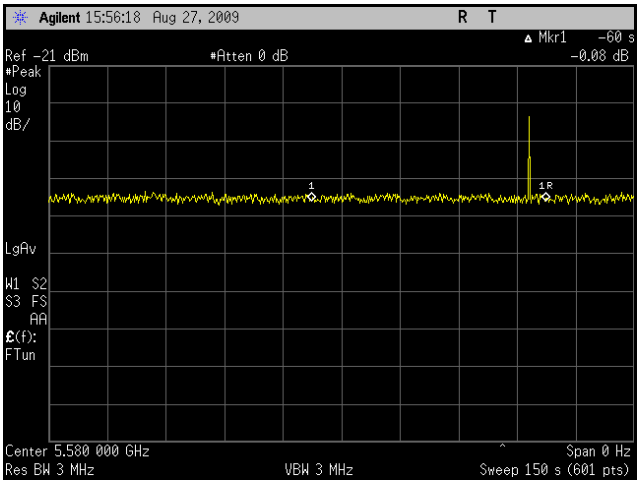
Test Results: Plot 339 indicates that no UUT transmissions occurred during the 2.5 minute measurement window. Marker 1R indicates completion of the power-on cycle. Marker 1 indicates the end of the 60-second channel availability check time.

The equipment complies with § 15.407 Radar Burst at the End of the Channel Availability Check Time.

Test Engineer: Anderson Soungpanya

Test Date: 08/26/09 – 09/02/09

Radar Burst at the End of Channel Availability Check Time – Plot



Plot 339. Radar Burst at the End of CACT, 250 seconds, 5580 MHz, 802.11a

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

Test Requirements:

§ 15.407 (Refer to DFS Response Requirement Values table in section III-A of this report.) The UUT shall continuously monitor for radar transmissions in the operating test channel. When a radar burst occurs in the test channel, it has 10 seconds to move to another channel. This 10 second window is termed Channel Move Time (CMT).

When a radar burst occurs, the UUT has 200 milliseconds, plus an aggregate of 60 milliseconds, to cease transmission in the operating test channel. This 200 ms + 60 ms requirement is termed Channel Closing Transmission Time (CCT).

After radar burst and subsequent move to another channel, the UUT shall not resume transmission, on the channel it moved from, for a period of 30 minutes. This requirement is termed Non-Occupancy Period (NOP).

Test Procedure:

These tests define how the following DFS parameters are verified during In-Service Monitoring: Channel Closing Transmission Time, Channel Move Time, and Non-Occupancy Period.

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 + 1dB (-63dBm) is generated on the Operating Channel of the U-NII device.

A U-NII device operating as a Client Device will associate with the UUT (Master) at 5580MHz. Stream the MPEG test file from the Master Device to the Client Device on the selected Channel for the entire period of the test.

At time T0 the Radar Waveform generator sends a Burst of pulses for each of the radar types at -63dBm.

Observe the transmissions of the UUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). Compare the Channel Move Time and Channel Closing Transmission Time results to the limits defined in the *DFS Response Requirement Values table*.

Test Results:

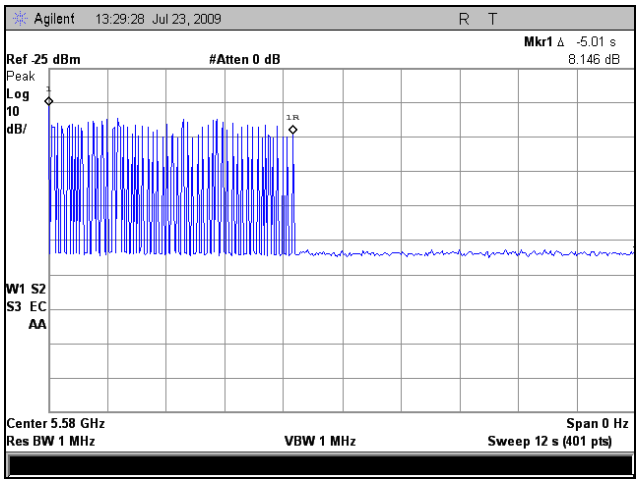
Plot 340 and Plot 341 indicate cessation of transmission for more than 10 seconds after a radar burst (marker 1). Plot 342 depicts the 200 ms closing time window (marker 1), and Plot 343 depicts post 200 ms aggregate transmissions. Finally, Plot 344 shows that transmissions have not resumed within 30 minutes of channel move.

The UUT complies with § 15.407 In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time, and Non-Occupancy Period.

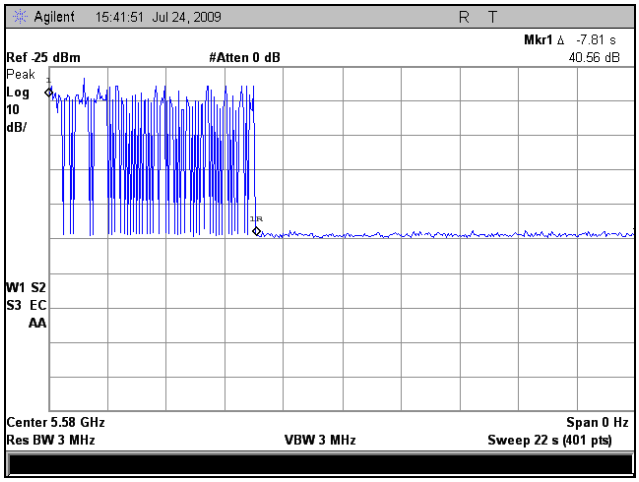
Test Engineer: Anderson Soungpanya

Test Date: 08/26/09 – 09/02/09

In-Service Monitoring for Channel Move Time – Plots

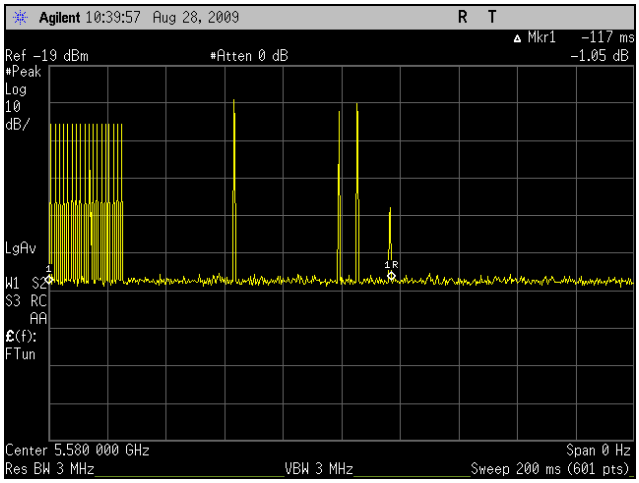


Plot 340. Channel Move Time for Radar Type 1, 10 seconds, 5580 MHz, 802.11a

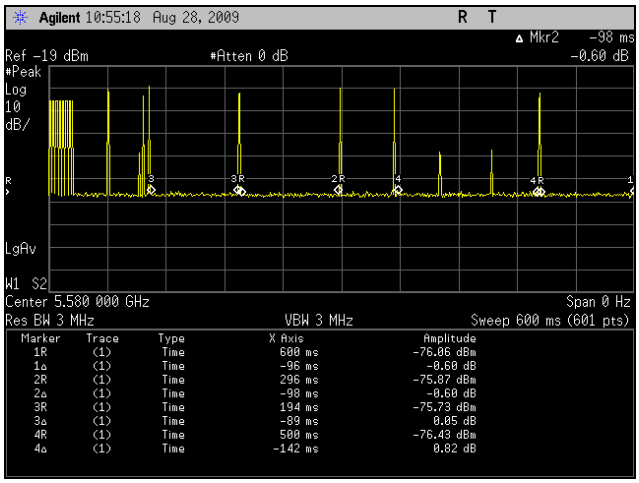


Plot 341. Channel Move Time for Radar Type 5, 22 seconds, 5580 MHz, 802.11a

In-Service Monitoring for Channel Closing Transmission Time – Plots

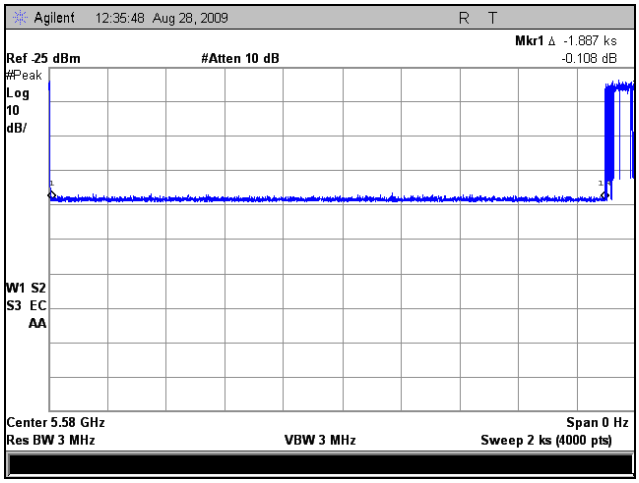


Plot 342. Channel Closing Transmission Time, 200 milliseconds, 5580 MHz, 802.11a



Plot 343. Channel Closing Transmission Time, 260 milliseconds, 5580 MHz, 802.11a

In-Service Monitoring for Non-Occupancy Period – Plot



Plot 344. Non-Occupancy Period, 30minutes, 5580 MHz, 802.11a

H. Statistical Performance Check

Test Requirements: **§ 15.407** During In-Service Monitoring, the EUT requires a minimum percentage of successful radar detections from all required radar waveforms at a level equal to the DFS Detection Threshold + 1dB.

Test Procedure: Stream the MPEG test file from the Master Device to the Client Device on the selected Channel for the entire period of the test. The Radar Waveform generator sends the individual waveform for each of the radar types 1-6 at -63dbm. Statistical data is gathered to determine the ability of the device to detect the radar test waveforms. The device can utilize a test mode to demonstrate when detection occurs to prevent the need to reset the device between trial runs. The percentage of successful detection is calculated by:

$$\frac{TotalWaveformDetections}{TotalWaveformTrials} \times 100$$

The Minimum number of trails, minimum percentage of successful detection and the average minimum percentage of successful detection are found in the Radar Test Waveforms section.

Test Results: Statistical performance for radar type 1 is tabulated in Table 81.

The equipment complies with § 15.407 Statistical Performance Check.

Test Engineer: Anderson Soungpanya

Test Date: 08/26/09

Radar Type	Trial #	Pulses per Burst	Pulse Width (µsec)	PRI (µsec)	Detection
					1 = Yes, 0 = No
1	1	18	1	1428	1
	2	18	1	1428	1
	3	18	1	1428	1
	4	18	1	1428	1
	5	18	1	1428	1
	6	18	1	1428	1
	7	18	1	1428	1
	8	18	1	1428	1
	9	18	1	1428	1
	10	18	1	1428	1
	11	18	1	1428	1
	12	18	1	1428	1
	13	18	1	1428	1
	14	18	1	1428	1
	15	18	1	1428	1
	16	18	1	1428	1
	17	18	1	1428	1
	18	18	1	1428	1
	19	18	1	1428	1
	20	18	1	1428	1
	21	18	1	1428	1
	22	18	1	1428	1
	23	18	1	1428	1
	24	18	1	1428	1
	25	18	1	1428	1
	26	18	1	1428	1
	27	18	1	1428	1
	28	18	1	1428	1
	29	18	1	1428	1
	30	18	1	1428	1
	Detection Percentage				100% (> 60%)

Table 81. Statistical Performance Check – Radar Type 1, 5580 MHz, 802.11a

Radar Type	Trial #	Pulse Width 1 to 5 µsec	PRI 150 to 230 µsec	Pulses per Burst 23 to 29	Detection 1 = Yes, 0 = No
2	1	2.6	221	24	1
	2	3.7	170	28	1
	3	4.4	159	23	1
	4	3.5	187	24	1
	5	4.4	168	23	1
	6	3.5	156	23	1
	7	1.9	164	25	1
	8	3.0	198	26	1
	9	4.8	224	28	1
	10	2.6	180	27	1
	11	2.1	206	28	0
	12	1.4	191	24	1
	13	1.9	187	26	1
	14	4.1	160	29	1
	15	2.8	213	28	1
	16	4.7	202	26	1
	17	2.8	184	24	1
	18	4.8	211	23	1
	19	1.2	187	29	1
	20	4.3	208	23	1
	21	1.9	218	26	0
	22	4.4	161	29	0
	23	1.7	161	24	1
	24	1.6	204	25	1
	25	2.8	171	24	1
	26	2.7	207	24	1
	27	2.9	204	23	1
	28	1.4	219	29	1
	29	4.9	199	24	1
	30	2.3	191	26	1
	Detection Percentage				90% (> 60%)

Table 82. Statistical Performance Check – Radar Type 2, 5580 MHz, 802.11a

Radar Type	Trial #	Pulse Width 6 to 10 µsec	PRI 200 to 500 µsec	Pulses per Burst 16 to 18	Detection 1 = Yes, 0 = No
3	1	7.8	392	17	1
	2	7.8	364	17	1
	3	6.4	461	17	1
	4	8.1	419	16	1
	5	5.6	379	18	1
	6	8.1	439	16	1
	7	7.5	271	16	1
	8	7.0	278	16	0
	9	9.4	491	18	1
	10	7.6	260	18	1
	11	7.4	462	18	1
	12	8.3	344	17	1
	13	7.7	324	17	1
	14	9.8	308	16	1
	15	8.1	288	17	0
	16	9.2	368	16	1
	17	7.5	305	16	1
	18	9.3	292	17	1
	19	5.0	292	16	1
	20	5.3	460	16	1
	21	8.8	464	18	1
	22	7.7	461	16	1
	23	7.2	257	16	1
	24	6.1	328	18	1
	25	5.3	324	17	1
	26	6.1	452	16	1
	27	7.8	454	18	1
	28	5.8	287	16	1
	29	5.1	440	17	1
	30	8.4	441	16	1
	Detection Percentage				**94% (> 60%)**

Table 83. Statistical Performance Check – Radar Type 3, 5580 MHz, 802.11a

Radar Type	Trial #	Pulse Width 11 to 20 µsec	PRI 200 to 500 µsec	Pulses per Burst 12 to 16	Detection 1 = Yes, 0 = No
4	1	19.2	250	16	0
	2	18.7	307	15	1
	3	19.5	418	14	1
	4	13.2	351	15	1
	5	19.4	373	14	1
	6	13.3	355	16	1
	7	18.3	375	13	0
	8	13.9	370	13	1
	9	19.9	472	14	1
	10	18.4	354	12	1
	11	18.3	282	14	1
	12	19.0	413	16	1
	13	16.2	317	14	1
	14	10.5	375	14	0
	15	16.1	411	15	1
	16	15.9	412	13	1
	17	11.5	386	16	0
	18	10.3	321	12	1
	19	16.8	344	14	1
	20	15.8	324	14	1
	21	19.0	390	16	1
	22	14.3	261	13	1
	23	19.8	484	12	1
	24	14.1	380	13	1
	25	15.5	368	14	1
	26	13.9	293	14	0
	27	17.0	299	12	1
	28	12.9	292	14	1
	29	19.8	421	14	1
	30	17.8	335	14	1
	Detection Percentage				84% (> 60%)

