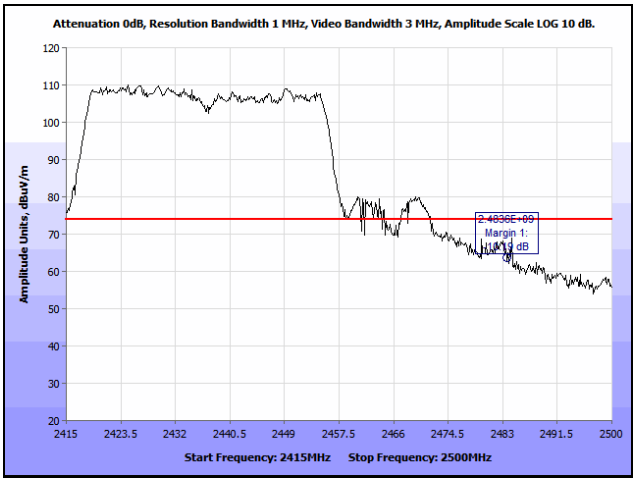
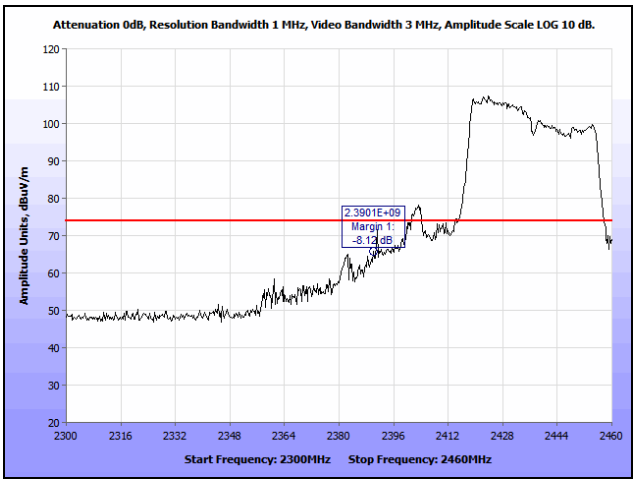
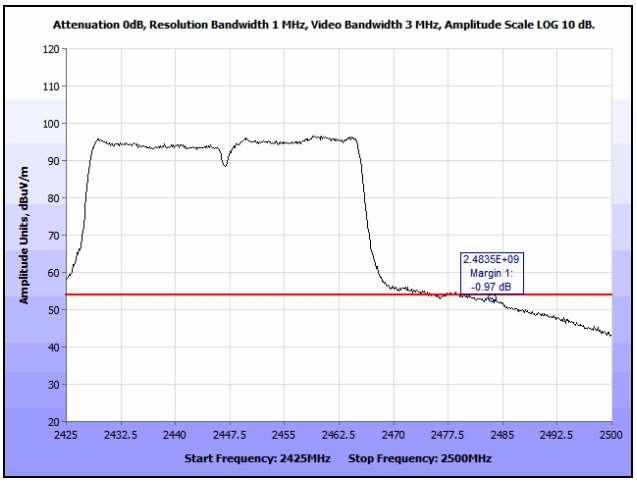


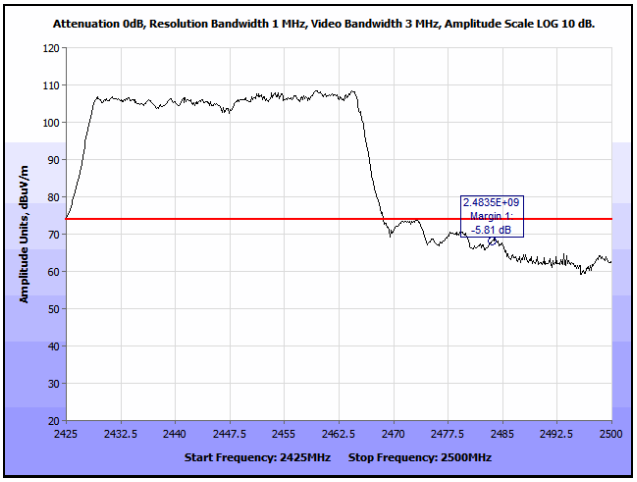
Plot 218. Restricted Band Edge, Internal PIFA, 802.11n 40 MHz, 2427 MHz, Channel 6, Peak @ 2483.5 MHz



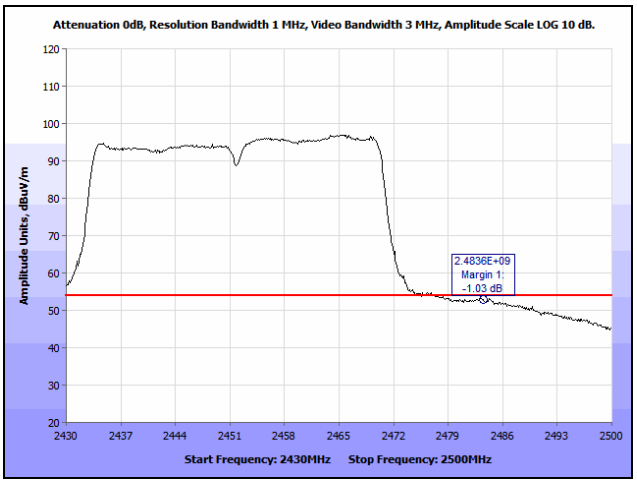
Plot 219. Restricted Band Edge, Internal PIFA, 802.11n 40 MHz, 2427 MHz, Channel 6, Peak



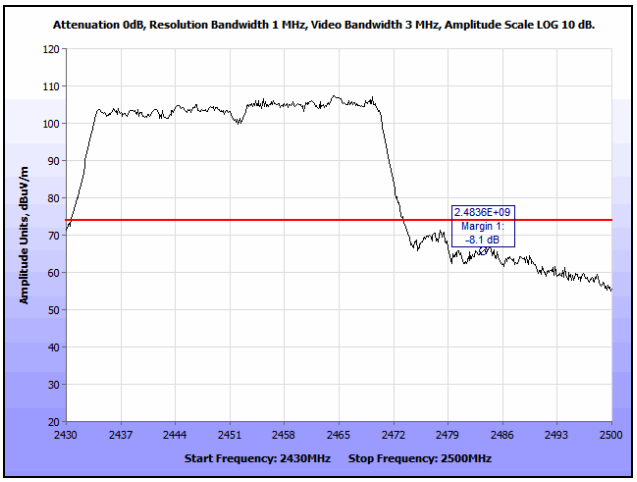
Plot 220. Restricted Band Edge, Internal PIFA, 802.11n 40 MHz, 2452 MHz, Channel 10, Average



Plot 221. Restricted Band Edge, Internal PIFA, 802.11n 40 MHz, 2452 MHz, Channel 10, Peak



Plot 222. Restricted Band Edge, Internal PIFA, 802.11n 40 MHz, 2452 MHz, Average



Plot 223. Restricted Band Edge, Internal PIFA, 802.11n 40 MHz, 2452 MHz, Peak

Electromagnetic Compatibility Criteria for Intentional Radiators

Co-location

Test Requirements: Devices designed to transmit simultaneously in multiple channels in single or multiple frequency bands or those using new "carrier aggregation techniques", excluding cellular base stations or where specific guidance has been proved.

All devices that are capable of transmitting simultaneously in more than one Part-15 band between 5 and 6 GHz (*i.e.,* in two or more of the four U-NII bands or in the 5.8 GHz 15.247 band and at least one U-NII band) are subject to Permit But Ask provisions. This includes devices marketed as IEEE Std 802.11acor "pre-standard" IEEE Std 802.11ac.

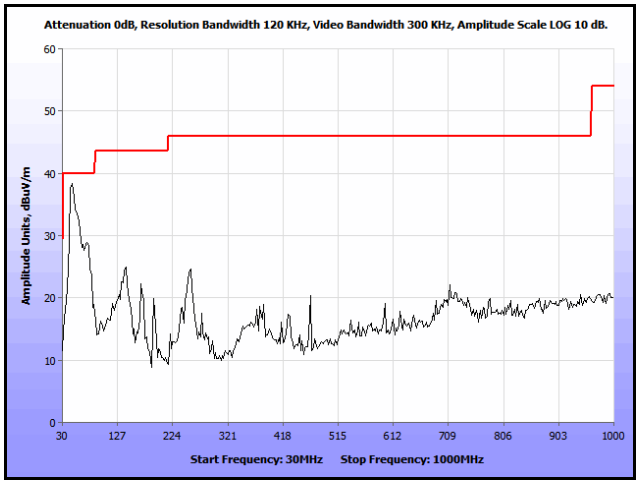
Test Procedure: The transmitter was placed on an 80cm wooden table inside in a semi-anechoic chamber. Measurements were performed with the EUT rotated 360 degrees and varying the adjustable antenna mast height to determine worst case orientation for maximum emissions. A preamp was used in the range from 7-18GHz to improve noise floor. Plots were corrected for cable loss, antenna, and preamp gain.

For frequencies from 30 MHz to 1 GHz, measurements were made using a quasi-peak detector with a 120 kHz bandwidth.

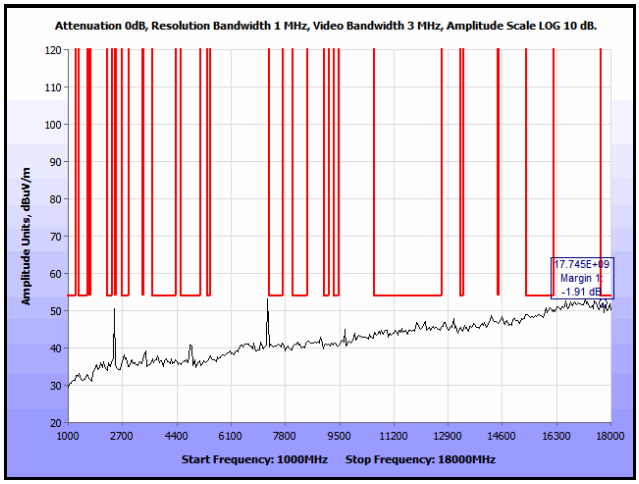
For measurements above 1 GHz, measurements were made with a Peak detector with 1 MHz resolution bandwidth. Where the spurious emissions fell into a restricted band, measurements were also made with an average detector to make sure they complied with 15.209 limits. Only noise floor was seen above 18 GHz.

The EUT uses 2 radios that are co-located. The EUT was set to transmit on both radios using the following matrix below.

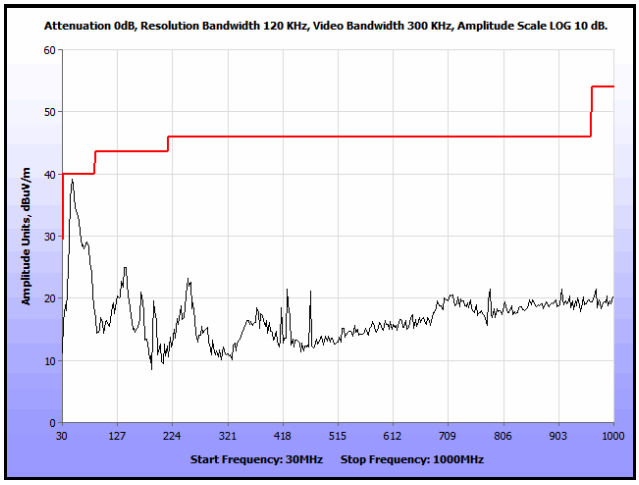
PIFA 3/4dBi (Each port is 2.4-5.8GHz)						Ports 1-3 is 2.4GHz only. Ports 4-6 is 5GHz Only	
Radio 1	Radio 2	Radio 1	Radio 2	Radio 1	Radio 2	Radio 1	Radio 2
802.11n 20MHz	802.11n 20MHz	802.11n 20MHz	802.11n 20MHz	802.11n 20MHz	802.11n 20MHz	802.11n 20MHz	802.11n 20MHz
2412	5200	2412	2412	5200	5200	2412	2412
2437	5300	2437	2437	5300	5300	2437	2437
2462	5580	2462	2462	5580	5580	2462	2462
--	5785	--	--	5785	5785	--	5200
--	--	--	--	--	--	--	5300
--	--	--	--	--	--	--	5580
--	--	--	--	--	--	--	5785



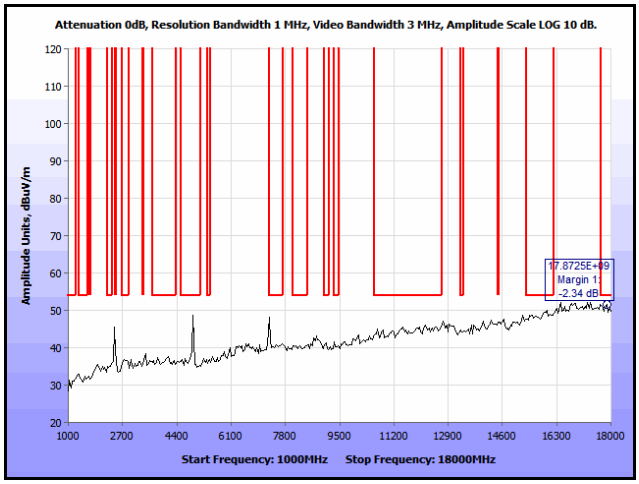
Plot 224. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 2412 MHz, 30 MHz – 1 GHz



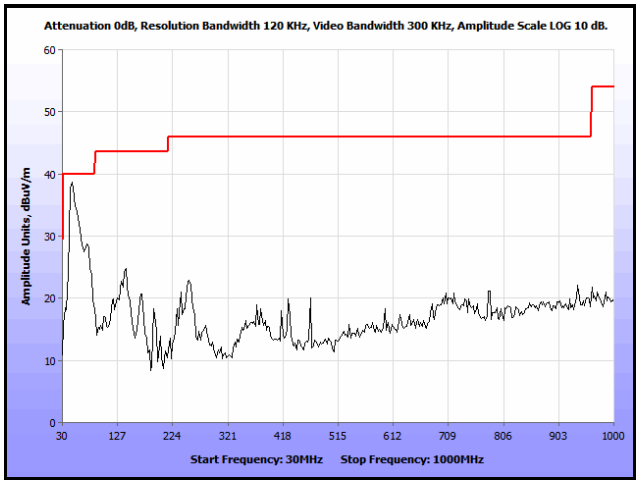
Plot 225. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 2412 MHz, 1 GHz – 8 GHz



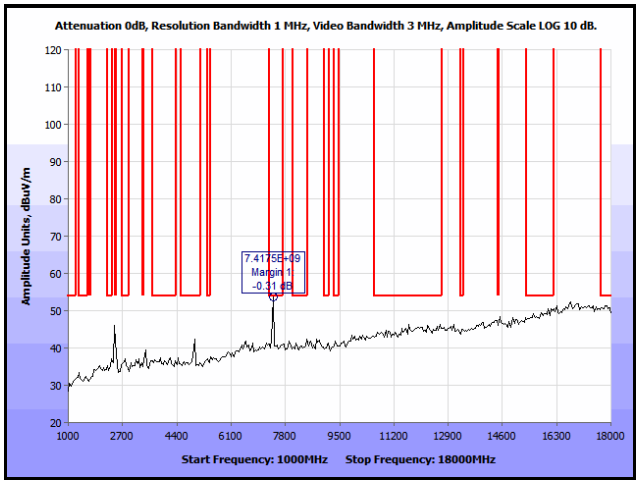
Plot 226. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 2437 MHz, 30 MHz – 1 GHz



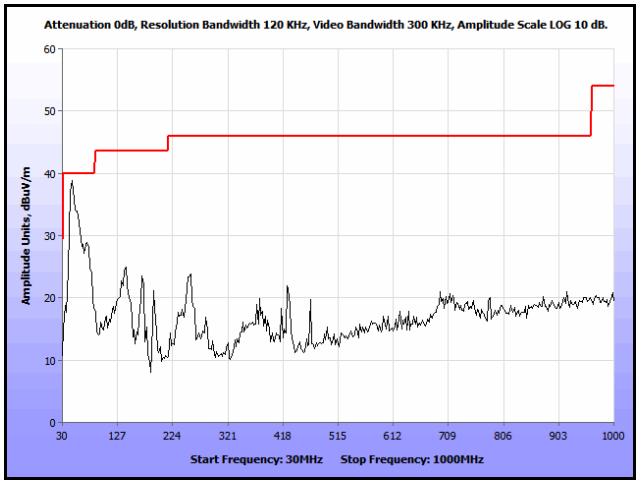
Plot 227. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 2437 MHz, 1 GHz – 8 GHz



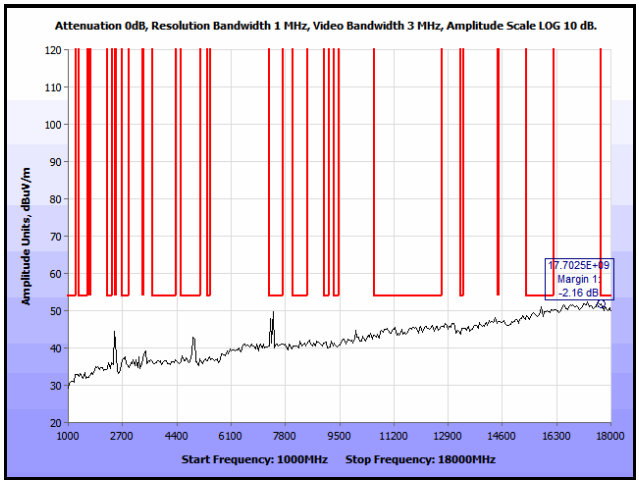
Plot 228. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 2462 MHz, 30 MHz – 1 GHz



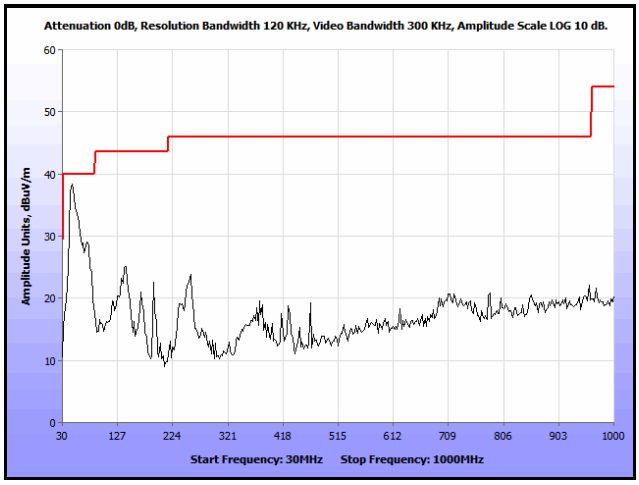
Plot 229. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 2462 MHz, 1 GHz – 8 GHz



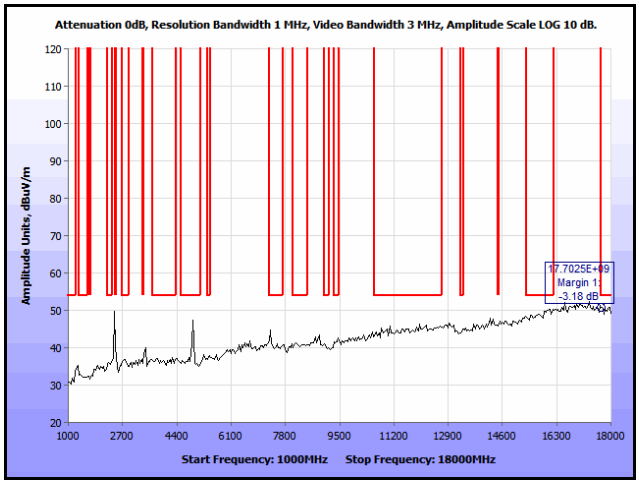
Plot 230. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 2437 MHz, 30 MHz – 1 GHz



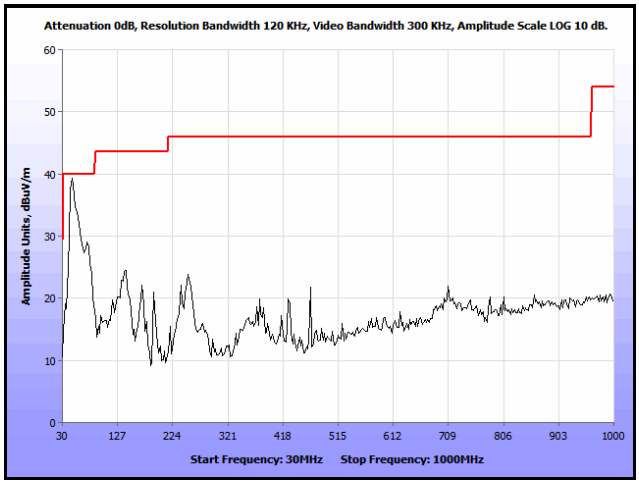
Plot 231. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 2437 MHz, 1 GHz – 8 GHz



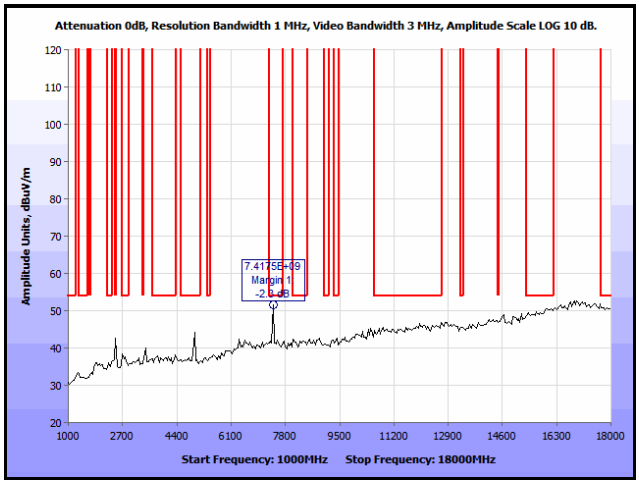
Plot 232. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 2462 MHz, 30 MHz – 1 GHz



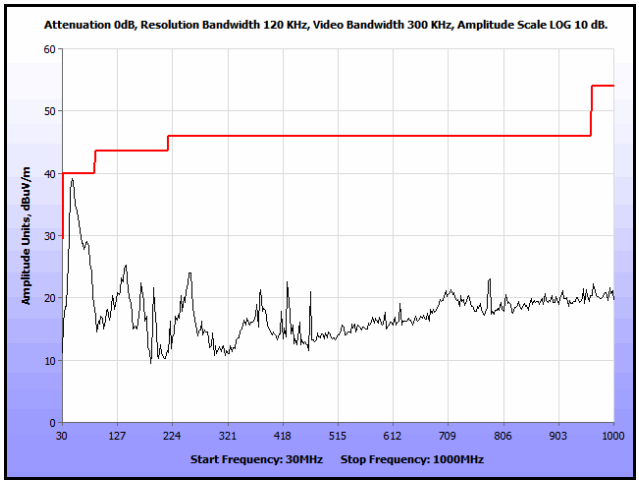
Plot 233. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 2462 MHz, 1 GHz – 8 GHz



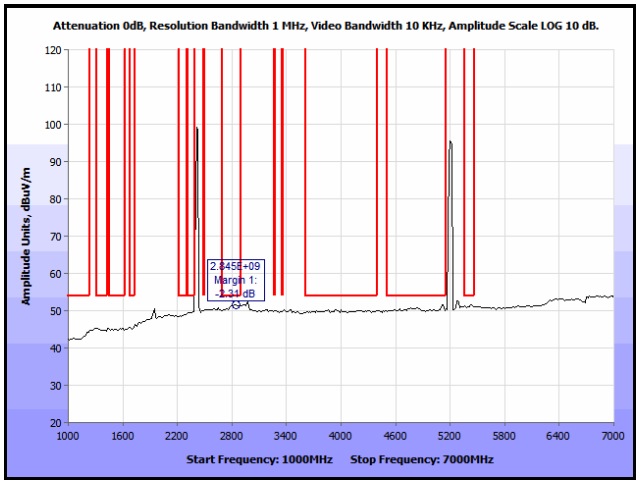
Plot 234. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 2462 MHz, 30 MHz – 1 GHz



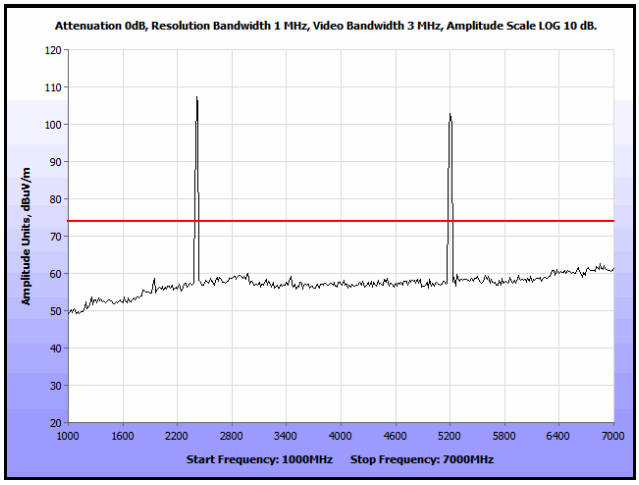
Plot 235. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 2462 MHz, 1 GHz – 8 GHz



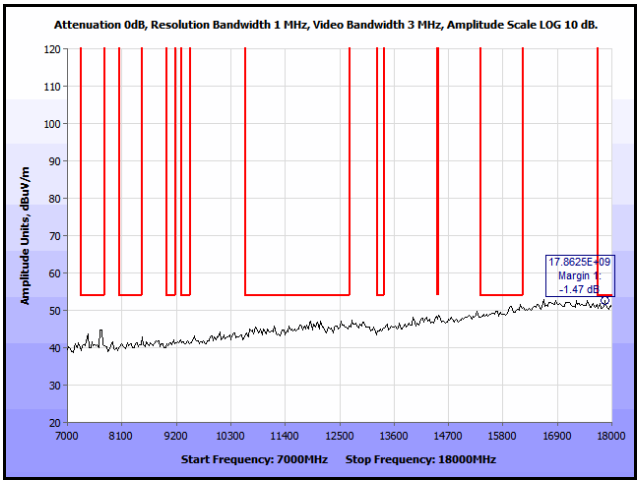
Plot 236. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 5200 MHz, 30 MHz – 1 GHz



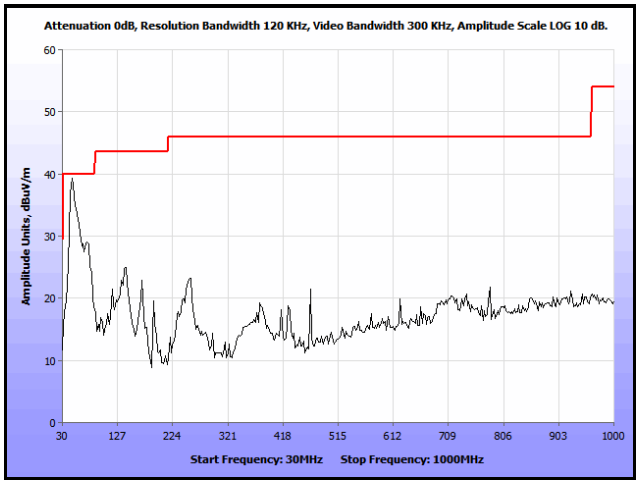
Plot 237. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 5200 MHz, 1 GHz – 7 GHz, Average



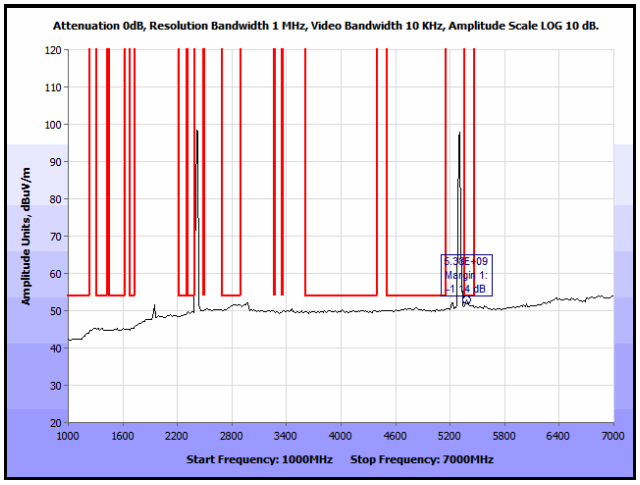
Plot 238. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 5200 MHz, 1 GHz – 7 GHz, Peak



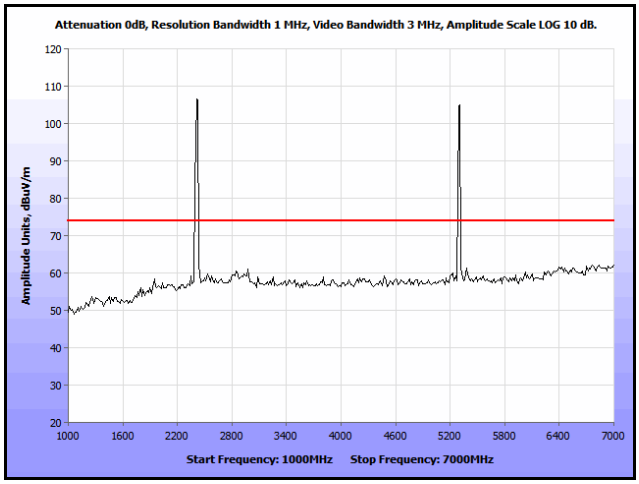
Plot 239. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 5200 MHz, 7 GHz – 18 GHz, Peak



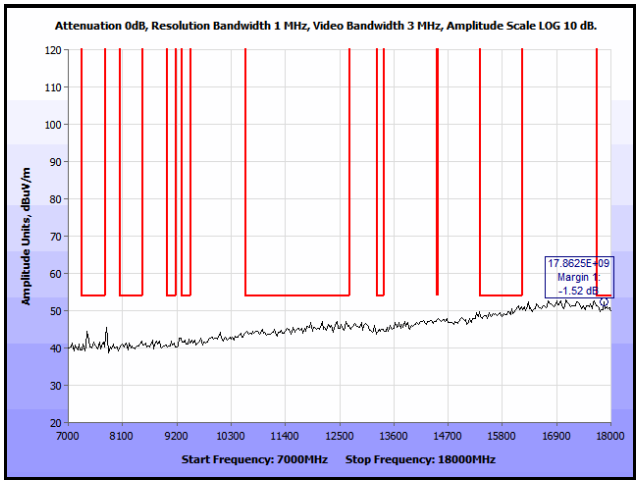
Plot 240. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 5300 MHz, 30 MHz – 1 GHz



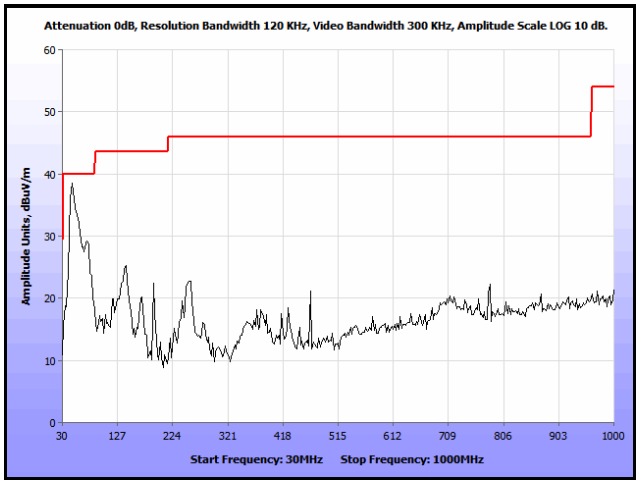
Plot 241. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 5300 MHz, 1 GHz – 7 GHz, Average



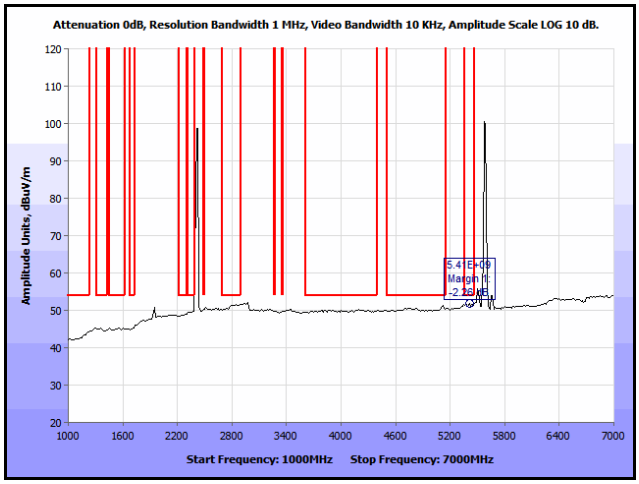
Plot 242. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 5300 MHz, 1 GHz – 7 GHz, Peak



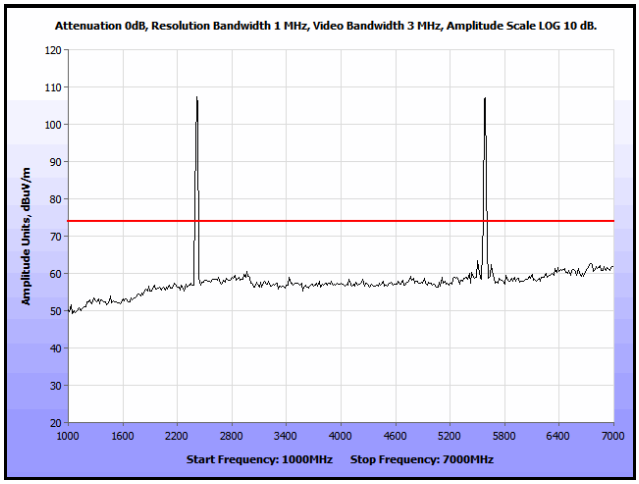
Plot 243. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 5300 MHz, 7 GHz – 18 GHz, Peak



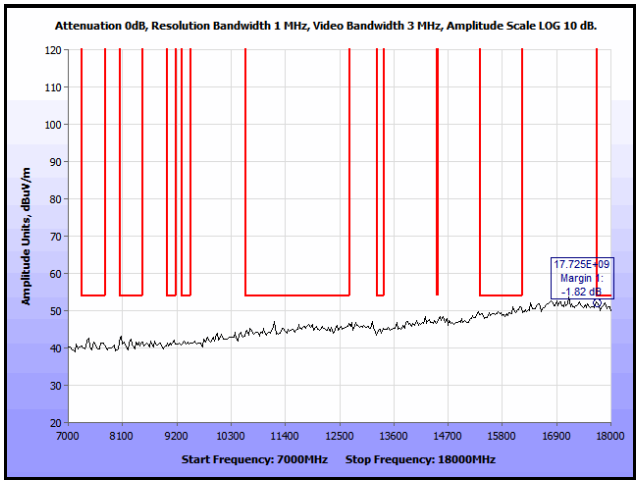
Plot 244. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 5580 MHz, 30 MHz – 1 GHz



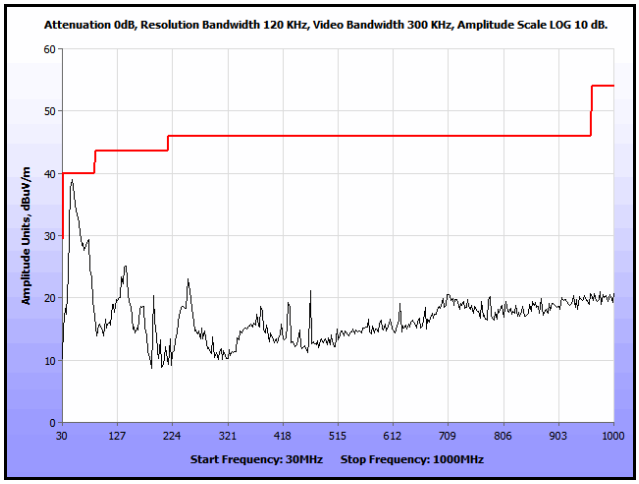
Plot 245. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 5580 MHz, 1 GHz – 7 GHz, Average



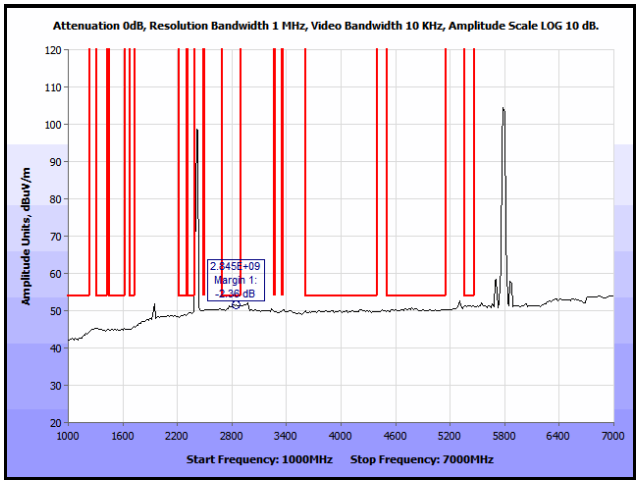
Plot 246. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 5580 MHz, 1 GHz – 7 GHz, Peak