Table 84. Statistical Performance Check – Radar Type 4, 5580 MHz, 802.11a

Radar Type	Trial #	Filename*	Detection
			1 = Yes, 0 = No
5	1	bin5-trial 1	0
	2	bin5-trial 2	1
	3	bin5-trial 3	1
	4	bin5-trial 4	1
	5	bin5-trial 5	1
	6	bin5-trial 6	1
	7	bin5-trial 7	1
	8	bin5-trial 8	1
	9	bin5-trial 9	1
	10	bin5-trial 10	1
	11	bin5-trial 11	1
	12	bin5-trial 12	1
	13	bin5-trial 13	1
	14	bin5-trial 14	1
	15	bin5-trial 15	1
	16	bin5-trial 16	1
	17	bin5-trial 17	1
	18	bin5-trial 18	1
	19	bin5-trial 19	1
	20	bin5-trial 20	1
	21	bin5-trial 21	1
	22	bin5-trial 22	1
	23	bin5-trial 23	1
	24	bin5-trial 24	1
	25	bin5-trial 25	1
	26	bin5-trial 26	1
	27	bin5-trial 27	1
	28	bin5-trial 28	1
	29	bin5-trial 29	1
	30	bin5-trial 30	1
	Detection Percentage		**97% (> 80%)**

Table 85. Statistical Performance Check – Radar Type 5, 5580 MHz, 802.11a

Note: See Appendix

Radar Type	Trial #	Frequency (MHz)	Pulses/Hop	Pulse Width (µsec)	PRI (µsec)	Detection
						1 = Yes, 0 = No
6	1	5580	9	1	333	1
	2	5580	9	1	333	1
	3	5580	9	1	333	1
	4	5580	9	1	333	1
	5	5580	9	1	333	1
	6	5580	9	1	333	1
	7	5580	9	1	333	1
	8	5580	9	1	333	1
	9	5580	9	1	333	1
	10	5580	9	1	333	1
	11	5580	9	1	333	1
	12	5580	9	1	333	1
	13	5580	9	1	333	1
	14	5580	9	1	333	1
	15	5580	9	1	333	1
	16	5580	9	1	333	1
	17	5580	9	1	333	1
	18	5580	9	1	333	1
	19	5580	9	1	333	1
	20	5580	9	1	333	1
	21	5580	9	1	333	1
	22	5580	9	1	333	1
	23	5580	9	1	333	1
	24	5580	9	1	333	1
	25	5580	9	1	333	1
	26	5580	9	1	333	1
	27	5580	9	1	333	1
	28	5580	9	1	333	1
	29	5580	9	1	333	1
	30	5580	9	1	333	1
	Detection Percentage					100% (> 70%)

Table 86. Statistical Performance Check – Radar Type 6, 5580 MHz, 802.11a

Radar Type	Trial #	Pulses per Burst	Pulse Width (µsec)	PRI (µsec)	Detection 1 = Yes, 0 = No
1	1	18	1	1428	1
	2	18	1	1428	1
	3	18	1	1428	1
	4	18	1	1428	1
	5	18	1	1428	1
	6	18	1	1428	1
	7	18	1	1428	0
	8	18	1	1428	1
	9	18	1	1428	0
	10	18	1	1428	1
	11	18	1	1428	1
	12	18	1	1428	1
	13	18	1	1428	0
	14	18	1	1428	1
	15	18	1	1428	1
	16	18	1	1428	1
	17	18	1	1428	1
	18	18	1	1428	0
	19	18	1	1428	1
	20	18	1	1428	1
	21	18	1	1428	1
	22	18	1	1428	1
	23	18	1	1428	1
	24	18	1	1428	1
	25	18	1	1428	1
	26	18	1	1428	1
	27	18	1	1428	1
	28	18	1	1428	1
	29	18	1	1428	1
	30	18	1	1428	0
	Detection Percentage				**84% (> 60%)**

Table 87. Statistical Performance Check – Radar Type 1, 5310 MHz, 802.11n 40MHz

Radar Type	Trial #	Pulse Width 1 to 5 µsec	PRI 150 to 230 µsec	Pulses per Burst 23 to 29	Detection 1 = Yes, 0 = No
2	1	4.1	203	26	1
	2	1.4	160	28	1
	3	3	194	28	0
	4	1.4	174	25	1
	5	1.6	218	25	1
	6	4.2	215	27	1
	7	3.5	214	24	1
	8	3	155	23	1
	9	3.2	180	23	1
	10	1.3	201	25	1
	11	4.9	213	24	0
	12	4.7	207	25	1
	13	3.1	194	28	1
	14	4.1	203	23	1
	15	1.9	169	25	1
	16	1	208	26	1
	17	2.7	192	29	1
	18	1.4	186	23	1
	19	1.9	188	29	1
	20	2	221	23	1
	21	2.3	183	24	0
	22	2.2	230	26	1
	23	2	211	28	1
	24	3.6	218	29	0
	25	2.5	210	28	1
	26	4.8	205	27	0
	27	1.7	153	28	1
	28	3.4	169	27	1
	29	2.9	217	29	1
	30	3.5	182	28	1
	Detection Percentage				**84% (> 60%)**

Table 88. Statistical Performance Check – Radar Type 2, 5310 MHz, 802.11n 40MHz

Radar Type	Trial #	Pulse Width 6 to 10 µsec	PRI 200 to 500 µsec	Pulses per Burst 16 to 18	Detection 1 = Yes, 0 = No
3	1	9.7	448	18	1
	2	8.1	451	18	1
	3	7.4	287	16	1
	4	5.9	433	18	0
	5	9.9	424	17	1
	6	7.2	435	18	0
	7	8.2	477	17	0
	8	9.2	475	17	1
	9	6.3	317	16	1
	10	6.7	274	17	1
	11	5	337	17	1
	12	8.5	398	18	1
	13	5.7	476	18	1
	14	9.6	368	17	1
	15	9	421	17	1
	16	5.1	457	16	1
	17	6.2	394	17	1
	18	7.1	389	17	1
	19	6.1	443	18	1
	20	5.1	429	16	1
	21	9.2	267	16	1
	22	5.9	266	18	1
	23	7.6	353	18	1
	24	6.5	449	17	1
	25	8.6	371	16	1
	26	9.8	329	16	1
	27	6.8	338	18	1
	28	5.6	346	18	1
	29	9.9	453	17	1
	30	6.7	288	18	1
	Detection Percentage				90% (> 60%)

Table 89. Statistical Performance Check – Radar Type 3, 5310 MHz, 802.11n 40MHz

Radar Type	Trial #	Pulse Width 11 to 20 µsec	PRI 200 to 500 µsec	Pulses per Burst 12 to 16	Detection 1 = Yes, 0 = No
4	1	11.9	362	15	1
	2	18.1	267	16	1
	3	12.3	452	14	1
	4	19.2	492	14	0
	5	11.4	277	14	1
	6	11.4	437	12	1
	7	11	342	16	1
	8	11	311	12	1
	9	19.2	485	16	0
	10	10.8	318	14	1
	11	16.2	329	15	1
	12	16.7	363	15	1
	13	11.9	251	16	1
	14	19.6	282	13	1
	15	14.7	394	15	1
	16	16.4	500	15	1
	17	12.1	443	16	1
	18	19.6	360	15	1
	19	11.9	374	16	1
	20	12.2	471	12	1
	21	13.9	349	14	1
	22	19.4	369	15	1
	23	14.8	300	13	1
	24	17.3	261	12	1
	25	16.9	368	15	1
	26	19.1	325	15	1
	27	14.5	404	14	1
	28	15.5	439	14	1
	29	14.7	399	15	1
	30	13.1	254	15	1
	Detection Percentage				94% (> 60%)

Table 90. Statistical Performance Check – Radar Type 4, 5310 MHz, 802.11n 40MHz

Radar Type	Trial #	Filename*	Detection
			1 = Yes, 0 = No
5	1	bin5-trial 1	1
	2	bin5-trial 2	1
	3	bin5-trial 3	0
	4	bin5-trial 4	1
	5	bin5-trial 5	1
	6	bin5-trial 6	1
	7	bin5-trial 7	1
	8	bin5-trial 8	1
	9	bin5-trial 9	1
	10	bin5-trial 10	1
	11	bin5-trial 11	1
	12	bin5-trial 12	1
	13	bin5-trial 13	0
	14	bin5-trial 14	1
	15	bin5-trial 15	1
	16	bin5-trial 16	1
	17	bin5-trial 17	1
	18	bin5-trial 18	1
	19	bin5-trial 19	1
	20	bin5-trial 20	1
	21	bin5-trial 21	1
	22	bin5-trial 22	1
	23	bin5-trial 23	1
	24	bin5-trial 24	1
	25	bin5-trial 25	1
	26	bin5-trial 26	1
	27	bin5-trial 27	1
	28	bin5-trial 28	1
	29	bin5-trial 29	1
	30	bin5-trial 30	1
	Detection Percentage		**94% (> 80%)**

Table 91. Statistical Performance Check – Radar Type 5, 5310 MHz, 802.11n 40MHz

Note: See Appendix

Radar Type	Trial #	Frequency (MHz)	Pulses/Hop	Pulse Width (µsec)	PRI (µsec)	Detection
						1 = Yes, 0 = No
6	1	5310	9	1	333	1
	2	5310	9	1	333	1
	3	5310	9	1	333	1
	4	5310	9	1	333	1
	5	5310	9	1	333	1
	6	5310	9	1	333	1
	7	5310	9	1	333	1
	8	5310	9	1	333	1
	9	5310	9	1	333	1
	10	5310	9	1	333	1
	11	5310	9	1	333	1
	12	5310	9	1	333	1
	13	5310	9	1	333	1
	14	5310	9	1	333	1
	15	5310	9	1	333	1
	16	5310	9	1	333	1
	17	5310	9	1	333	1
	18	5310	9	1	333	1
	19	5310	9	1	333	1
	20	5310	9	1	333	1
	21	5310	9	1	333	1
	22	5310	9	1	333	1
	23	5310	9	1	333	1
	24	5310	9	1	333	1
	25	5310	9	1	333	1
	26	5310	9	1	333	1
	27	5310	9	1	333	1
	28	5310	9	1	333	1
	29	5310	9	1	333	1
	30	5310	9	1	333	1
	Detection Percentage					100% (> 70%)

Table 92. Statistical Performance Check – Radar Type 6, 5310 MHz, 802.11n 40MHz

V. Appendix A

802.11n 20MHz

New3RandParmBin5.txt

Random DFS waveform parameters (NewBin5)

Waveform Num = 1
Num of Bursts = 18
Burst Interval (us) = 666667.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	457425	3	6.0	90	1946	1551	1060	457425	0	666666
2	783558	1	6.0	70	1290	0	0	1245540	666667	1333333
3	324209	2	16.0	95	1229	1042	0	1571039	1333334	2000000
4	1030285	1	7.0	76	1047	0	0	2603595	2000001	2666667
5	279009	1	12.0	82	1269	0	0	2883651	2666668	3333334
6	1047569	3	19.0	83	1449	1931	1373	3932489	3333335	4000001
7	427118	1	18.0	95	1469	0	0	4364360	4000002	4666668
8	574664	1	19.0	63	1456	0	0	4940493	4666669	5333335
9	746052	1	16.0	92	1533	0	0	5688001	5333336	6000002
10	387067	1	18.0	82	1438	0	0	6076601	6000003	6666669
11	960085	1	13.0	91	1164	0	0	7038124	6666670	7333336
12	413570	3	5.0	57	1621	1011	1911	7452858	7333337	8000003
13	777748	3	19.0	60	1742	1705	1425	8235149	8000004	8666670
14	652230	2	13.0	66	1729	1569	0	8892251	8666671	9333337
15	591174	2	5.0	90	1037	1550	0	9486723	9333338	10000004
16	1158922	3	7.0	66	1812	1927	1369	10648232	10000005	10666671
17	490012	3	13.0	56	1819	1271	1100	11143352	10666672	11333338
18	275139	3	15.0	59	1161	1858	1214	11422681	11333339	12000005

Total number of pulses in waveform = 35

Waveform Num = 2
Num of Bursts = 14

Page 1

New3RandParmBin5.txt

Burst Interval (us) = 857143.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	567555	3	17.0	51	1077	1972	1158	567555	0	857142
2	332798	3	9.0	74	1902	1117	1567	904560	857143	1714285
3	1149557	3	10.0	73	1067	1103	1080	2058703	1714286	2571428
4	1289643	1	17.0	62	1963	0	0	3351596	2571429	3428571
5	614299	1	13.0	86	1122	0	0	3967858	3428572	4285714
6	454116	2	11.0	57	1719	1668	0	4423096	4285715	5142857
7	917485	1	7.0	56	1902	0	0	5343968	5142858	6000000
8	1020163	2	12.0	58	1072	1610	0	6366033	6000001	6857143
9	1072968	1	10.0	51	1520	0	0	7441683	6857144	7714286
10	307274	3	17.0	91	1065	1108	1019	7750477	7714287	8571429
11	1246272	3	15.0	58	1333	1518	1587	8999941	8571430	9428572
12	856763	1	16.0	96	1739	0	0	9861142	9428573	10285715
13	496767	3	7.0	89	1195	1177	1854	10359648	10285716	11142858
14	1566339	2	17.0	93	1023	1911	0	11930213	11142859	12000001

Total number of pulses in waveform = 29

Waveform Num = 3
Num of Bursts = 9
Burst Interval (us) = 1333333.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	1206830	2	12.0	65	1968	1677	0	1206830	0	1333332
2	667887	1	7.0	86	1679	0	0	1878362	1333333	2666665
3	1684952	2	19.0	63	1393	1582	0	3564993	2666666	3999998
4	844347	3	12.0	54	1278	1006	1309	4412315	3999999	5333331

Page 2

New3RandParmBin5.txt

5	1291674	1	14.0	61	1907	0	0	5707582	5333332	6666664
6	2159002	1	20.0	65	1538	0	0	7868491	6666665	7999997
7	1184430	1	15.0	71	1301	0	0	9054459	7999998	9333330
8	326546	2	18.0	80	1370	1765	0	9382306	9333331	10666663
9	1906149	2	6.0	55	1149	1678	0	11291590	10666664	11999996