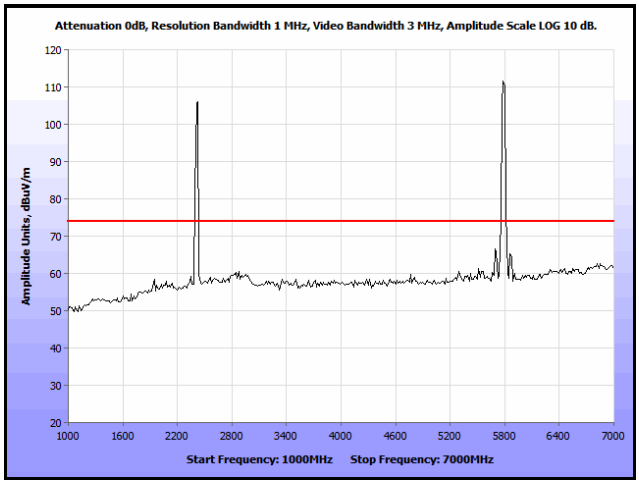
Plot 247. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 5580 MHz, 7 GHz – 18 GHz, Peak



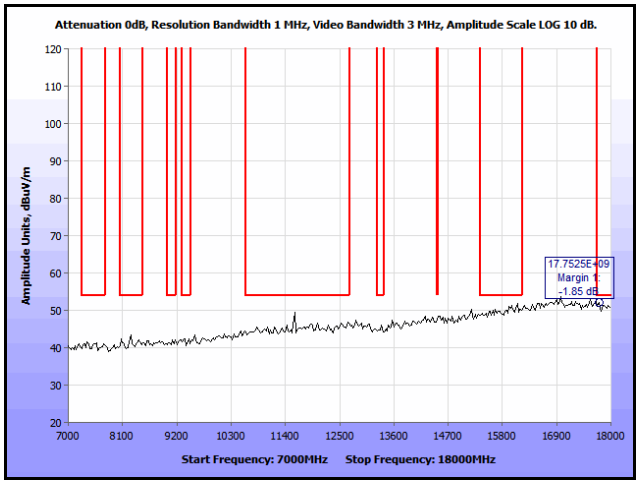
Plot 248. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 5785 MHz, 30 MHz – 1 GHz



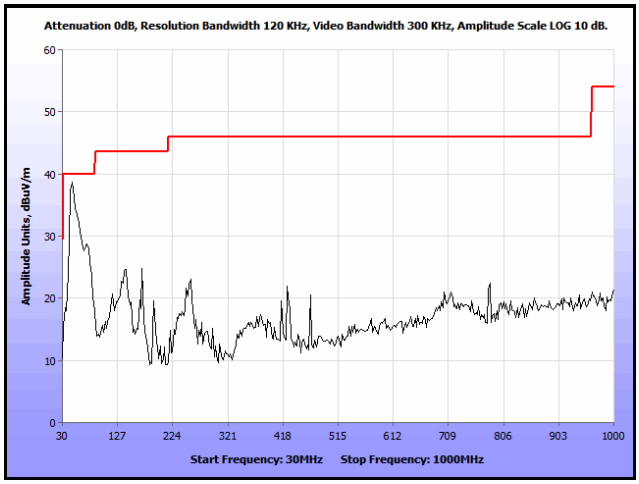
Plot 249. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 5785 MHz, 1 GHz – 7 GHz, Average



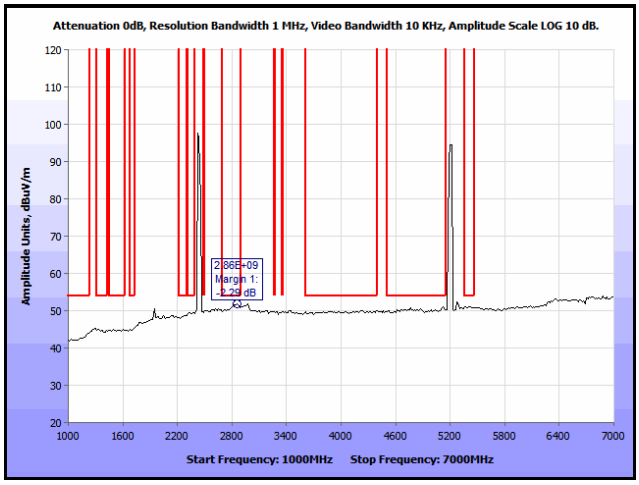
Plot 250. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 5785 MHz, 1 GHz – 7 GHz, Peak



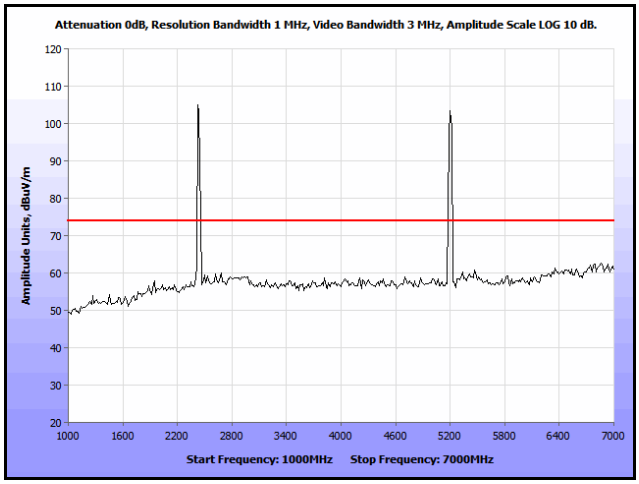
Plot 251. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2412 & 5785 MHz, 7 GHz – 18 GHz, Peak



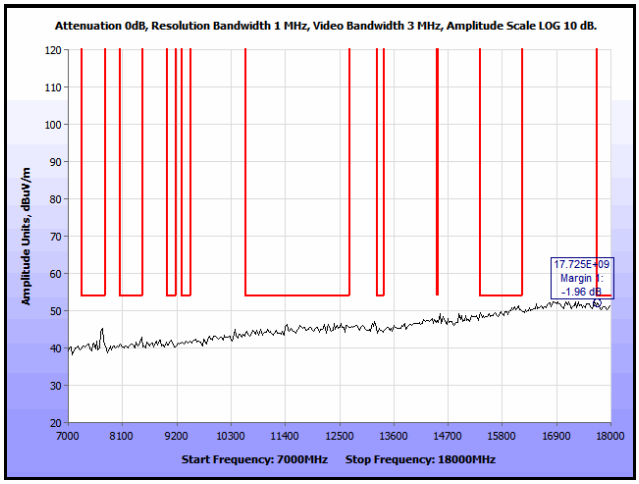
Plot 252. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 5200 MHz, 30 MHz – 1 GHz



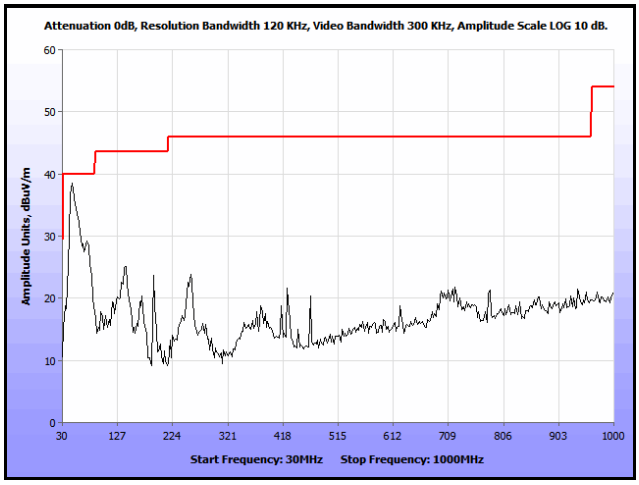
Plot 253. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 5200 MHz, 1 GHz – 7 GHz, Average



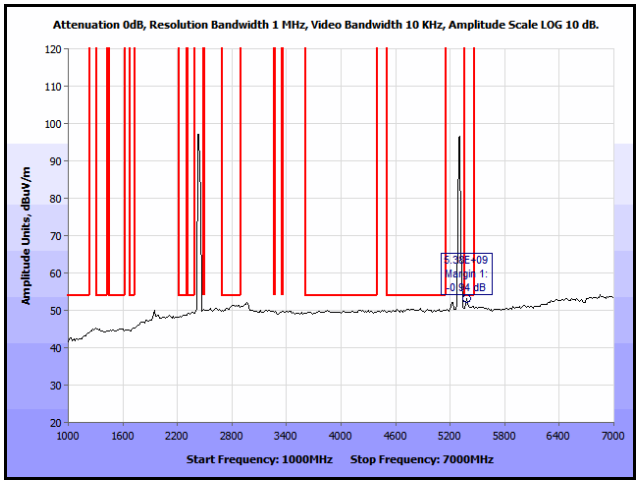
Plot 254. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 5200 MHz, 1 GHz – 7 GHz, Peak



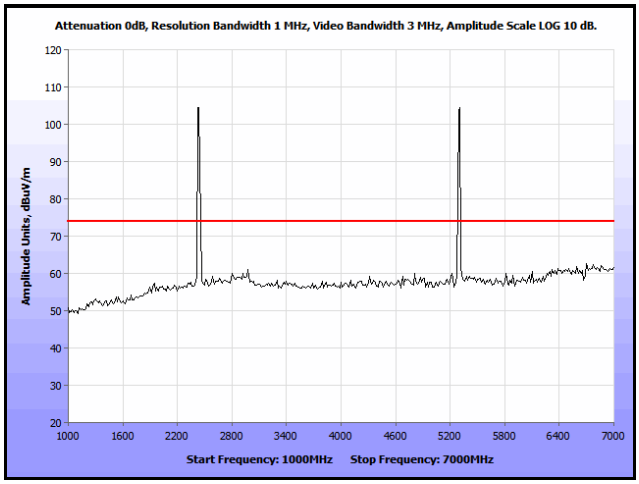
Plot 255. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 5200 MHz, 7 GHz – 18 GHz, Peak



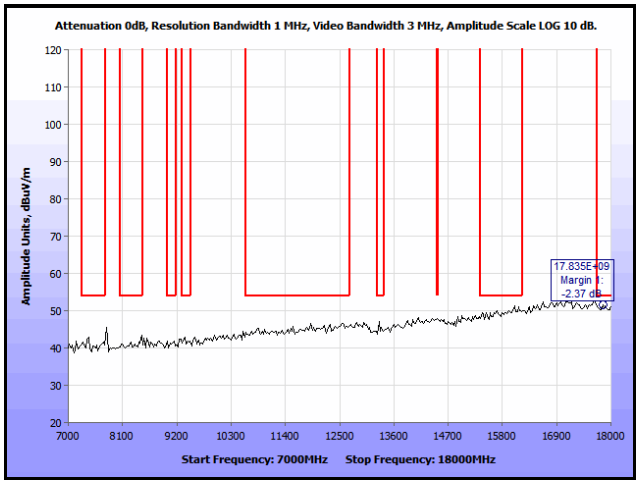
Plot 256. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 5300 MHz, 30 MHz – 1 GHz



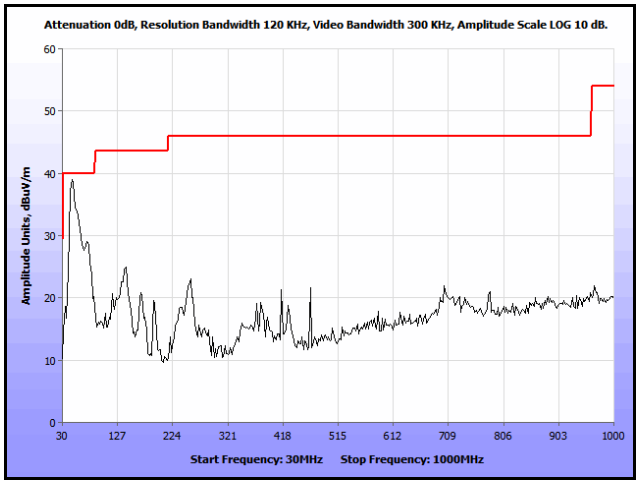
Plot 257. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 5300 MHz, 1 GHz – 7 GHz, Average



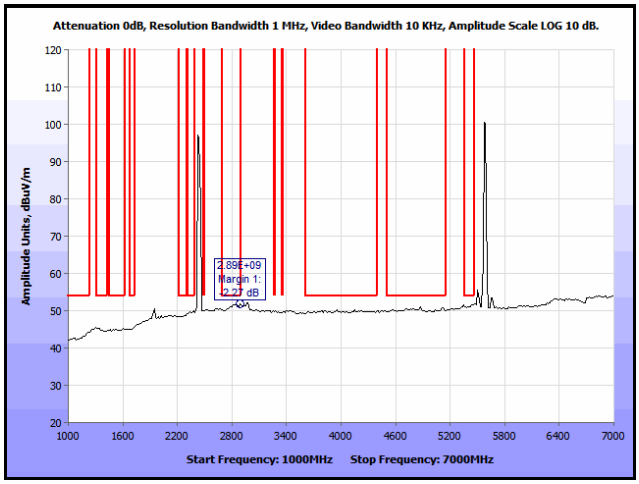
Plot 258. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 5300 MHz, 1 GHz – 7 GHz, Peak



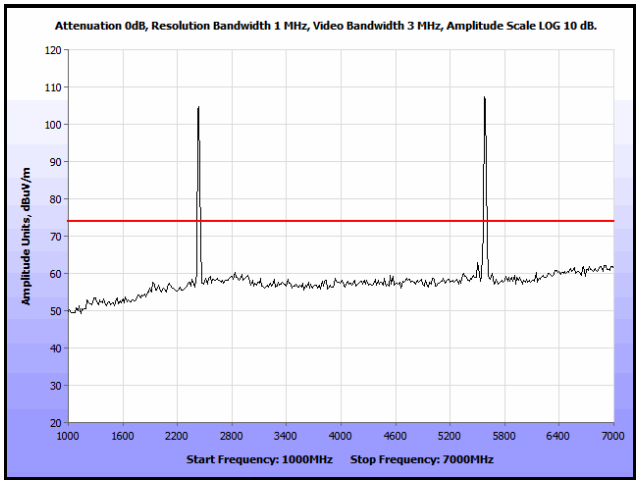
Plot 259. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 5300 MHz, 7 GHz – 18 GHz, Peak



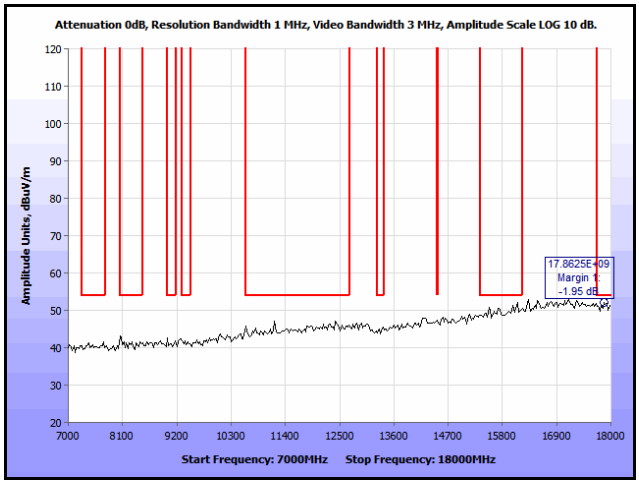
Plot 260. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 5580 MHz, 30 MHz – 1 GHz



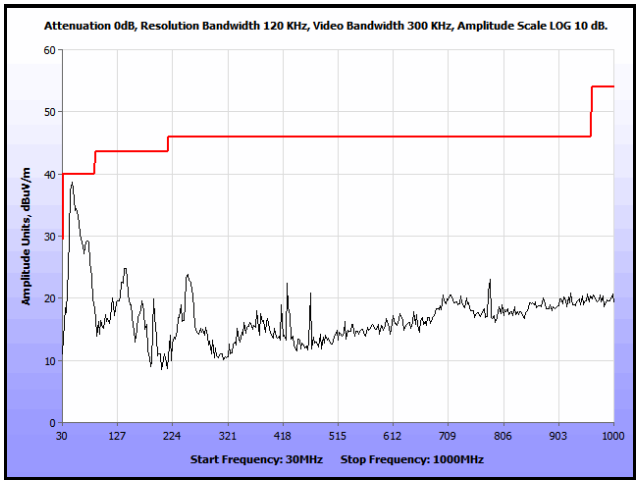
Plot 261. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 5580 MHz, 1 GHz – 7 GHz, Average



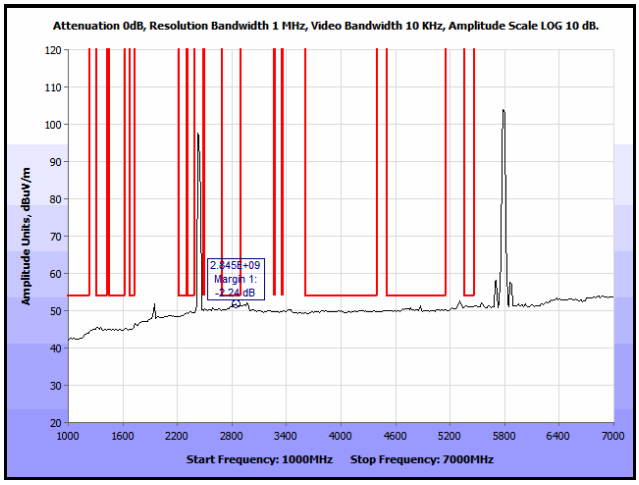
Plot 262. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 5580 MHz, 1 GHz – 7 GHz, Peak



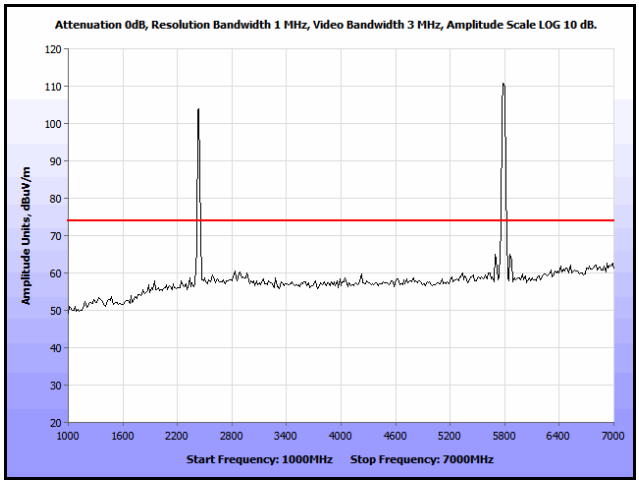
Plot 263. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 5580 MHz, 7 GHz – 18 GHz, Peak