Total number of pulses in waveform = 15

Waveform Num = 4
Num of Bursts = 20
Burst Interval (us) = 600000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	166201	2	17.0	95	1547	1778	0	166201	0	599999
2	442970	3	10.0	63	1615	1773	1441	612496	600000	1199999
3	787396	3	16.0	83	1037	1160	1527	1404721	1200000	1799999
4	575472	3	17.0	97	1018	1142	1796	1983917	1800000	2399999
5	561627	2	10.0	96	1310	1400	0	2549500	2400000	2999999
6	702122	3	10.0	100	1908	1893	1116	3254332	3000000	3599999
7	743901	2	20.0	83	1477	1362	0	4003150	3600000	4199999
8	321666	2	19.0	50	1807	1044	0	4327655	4200000	4799999
9	655441	2	9.0	74	1047	1823	0	4985947	4800000	5399999
10	913742	2	7.0	71	1971	1408	0	5902559	5400000	5999999
11	519413	2	7.0	55	1718	1118	0	6425351	6000000	6599999
12	553326	1	18.0	91	1758	0	0	6981513	6600000	7199999
13	675997	2	12.0	62	1722	1623	0	7659268	7200000	7799999
14	151118	1	5.0	51	1167	0	0	7813731	7800000	8399999
15	1139799	3	12.0	93	1702	1455	1452	8954697	8400000	8999999

Page 3

New3RandParmBin5.txt

16	611785	1	11.0	86	1343	0	0	9571091	9000000	9599999
17	36936	2	13.0	63	1584	1503	0	9609370	9600000	10199999
18	1010715	2	8.0	91	1232	1380	0	10623172	10200000	10799999
19	515936	3	18.0	69	1441	1473	1103	11141720	10800000	11399999
20	375073	3	10.0	79	1092	1414	1950	11520810	11400000	11999999

Total number of pulses in waveform = 44

Waveform Num = 5
Num of Bursts = 11
Burst Interval (us) = 1090909.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	473292	2	10.0	91	1638	1292	0	473292	0	1090908
2	1652310	2	19.0	79	1944	1599	0	2128532	1090909	2181817
3	1089220	3	13.0	62	1285	1641	1196	3221295	2181818	3272726
4	670098	3	9.0	56	1952	1073	1534	3895515	3272727	4363635
5	558740	3	15.0	86	1300	1030	1647	4458814	4363636	5454544
6	1330498	3	5.0	73	1984	1593	1468	5793289	5454545	6545453
7	977327	3	5.0	84	1947	1531	1150	6775661	6545454	7636362
8	1732558	1	18.0	88	1397	0	0	8512847	7636363	8727271
9	563947	1	6.0	78	1058	0	0	9078191	8727272	9818180
10	1305747	1	14.0	90	1905	0	0	10384996	9818181	10909089
11	865323	2	16.0	88	1922	1325	0	11252224	10909090	11999998

Total number of pulses in waveform = 24

Waveform Num = 6
Num of Bursts = 11
Burst Interval (us) = 1090909.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)

New3RandParmBin5.txt

1	65024	3	5.0	52	1928	1336	1995	65024	0	1090908
2	1556444	1	12.0	93	1015	0	0	1626727	1090909	2181817
3	1620394	2	15.0	80	1440	1716	0	3248136	2181818	3272726
4	375559	1	11.0	86	1759	0	0	3626851	3272727	4363635
5	1376424	2	10.0	78	1149	1767	0	5005034	4363636	5454544
6	659525	3	20.0	89	1930	1838	1327	5667475	5454545	6545453
7	1143172	2	18.0	96	1216	1889	0	6815742	6545454	7636362
8	1660855	1	6.0	97	1910	0	0	8479702	7636363	8727271
9	347377	2	15.0	63	1362	1654	0	8828989	8727272	9818180
10	1232337	1	6.0	67	1239	0	0	10064342	9818181	10909089
11	1030623	1	16.0	53	1040	0	0	11096204	10909090	11999998

Total number of pulses in waveform = 19

Waveform Num = 7
Num of Bursts = 14
Burst Interval (us) = 857143.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	58469	2	6.0	78	1464	1688	0	58469	0	857142
2	818448	3	15.0	69	1071	1891	1019	880069	857143	1714285
3	1593585	3	7.0	72	1569	1000	1533	2477635	1714286	2571428
4	662292	1	6.0	88	1739	0	0	3144029	2571429	3428571
5	601757	2	10.0	100	1510	1046	0	3747525	3428572	4285714
6	1212824	3	7.0	55	1128	1493	1737	4962905	4285715	5142857
7	811311	2	18.0	55	1663	1501	0	5778574	5142858	6000000
8	1024804	1	10.0	78	1167	0	0	6806542	6000001	6857143
9	734024	3	12.0	94	1936	1752	1544	7541733	6857144	7714286

Page 5

New3RandParmBin5.txt

10	946256	1	7.0	100	1856	0	0	8493221	7714287	8571429
11	863161	3	16.0	51	1877	1396	1029	9358238	8571430	9428572
12	442062	1	8.0	65	1757	0	0	9804602	9428573	10285715
13	982044	1	16.0	61	1725	0	0	10788403	10285716	11142858
14	805203	1	8.0	79	1400	0	0	11595331	11142859	12000001

Total number of pulses in waveform = 27

Waveform Num = 8
Num of Bursts = 20
Burst Interval (us) = 600000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	528157	1	8.0	93	1272	0	0	528157	0	599999
2	355307	1	6.0	84	1725	0	0	884736	600000	1199999
3	700648	3	12.0	85	1910	1925	1082	1587109	1200000	1799999
4	325795	1	13.0	82	1887	0	0	1917821	1800000	2399999
5	1024926	2	15.0	91	1445	1219	0	2944634	2400000	2999999
6	365990	1	17.0	67	1103	0	0	3313288	3000000	3599999
7	469400	1	7.0	52	1427	0	0	3783791	3600000	4199999
8	534253	3	5.0	78	1671	1468	1459	4319471	4200000	4799999
9	944551	1	7.0	63	1224	0	0	5268620	4800000	5399999
10	429358	2	11.0	58	1864	1460	0	5699202	5400000	5999999
11	824606	2	14.0	59	1923	1179	0	6527132	6000000	6599999
12	350744	2	5.0	91	1989	1287	0	6880978	6600000	7199999
13	771480	3	9.0	84	1772	1985	1360	7655734	7200000	7799999
14	145491	3	20.0	70	1860	1383	1088	7806342	7800000	8399999
15	1062053	2	12.0	60	1466	1818	0	8872726	8400000	8999999

Page 6

New3RandParmBin5.txt

16	353044	1	6.0	98	1683	0	0	9229054	9000000	9599999
17	435734	2	7.0	95	1592	1648	0	9666471	9600000	10199999
18	537090	2	17.0	70	1031	1522	0	10206801	10200000	10799999
19	1081926	2	15.0	84	1908	1534	0	11291280	10800000	11399999
20	410043	2	19.0	71	1299	1564	0	11704765	11400000	11999999

Total number of pulses in waveform = 37

Waveform Num = 9
Num of Bursts = 19
Burst Interval (us) = 631579.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	66864	1	7.0	60	1553	0	0	66864	0	631578
2	1078297	2	15.0	73	1831	1900	0	1146714	631579	1263157
3	494606	3	11.0	61	1257	1765	1708	1645051	1263158	1894736
4	388071	1	20.0	58	1209	0	0	2037852	1894737	2526315
5	650101	1	13.0	65	1614	0	0	2689162	2526316	3157894
6	704464	2	15.0	90	1879	1729	0	3395240	3157895	3789473
7	506129	3	17.0	62	1950	1925	1961	3904977	3789474	4421052
8	581707	1	14.0	93	1685	0	0	4492520	4421053	5052631
9	770400	1	18.0	91	1588	0	0	5264605	5052632	5684210
10	953719	1	14.0	78	1940	0	0	6219912	5684211	6315789
11	632465	1	16.0	97	1124	0	0	6854317	6315790	6947368
12	382794	3	13.0	96	1152	1813	1827	7238235	6947369	7578947
13	734949	3	15.0	82	1436	1926	1460	7977976	7578948	8210526
14	752654	1	17.0	90	1341	0	0	8735452	8210527	8842105
15	489150	1	5.0	55	1319	0	0	9225943	8842106	9473684

Page 7

New3RandParmBin5.txt

	534628								
16		3	14.0	63	1026	1081	1600	9761890	9473685	10105263
	643710								
17		1	10.0	97	1590	0	0	10409307	10105264	10736842
	408534								
18		1	12.0	83	1593	0	0	10819431	10736843	11368421
	684236								
19		1	14.0	81	1015	0	0	11505260	11368422	12000000

Total number of pulses in waveform = 31

Waveform Num = 10
Num of Bursts = 11
Burst Interval (us) = 1090909.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	1045385									
1		1	15.0	51	1607	0	0	1045385	0	1090908
	670320									
2		2	6.0	85	1408	1416	0	1717312	1090909	2181817
	1020811									
3		1	20.0	73	1629	0	0	2740947	2181818	3272726
	1089014									
4		2	5.0	62	1014	1335	0	3831590	3272727	4363635
	775047									
5		1	15.0	87	1204	0	0	4608986	4363636	5454544
	1161797									
6		1	13.0	91	1215	0	0	5771987	5454545	6545453
	1267116									
7		2	19.0	86	1161	1343	0	7040318	6545454	7636362
	1631764									
8		1	11.0	72	1292	0	0	8674586	7636363	8727271
	1044089									
9		3	19.0	87	1915	1730	1380	9719967	8727272	9818180
	890610									
10		1	11.0	67	1274	0	0	10615602	9818181	10909089
	434806									
11		3	13.0	87	1583	1036	1419	11051682	10909090	11999998

Total number of pulses in waveform = 18

Waveform Num = 11
Num of Bursts = 14
Burst Interval (us) = 857143.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	810031									
1		1	14.0	61	1274	0	0	810031	0	857142

Page 8

New3RandParmBin5.txt

2	782981	1	16.0	89	1230	0	0	1594286	857143	1714285
3	548437	1	9.0	84	1042	0	0	2143953	1714286	2571428
4	716292	2	10.0	60	1383	1702	0	2861287	2571429	3428571
5	1089184	1	20.0	74	1249	0	0	3953556	3428572	4285714
6	680226	2	19.0	71	1910	1049	0	4635031	4285715	5142857
7	857193	1	10.0	93	1065	0	0	5495183	5142858	6000000
8	677689	3	6.0	60	1157	1094	1229	6173937	6000001	6857143
9	1434140	3	13.0	51	1610	1343	1604	7611557	6857144	7714286
10	861505	1	12.0	99	1459	0	0	8477619	7714287	8571429
11	544461	2	17.0	92	1520	1947	0	9023539	8571430	9428572
12	1092070	3	20.0	95	1749	1188	1821	10119076	9428573	10285715
13	486192	3	10.0	75	1000	1958	1903	10610026	10285716	11142858
14	830397	1	20.0	58	1367	0	0	11445284	11142859	12000001

Total number of pulses in waveform = 25

Waveform Num = 12
Num of Bursts = 12
Burst Interval (us) = 1000000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	143666	3	16.0	53	1131	1131	1465	143666	0	999999
2	950760	1	16.0	79	1620	0	0	1098153	1000000	1999999
3	1753045	3	20.0	70	1634	1438	1410	2852818	2000000	2999999
4	802900	1	8.0	90	1951	0	0	3660200	3000000	3999999
5	720616	3	18.0	50	1064	1990	1394	4382767	4000000	4999999
6	1238515	3	19.0	70	1537	1422	1039	5625730	5000000	5999999
7	1321850	3	6.0	86	1571	1545	1622	6951578	6000000	6999999

Page 9

New3RandParmBin5.txt

8	345991	3	14.0	62	1429	1002	1810	7302307	7000000	7999999
9	1158749	1	18.0	89	1583	0	0	8465297	8000000	8999999
10	1261870	2	16.0	56	1087	1164	0	9728750	9000000	9999999
11	512837	1	6.0	51	1650	0	0	10243838	10000000	10999999
12	1677097	2	18.0	51	1778	1391	0	11922585	11000000	11999999

Total number of pulses in waveform = 26

Waveform Num = 13
Num of Bursts = 12
Burst Interval (us) = 1000000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	82983	1	6.0	55	1018	0	0	82983	0	999999
2	1572499	1	6.0	59	1337	0	0	1656500	1000000	1999999
3	1312837	1	7.0	92	1773	0	0	2970674	2000000	2999999
4	77987	2	17.0	66	1509	1058	0	3050434	3000000	3999999
5	1108163	1	6.0	69	1743	0	0	4161164	4000000	4999999
6	1696390	1	19.0	94	1278	0	0	5859297	5000000	5999999
7	367774	3	13.0	50	1878	1067	1543	6228349	6000000	6999999
8	923532	3	16.0	100	1688	1003	1001	7156369	7000000	7999999
9	1232779	2	14.0	50	1821	1061	0	8392840	8000000	8999999
10	831714	1	13.0	96	1261	0	0	9227436	9000000	9999999
11	1123453	3	18.0	83	1336	1934	1206	10352150	10000000	10999999
12	717149	2	13.0	93	1737	1190	0	11073775	11000000	11999999

Total number of pulses in waveform = 21

Waveform Num = 14
Num of Bursts = 19
Burst Interval (us) = 631579.0

New3RandParmBin5.txt

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	514980	2	7.0	58	1489	1298	0	514980	0	631578
2	340678	2	8.0	87	1352	1379	0	858445	631579	1263157
3	437338	2	11.0	68	1397	1022	0	1298514	1263158	1894736
4	1184382	2	16.0	67	1985	1709	0	2485315	1894737	2526315
5	365165	2	7.0	85	1267	1960	0	2854174	2526316	3157894
6	850239	1	10.0	86	1346	0	0	3707640	3157895	3789473
7	343133	3	7.0	96	1182	1715	1930	4052119	3789474	4421052
8	895307	2	12.0	89	1809	1706	0	4952253	4421053	5052631
9	529743	2	5.0	90	1078	1343	0	5485511	5052632	5684210
10	627403	2	17.0	92	1517	1462	0	6115335	5684211	6315789
11	627519	3	19.0	89	1870	1549	1940	6745833	6315790	6947368
12	256316	2	10.0	94	1679	1481	0	7007508	6947369	7578947
13	1112530	3	16.0	99	1703	1241	1950	8123198	7578948	8210526
14	94427	3	18.0	65	1420	1286	1267	8222519	8210527	8842105
15	1047898	2	8.0	76	1718	1572	0	9274390	8842106	9473684
16	717466	3	11.0	89	1720	1778	1956	9995146	9473685	10105263
17	173944	2	14.0	52	1128	1720	0	10174544	10105264	10736842
18	1005031	3	12.0	50	1250	1403	1111	11182423	10736843	11368421
19	647895	3	10.0	52	1061	1316	1047	11834082	11368422	12000000