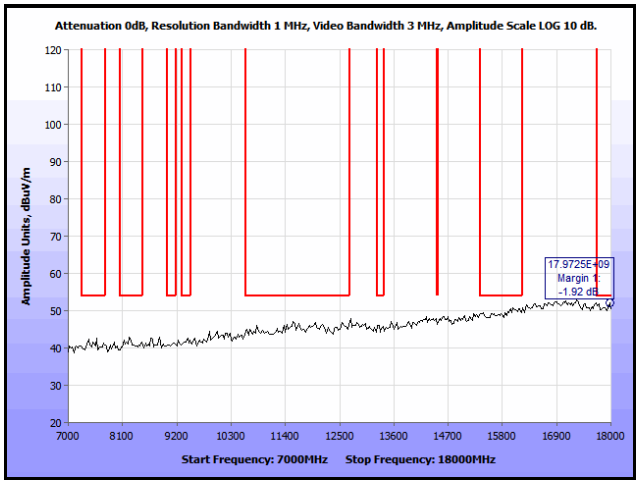
Plot 264. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 5785 MHz, 30 MHz – 1 GHz



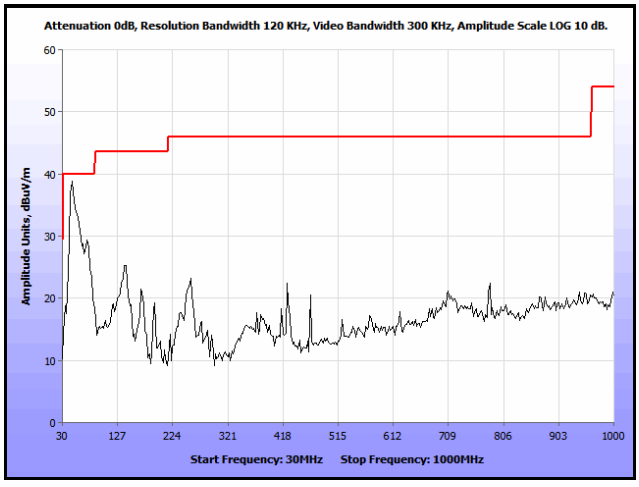
Plot 265. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 5785 MHz, 1 GHz – 7 GHz, Average



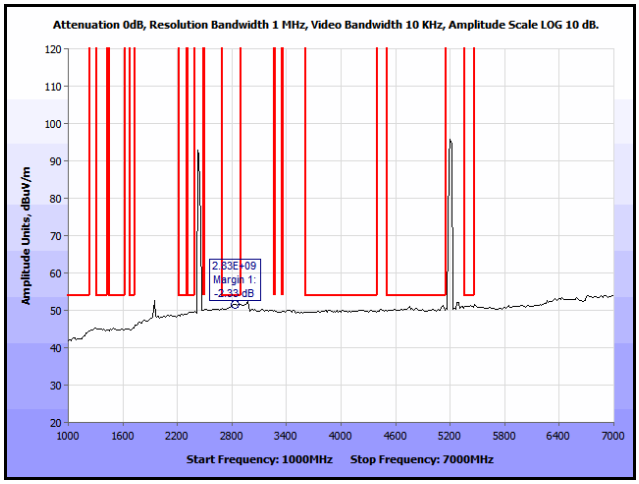
Plot 266. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 5785 MHz, 1 GHz – 7 GHz, Peak



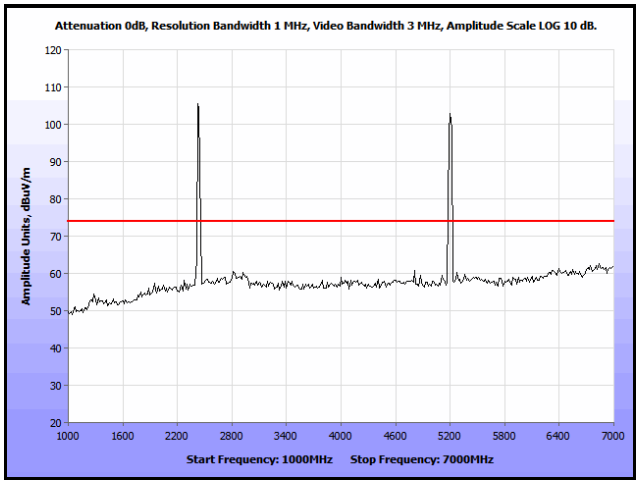
Plot 267. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2437 & 5785 MHz, 7 GHz – 18 GHz, Peak



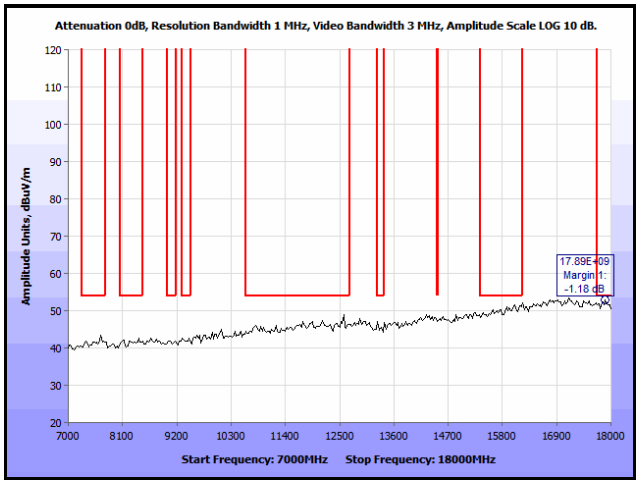
Plot 268. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 5200 MHz, 30 MHz – 1 GHz



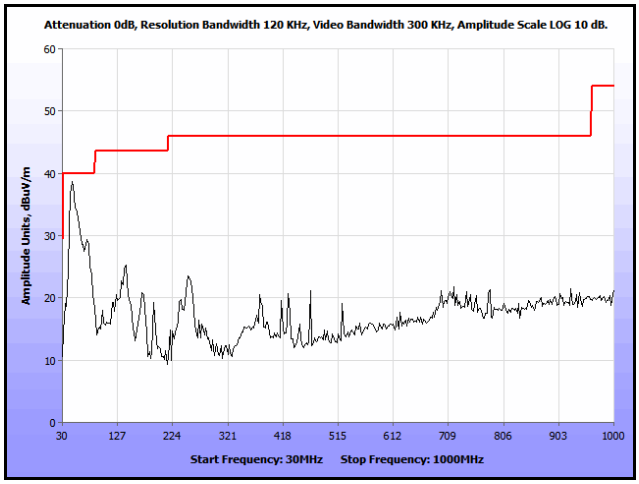
Plot 269. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 5200 MHz, 1 GHz – 7 GHz, Average



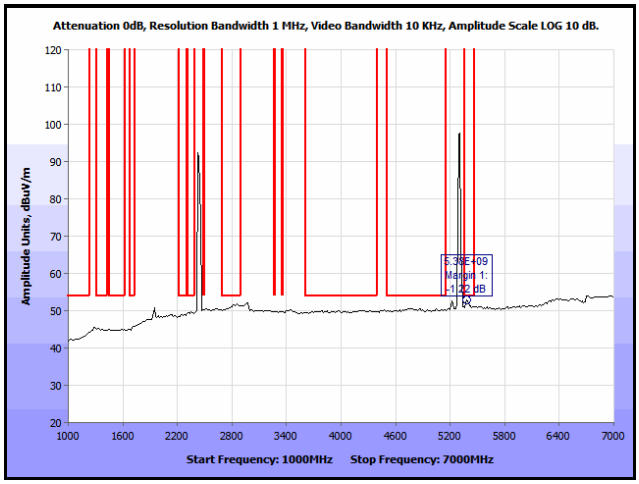
Plot 270. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 5200 MHz, 1 GHz – 7 GHz, Peak



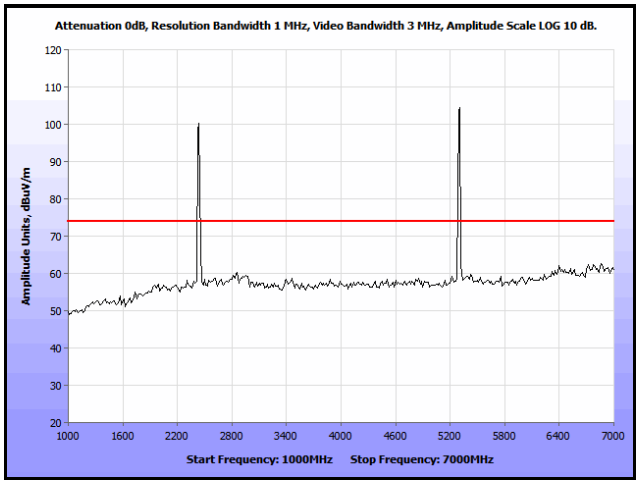
Plot 271. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 5200 MHz, 7 GHz – 18 GHz, Peak



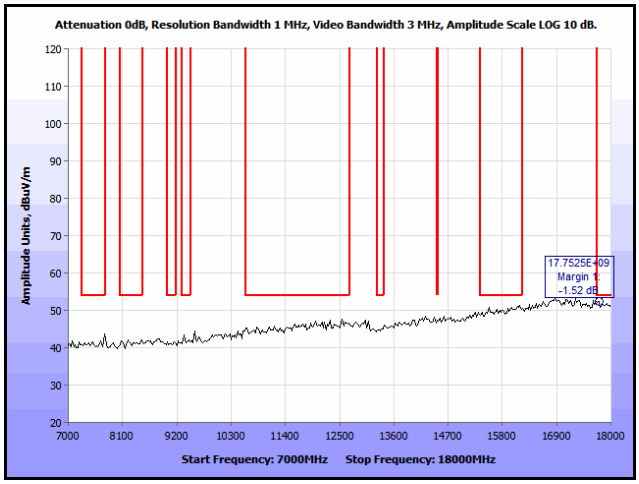
Plot 272. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 5300 MHz, 30 MHz – 1 GHz



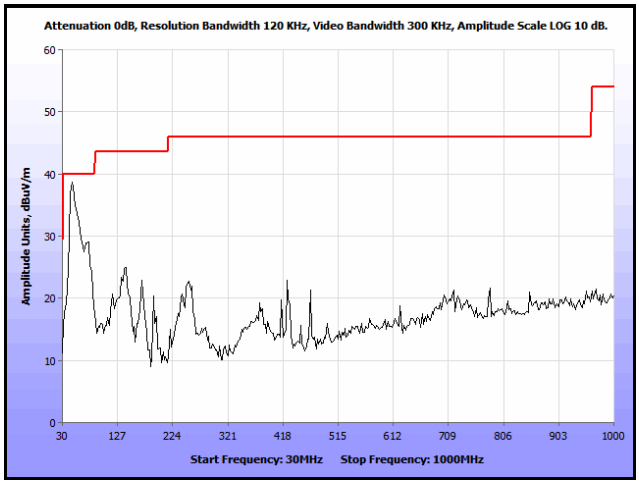
Plot 273. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 5300 MHz, 1 GHz – 7 GHz, Average



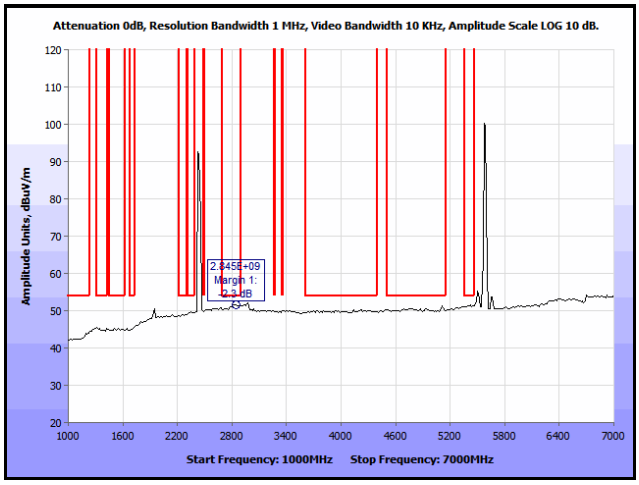
Plot 274. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 5300 MHz, 1 GHz – 7 GHz, Peak



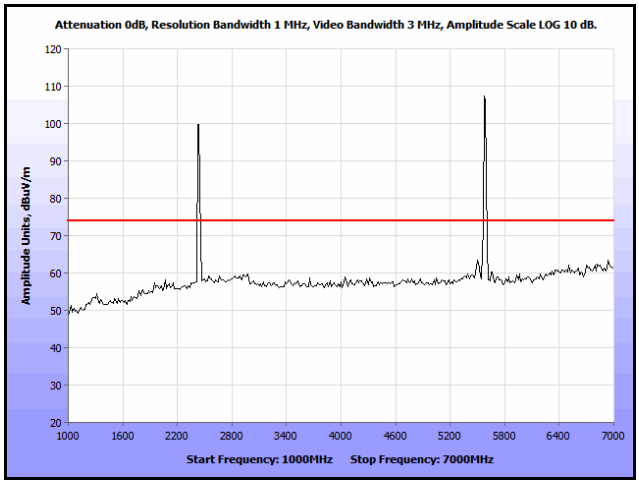
Plot 275. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 5300 MHz, 7 GHz – 18 GHz, Peak



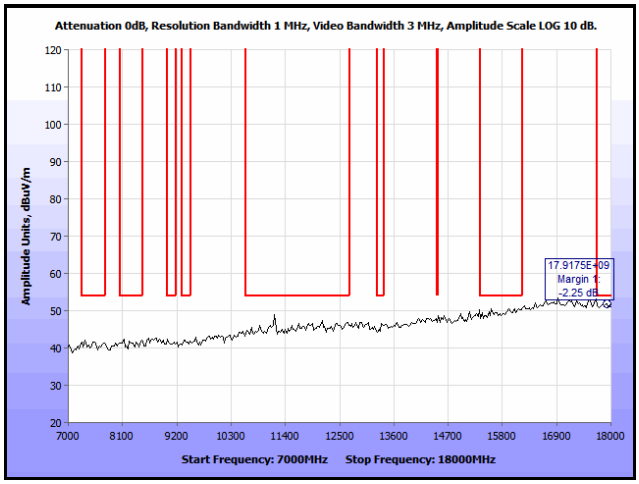
Plot 276. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 5580 MHz, 30 MHz – 1 GHz



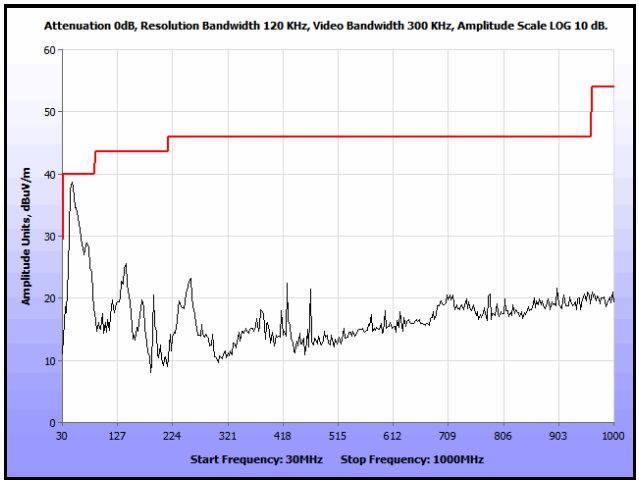
Plot 277. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 5580 MHz, 1 GHz – 7 GHz, Average



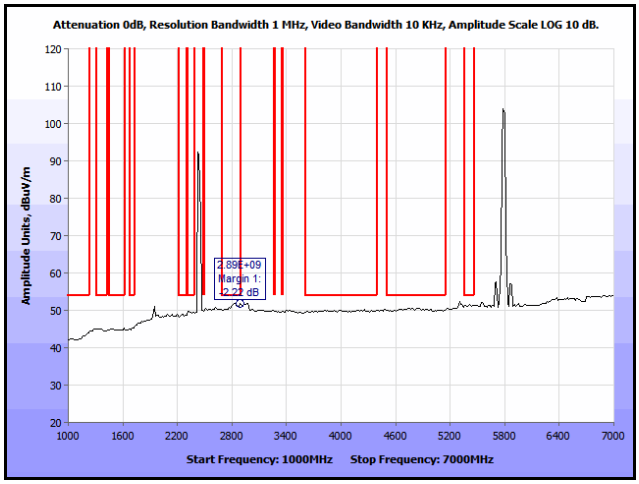
Plot 278. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 5580 MHz, 1 GHz – 7 GHz, Peak



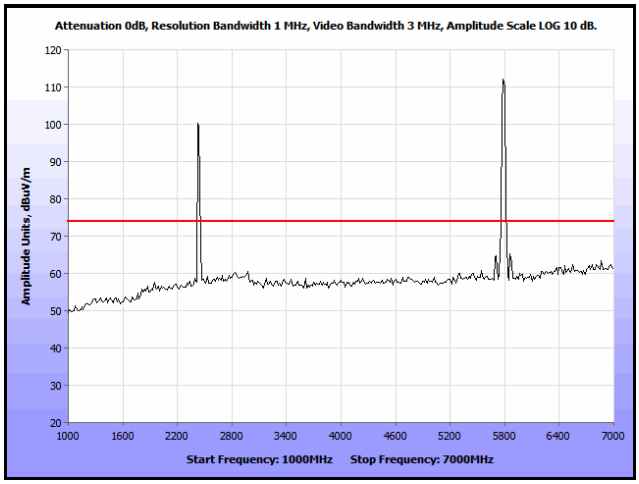
Plot 279. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 5580 MHz, 7 GHz – 18 GHz, Peak



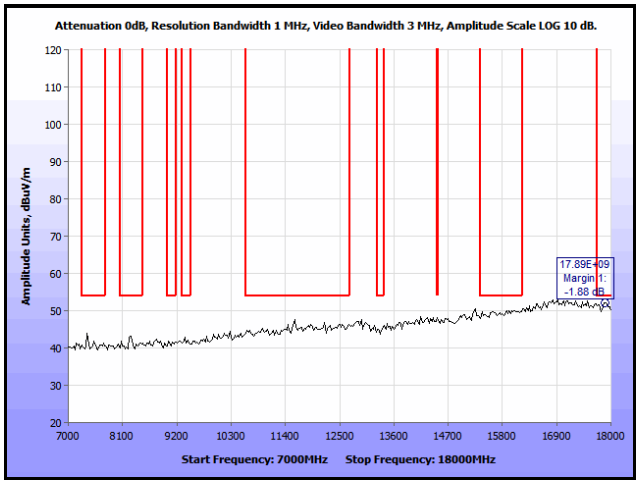
Plot 280. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 5785 MHz, 30 MHz – 1 GHz



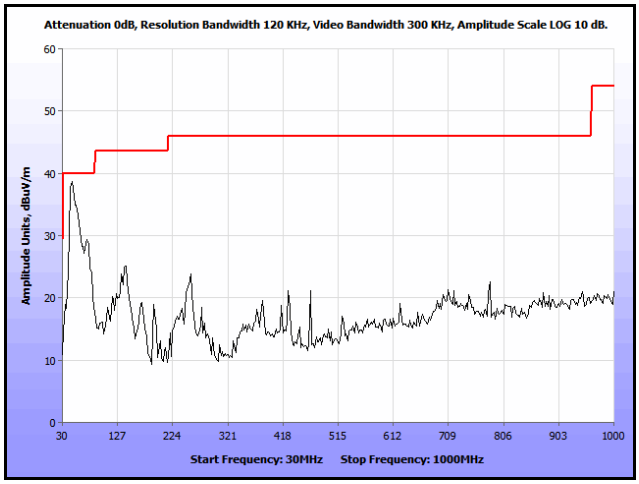
Plot 281. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 5785 MHz, 1 GHz – 7 GHz, Average



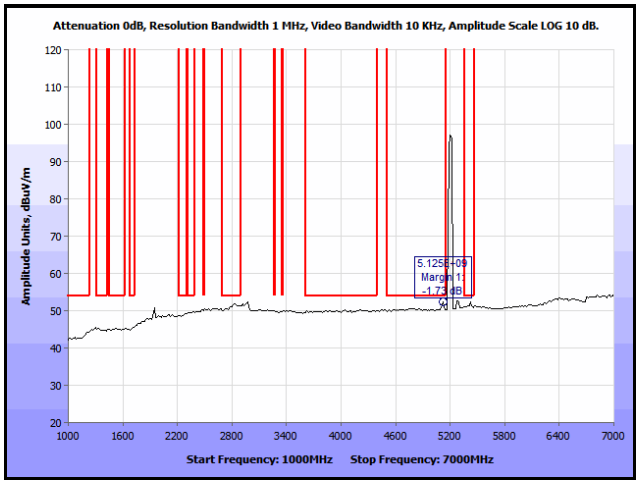
Plot 282. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 5785 MHz, 1 GHz – 7 GHz, Peak



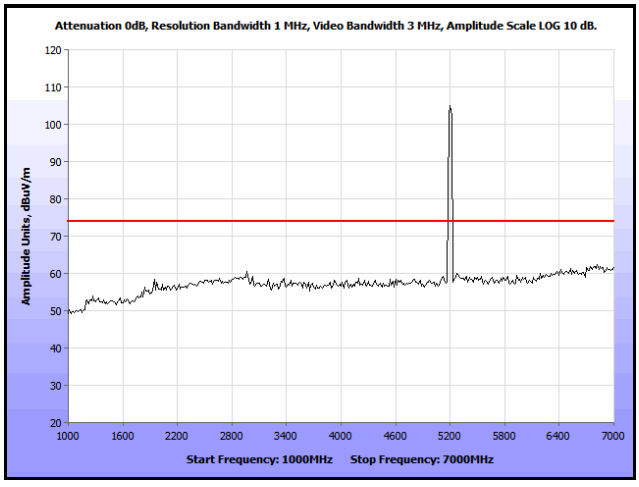
Plot 283. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 2462 & 5785 MHz, 7 GHz – 18 GHz, Peak



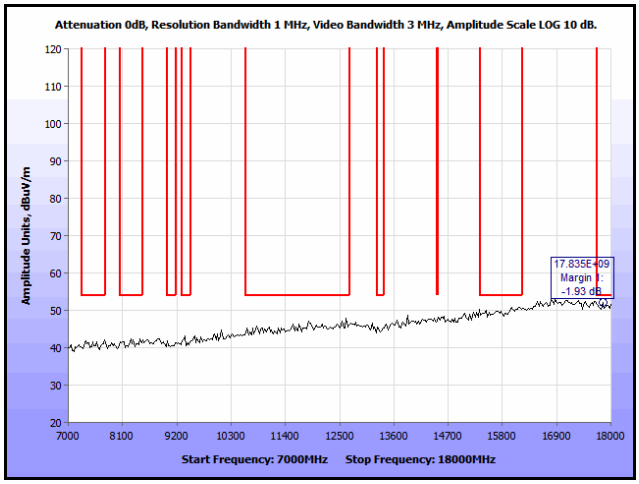
Plot 284. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5200 & 5200 MHz, 30 MHz – 1 GHz



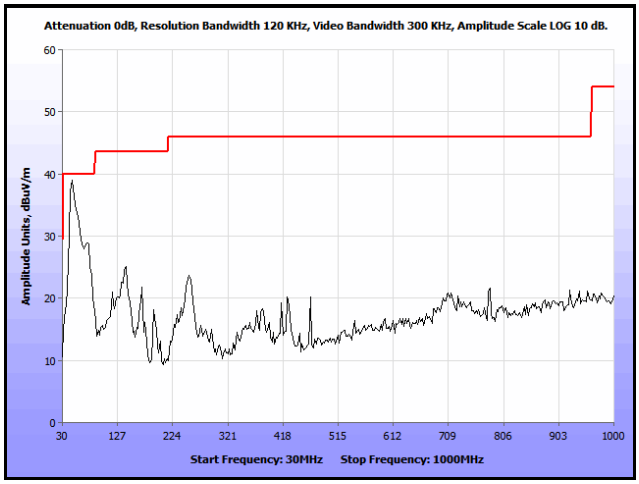
Plot 285. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5200 & 5200 MHz, 1 GHz – 7 GHz, Average



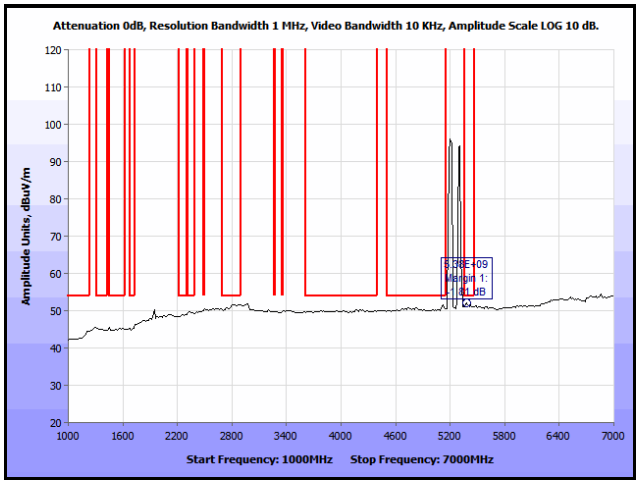
Plot 286. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5200 & 5200 MHz, 1 GHz – 7 GHz, Peak



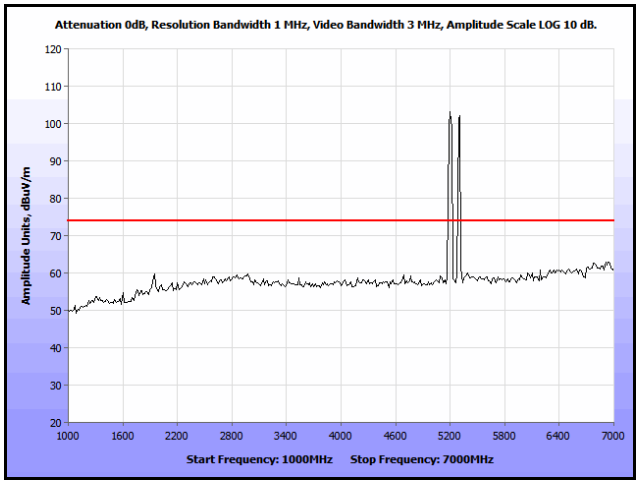
Plot 287. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5200 & 5200 MHz, 7 GHz – 18 GHz, Peak



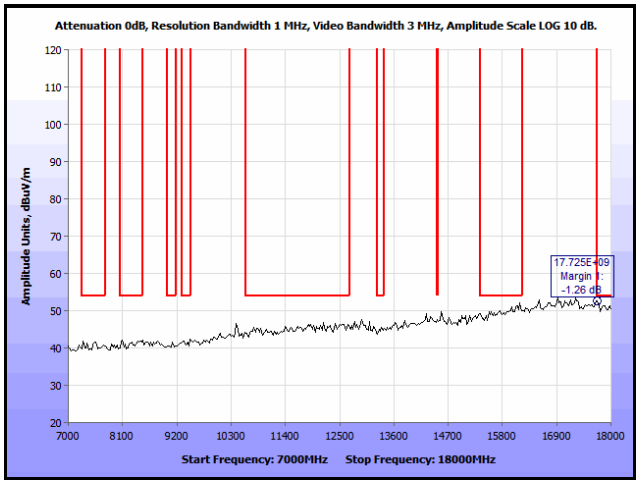
Plot 288. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5200 & 5300 MHz, 30 MHz – 1 GHz



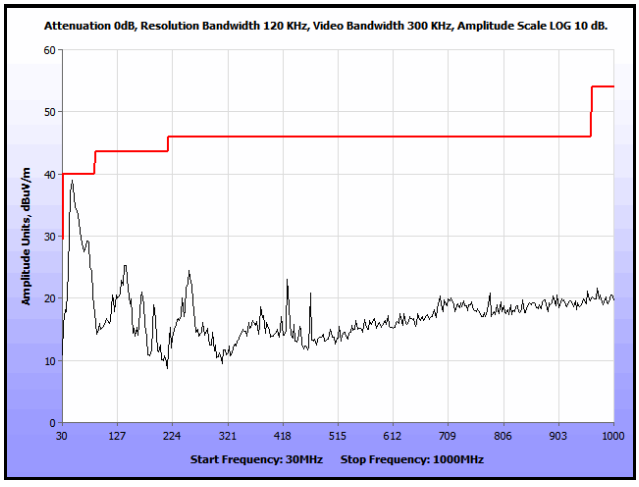
Plot 289. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5200 & 5300 MHz, 1 GHz – 7 GHz, Average



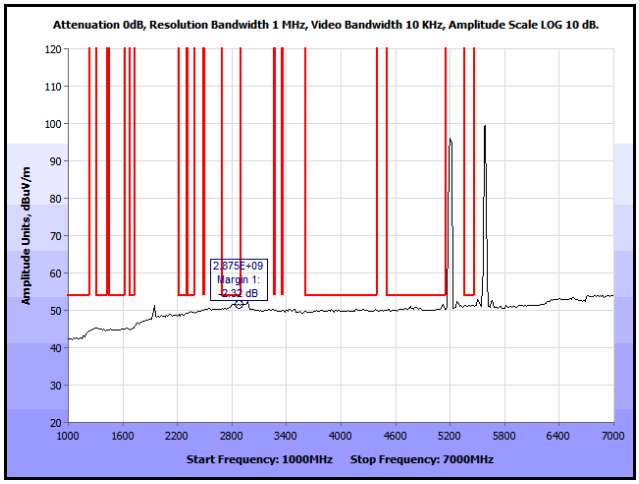
Plot 290. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5200 & 5300 MHz, 1 GHz – 7 GHz, Peak



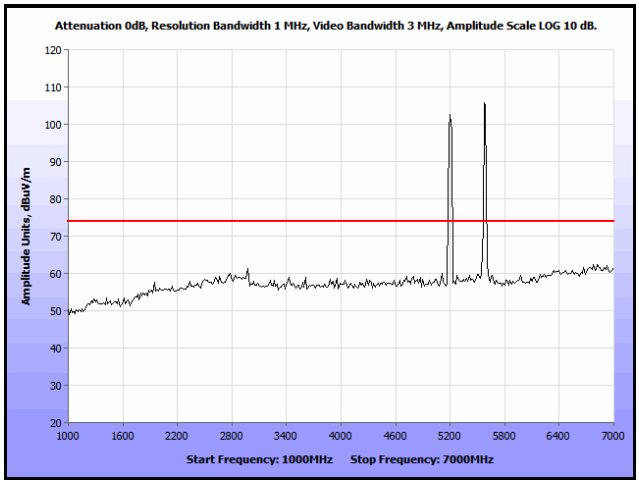
Plot 291. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5200 & 5300 MHz, 7 GHz – 18 GHz, Peak



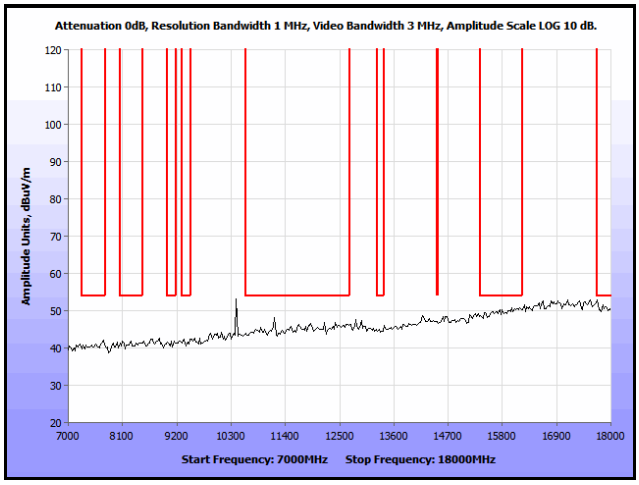
Plot 292. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5200 & 5580 MHz, 30 MHz – 1 GHz



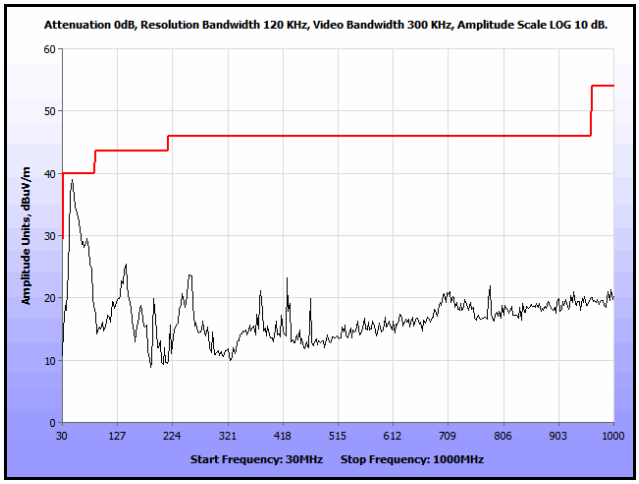
Plot 293. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5200 & 5580 MHz, 1 GHz – 7 GHz, Average



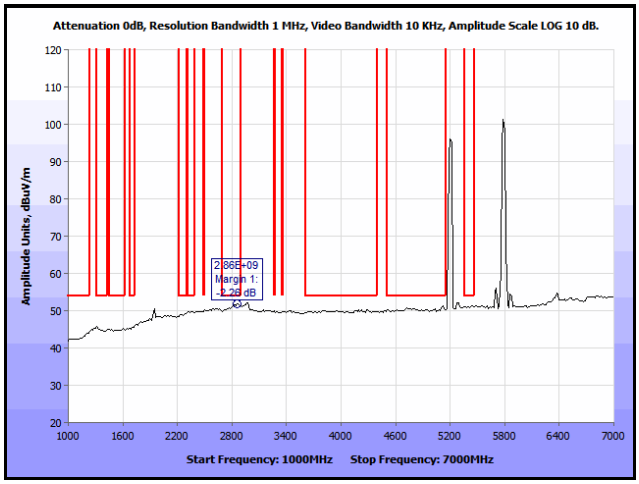
Plot 294. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5200 & 5580 MHz, 1 GHz – 7 GHz, Peak



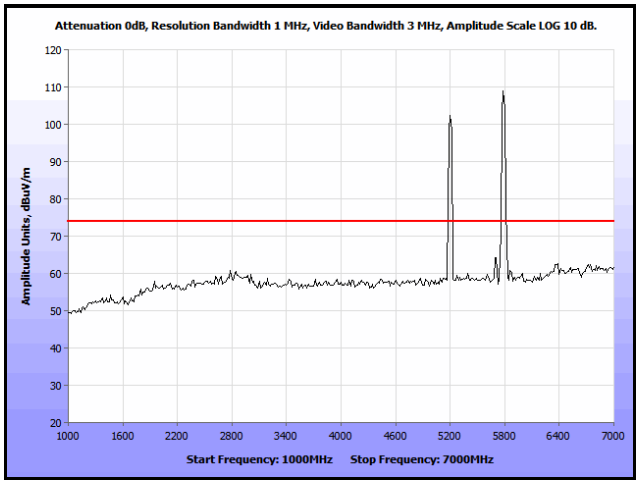
Plot 295. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5200 & 5580 MHz, 7 GHz – 18 GHz, Peak



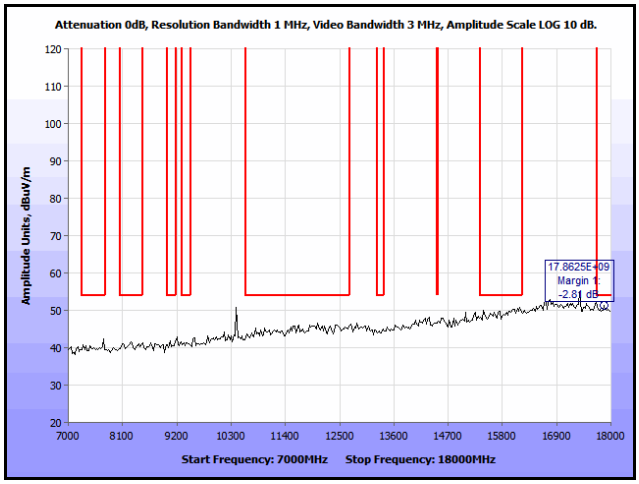
Plot 296. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5200 & 5785 MHz, 30 MHz – 1 GHz



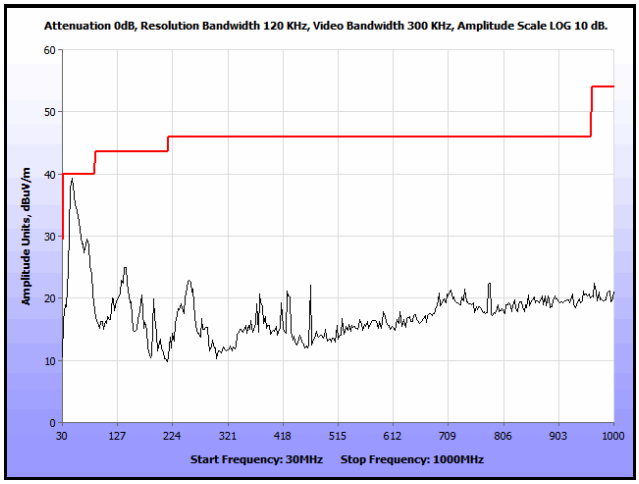
Plot 297. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5200 & 5785 MHz, 1 GHz – 7 GHz, Average