Total number of pulses in waveform = 44

Waveform Num = 15
Num of Bursts = 10
Burst Interval (us) = 1200000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)

Page 11

New3RandParmBin5.txt

1	819317	3	12.0	88	1441	1661	1831	819317	0	1199999
2	1056397	2	11.0	80	1764	1164	0	1880647	1200000	2399999
3	1205899	3	15.0	62	1520	1558	1542	3089474	2400000	3599999
4	883406	3	15.0	75	1546	1958	1396	3977500	3600000	4799999
5	949991	2	8.0	61	1261	1535	0	4932391	4800000	5999999
6	1790962	1	10.0	63	1520	0	0	6726149	6000000	7199999
7	977849	1	15.0	59	1699	0	0	7705518	7200000	8399999
8	1034962	1	10.0	66	1985	0	0	8742179	8400000	9599999
9	2024232	1	20.0	65	1025	0	0	10768396	9600000	10799999
10	1167431	1	13.0	82	1229	0	0	11936852	10800000	11999999

Total number of pulses in waveform = 18

Waveform Num = 16
Num of Bursts = 8
Burst Interval (us) = 1500000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	150666	2	15.0	71	1110	1136	0	150666	0	1499999
2	1426084	3	6.0	84	1562	1268	1501	1578996	1500000	2999999
3	1589241	3	19.0	78	1036	1203	1428	3172568	3000000	4499999
4	2653344	3	11.0	98	1013	1829	1839	5829579	4500000	5999999
5	1602097	2	6.0	86	1273	1546	0	7436357	6000000	7499999
6	1003786	2	17.0	62	1217	1339	0	8442962	7500000	8999999
7	1939097	1	10.0	55	1828	0	0	10384615	9000000	10499999
8	1014854	3	6.0	63	1350	1799	1801	11401297	10500000	11999999

Total number of pulses in waveform = 19

Waveform Num = 17
Num of Bursts = 13

Page 12

New3RandParmBin5.txt

Burst Interval (us) = 923077.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	852569	2	10.0	65	1799	1511	0	852569	0	923076
2	263327	3	16.0	60	1119	1273	1166	1119206	923077	1846153
3	1424466	3	7.0	67	1657	1105	1857	2547230	1846154	2769230
4	984834	1	20.0	93	1461	0	0	3536683	2769231	3692307
5	1027816	1	15.0	92	1462	0	0	4565960	3692308	4615384
6	319721	2	8.0	73	1046	1339	0	4887143	4615385	5538461
7	1095119	2	13.0	89	1818	1264	0	5984647	5538462	6461538
8	1025633	3	10.0	58	1459	1408	1478	7013362	6461539	7384615
9	469458	3	7.0	98	1283	1688	1672	7487165	7384616	8307692
10	1690781	3	9.0	60	1804	1981	1282	9182589	8307693	9230769
11	573279	3	16.0	51	1335	1633	1140	9760935	9230770	10153846
12	1186893	3	18.0	64	1104	1487	1769	10951936	10153847	11076923
13	912361	2	12.0	69	1332	1118	0	11868657	11076924	12000000

Total number of pulses in waveform = 31

Waveform Num = 18
Num of Bursts = 11
Burst Interval (us) = 1090909.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	430323	1	19.0	99	1688	0	0	430323	0	1090908
2	1564614	1	18.0	81	1341	0	0	1996625	1090909	2181817
3	999450	1	5.0	62	1028	0	0	2997416	2181818	3272726
4	1206214	2	8.0	77	1060	1547	0	4204658	3272727	4363635
5	675188	3	14.0	96	1080	1480	1607	4882453	4363636	5454544

New3RandParmBin5.txt

6	1173315	2	6.0	54	1959	1302	0	6059935	5454545	6545453
7	1381946	1	6.0	65	1169	0	0	7445142	6545454	7636362
8	1254773	2	12.0	75	2000	1778	0	8701084	7636363	8727271
9	119632	2	6.0	71	1622	1398	0	8824494	8727272	9818180
10	1229495	1	15.0	88	1108	0	0	10057009	9818181	10909089
11	876980	3	16.0	66	1017	1053	1305	10935097	10909090	11999998

Total number of pulses in waveform = 19

Waveform Num = 19
Num of Bursts = 15
Burst Interval (us) = 800000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	653864	3	6.0	95	1680	1338	1962	653864	0	799999
2	294048	1	12.0	60	1910	0	0	952892	800000	1599999
3	1257208	1	14.0	89	1725	0	0	2212010	1600000	2399999
4	255051	3	19.0	75	1993	1851	1833	2468786	2400000	3199999
5	1131239	3	20.0	94	1125	1707	1097	3605702	3200000	3999999
6	669538	3	15.0	79	1405	1881	1984	4279169	4000000	4799999
7	621439	2	14.0	81	1975	1958	0	4905878	4800000	5599999
8	1099916	2	10.0	81	1006	1597	0	6009727	5600000	6399999
9	1140495	2	20.0	93	1836	1392	0	7152825	6400000	7199999
10	590131	3	16.0	89	1185	1535	1938	7746184	7200000	7999999
11	812986	1	11.0	99	1543	0	0	8563828	8000000	8799999
12	726825	1	5.0	79	1331	0	0	9292196	8800000	9599999
13	421853	3	15.0	59	1254	1184	1798	9715380	9600000	10399999
14	1190175	2	15.0	54	1862	1565	0	10909791	10400000	11199999

New3RandParmBin5.txt

15	1048352	2	8.0	76	1716	1521	0	11961570	11200000	11999999

Total number of pulses in waveform = 32

Waveform Num = 20
Num of Bursts = 16
Burst Interval (us) = 750000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	50593	1	8.0	65	1678	0	0	50593	0	749999
2	1236504	3	13.0	77	1082	1325	1608	1288775	750000	1499999
3	396323	2	6.0	55	1255	1640	0	1689113	1500000	2249999
4	1175783	3	8.0	100	1067	1627	1513	2867791	2250000	2999999
5	150540	1	9.0	70	1994	0	0	3022538	3000000	3749999
6	1248658	3	6.0	83	1986	1603	1530	4273190	3750000	4499999
7	520299	2	16.0	86	1530	1812	0	4798608	4500000	5249999
8	465949	1	9.0	99	1809	0	0	5267899	5250000	5999999
9	817043	3	15.0	90	1628	1371	1531	6086751	6000000	6749999
10	665699	2	11.0	62	1738	1190	0	6756980	6750000	7499999
11	931271	2	8.0	73	1998	1839	0	7691179	7500000	8249999
12	817410	3	10.0	90	1337	1779	1063	8512426	8250000	8999999
13	689077	1	17.0	51	1970	0	0	9205682	9000000	9749999
14	776408	1	19.0	77	1169	0	0	9984060	9750000	10499999
15	682002	3	16.0	90	1651	1080	1915	10667231	10500000	11249999
16	1169287	2	7.0	79	1266	1829	0	11841164	11250000	11999999

Total number of pulses in waveform = 33

Waveform Num = 21
Num of Bursts = 12
Burst Interval (us) = 1000000.0

Page 15

New3RandParmBin5.txt

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	493461	1	18.0	86	1488	0	0	493461	0	999999
2	628608	2	14.0	56	1464	1500	0	1123557	1000000	1999999
3	1233351	1	20.0	100	1044	0	0	2359872	2000000	2999999
4	1623698	3	9.0	82	1109	1834	1680	3984614	3000000	3999999
5	119692	2	20.0	93	1763	1188	0	4108929	4000000	4999999
6	1212618	2	16.0	83	1785	1245	0	5324498	5000000	5999999
7	967747	2	5.0	75	1761	1370	0	6295275	6000000	6999999
8	986028	2	7.0	81	1406	1246	0	7284434	7000000	7999999
9	982185	1	12.0	58	1000	0	0	8269271	8000000	8999999
10	1405234	3	19.0	84	1635	1984	1595	9675505	9000000	9999999
11	823361	3	8.0	92	1639	1269	1856	10504080	10000000	10999999
12	1008655	2	19.0	72	1314	1631	0	11517499	11000000	11999999

Total number of pulses in waveform = 24

Waveform Num = 22
Num of Bursts = 19
Burst Interval (us) = 631579.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	474284	1	7.0	52	1665	0	0	474284	0	631578
2	628003	1	5.0	79	1308	0	0	1103952	631579	1263157
3	425712	3	11.0	100	1146	1539	1569	1530972	1263158	1894736
4	634959	2	7.0	80	1744	1226	0	2170185	1894737	2526315
5	576711	1	8.0	75	1996	0	0	2749866	2526316	3157894
6	858586	1	16.0	76	1951	0	0	3610448	3157895	3789473
7	502193	1	9.0	84	1379	0	0	4114592	3789474	4421052

Page 16

New3RandParmBin5.txt

8	868892	2	17.0	85	1666	1835	0	4984863	4421053	5052631
9	345820	1	20.0	80	1864	0	0	5334184	5052632	5684210
10	632650	3	11.0	71	1441	1669	1194	5968698	5684211	6315789
11	926967	3	12.0	96	1919	1200	1216	6899969	6315790	6947368
12	361847	3	11.0	69	1929	1449	1708	7266151	6947369	7578947
13	354471	1	19.0	70	1610	0	0	7625708	7578948	8210526
14	1199958	3	16.0	89	1279	1242	1086	8827276	8210527	8842105
15	216999	2	8.0	98	1824	1203	0	9047882	8842106	9473684
16	531184	3	14.0	66	1817	1866	1060	9582093	9473685	10105263
17	628912	2	6.0	77	1389	1670	0	10215748	10105264	10736842
18	686225	3	20.0	92	1793	1940	1047	10905032	10736843	11368421
19	1004916	2	7.0	64	1088	1179	0	11914728	11368422	12000000

Total number of pulses in waveform = 38

Waveform Num = 23
Num of Bursts = 20
Burst Interval (us) = 600000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	168651	1	5.0	74	1418	0	0	168651	0	599999
2	718639	1	5.0	75	1038	0	0	888708	600000	1199999
3	460572	1	15.0	53	1199	0	0	1350318	1200000	1799999
4	775755	1	16.0	93	1004	0	0	2127272	1800000	2399999
5	677659	3	6.0	92	1699	1813	1579	2805935	2400000	2999999
6	449750	2	9.0	65	1893	1235	0	3260776	3000000	3599999
7	586226	1	5.0	98	1915	0	0	3850130	3600000	4199999
8	705647	3	8.0	75	1036	1239	1605	4557692	4200000	4799999

Page 17

New3RandParmBin5.txt

9	392623	1	11.0	84	1263	0	0	4954195	4800000	5399999
10	831983	1	9.0	89	1290	0	0	5787441	5400000	5999999
11	601130	1	9.0	65	1239	0	0	6389861	6000000	6599999
12	501972	1	12.0	91	1790	0	0	6893072	6600000	7199999
13	509951	2	20.0	79	1437	1174	0	7404813	7200000	7799999
14	429905	3	9.0	55	1855	1461	1581	7837329	7800000	8399999
15	817471	1	7.0	80	1212	0	0	8659697	8400000	8999999
16	450289	3	5.0	78	1496	1524	1660	9111198	9000000	9599999
17	652361	2	17.0	67	1434	1422	0	9768239	9600000	10199999
18	610747	3	9.0	66	1874	1401	1361	10381842	10200000	10799999
19	536519	3	12.0	88	1154	1334	1739	10922997	10800000	11399999
20	639384	2	17.0	98	1020	1334	0	11566608	11400000	11999999

Total number of pulses in waveform = 36

Waveform Num = 24
Num of Bursts = 9
Burst Interval (us) = 1333333.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	556828	2	10.0	53	1309	1639	0	556828	0	1333332
2	1608683	3	6.0	82	1629	1815	1762	2168459	1333333	2666665
3	1347069	2	18.0	65	1961	1728	0	3520734	2666666	3999998
4	1291595	2	5.0	66	1290	1688	0	4816018	3999999	5333331
5	1534530	1	17.0	55	1113	0	0	6353526	5333332	6666664
6	1624070	3	8.0	90	1983	1478	1062	7978709	6666665	7999997
7	96053	1	16.0	58	1827	0	0	8079285	7999998	9333330
8	1802720	1	16.0	89	1795	0	0	9883832	9333331	10666663

Page 18

New3RandParmBin5.txt

	1602071								
9		1	12.0	94	1117	0	0	11487698	10666664	11999996

Total number of pulses in waveform = 16

Waveform Num = 25
Num of Bursts = 12
Burst Interval (us) = 1000000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	173506									
1		2	6.0	78	1140	1134	0	173506	0	999999
	1404437									
2		2	20.0	98	1022	1913	0	1580217	1000000	1999999
	1007817									
3		2	20.0	50	1116	1850	0	2590969	2000000	2999999
	1071008									
4		1	13.0	64	1012	0	0	3664943	3000000	3999999
	1165098									
5		2	15.0	67	1746	1783	0	4831053	4000000	4999999
	1119459									
6		1	8.0	89	1096	0	0	5954041	5000000	5999999
	719624									
7		3	12.0	67	1301	1712	1112	6674761	6000000	6999999
	726479									
8		1	6.0	97	1381	0	0	7405365	7000000	7999999
	1275445									
9		3	5.0	67	1999	1540	1913	8682191	8000000	8999999
	457267									
10		1	9.0	91	1368	0	0	9144910	9000000	9999999
	1531323									
11		1	20.0	83	1124	0	0	10677601	10000000	10999999
	420015									
12		1	6.0	63	1389	0	0	11098740	11000000	11999999

Total number of pulses in waveform = 20

Waveform Num = 26
Num of Bursts = 11
Burst Interval (us) = 1090909.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	147818									
1		1	10.0	66	1311	0	0	147818	0	1090908
	1024419									
2		3	17.0	59	1294	1950	1719	1173548	1090909	2181817
	1753838									
3		3	12.0	50	1163	1070	1780	2932349	2181818	3272726

New3RandParmBin5.txt

4	1299918	1	13.0	82	1250	0	0	4236280	3272727	4363635
5	1118580	1	9.0	93	1216	0	0	5356110	4363636	5454544
6	909569	1	12.0	76	1125	0	0	6266895	5454545	6545453
7	928712	1	8.0	88	1810	0	0	7196732	6545454	7636362
8	1208328	1	9.0	59	1492	0	0	8406870	7636363	8727271
9	397293	1	6.0	58	1377	0	0	8805655	8727272	9818180
10	1243182	2	19.0	53	1078	1996	0	10050214	9818181	10909089
11	1017041	3	8.0	85	1450	1137	1176	11070329	10909090	11999998