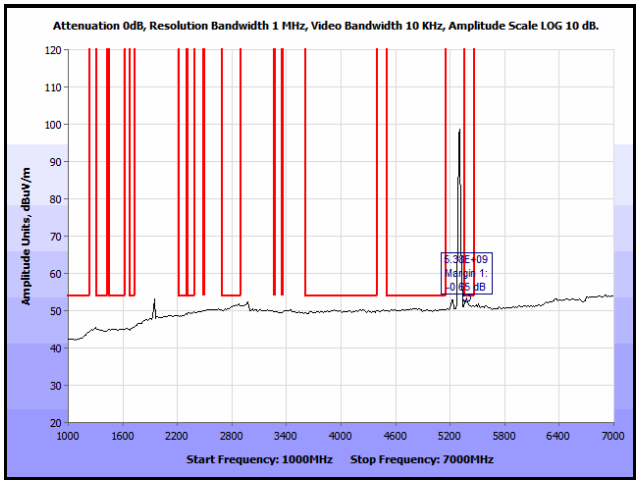
Plot 298. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5200 & 5785 MHz, 1 GHz – 7 GHz, Peak



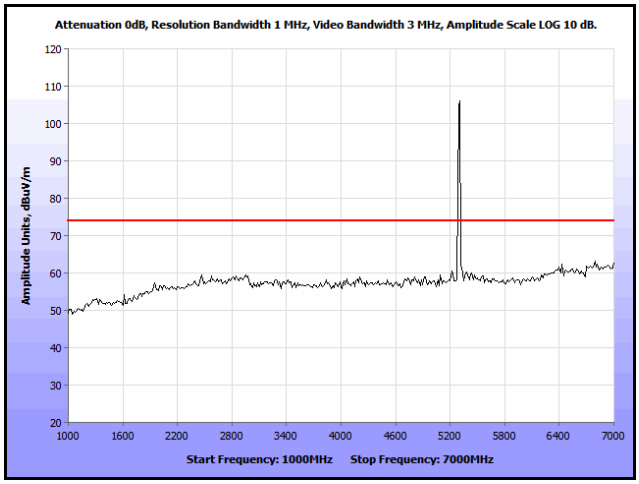
Plot 299. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5200 & 5785 MHz, 7 GHz – 18 GHz, Peak



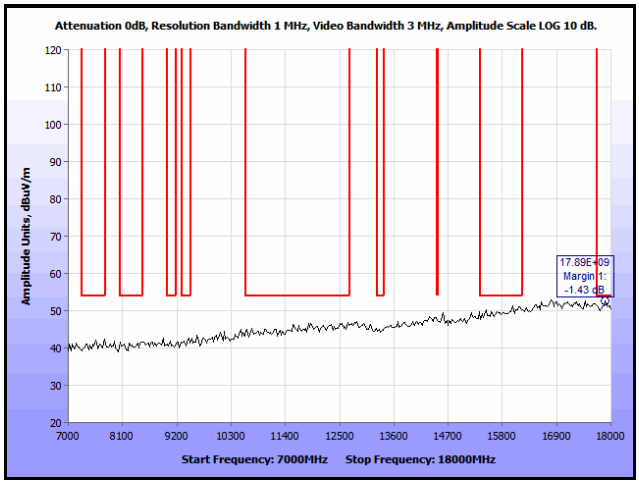
Plot 300. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5300 & 5300 MHz, 30 MHz – 1 GHz



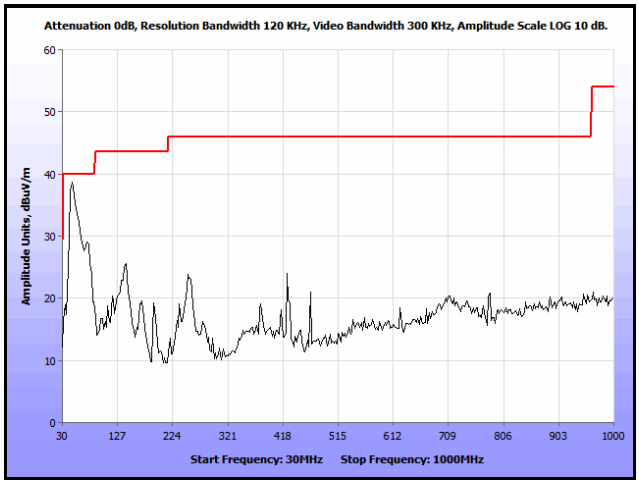
Plot 301. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5300 & 5300 MHz, 1 GHz – 7 GHz, Average



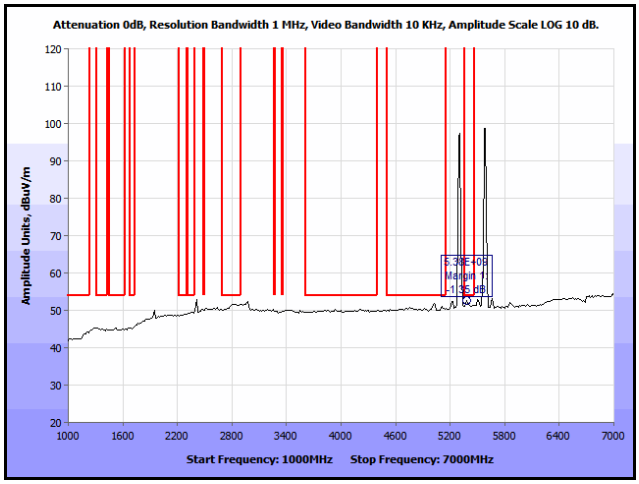
Plot 302. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5300 & 5300 MHz, 1 GHz – 7 GHz, Peak



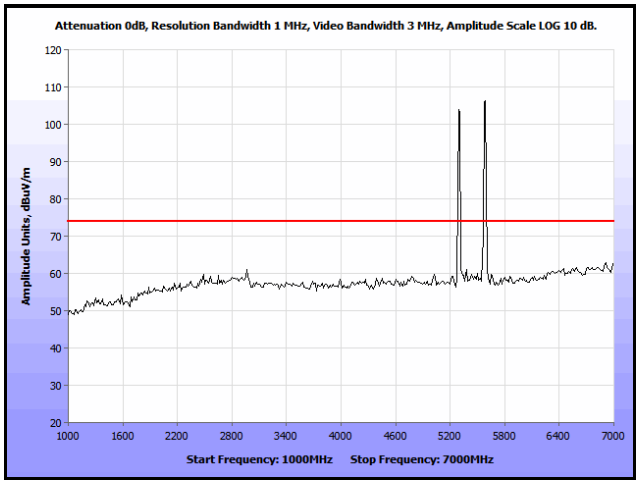
Plot 303. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5300 & 5300 MHz, 7 GHz – 18 GHz, Peak



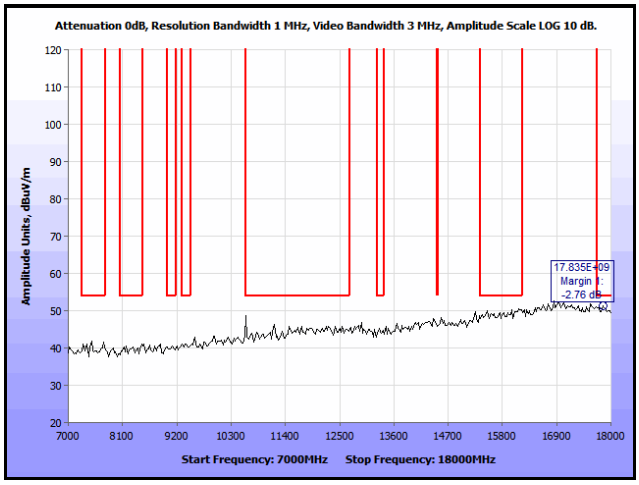
Plot 304. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5300 & 5580 MHz, 30 MHz – 1 GHz



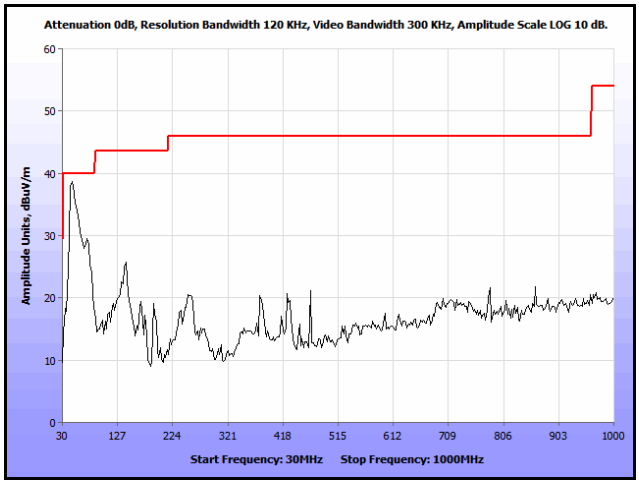
Plot 305. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5300 & 5580 MHz, 1 GHz – 7 GHz, Average



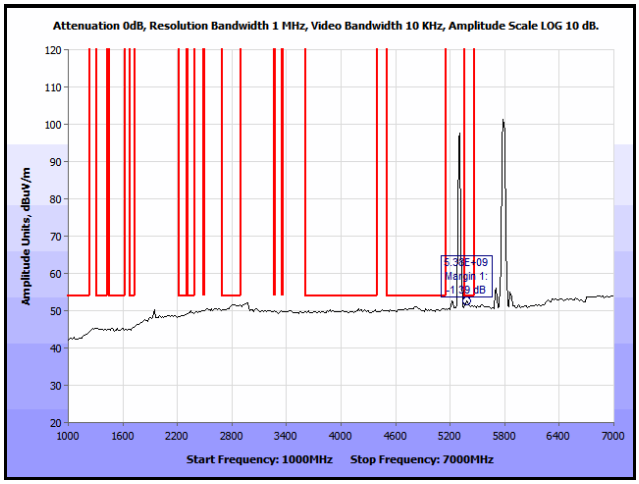
Plot 306. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5300 & 5580 MHz, 1 GHz – 7 GHz, Peak



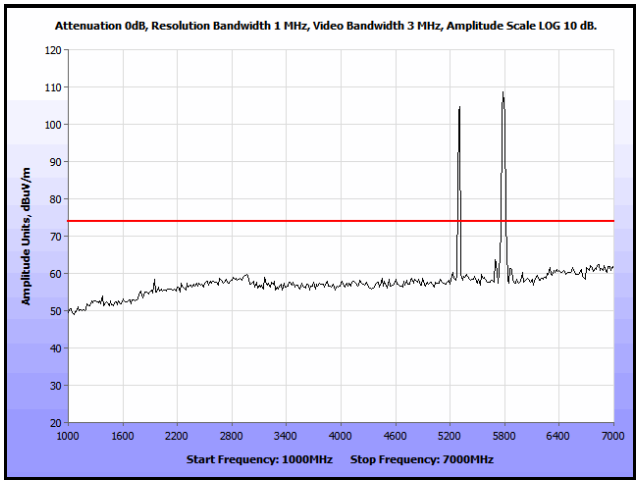
Plot 307. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5300 & 5580 MHz, 7 GHz – 18 GHz, Peak



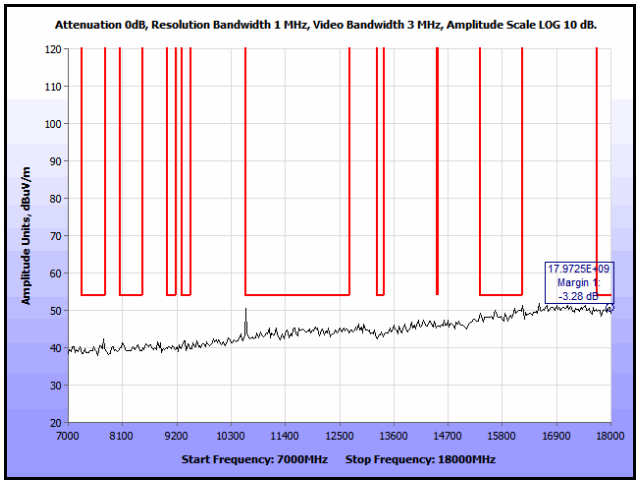
Plot 308. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5300 & 5785 MHz, 30 MHz – 1 GHz



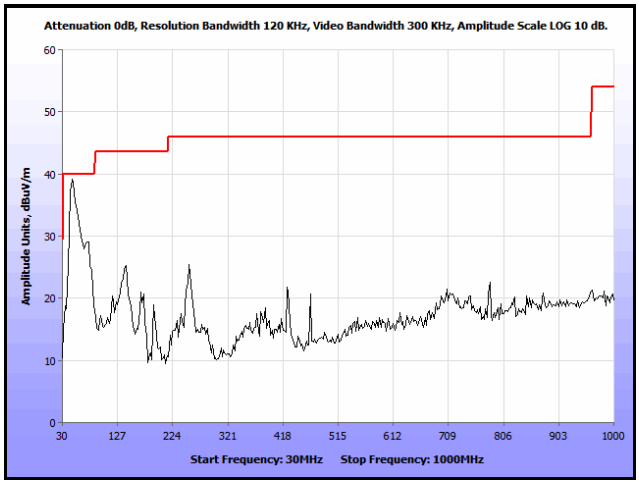
Plot 309. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5300 & 5785 MHz, 1 GHz – 7 GHz, Average



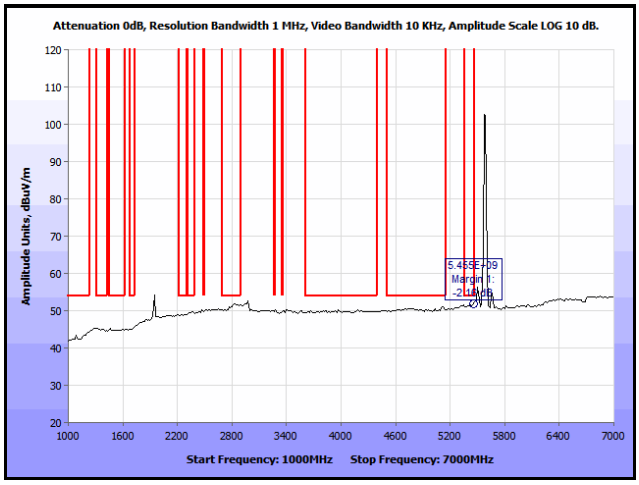
Plot 310. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5300 & 5785 MHz, 1 GHz – 7 GHz, Peak



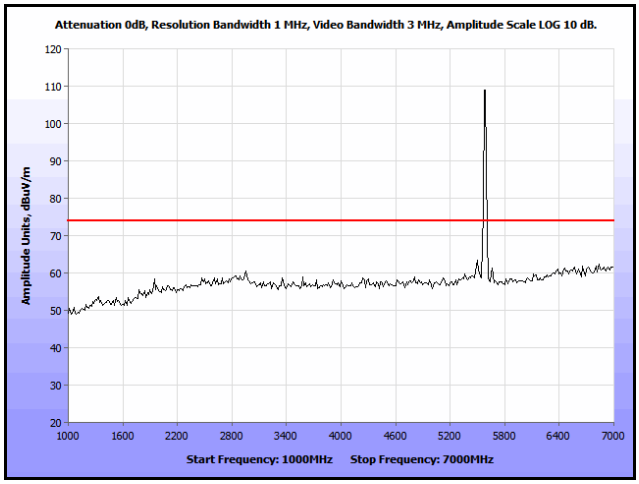
Plot 311. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5300 & 5785 MHz, 7 GHz – 18 GHz, Peak



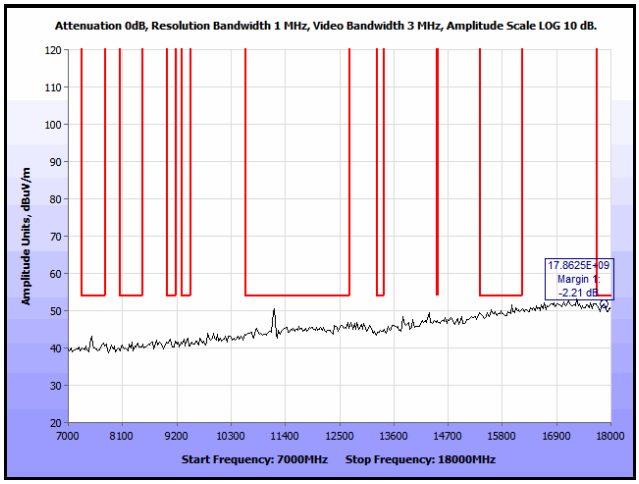
Plot 312. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5580 & 5580 MHz, 30 MHz – 1 GHz



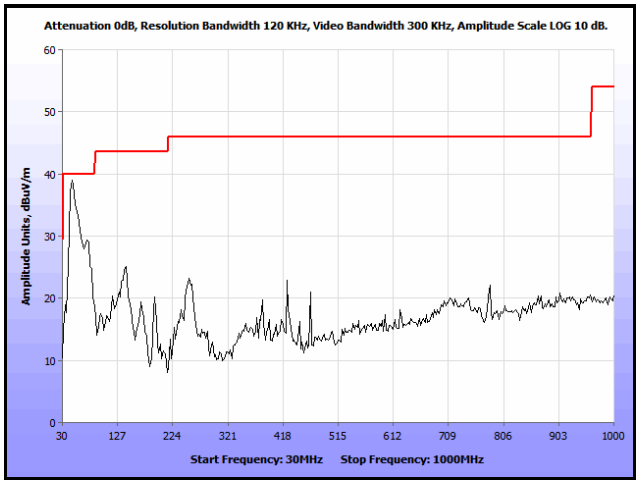
Plot 313. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5580 & 5580 MHz, 1 GHz – 7 GHz, Average



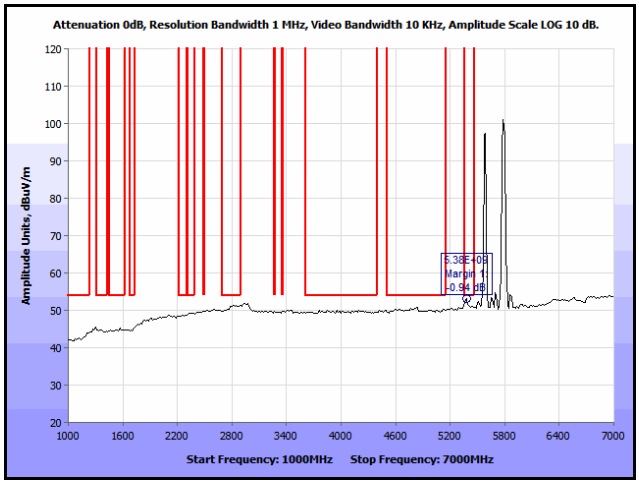
Plot 314. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5580 & 5580 MHz, 1 GHz – 7 GHz, Peak