Total number of pulses in waveform = 18

Waveform Num = 27
Num of Bursts = 20
Burst Interval (us) = 600000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	502071	2	12.0	51	1736	1518	0	502071	0	599999
2	336262	2	19.0	96	1118	1773	0	841587	600000	1199999
3	636552	1	16.0	61	1623	0	0	1481030	1200000	1799999
4	643093	2	7.0	86	1484	1397	0	2125746	1800000	2399999
5	348980	1	6.0	94	1369	0	0	2477607	2400000	2999999
6	744401	1	10.0	86	1102	0	0	3223377	3000000	3599999
7	869541	1	5.0	75	1047	0	0	4094020	3600000	4199999
8	432389	1	14.0	54	1214	0	0	4527456	4200000	4799999
9	400404	3	5.0	50	1361	1232	1889	4929074	4800000	5399999
10	786246	2	18.0	72	1757	1838	0	5719802	5400000	5999999
11	521348	3	13.0	59	1882	1269	1171	6244745	6000000	6599999
12	577229	2	12.0	89	1776	1348	0	6826296	6600000	7199999

Page 20

New3RandParmBin5.txt

13	474407	3	17.0	82	1317	1873	1227	7303827	7200000	7799999
14	1006629	1	15.0	100	1176	0	0	8314873	7800000	8399999
15	515786	3	20.0	54	1764	1551	1483	8831835	8400000	8999999
16	365005	3	12.0	58	1834	1789	1237	9201638	9000000	9599999
17	458975	2	11.0	54	1526	1336	0	9665473	9600000	10199999
18	610790	1	18.0	92	1197	0	0	10279125	10200000	10799999
19	1100766	1	6.0	74	1188	0	0	11381088	10800000	11399999
20	42313	3	10.0	94	1203	1803	1930	11424589	11400000	11999999

Total number of pulses in waveform = 38

Waveform Num = 28
Num of Bursts = 11
Burst Interval (us) = 1090909.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	298018	1	7.0	96	1540	0	0	298018	0	1090908
2	1261856	1	7.0	94	1401	0	0	1561414	1090909	2181817
3	1149917	1	17.0	55	1037	0	0	2712732	2181818	3272726
4	593837	2	14.0	60	1608	1163	0	3307606	3272727	4363635
5	1058333	2	19.0	74	1463	1002	0	4368710	4363636	5454544
6	1891175	2	17.0	66	1635	1586	0	6262350	5454545	6545453
7	1063942	1	6.0	83	1238	0	0	7329513	6545454	7636362
8	314151	1	11.0	84	1876	0	0	7644902	7636363	8727271
9	2024911	1	11.0	99	1994	0	0	9671689	8727272	9818180
10	451234	3	6.0	84	1018	1537	1531	10124917	9818181	10909089
11	833204	3	5.0	99	1982	1062	1639	10962207	10909090	11999998

Total number of pulses in waveform = 18

New3RandParmBin5.txt

Waveform Num = 29
Num of Bursts = 19
Burst Interval (us) = 631579.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	555680	3	16.0	77	1013	1998	1035	555680	0	631578
2	405684	3	20.0	95	1133	1084	1170	965410	631579	1263157
3	517664	1	15.0	64	1081	0	0	1486461	1263158	1894736
4	408509	1	19.0	60	1416	0	0	1896051	1894737	2526315
5	766071	2	11.0	57	1120	1711	0	2663538	2526316	3157894
6	869968	1	12.0	94	1370	0	0	3536337	3157895	3789473
7	795503	1	20.0	73	1083	0	0	4333210	3789474	4421052
8	367213	1	5.0	69	1603	0	0	4701506	4421053	5052631
9	542532	3	10.0	84	1557	1913	1086	5245641	5052632	5684210
10	589005	3	19.0	61	1433	1434	1611	5839202	5684211	6315789
11	845860	1	8.0	60	1798	0	0	6689540	6315790	6947368
12	443100	2	19.0	65	1078	1239	0	7134438	6947369	7578947
13	513048	2	19.0	57	1582	1863	0	7649803	7578948	8210526
14	614895	2	19.0	50	1283	1431	0	8268143	8210527	8842105
15	769279	3	11.0	87	1695	1567	1827	9040136	8842106	9473684
16	581930	3	10.0	51	1626	1791	1689	9627155	9473685	10105263
17	1083046	1	11.0	50	1771	0	0	10715307	10105264	10736842
18	524187	3	12.0	95	1159	1578	1261	11241265	10736843	11368421
19	136422	1	9.0	79	1138	0	0	11381685	11368422	12000000

Total number of pulses in waveform = 37

Waveform Num = 30
Num of Bursts = 9

New3RandParmBin5.txt

Burst Interval (us) = 1333333.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	139171	2	10.0	73	1269	1424	0	139171	0	1333332
2	2112903	1	9.0	63	1980	0	0	2254767	1333333	2666665
3	498212	1	20.0	98	1269	0	0	2754959	2666666	3999998
4	1678427	3	20.0	89	1644	1341	1747	4434655	3999999	5333331
5	2085587	3	14.0	96	1390	1911	1866	6524974	5333332	6666664
6	325777	1	10.0	67	1359	0	0	6855918	6666665	7999997
7	2200302	2	13.0	76	1249	1547	0	9057579	7999998	9333330
8	1599971	1	5.0	64	1465	0	0	10660346	9333331	10666663
9	600544	2	19.0	84	1343	1678	0	11262355	10666664	11999996

Total number of pulses in waveform = 16

Page 23

802.11n 40MHz

New3RandParmBin5.txt

Waveform Num = 1
Num of Bursts = 14
Burst Interval (us) = 857143.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	76031	2	18.0	62	1858	1352	0	76031	0	857142
2	878212	2	15.0	96	1701	1940	0	957453	857143	1714285
3	1089340	1	6.0	90	1020	0	0	2050434	1714286	2571428
4	700869	1	14.0	75	1892	0	0	2752323	2571429	3428571
5	726420	1	20.0	96	1344	0	0	3480635	3428572	4285714
6	1092530	2	20.0	84	1503	1454	0	4574509	4285715	5142857
7	979068	3	19.0	94	1831	1740	1542	5556534	5142858	6000000
8	973527	3	12.0	97	1112	1285	1049	6535174	6000001	6857143
9	477663	2	15.0	57	1204	1644	0	7016283	6857144	7714286
10	839633	2	7.0	75	1363	1217	0	7858764	7714287	8571429
11	1181318	2	5.0	99	1392	1060	0	9042662	8571430	9428572
12	536999	2	20.0	87	1711	1306	0	9582113	9428573	10285715
13	1421451	2	5.0	89	1944	1418	0	11006581	10285716	11142858
14	338474	1	20.0	84	1850	0	0	11348417	11142859	12000001

Total number of pulses in waveform = 26

Waveform Num = 2
Num of Bursts = 18
Burst Interval (us) = 666667.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	427875	2	20.0	97	1072	1265	0	427875	0	666666
2	485416	3	14.0	55	1349	1292	1762	915628	666667	1333333
3	754488	2	17.0	68	1413	1560	0	1674519	1333334	2000000

Page 1

New3RandParmBin5.txt

4	848839	2	20.0	53	1952	1710	0	2526331	2000001	2666667
5	271373	1	20.0	55	1871	0	0	2801366	2666668	3333334
6	761527	3	7.0	98	1222	1576	1984	3564764	3333335	4000001
7	958234	3	7.0	85	1100	1694	1495	4527780	4000002	4666668
8	274697	3	11.0	67	1297	1388	1069	4806766	4666669	5333335
9	943553	3	18.0	86	1449	1394	1321	5754073	5333336	6000002
10	488008	1	17.0	53	1369	0	0	6246245	6000003	6666669
11	933590	2	7.0	83	1557	1145	0	7181204	6666670	7333336
12	171953	1	9.0	52	1991	0	0	7355859	7333337	8000003
13	1143163	3	8.0	51	1452	1979	1275	8501013	8000004	8666670
14	242778	3	5.0	75	1202	1931	1284	8748497	8666671	9333337
15	1113660	3	8.0	60	1130	1222	1176	9866574	9333338	10000004
16	728710	2	6.0	96	1125	1352	0	10598812	10000005	10666671
17	493148	1	15.0	56	1993	0	0	11094437	10666672	11333338
18	722999	3	5.0	67	1429	1709	1094	11819429	11333339	12000005

Total number of pulses in waveform = 41

Waveform Num = 3
Num of Bursts = 20
Burst Interval (us) = 600000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	437254	2	9.0	91	1276	1488	0	437254	0	599999
2	351004	1	16.0	81	1588	0	0	791022	600000	1199999
3	629297	2	14.0	87	1467	1426	0	1421907	1200000	1799999
4	734801	1	14.0	61	1821	0	0	2159601	1800000	2399999
5	593835	3	7.0	88	1776	1331	1581	2755257	2400000	2999999

Page 2

New3RandParmBin5.txt

6	310630	2	7.0	99	1937	1910	0	3070575	3000000	3599999
7	772826	3	15.0	84	1581	1756	1241	3847248	3600000	4199999
8	677277	3	20.0	85	1035	1916	1921	4529103	4200000	4799999
9	633363	3	9.0	69	1244	1949	1231	5167338	4800000	5399999
10	338403	1	20.0	57	1081	0	0	5510165	5400000	5999999
11	581053	2	15.0	76	1572	1403	0	6092299	6000000	6599999
12	581988	2	19.0	53	1673	1438	0	6677262	6600000	7199999
13	730597	3	19.0	52	1890	1922	1960	7410970	7200000	7799999
14	852553	2	18.0	50	1331	1252	0	8269295	7800000	8399999
15	673263	3	18.0	91	1941	1919	1585	8945141	8400000	8999999
16	264580	2	18.0	66	1442	1901	0	9215166	9000000	9599999
17	948540	3	8.0	52	1957	1881	1530	10167049	9600000	10199999
18	66303	1	11.0	64	1752	0	0	10238720	10200000	10799999
19	1133677	1	19.0	57	1098	0	0	11374149	10800000	11399999
20	364022	3	18.0	94	1531	1883	1308	11739269	11400000	11999999

Total number of pulses in waveform = 43

Waveform Num = 4
Num of Bursts = 18
Burst Interval (us) = 666667.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	536425	3	13.0	72	1727	1734	1020	536425	0	666666
2	637092	2	14.0	59	1484	1734	0	1177998	666667	1333333
3	707026	2	7.0	57	1804	1603	0	1888242	1333334	2000000
4	451027	3	6.0	94	1906	1899	1400	2342676	2000001	2666667
5	818896	1	11.0	96	1386	0	0	3166777	2666668	3333334

Page 3

New3RandParmBin5.txt

6	822084	1	5.0	98	1973	0	0	3990247	3333335	4000001
7	155505	1	18.0	79	1796	0	0	4147725	4000002	4666668
8	831106	1	13.0	70	1117	0	0	4980627	4666669	5333335
9	490540	3	13.0	94	1004	1627	1516	5472284	5333336	6000002
10	1172308	1	8.0	89	1831	0	0	6648739	6000003	6666669
11	336013	2	17.0	93	1186	1092	0	6986583	6666670	7333336
12	562511	3	9.0	68	1275	1340	1651	7551372	7333337	8000003
13	659725	3	7.0	69	1306	1705	1938	8215363	8000004	8666670
14	859389	3	7.0	62	1966	1872	1933	9079701	8666671	9333337
15	554832	1	20.0	72	1294	0	0	9640304	9333338	10000004
16	623191	1	20.0	52	1190	0	0	10264789	10000005	10666671
17	808250	3	14.0	79	1082	1402	1119	11074229	10666672	11333338
18	398318	3	8.0	83	1249	1173	1480	11476150	11333339	12000005

Total number of pulses in waveform = 37

Waveform Num = 5
Num of Bursts = 9
Burst Interval (us) = 1333333.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	188364	1	15.0	85	1204	0	0	188364	0	1333332
2	2248844	3	9.0	96	1949	1210	1068	2438412	1333333	2666665
3	972107	3	13.0	82	1032	1589	1698	3414746	2666666	3999998
4	1095309	1	10.0	89	1515	0	0	4514374	3999999	5333331
5	1097659	1	17.0	87	1938	0	0	5613548	5333332	6666664
6	1162004	1	11.0	50	1868	0	0	6777490	6666665	7999997
7	2057485	1	18.0	52	1820	0	0	8836843	7999998	9333330

Page 4

New3RandParmBin5.txt

	1674020								
8		2	12.0	65	1454	1121	0	10512683	9333331	10666663
	904608								
9		2	19.0	67	1587	1996	0	11419866	10666664	11999996

Total number of pulses in waveform = 15

Waveform Num = 6
Num of Bursts = 9
Burst Interval (us) = 1333333.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	204797									
1		2	15.0	75	1770	1897	0	204797	0	1333332
	1376644									
2		3	18.0	74	1647	1972	1122	1585108	1333333	2666665
	1848089									
3		3	5.0	91	1309	1538	1626	3437938	2666666	3999998
	1661351									
4		3	14.0	64	1922	1267	1405	5103762	3999999	5333331
	939834									
5		3	9.0	68	1751	1064	1913	6048190	5333332	6666664
	1883743									
6		3	7.0	90	1397	1556	1517	7936661	6666665	7999997
	928820									
7		2	9.0	98	1812	1024	0	8869951	7999998	9333330
	1115988									
8		2	6.0	53	1209	1070	0	9988775	9333331	10666663
	1550060									
9		3	17.0	60	1301	1098	1729	11541114	10666664	11999996

Total number of pulses in waveform = 24

Waveform Num = 7
Num of Bursts = 14
Burst Interval (us) = 857143.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	57459									
1		2	13.0	65	1792	1725	0	57459	0	857142
	1198619									
2		2	6.0	81	1049	1546	0	1259595	857143	1714285
	800400									
3		3	16.0	59	1822	1633	1555	2062590	1714286	2571428
	951215									
4		2	5.0	89	1291	1152	0	3018815	2571429	3428571
	916454									
5		3	20.0	62	1790	1930	1751	3937712	3428572	4285714

Page 5

New3RandParmBin5.txt

6	774497	2	8.0	71	1268	1569	0	4717680	4285715	5142857
7	435176	3	13.0	61	1646	1697	1110	5155693	5142858	6000000
8	1090290	2	19.0	67	1573	1802	0	6250436	6000001	6857143
9	965285	1	10.0	97	1308	0	0	7219096	6857144	7714286
10	1315934	1	8.0	50	1454	0	0	8536338	7714287	8571429
11	95789	1	16.0	62	1372	0	0	8633581	8571430	9428572
12	815954	3	7.0	75	1315	1621	1260	9450907	9428573	10285715
13	1310545	1	16.0	66	1903	0	0	10765648	10285716	11142858
14	840611	3	17.0	55	1596	1794	1213	11608162	11142859	12000001