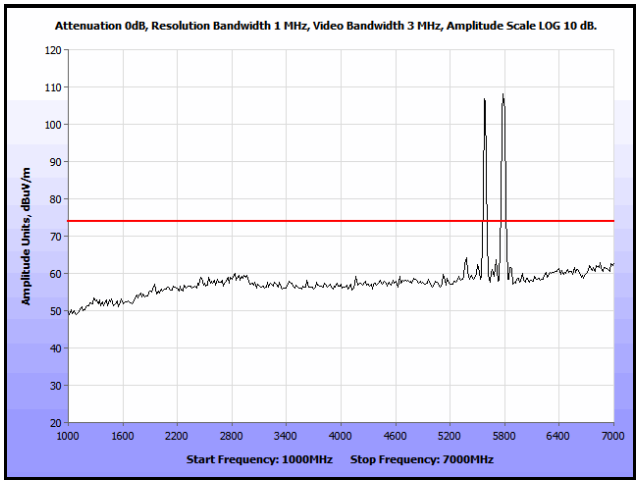
Plot 315. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5580 & 5580 MHz, 7 GHz – 18 GHz, Peak



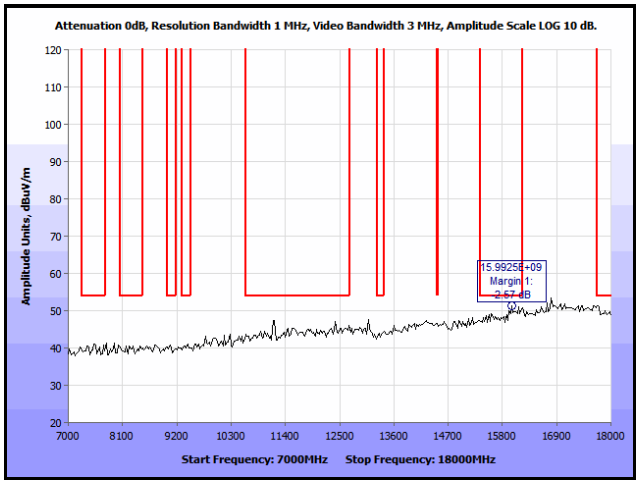
Plot 316. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5580 & 5785 MHz, 30 MHz – 1 GHz



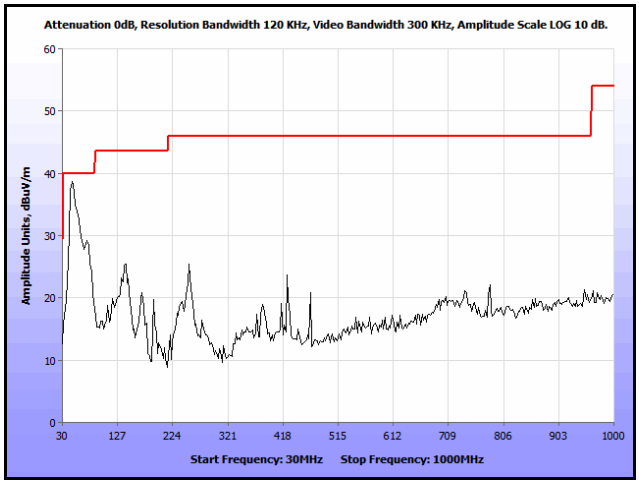
Plot 317. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5580 & 5785 MHz, 1 GHz – 7 GHz, Average



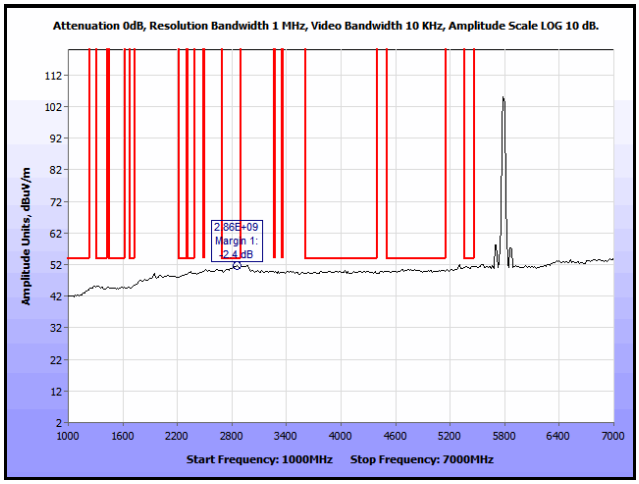
Plot 318. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5580 & 5785 MHz, 1 GHz – 7 GHz, Peak



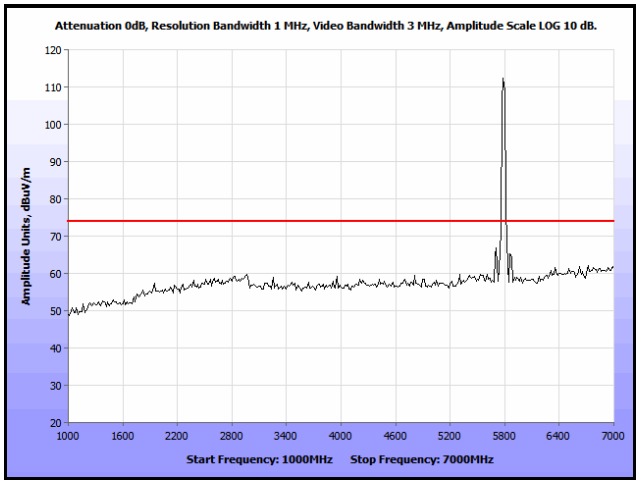
Plot 319. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5580 & 5785 MHz, 7 GHz – 18 GHz, Peak



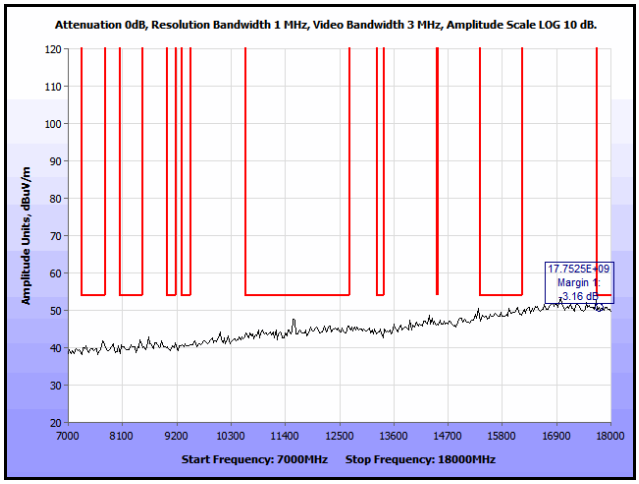
Plot 320. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5785 & 5785 MHz, 30 MHz – 1 GHz



Plot 321. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5785 & 5785 MHz, 1 GHz – 7 GHz, Average



Plot 322. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5785 & 5785 MHz, 1 GHz – 7 GHz, Peak



Plot 323. Co-location, Radiated Spurious Emissions, PIFA, 802.11n 20 MHz, 5785 & 5785 MHz, 7 GHz – 18 GHz, Peak

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(d) RF Conducted Spurious Emissions Requirements and Band Edge

Test Requirement: **15.247(d)** In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Test Procedure: For intentional radiators with a digital device portion which operates below 10 GHz, the spectrum was investigated as per §15.33(a)(1) and §15.33(a)(4); i.e., the lowest RF signal generated or used in the device up to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

The EUT was connected from the SMA connector to a spectrum analyzer. Testing was performed on Low, Mid and High Channels. A resolution bandwidth of 100kHz and video bandwidth of 300kHz were utilized.

For conducted band edge, a delta measurement was taken from the peak of the fundamental to the Band edge then compared to the limit.

See following pages for detailed test results with RF Conducted Spurious Emissions.

Test Results: The EUT was compliant with the Conducted Spurious Emission limits of **§15.247(d)**.

Test Engineer(s): Jonathan Chao

Test Date(s): 02/18/13

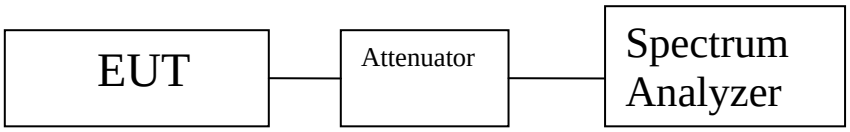
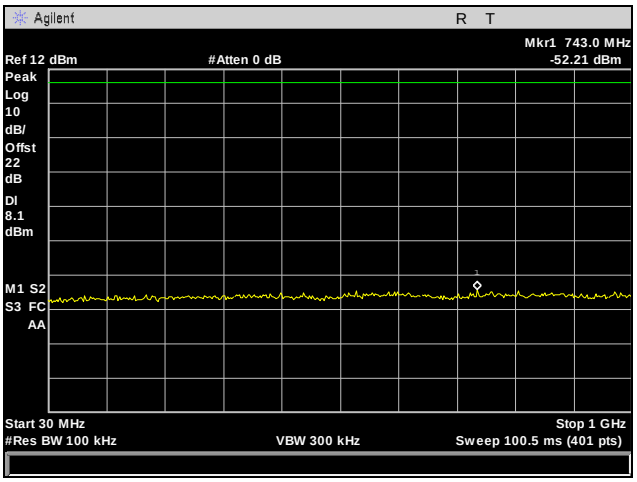
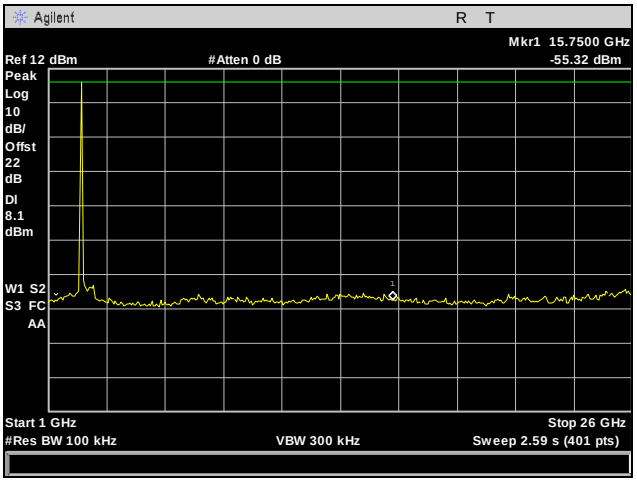


Figure 4. Block Diagram, Conducted Spurious Emissions Test Setup

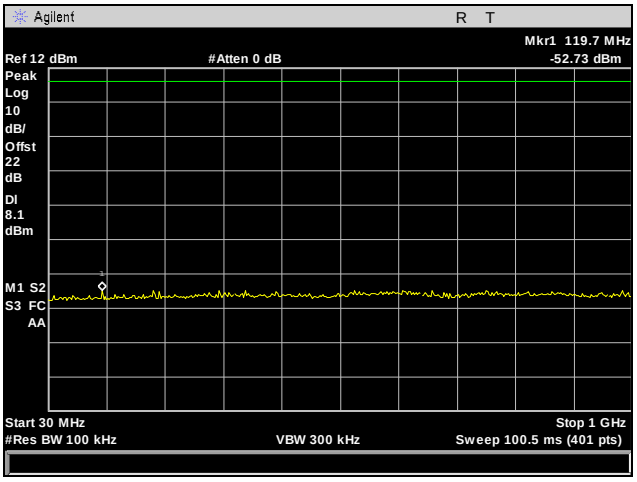
Conducted Spurious Emissions Test Results, 802.11b, 2.4 GHz



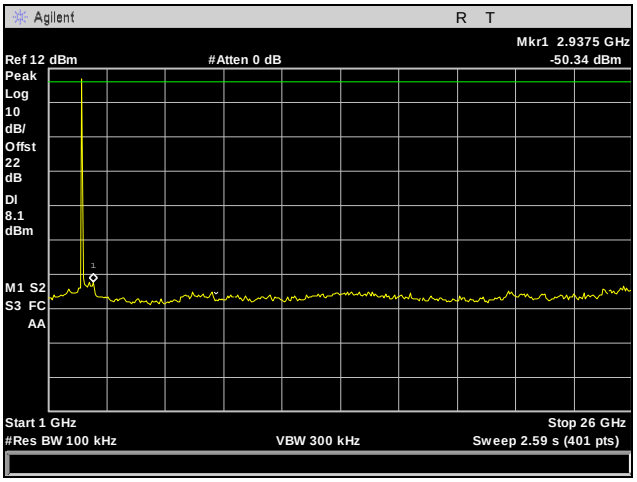
Plot 324. Conducted Spurious Emissions, 802.11b, 2412 MHz, Low Channel, 30 MHz - 1 GHz



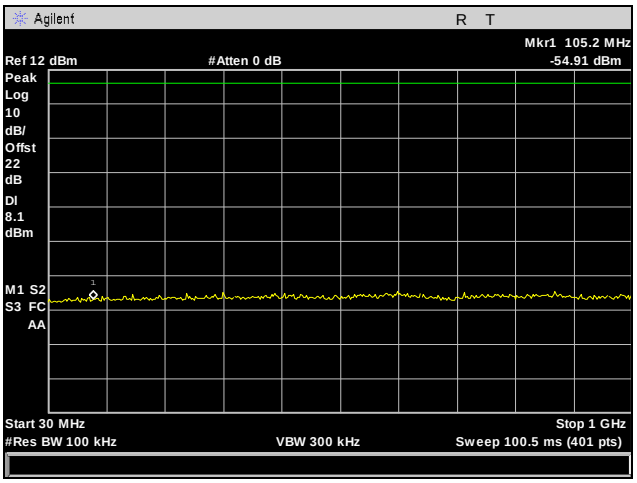
Plot 325. Conducted Spurious Emissions, 802.11b, 2412 MHz, Low Channel, 1 GHz - 26 GHz



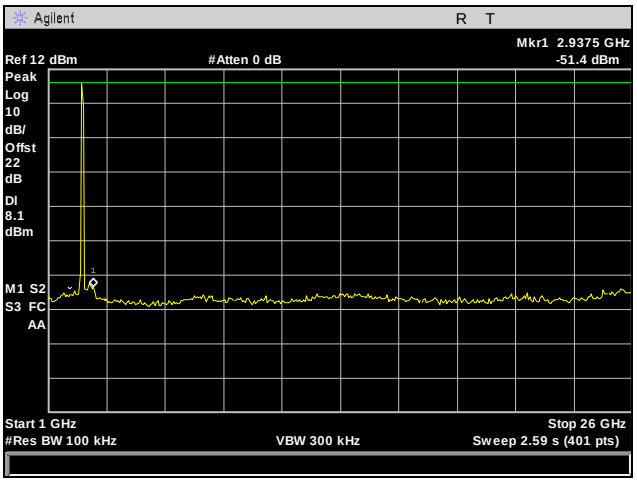
Plot 326. Conducted Spurious Emissions, 802.11b, 2437 MHz, Mid Channel, 30 MHz - 1 GHz



Plot 327. Conducted Spurious Emissions, 802.11b, 2437 MHz, Mid Channel, 1 GHz - 26 GHz

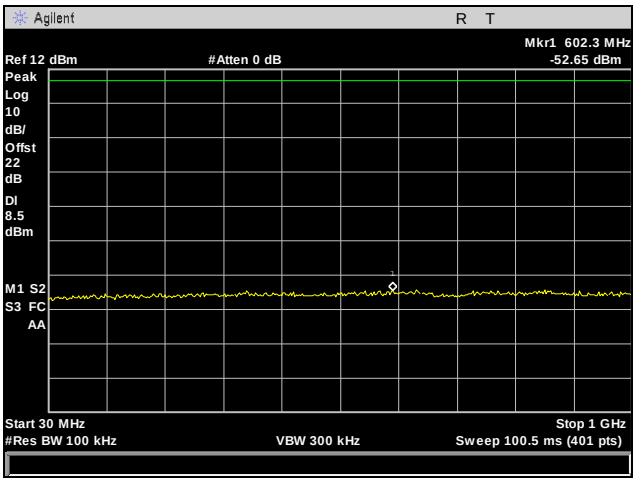


Plot 328. Conducted Spurious Emissions, 802.11b, 2462 MHz, High Channel, 30 MHz - 1 GHz

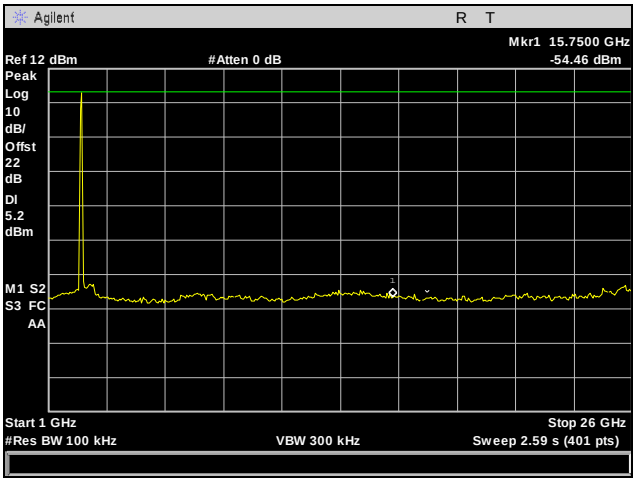


Plot 329. Conducted Spurious Emissions, 802.11b, 2462 MHz, High Channel, 1 GHz - 26 GHz

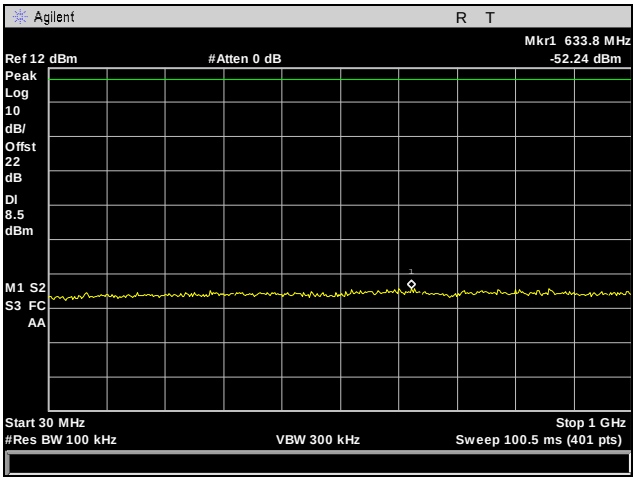
Conducted Spurious Emissions Test Results, 802.11g, 2.4 GHz



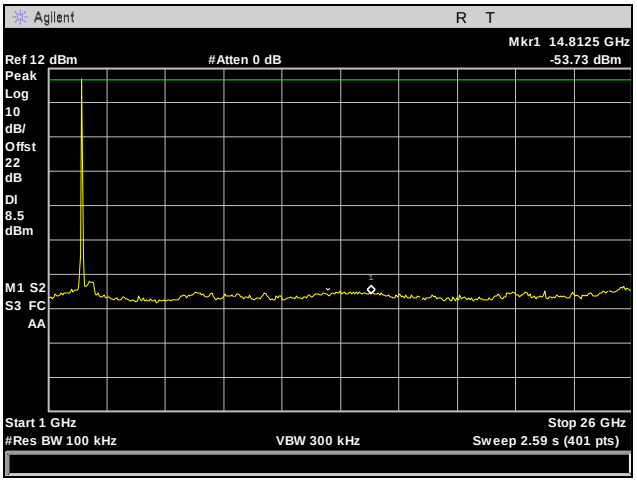
Plot 330. Conducted Spurious Emissions, 802.11g, 2412 MHz, Low Channel, 30 MHz - 1 GHz