Total number of pulses in waveform = 29

Waveform Num = 8
Num of Bursts = 14
Burst Interval (us) = 857143.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	304183	1	9.0	82	1842	0	0	304183	0	857142
2	873359	2	20.0	58	1375	1263	0	1179384	857143	1714285
3	866119	3	14.0	62	1093	1249	1221	2048141	1714286	2571428
4	1317848	1	16.0	96	1360	0	0	3369552	2571429	3428571
5	177527	1	13.0	90	1544	0	0	3548439	3428572	4285714
6	1076034	3	15.0	98	1091	1198	1396	4626017	4285715	5142857
7	1230872	3	8.0	58	1021	1740	1130	5860574	5142858	6000000
8	769630	1	15.0	77	1763	0	0	6634095	6000001	6857143
9	260210	1	16.0	83	1713	0	0	6896068	6857144	7714286
10	1279222	3	8.0	57	1485	1959	1307	8177003	7714287	8571429
11	602463	3	15.0	53	1312	1591	1337	8784217	8571430	9428572

Page 6

New3RandParmBin5.txt

	809162								
12		2	5.0	51	1061	1807	0	9597619	9428573	10285715
	1494485								
13		3	8.0	61	1058	1741	1155	11094972	10285716	11142858
	167670								
14		2	16.0	87	1925	1409	0	11266596	11142859	12000001

Total number of pulses in waveform = 29

Waveform Num = 9
Num of Bursts = 13
Burst Interval (us) = 923077.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	520602									
1		1	12.0	78	1618	0	0	520602	0	923076
	582025									
2		2	18.0	62	1913	1275	0	1104245	923077	1846153
	1512390									
3		2	5.0	86	1960	1775	0	2619823	1846154	2769230
	845187									
4		3	9.0	84	1211	1364	1443	3468745	2769231	3692307
	834391									
5		2	16.0	70	1508	1200	0	4307154	3692308	4615384
	640845									
6		3	20.0	70	1715	1234	1411	4950707	4615385	5538461
	1436852									
7		2	18.0	75	1287	1460	0	6391919	5538462	6461538
	221171									
8		1	11.0	73	1999	0	0	6615837	6461539	7384615
	1474203									
9		2	7.0	77	1903	1792	0	8092039	7384616	8307692
	1041133									
10		1	5.0	70	1545	0	0	9136867	8307693	9230769
	174111									
11		2	6.0	54	1477	1397	0	9312523	9230770	10153846
	936368									
12		1	14.0	76	1138	0	0	10251765	10153847	11076923
	1478915									
13		2	9.0	90	1733	1405	0	11731818	11076924	12000000

Total number of pulses in waveform = 24

Waveform Num = 10
Num of Bursts = 16
Burst Interval (us) = 750000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)

New3RandParmBin5.txt

1	214003	2	16.0	57	1146	1933	0	214003	0	749999
2	820355	1	20.0	79	1349	0	0	1037437	750000	1499999
3	969789	3	14.0	63	1112	1119	1329	2008575	1500000	2249999
4	487230	3	20.0	74	1632	1621	1426	2499365	2250000	2999999
5	1164953	3	8.0	90	1759	1844	1897	3668997	3000000	3749999
6	150858	1	16.0	97	1453	0	0	3825355	3750000	4499999
7	1013536	1	9.0	51	1193	0	0	4840344	4500000	5249999
8	500026	3	10.0	71	1709	1248	1936	5341563	5250000	5999999
9	1360368	2	6.0	94	1234	1312	0	6706824	6000000	6749999
10	745213	3	18.0	67	1336	1829	1273	7454583	6750000	7499999
11	680216	2	11.0	93	1924	1752	0	8139237	7500000	8249999
12	571633	2	18.0	81	1678	1493	0	8714546	8250000	8999999
13	369289	3	10.0	54	1615	1243	1675	9087006	9000000	9749999
14	1250415	2	6.0	99	1009	1420	0	10341954	9750000	10499999
15	683016	1	11.0	53	1678	0	0	11027399	10500000	11249999
16	487980	1	8.0	71	1558	0	0	11517057	11250000	11999999

Total number of pulses in waveform = 33

Waveform Num = 11
Num of Bursts = 11
Burst Interval (us) = 1090909.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	409118	1	19.0	97	1362	0	0	409118	0	1090908
2	1158904	2	11.0	51	1770	1496	0	1569384	1090909	2181817
3	1316180	1	7.0	82	1274	0	0	2888830	2181818	3272726
4	542383	2	9.0	75	1439	1085	0	3432487	3272727	4363635

Page 8

New3RandParmBin5.txt

	1011185								
5		1	17.0	92	1315	0	0	4446196	4363636	5454544
	1516802								
6		2	10.0	80	1062	1971	0	5964313	5454545	6545453
	1629631								
7		2	8.0	54	1477	1082	0	7596977	6545454	7636362
	133763								
8		2	18.0	65	1423	1970	0	7733299	7636363	8727271
	1829783								
9		2	13.0	52	1060	1824	0	9566475	8727272	9818180
	597268								
10		3	7.0	56	1806	1233	1381	10166627	9818181	10909089
	858562								
11		3	13.0	74	1676	1865	1297	11029609	10909090	11999998

Total number of pulses in waveform = 21

Waveform Num = 12
Num of Bursts = 11
Burst Interval (us) = 1090909.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	944816									
1		3	16.0	54	1686	1185	1972	944816	0	1090908
	653072									
2		3	13.0	73	1159	1307	1922	1602731	1090909	2181817
	717378									
3		3	19.0	51	1111	1603	1066	2324497	2181818	3272726
	1136662									
4		1	12.0	80	1908	0	0	3464939	3272727	4363635
	1879152									
5		3	9.0	78	1978	1718	1981	5345999	4363636	5454544
	164741									
6		1	10.0	77	1188	0	0	5516417	5454545	6545453
	1634915									
7		1	12.0	59	1084	0	0	7152520	6545454	7636362
	698124									
8		2	15.0	64	1266	1947	0	7851728	7636363	8727271
	1085800									
9		3	15.0	87	1006	1632	1261	8940741	8727272	9818180
	1186729									
10		2	14.0	70	1635	1036	0	10131369	9818181	10909089
	1259134									
11		3	17.0	92	1634	1003	1024	11393174	10909090	11999998

Total number of pulses in waveform = 25

Waveform Num = 13
Num of Bursts = 17

New3RandParmBin5.txt

Burst Interval (us) = 705882.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	179816									
1		3	9.0	93	1930	1052	1665	179816	0	705881
	783852									
2		1	6.0	51	1733	0	0	968315	705882	1411763
	628621									
3		2	15.0	80	1584	1072	0	1598669	1411764	2117645
	834918									
4		2	9.0	64	1066	1479	0	2436243	2117646	2823527
	1042395									
5		1	9.0	52	1807	0	0	3481183	2823528	3529409
	380958									
6		3	17.0	71	1731	1989	1288	3863948	3529410	4235291
	1016753									
7		2	18.0	75	1475	1718	0	4885709	4235292	4941173
	68355									
8		1	8.0	71	1541	0	0	4957257	4941174	5647055
	1219078									
9		3	12.0	61	1221	1533	1465	6177876	5647056	6352937
	652801									
10		3	15.0	83	1954	1751	1006	6834896	6352938	7058819
	440130									
11		2	13.0	87	1711	1301	0	7279737	7058820	7764701
	1170954									
12		2	15.0	67	1838	1653	0	8453703	7764702	8470583
	227680									
13		3	5.0	62	1959	1233	1347	8684874	8470584	9176465
	491270									
14		3	16.0	50	1089	1996	1082	9180683	9176466	9882347
	1213005									
15		3	18.0	56	1868	1421	1166	10397855	9882348	10588229
	188371									
16		2	14.0	59	1690	1470	0	10590681	10588230	11294111
	871671									
17		2	8.0	96	1698	1110	0	11465512	11294112	11999993

Total number of pulses in waveform = 38

Waveform Num = 14
Num of Bursts = 16
Burst Interval (us) = 750000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	299328									
1		1	9.0	78	1286	0	0	299328	0	749999

Page 10

New3RandParmBin5.txt

2	756671	2	7.0	51	1074	1858	0	1057285	750000	1499999
3	477462	2	14.0	75	1230	1667	0	1537679	1500000	2249999
4	1363000	1	19.0	51	1133	0	0	2903576	2250000	2999999
5	544151	3	15.0	94	1915	1221	1812	3448860	3000000	3749999
6	912032	3	11.0	79	1415	1495	1896	4365840	3750000	4499999
7	611838	3	8.0	91	1947	1595	1336	4982484	4500000	5249999
8	873114	3	11.0	87	1645	1492	1492	5860476	5250000	5999999
9	721282	1	7.0	71	1180	0	0	6586387	6000000	6749999
10	667455	1	17.0	54	1577	0	0	7255022	6750000	7499999
11	244918	3	18.0	69	1358	1016	1342	7501517	7500000	8249999
12	1121553	1	8.0	73	1246	0	0	8626786	8250000	8999999
13	641575	2	8.0	100	1699	1424	0	9269607	9000000	9749999
14	657028	2	20.0	85	1381	1170	0	9929758	9750000	10499999
15	1222503	1	12.0	50	1075	0	0	11154812	10500000	11249999
16	364685	1	14.0	100	1421	0	0	11520572	11250000	11999999

Total number of pulses in waveform = 30

Waveform Num = 15
Num of Bursts = 15
Burst Interval (us) = 800000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	443639	1	14.0	59	1348	0	0	443639	0	799999
2	1045245	1	6.0	97	1484	0	0	1490232	800000	1599999
3	208075	2	18.0	53	1279	1652	0	1699791	1600000	2399999
4	833478	3	5.0	54	1409	1651	1999	2536200	2400000	3199999
5	846861	1	15.0	91	1060	0	0	3388120	3200000	3999999

New3RandParmBin5.txt

6	1258008	3	17.0	96	1620	1289	1642	4647188	4000000	4799999
7	802778	3	16.0	62	1109	1079	1671	5454517	4800000	5599999
8	857880	3	5.0	64	1634	1178	1940	6316256	5600000	6399999
9	816400	1	17.0	74	1931	0	0	7137408	6400000	7199999
10	813965	3	8.0	97	1696	1910	1485	7953304	7200000	7999999
11	418883	2	9.0	100	1800	1768	0	8377278	8000000	8799999
12	564350	3	17.0	62	1730	1699	1474	8945196	8800000	9599999
13	1098595	3	5.0	80	1571	1013	1808	10048694	9600000	10399999
14	406643	3	10.0	69	1434	1787	1219	10459729	10400000	11199999
15	831855	1	10.0	59	1428	0	0	11296024	11200000	11999999

Total number of pulses in waveform = 33

Waveform Num = 16
Num of Bursts = 9
Burst Interval (us) = 1333333.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	1290245	2	14.0	62	1859	1283	0	1290245	0	1333332
2	529824	1	17.0	58	1957	0	0	1823211	1333333	2666665
3	1825548	1	18.0	87	1875	0	0	3650716	2666666	3999998
4	492648	1	10.0	79	1622	0	0	4145239	3999999	5333331
5	1600963	2	18.0	96	1550	1950	0	5747824	5333332	6666664
6	1528546	3	10.0	51	1672	1361	1352	7279870	6666665	7999997
7	1659449	3	15.0	76	1439	1135	1792	8943704	7999998	9333330
8	654631	2	5.0	62	1092	1561	0	9602701	9333331	10666663
9	2149016	3	12.0	94	1355	1212	1538	11754370	10666664	11999996

Total number of pulses in waveform = 18

Page 12

New3RandParmBin5.txt

Waveform Num = 17
Num of Bursts = 12
Burst Interval (us) = 1000000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	294826	1	5.0	73	1962	0	0	294826	0	999999
2	1125078	3	14.0	69	1476	1918	1992	1421866	1000000	1999999
3	1366317	2	15.0	65	1254	1191	0	2793569	2000000	2999999
4	535754	1	15.0	97	1008	0	0	3331768	3000000	3999999
5	839392	1	15.0	77	1182	0	0	4172168	4000000	4999999
6	949605	1	12.0	93	1435	0	0	5122955	5000000	5999999
7	1393441	1	5.0	53	1000	0	0	6517831	6000000	6999999
8	644844	3	15.0	76	1004	1805	1229	7163675	7000000	7999999
9	1024913	3	7.0	54	1983	1289	1290	8192626	8000000	8999999
10	1645820	3	20.0	71	1061	1916	1131	9843008	9000000	9999999
11	355065	1	19.0	72	1297	0	0	10202181	10000000	10999999
12	1653980	2	7.0	81	1394	1811	0	11857458	11000000	11999999

Total number of pulses in waveform = 22

Waveform Num = 18
Num of Bursts = 20
Burst Interval (us) = 600000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	226567	2	15.0	58	1164	1153	0	226567	0	599999
2	627797	2	11.0	88	1631	1497	0	856681	600000	1199999
3	814656	1	16.0	66	1137	0	0	1674465	1200000	1799999
4	568547	3	19.0	68	1859	1854	1943	2244149	1800000	2399999
5	747074	1	19.0	91	1497	0	0	2996879	2400000	2999999

New3RandParmBin5.txt

6	137013	2	9.0	56	1453	1961	0	3135389	3000000	3599999
7	690948	2	12.0	80	1425	1232	0	3829751	3600000	4199999
8	681515	2	7.0	81	1443	1419	0	4513923	4200000	4799999
9	536571	3	19.0	50	1340	1916	1470	5053356	4800000	5399999
10	825727	3	20.0	93	1030	1655	1280	5883809	5400000	5999999
11	370871	3	7.0	89	1575	1819	1502	6258645	6000000	6599999
12	613340	1	17.0	65	1032	0	0	6876881	6600000	7199999
13	655741	2	13.0	92	1834	1305	0	7533654	7200000	7799999
14	574058	1	13.0	90	1618	0	0	8110851	7800000	8399999
15	403211	2	13.0	60	1343	1630	0	8515680	8400000	8999999
16	661362	1	9.0	56	1134	0	0	9180015	9000000	9599999
17	850198	1	15.0	95	1214	0	0	10031347	9600000	10199999
18	352563	3	18.0	58	1996	1645	1308	10385124	10200000	10799999
19	799765	1	16.0	77	1838	0	0	11189838	10800000	11399999
20	775745	3	20.0	82	1049	1963	1325	11967421	11400000	11999999

Total number of pulses in waveform = 39

Waveform Num = 19
Num of Bursts = 11
Burst Interval (us) = 1090909.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	423732	2	20.0	67	1239	1357	0	423732	0	1090908
2	742268	3	7.0	87	1236	1732	1783	1168596	1090909	2181817
3	1443776	2	14.0	68	1357	1811	0	2617123	2181818	3272726
4	708308	1	11.0	65	1861	0	0	3328599	3272727	4363635
5	1176838	3	14.0	85	1885	1820	1346	4507298	4363636	5454544

Page 14

New3RandParmBin5.txt

	1808294								
6		2	13.0	73	1805	1469	0	6320643	5454545	6545453
	1174299								
7		2	6.0	76	1336	1982	0	7498216	6545454	7636362
	771435								
8		3	6.0	55	2000	1588	1469	8272969	7636363	8727271
	1380300								
9		1	18.0	92	1519	0	0	9658326	8727272	9818180
	903216								
10		3	14.0	85	1522	1074	1727	10563061	9818181	10909089
	449990								
11		3	11.0	54	1870	1763	1766	11017374	10909090	11999998

Total number of pulses in waveform = 25

Waveform Num = 20
Num of Bursts = 12
Burst Interval (us) = 1000000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	516339									
1		1	5.0	90	1429	0	0	516339	0	999999
	1246850									
2		3	12.0	94	1000	1816	1450	1764618	1000000	1999999
	916198									
3		1	12.0	84	1692	0	0	2685082	2000000	2999999
	852196									
4		3	19.0	77	1948	1574	1712	3538970	3000000	3999999
	528913									
5		2	9.0	85	1520	1751	0	4073117	4000000	4999999
	1441775									
6		1	5.0	79	1475	0	0	5518163	5000000	5999999
	680086									
7		3	12.0	52	1122	1490	1259	6199724	6000000	6999999
	1308016									
8		2	12.0	76	1801	1061	0	7511611	7000000	7999999
	1364322									
9		2	10.0	98	1029	1813	0	8878795	8000000	8999999
	202691									
10		3	15.0	93	1546	1007	1171	9084328	9000000	9999999
	1673163									
11		2	5.0	77	1671	1675	0	10761215	10000000	10999999
	443549									
12		2	11.0	60	1652	1343	0	11208110	11000000	11999999

Total number of pulses in waveform = 25

Waveform Num = 21
Num of Bursts = 16

New3RandParmBin5.txt

Burst Interval (us) = 750000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	622803									
1		1	18.0	68	1008	0	0	622803	0	749999
	366086									
2		2	20.0	61	1076	1923	0	989897	750000	1499999
	997010									
3		3	5.0	77	1828	1934	1532	1989906	1500000	2249999
	359799									
4		1	19.0	76	1436	0	0	2354999	2250000	2999999
	750854									
5		3	13.0	93	1258	1880	1722	3107289	3000000	3749999
	667261									
6		1	6.0	63	1688	0	0	3779410	3750000	4499999
	786822									
7		2	14.0	63	1917	1933	0	4567920	4500000	5249999
	869817									
8		2	8.0	59	1520	1825	0	5441587	5250000	5999999
	726873									
9		1	9.0	55	1941	0	0	6171805	6000000	6749999
	810874									
10		2	5.0	70	1183	1556	0	6984620	6750000	7499999
	646850									
11		1	16.0	88	1097	0	0	7634209	7500000	8249999
	653375									
12		1	5.0	65	1889	0	0	8288681	8250000	8999999
	1182901									
13		2	8.0	60	1094	1104	0	9473471	9000000	9749999
	540040									
14		1	5.0	88	1417	0	0	10015709	9750000	10499999
	721959									
15		3	8.0	77	1865	1435	1720	10739085	10500000	11249999
	1112120									
16		2	12.0	80	1154	1080	0	11856225	11250000	11999999

Total number of pulses in waveform = 28

Waveform Num = 22
Num of Bursts = 20
Burst Interval (us) = 600000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	83157									
1		1	16.0	61	1878	0	0	83157	0	599999
	538341									
2		1	12.0	59	1218	0	0	623376	600000	1199999

Page 16

New3RandParmBin5.txt

3	826324	3	20.0	78	1248	1540	1507	1450918	1200000	1799999
4	592344	3	18.0	86	1857	1770	1548	2047557	1800000	2399999
5	374954	3	13.0	52	1858	1493	1493	2427686	2400000	2999999
6	896173	3	15.0	69	1832	1245	1561	3328703	3000000	3599999
7	442720	2	18.0	59	1898	1394	0	3776061	3600000	4199999
8	453841	2	17.0	98	1211	1863	0	4233194	4200000	4799999
9	894705	1	7.0	81	1486	0	0	5130973	4800000	5399999
10	606788	1	11.0	84	1228	0	0	5739247	5400000	5999999
11	264620	2	9.0	50	1809	1907	0	6005095	6000000	6599999
12	1176779	3	15.0	78	1257	1693	1839	7185590	6600000	7199999
13	252276	3	19.0	85	1795	1700	1989	7442655	7200000	7799999
14	827863	2	20.0	77	1110	1787	0	8276002	7800000	8399999
15	205568	1	7.0	58	1919	0	0	8484467	8400000	8999999
16	800944	2	10.0	79	1776	1117	0	9287330	9000000	9599999
17	365970	3	17.0	76	1924	1088	1283	9656193	9600000	10199999
18	889904	3	13.0	91	1680	1974	1000	10550392	10200000	10799999
19	678726	3	14.0	79	1226	1680	1843	11233772	10800000	11399999
20	291925	3	8.0	56	1204	1768	1166	11530446	11400000	11999999

Total number of pulses in waveform = 45

Waveform Num = 23
Num of Bursts = 10
Burst Interval (us) = 1200000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	479704	3	12.0	91	1452	1704	1966	479704	0	1199999
2	1040598	3	15.0	72	1158	1863	1094	1525424	1200000	2399999

New3RandParmBin5.txt

3	2010882	3	6.0	91	1524	1528	1564	3540421	2400000	3599999
4	257671	1	6.0	54	1760	0	0	3802708	3600000	4799999
5	1512306	3	9.0	65	1035	1445	1038	5316774	4800000	5999999
6	791821	2	17.0	56	1962	1733	0	6112113	6000000	7199999
7	2170698	2	19.0	61	1184	1402	0	8286506	7200000	8399999
8	111048	2	13.0	72	1643	1709	0	8400140	8400000	9599999
9	1539965	2	15.0	88	1673	1743	0	9943457	9600000	10799999
10	1210886	1	14.0	62	1807	0	0	11157759	10800000	11999999

Total number of pulses in waveform = 22

Waveform Num = 24
Num of Bursts = 16
Burst Interval (us) = 750000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	482085	3	16.0	64	1581	1031	1398	482085	0	749999
2	433996	2	15.0	64	1752	1283	0	920091	750000	1499999
3	602024	2	12.0	58	1472	1876	0	1525150	1500000	2249999
4	1241482	2	8.0	70	1784	1366	0	2769980	2250000	2999999
5	368750	1	16.0	65	1601	0	0	3141880	3000000	3749999
6	709672	3	15.0	82	1440	1378	1565	3853153	3750000	4499999
7	795674	3	8.0	72	1536	1860	1499	4653210	4500000	5249999
8	1195621	1	9.0	95	1454	0	0	5853726	5250000	5999999
9	784809	2	19.0	77	1467	1065	0	6639989	6000000	6749999
10	568721	2	18.0	86	1385	1720	0	7211242	6750000	7499999
11	805074	3	12.0	65	1675	1847	1504	8019421	7500000	8249999
12	371136	1	10.0	61	1454	0	0	8395583	8250000	8999999

Page 18

New3RandParmBin5.txt

	863512								
13		3	20.0	86	1903	1775	1886	9260549	9000000	9749999
	777877								
14		1	19.0	77	1839	0	0	10043990	9750000	10499999
	741976								
15		2	8.0	80	1113	1939	0	10787805	10500000	11249999
	1044351								
16		2	7.0	81	1941	1488	0	11835208	11250000	11999999

Total number of pulses in waveform = 33

Waveform Num = 25
Num of Bursts = 9
Burst Interval (us) = 1333333.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	177769									
1		3	20.0	67	1937	1658	1199	177769	0	1333332
	1891594									
2		1	17.0	65	1473	0	0	2074157	1333333	2666665
	1911216									
3		1	12.0	57	1434	0	0	3986846	2666666	3999998
	638262									
4		1	17.0	100	1877	0	0	4626542	3999999	5333331
	1494853									
5		2	18.0	86	1448	1053	0	6123272	5333332	6666664
	1255723									
6		1	16.0	50	1577	0	0	7381496	6666665	7999997
	1817621									
7		1	11.0	52	1346	0	0	9200694	7999998	9333330
	748343									
8		3	9.0	94	1518	1862	1724	9950383	9333331	10666663
	1994840									
9		2	16.0	67	1933	1326	0	11950327	10666664	11999996

Total number of pulses in waveform = 15

Waveform Num = 26
Num of Bursts = 15
Burst Interval (us) = 800000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	606001									
1		3	13.0	91	1735	1582	1358	606001	0	799999
	192833									
2		3	17.0	76	1621	1265	1780	803509	800000	1599999
	871473									
3		1	20.0	52	1713	0	0	1679648	1600000	2399999

Page 19

New3RandParmBin5.txt

4	1003209	1	20.0	60	1570	0	0	2684570	2400000	3199999
5	1203971	2	6.0	98	1742	1629	0	3890111	3200000	3999999
6	695082	1	16.0	55	1323	0	0	4588564	4000000	4799999
7	703827	2	9.0	60	1322	1179	0	5293714	4800000	5599999
8	502930	2	19.0	80	1251	1190	0	5799145	5600000	6399999
9	846661	2	8.0	94	1036	1861	0	6648247	6400000	7199999
10	1032000	3	15.0	65	1353	1691	1496	7683144	7200000	7999999
11	1064943	3	16.0	79	1407	1201	1237	8752627	8000000	8799999
12	662044	2	17.0	78	1838	1684	0	9418516	8800000	9599999
13	733237	2	17.0	53	1476	1234	0	10155275	9600000	10399999
14	716263	2	9.0	53	1186	1236	0	10874248	10400000	11199999
15	1050204	1	18.0	57	1487	0	0	11926874	11200000	11999999

Total number of pulses in waveform = 30

Waveform Num = 27
Num of Bursts = 19
Burst Interval (us) = 631579.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	180244	1	5.0	72	1295	0	0	180244	0	631578
2	450896	2	18.0	59	1325	1696	0	632435	631579	1263157
3	974494	3	18.0	92	1419	1623	1046	1609950	1263158	1894736
4	497871	3	13.0	93	1314	1152	1332	2111909	1894737	2526315
5	772694	1	18.0	97	1021	0	0	2888401	2526316	3157894
6	306468	1	17.0	89	1472	0	0	3195890	3157895	3789473
7	659062	3	15.0	61	1212	1021	1207	3856424	3789474	4421052
8	604514	1	13.0	95	1923	0	0	4464378	4421053	5052631

Page 20

New3RandParmBin5.txt

	1102304								
9		1	8.0	95	1615	0	0	5568605	5052632	5684210
	168246								
10		1	11.0	68	1606	0	0	5738466	5684211	6315789
	945877								
11		2	12.0	95	1522	1740	0	6685949	6315790	6947368
	493862								
12		1	14.0	54	1255	0	0	7183073	6947369	7578947
	974359								
13		1	10.0	77	1347	0	0	8158687	7578948	8210526
	469294								
14		2	17.0	52	1721	1140	0	8629328	8210527	8842105
	290479								
15		2	14.0	98	1177	1200	0	8922668	8842106	9473684
	774774								
16		1	18.0	73	1793	0	0	9699819	9473685	10105263
	501839								
17		2	13.0	77	1391	1864	0	10203451	10105264	10736842
	769992								
18		3	13.0	64	1765	1037	1829	10976698	10736843	11368421
	839666								
19		3	9.0	92	1403	1260	1906	11820995	11368422	12000000

Total number of pulses in waveform = 34

Waveform Num = 28
Num of Bursts = 11
Burst Interval (us) = 1090909.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
	623612									
1		1	16.0	58	1026	0	0	623612	0	1090908
	846049									
2		1	10.0	99	1776	0	0	1470687	1090909	2181817
	1380850									
3		3	5.0	99	1746	1704	1307	2853313	2181818	3272726
	1385884									
4		1	16.0	91	1325	0	0	4243954	3272727	4363635
	364978									
5		3	18.0	96	1387	1694	1143	4610257	4363636	5454544
	1074642									
6		1	15.0	53	1330	0	0	5689123	5454545	6545453
	1363316									
7		3	18.0	71	1452	1765	1711	7053769	6545454	7636362
	1257005									
8		2	12.0	66	1017	1452	0	8315702	7636363	8727271
	1183880									
9		1	16.0	78	1022	0	0	9502051	8727272	9818180

Page 21

New3RandParmBin5.txt

10	1292973	1	17.0	62	1067	0	0	10796046	9818181	10909089
11	610433	2	13.0	95	1329	1002	0	11407546	10909090	11999998

Total number of pulses in waveform = 19

Waveform Num = 29
Num of Bursts = 20
Burst Interval (us) = 600000.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	344756	3	8.0	85	1721	1498	1918	344756	0	599999
2	366753	3	8.0	54	1111	1890	1524	716646	600000	1199999
3	951293	3	15.0	81	1620	1256	1057	1672464	1200000	1799999
4	609294	1	8.0	64	1750	0	0	2285691	1800000	2399999
5	684146	1	5.0	66	1752	0	0	2971587	2400000	2999999
6	359976	2	16.0	86	1312	1433	0	3333315	3000000	3599999
7	682923	2	9.0	58	1214	1000	0	4018983	3600000	4199999
8	540067	1	12.0	67	1398	0	0	4561264	4200000	4799999
9	432700	1	16.0	79	1476	0	0	4995362	4800000	5399999
10	935616	3	17.0	94	1448	1658	1655	5932454	5400000	5999999
11	300460	2	10.0	100	1790	1817	0	6237675	6000000	6599999
12	607883	3	12.0	67	1524	1993	1290	6849165	6600000	7199999
13	469132	3	5.0	68	1786	1575	1259	7323104	7200000	7799999
14	681066	2	20.0	100	1024	1730	0	8008790	7800000	8399999
15	823553	2	14.0	80	1744	1520	0	8835097	8400000	8999999
16	223040	1	15.0	75	1932	0	0	9061401	9000000	9599999
17	1088942	3	19.0	59	1532	1828	1400	10152275	9600000	10199999
18	427464	3	20.0	66	1987	1352	1792	10584499	10200000	10799999

New3RandParmBin5.txt

19	756110	2	10.0	97	1634	1596	0	11345740	10800000	11399999
20	247448	1	16.0	95	1486	0	0	11596418	11400000	11999999

Total number of pulses in waveform = 42

Waveform Num = 30
Num of Bursts = 13
Burst Interval (us) = 923077.0

Burst #	Off Time (us)	# Pulses	Chirp (MHz)	PW (us)	Pulse 1 Pri(us)	Pulse 2 Pri(us)	Pulse 3 Pri(us)	Start Loc (us)	Start Burst Interval(us)	End Burst Interval(us)
1	870576	2	16.0	88	1293	1341	0	870576	0	923076
2	948896	3	13.0	53	1833	1155	1341	1822106	923077	1846153
3	729055	3	18.0	50	1737	1063	1244	2555490	1846154	2769230
4	568906	2	20.0	77	1630	1622	0	3128440	2769231	3692307
5	1136053	2	13.0	70	1336	1625	0	4267745	3692308	4615384
6	554758	2	20.0	90	1814	1792	0	4825464	4615385	5538461
7	1311002	1	19.0	63	1954	0	0	6140072	5538462	6461538
8	1016578	3	14.0	71	1908	1246	1267	7158604	6461539	7384615
9	322447	3	5.0	60	1382	1233	1611	7485472	7384616	8307692
10	1020274	3	14.0	67	1572	1170	1703	8509972	8307693	9230769
11	1269580	2	8.0	87	1120	1392	0	9783997	9230770	10153846
12	533393	3	18.0	67	1994	1524	1984	10319902	10153847	11076923
13	1544310	3	11.0	91	1044	1531	1414	11869714	11076924	12000000

Total number of pulses in waveform = 32

IV. Test Equipment

Test Equipment

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ANSI/NCSL Z540-1-1994 and ANSI/ISO/IEC 17025:2000.

MET Asset #	Equipment	Manufacturer	Model	Last Cal Date	Cal Due Date
1S2421	EMI RECEIVER	ROHDE&SCHWARZ	ESIB 7	05/27/2009	05/27/2010
1S2121	PRE-AMPLIFIER	HEWLETT PACKARD	8449B	SEE NOTE	
1S2198	HORN ANTENNA	EMCO	3115	09/10/2008	09/10/2009
1S2202	ANTENNA, HORN, 1 METER	EMCO	3116	04/10/2007	04/10/2010
N/A	HIGH PASS FILTER	MICRO-TRONICS	HPM13146	SEE NOTE	
1S2481	CHAMBER, 10 METER	ETS-LINDGREN	DKE 8X8 DBL	12/26/2008	12/26/2009
1S2041	COUPLER, BI DIRECTIONALCOAXIAL	NARDA	N/A	SEE NOTE	
1S2460	ANALYZER, SPECTRUM 9 KHZ-40GHZ	AGILENT	E4407B	04/14/2009	04/14/2010
1S2034	COUPLER, DIRECTIONAL 1-20 GHZ	KRYTAR	101020020	SEE NOTE	
1S2464	LISN	SOLAR ELECTRONICS	9252-50-R24-BNC	09/26/2008	09/26/2009
1S2512	TRANSIENT LIMITER	AGILENT	11947A	SEE NOTE	
1S2520	THERMO-HYGROMETER	FISHER SCIENTIFIC	11-661-7D	11/14/2007	11/13/2009
1S2482	CHAMBER, 5 METER	PANASHIELD	641431	11/22/2008	11/22/2009
1S2108	RECIEVER, EMI, RF FILTER SECTION	HEWLETT PACKARD	85460A	11/06/2008	11/06/2009
1S2399	TURNTABLE CONTROLLER	SUNOL SCIENCE	SC99V	SEE NOTE	
1S2485	BILOG ANTENNA	TESEQ	CBL6112D	03/20/2009	03/20/2010
N/A	2-6GHZ COMBINER	MINI CIRCUITS	ZN4PD-1-63-S+	SEE NOTE	
1S2108	RF FILTER SECTION	HEWLETT PACKARD	85460A	11/6/08	11/6/09
1S2041	COUPLER, BI DIRECTIONALCOAXIAL	NARDA	N/A	SEE NOTE	
1S2128	HARMONIC MIXER	HEWLETT PACKARD	11970A	11/22/2008	11/22/2010
1S2129	HARMONIC MIXER	HEWLETT PACKARD	11970K	11/22/2008	11/22/2010

Table 93. Test Equipment List

Note: Functionally tested equipment is verified using calibrated instrumentation at the time of testing.

MET Asset	Equipment	Manufacturer	Last Cal Date	Cal Due Date
1S2243	NI PXI-1042 8-SLOT 3U CHASSIS	NATIONAL INSTRUMENTS	SEE NOTE	
1S2602	NI PXI-5421 16-BIT 100MS/S ARBITRARY WAVEFORM GENERATOR	NATIONAL INSTRUMENTS	SEE NOTE	
1S2278	NI PXI-5610 2.7GHZ RF UPCONVERTER	NATIONAL INSTRUMENTS	SEE NOTE	
1S2069	UPCONVERTER, 7206 PXI 4.9 TO 6GHZ	ASCOR	SEE NOTE	
N/A	SPLITTER/COMBINER, ZFSC-2-9G (QTY 2)	MINI-CIRCUITS	SEE NOTE	
N/A	30DB ATTENUATOR, BW-S30W2 (QTY 2)	PASTERNAK	SEE NOTE	
N/A	10DB ATTENUATOR, BW-S10W2 (QTY 2)	PASTERNAK	SEE NOTE	
1S2523	PRE-AMPLIFIER, 8449B	AGILENT	SEE NOTE	
1S2583	SPECTRUM ANALYZER, E447A	AGILENT	01/12/2009	01/12/2010
1S2460	SPECTRUM ANALYZER, E4407B	AGILENT	04/14/2009	04/14/2010

Table 94. DFS Test Equipment List

Note: Functionally tested equipment is verified using calibrated instrumentation at the time of testing.

V. Certification & User's Manual Information

Certification & User's Manual Information

A. Certification Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 2, Subpart I — Marketing of Radio frequency devices:

§ 2.801 Radio-frequency device defined.

As used in this part, a radio-frequency device is any device which in its operation is capable of Emitting radio-frequency energy by radiation, conduction, or other means. Radio- frequency devices include, but are not limited to:

(a) The various types of radio communication transmitting devices described throughout this chapter.

(b) The incidental, unintentional and intentional radiators defined in Part 15 of this chapter.

(c) The industrial, scientific, and medical equipment described in Part 18 of this chapter.

(d) Any part or component thereof which in use emits radio-frequency energy by radiation, conduction, or other means.

§ 2.803 Marketing of radio frequency devices prior to equipment authorization.

(a) Except as provided elsewhere in this chapter, no person shall sell or lease, or offer for sale or lease (including advertising for sale or lease), or import, ship or distribute for the purpose of selling or leasing or offering for sale or lease, any radio frequency device unless:

(1) In the case of a device subject to certification, such device has been authorized by the Commission in accordance with the rules in this chapter and is properly identified and labeled as required by §2.925 and other relevant sections in this chapter; or

(2) In the case of a device that is not required to have a grant of equipment authorization issued by the Commission, but which must comply with the specified technical standards prior to use, such device also complies with all applicable administrative (including verification of the equipment or authorization under a Declaration of Conformity, where required), technical, labeling and identification requirements specified in this chapter.

(d) Notwithstanding the provisions of paragraph (a) of this section, the offer for sale solely to business, commercial, industrial, scientific or medical users (but not an offer for sale to other parties or to end users located in a residential environment) of a radio frequency device that is in the conceptual, developmental, design or pre-production stage is permitted prior to equipment authorization or, for devices not subject to the equipment authorization requirements, prior to a determination of compliance with the applicable technical requirements *provided* that the prospective buyer is advised in writing at the time of the offer for sale that the equipment is subject to the FCC rules and that the equipment will comply with the appropriate rules before delivery to the buyer or to centers of distribution.

(e)(1) Notwithstanding the provisions of paragraph (a) of this section, prior to equipment authorization or determination of compliance with the applicable technical requirements any radio frequency device may be operated, but not marketed, for the following purposes and under the following conditions:

(i) Compliance testing;

(ii) Demonstrations at a trade show provided the notice contained in paragraph (c) of this section is displayed in a conspicuous location on, or immediately adjacent to, the device;

(iii) Demonstrations at an exhibition conducted at a business, commercial, industrial, scientific or medical location, but excluding locations in a residential environment, provided the notice contained in paragraphs (c) or (d) of this section, as appropriate, is displayed in a conspicuous location on, or immediately adjacent to, the device;

(iv) Evaluation of product performance and determination of customer acceptability, provided such operation takes place at the manufacturer's facilities during developmental, design or pre-production states; or

(v) Evaluation of product performance and determination of customer acceptability where customer acceptability of a radio frequency device cannot be determined at the manufacturer's facilities because of size or unique capability of the device, provided the device is operated at a business, commercial, industrial, scientific or medical user's site, but not at a residential site, during the development, design or pre-production stages.

(e)(2) For the purpose of paragraphs (e)(1)(iv) and (e)(1)(v) of this section, the term *manufacturer's facilities* includes the facilities of the party responsible for compliance with the regulations and the manufacturer's premises, as well as the facilities of other entities working under the authorization of the responsible party in connection with the development and manufacture, but not the marketing, of the equipment.

(f) For radio frequency devices subject to verification and sold solely to business, commercial, industrial, scientific and medical users (excluding products sold to other parties or for operation in a residential environment), parties responsible for verification of the devices shall have the option of ensuring compliance with the applicable technical specifications of this chapter at each end user's location after installation, provided that the purchase or lease agreement includes a proviso that such a determination of compliance be made and is the responsibility of the party responsible for verification of the equipment.

Certification & User's Manual Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 2, Subpart J — Equipment Authorization Procedures:

§ 2.901 Basis and Purpose

(a) In order to carry out its responsibilities under the Communications Act and the various treaties and international regulations, and in order to promote efficient use of the radio spectrum, the Commission has developed technical standards for radio frequency equipment and parts or components thereof. The technical standards applicable to individual types of equipment are found in that part of the rules governing the service wherein the equipment is to be operated.[1] *In addition to the technical standards provided, the rules governing the service may require that such equipment be verified by the manufacturer or importer*, be authorized under a Declaration of Conformity, or receive an equipment authorization from the Commission by one of the following procedures: certification or registration.

(b) The following sections describe the verification procedure, the procedure for a Declaration of Conformity, and the procedures to be followed in obtaining certification from the Commission and the conditions attendant to such a grant.

§ 2.907 Certification.

(a) Certification is an equipment authorization issued by the Commission, based on representation and test data submitted by the applicant.

(b) Certification attaches to all units subsequently marketed by the grantee which are identical (see Section 2.908) to the sample tested except for permissive changes or other variations authorized by the Commission pursuant to Section 2.1043.

[1] In this case, the equipment is subject to the rules of Part 15. More specifically, the equipment falls under Subpart B (of Part 15), which deals with unintentional radiators.

Certification & User's Manual Information

§ 2.948 Description of measurement facilities.

(a) Each party making measurements of equipment that is subject to an equipment authorization under Part 15 or Part 18 of this chapter, regardless of whether the measurements are filed with the Commission or kept on file by the party responsible for compliance of equipment marketed within the U.S. or its possessions, shall compile a description of the measurement facilities employed.

(1) If the measured equipment is subject to the verification procedure, the description of the measurement facilities shall be retained by the party responsible for verification of the equipment.

(i) If the equipment is verified through measurements performed by an independent laboratory, it is acceptable for the party responsible for verification of the equipment to rely upon the description of the measurement facilities retained by or placed on file with the Commission by that laboratory. In this situation, the party responsible for the verification of the equipment is not required to retain a duplicate copy of the description of the measurement facilities.

(ii) If the equipment is verified based on measurements performed at the installation site of the equipment, no specific site calibration data is required. It is acceptable to retain the description of the measurement facilities at the site at which the measurements were performed.

(2) If the equipment is to be authorized by the Commission under the certification procedure, the description of the measurement facilities shall be filed with the Commission's Laboratory in Columbia, Maryland. The data describing the measurement facilities need only be filed once but must be updated as changes are made to the measurement facilities or as otherwise described in this section. At least every three years, the organization responsible for filing the data with the Commission shall certify that the data on file is current.

Certification & User's Manual Information

Label and User's Manual Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 15, Subpart A — General:

§ 15.19 Labeling requirements.

(a) In addition to the requirements in Part 2 of this chapter, a device subject to certification or verification shall be labeled as follows:

(1) Receivers associated with the operation of a licensed radio service, e.g., FM broadcast under Part 73 of this chapter, land mobile operation under Part 90, etc., shall bear the following statement in a conspicuous location on the device:

This device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

(2) A stand-alone cable input selector switch, shall bear the following statement in a conspicuous location on the device:

This device is verified to comply with Part 15 of the FCC Rules for use with cable television service.

(3) All other devices shall bear the following statement in a conspicuous location on the device:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

(4) Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified under paragraph (a) of this section is required to be affixed only to the main control unit.

(5) When the device is so small or for such use that it is not practicable to place the statement specified under paragraph (a) of this section on it, the information required by this paragraph shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed. However, the FCC identifier or the unique identifier, as appropriate, must be displayed on the device.

§ 15.21 Information to user.

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Verification & User's Manual Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 15, Subpart B — Unintentional Radiators:

§ 15.105 Information to the user.

(a) For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at own expense.

(b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

– Reorient or relocate the receiving antenna.

– Increase the separation between the equipment and receiver.

– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

– Consult the dealer or an experienced radio/TV technician for help.

ICES-003 Procedural & Labeling Requirements

From the Industry Canada Electromagnetic Compatibility Advisory Bulletin entitled, "Implementation and Interpretation of the Interference-Causing Equipment Standard for Digital Apparatus, ICES-003" (EMCAB-3, Issue 2, July 1995):

> "At present, CISPR 22: 2002 and ICES technical requirements are essentially equivalent. Therefore, if you have CISPR 22: 2002 approval by meeting CISPR Publication 22, the only additional requirements are: to attach a note to the report of the test results for compliance, indicating that these results are deemed satisfactory evidence of compliance with ICES-003 of the Canadian Interference-Causing Equipment Regulations; to maintain these records on file for the requisite five year period; and to provide the device with a notice of compliance in accordance with ICES-003."

Procedural Requirements:

According to Industry Canada's Interference Causing Equipment Standard for Digital Apparatus ICES-003 Issue 4, February 2004:

Section 6.1: A record of the measurements and results, showing the date that the measurements were completed, shall be retained by the manufacturer or importer for a period of at least five years from the date shown in the record and made available for examination on the request of the Minister.

Section 6.2: A written notice indicating compliance must accompany each unit of digital apparatus to the end user. The notice shall be in the form of a label that is affixed to the apparatus. Where because of insufficient space or other constraints it is not feasible to affix a label to the apparatus, the notice may be in the form of a statement in the user's manual.

Labeling Requirements:

The suggested text for the notice, in English and in French, is provided below, from the Annex of ICES-003:

> This Class [2] digital apparatus complies with Canadian ICES-003.
>
> Cet appareil numérique de la classe [1] est conforme à la norme NMB-003 du Canada.

[2] Insert either A or B but not both as appropriate for the equipment requirements.

End of Report