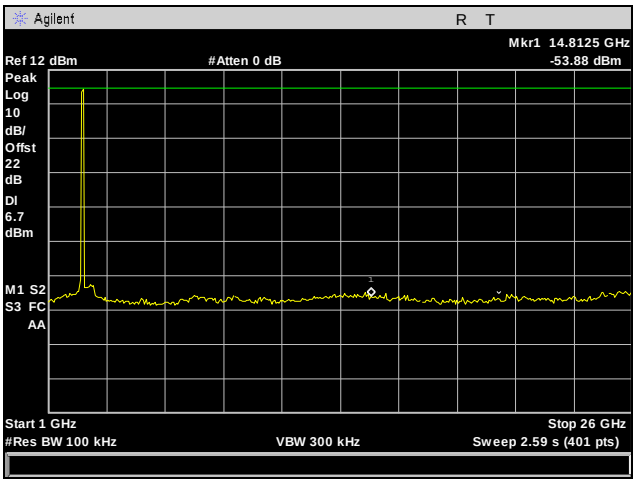
Plot 331. Conducted Spurious Emissions, 802.11g, 2412 MHz, Low Channel, 1 GHz - 26 GHz



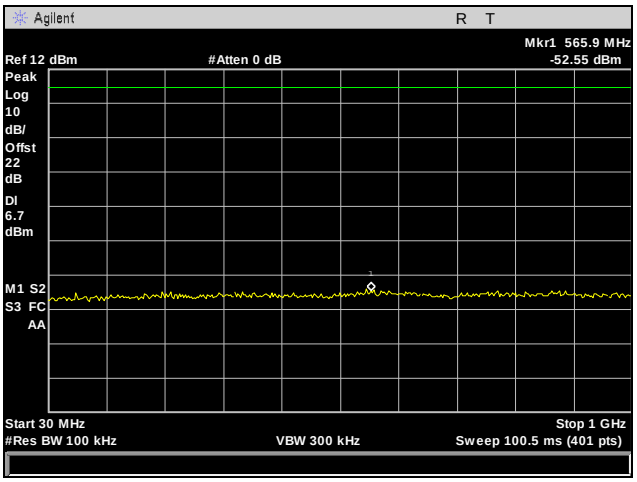
Plot 332. Conducted Spurious Emissions, 802.11g, 2437 MHz, Mid Channel, 30 MHz - 1 GHz



Plot 333. Conducted Spurious Emissions, 802.11g, 2437 MHz, Mid Channel, 1 GHz - 26 GHz

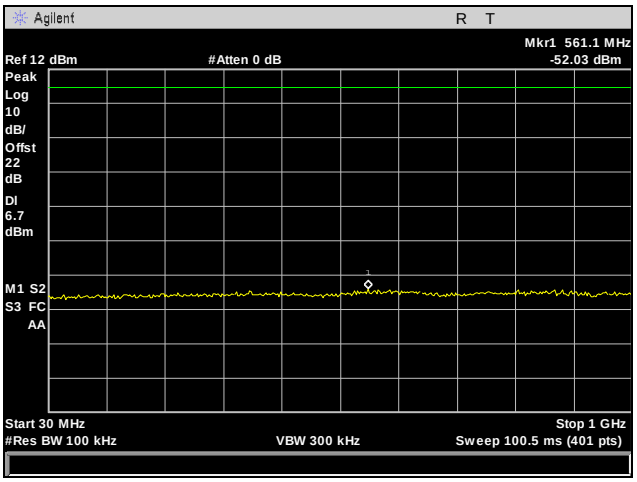


Plot 334. Conducted Spurious Emissions, 802.11g, 2462 MHz, High Channel, 30 MHz - 1 GHz

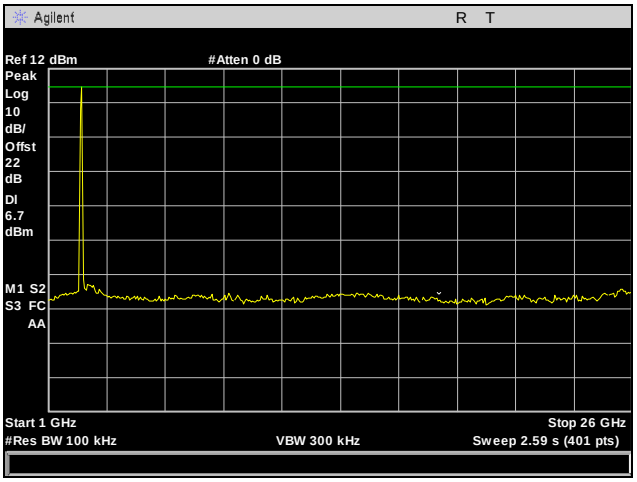


Plot 335. Conducted Spurious Emissions, 802.11g, 2462 MHz, High Channel, 1 GHz - 26 GHz

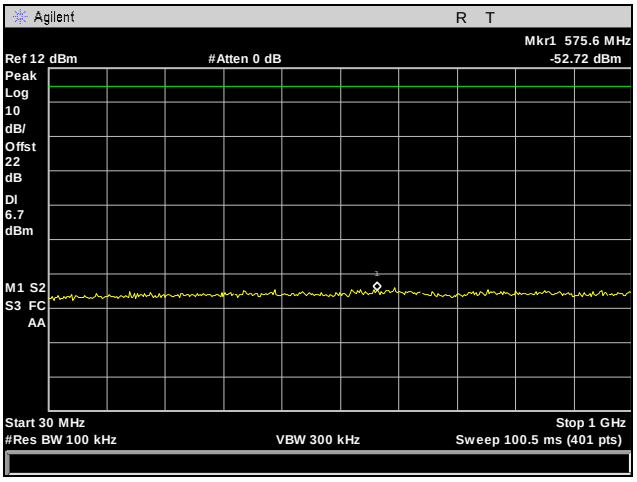
Conducted Spurious Emissions Test Results, 802.11n 20 MHz, Port 1, 2.4 GHz



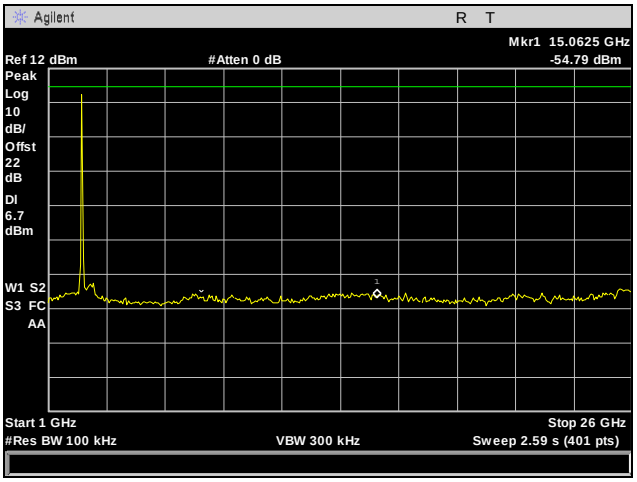
Plot 336. Conducted Spurious Emissions, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 1, 30 MHz, 1 GHz



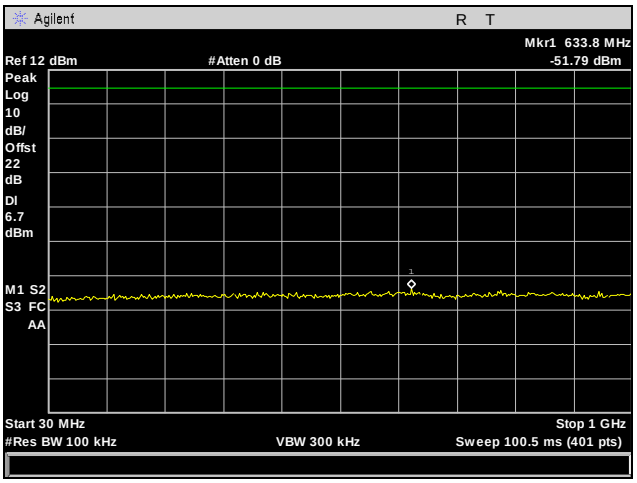
Plot 337. Conducted Spurious Emissions, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 1, 1 GHz - 26 GHz



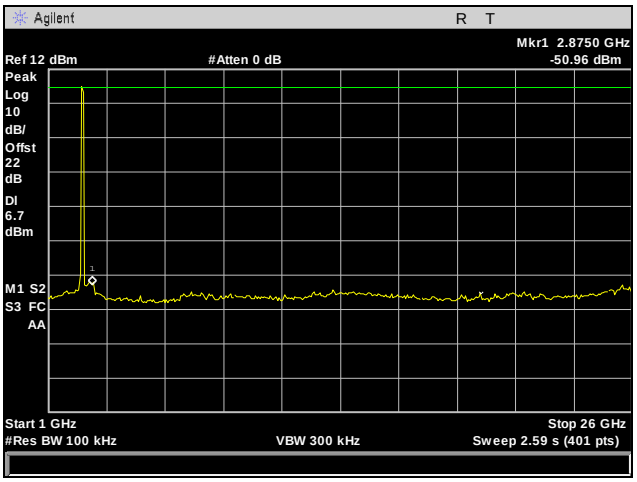
Plot 338. Conducted Spurious Emissions, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 1, 30 MHz, 1 GHz



Plot 339. Conducted Spurious Emissions, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 1, 1 GHz - 26 GHz

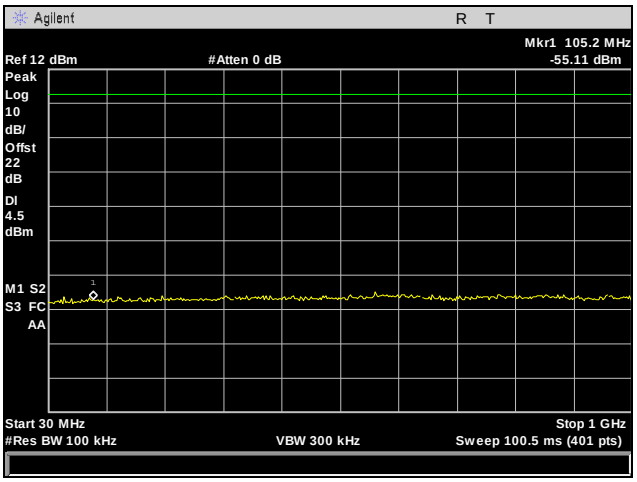


Plot 340. Conducted Spurious Emissions, 802.11n 20 MHz, 2462 MHz, High Channel, Port 1, 30 MHz, 1 GHz

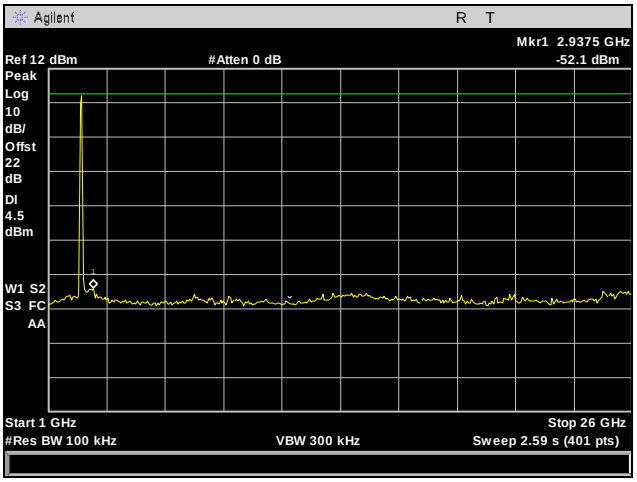


Plot 341. Conducted Spurious Emissions, 802.11n 20 MHz, 2462 MHz, High Channel, Port 1, 1 GHz - 26 GHz

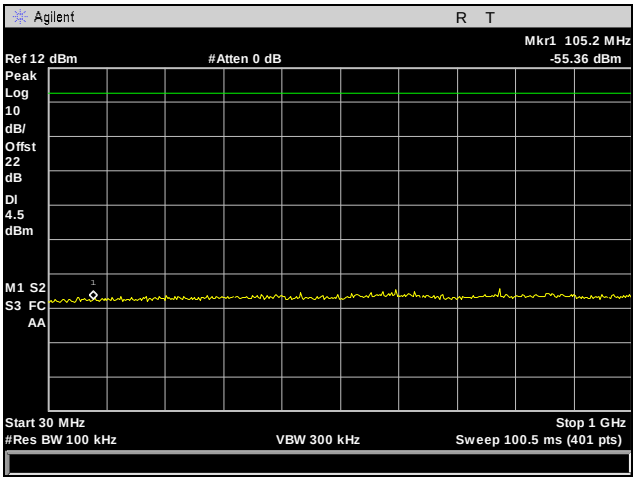
Conducted Spurious Emissions Test Results, 802.11n 20 MHz, Port 2, 2.4 GHz



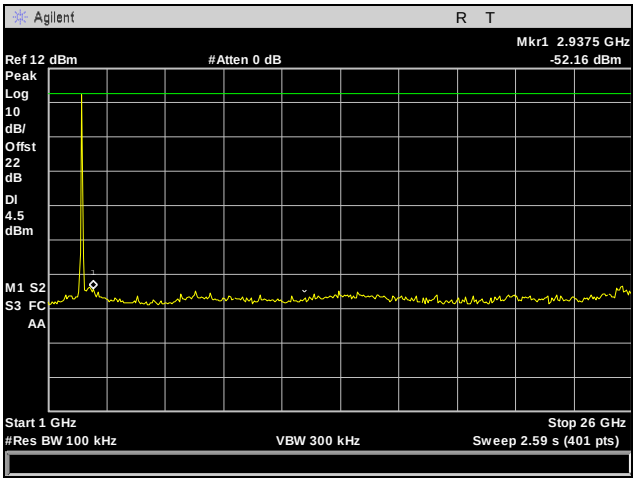
Plot 342. Conducted Spurious Emissions, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 2, 30 MHz, 1 GHz



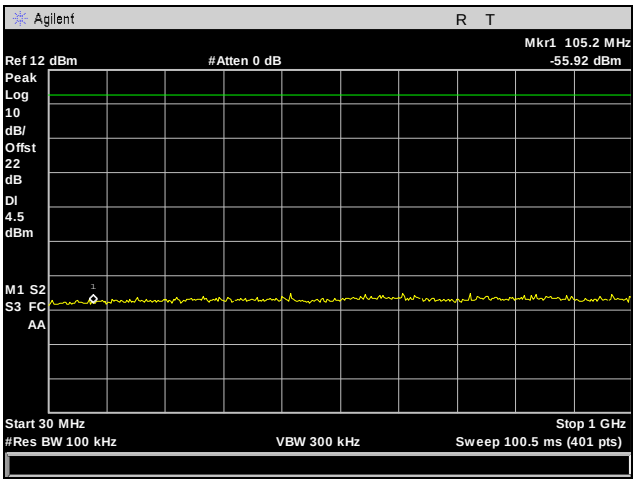
Plot 343. Conducted Spurious Emissions, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 2, 1 GHz - 26 GHz



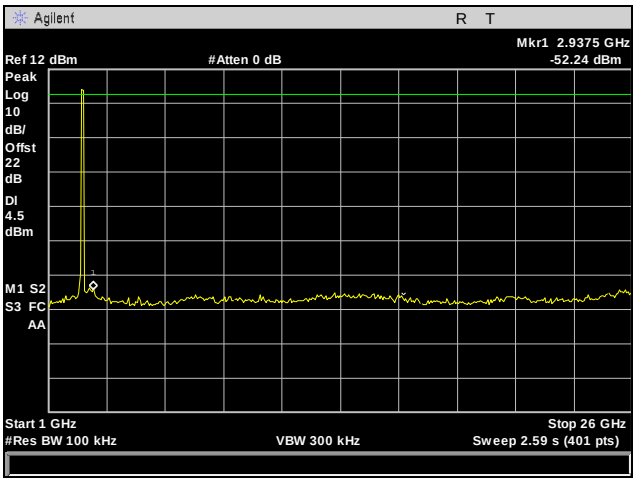
Plot 344. Conducted Spurious Emissions, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 2, 30 MHz, 1 GHz



Plot 345. Conducted Spurious Emissions, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 2, 1 GHz - 26 GHz

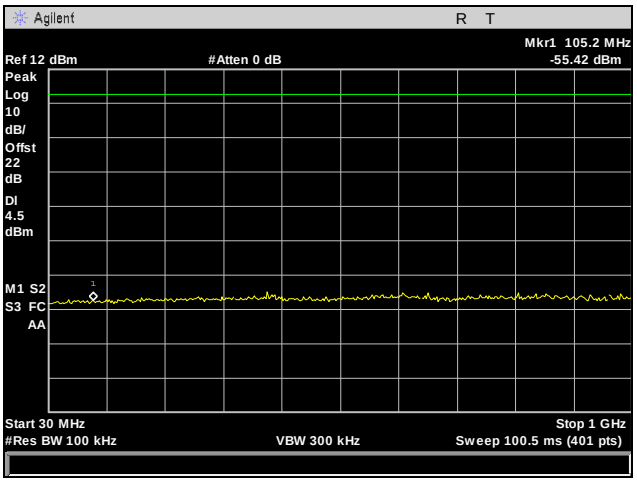


Plot 346. Conducted Spurious Emissions, 802.11n 20 MHz, 2462 MHz, High Channel, Port 2, 30 MHz, 1 GHz

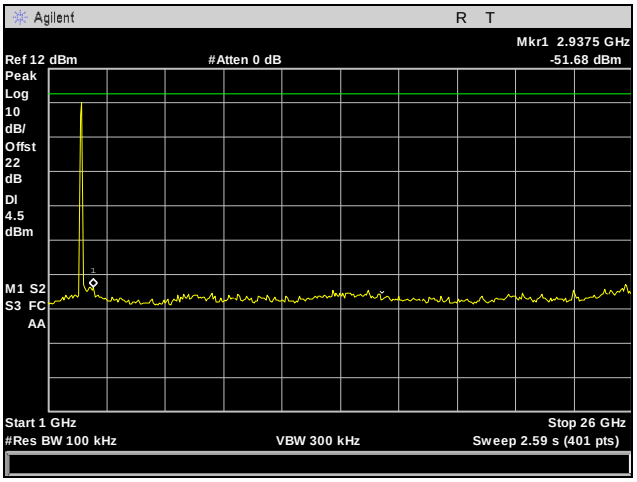


Plot 347. Conducted Spurious Emissions, 802.11n 20 MHz, 2462 MHz, High Channel, Port 2, 1 GHz - 26 GHz

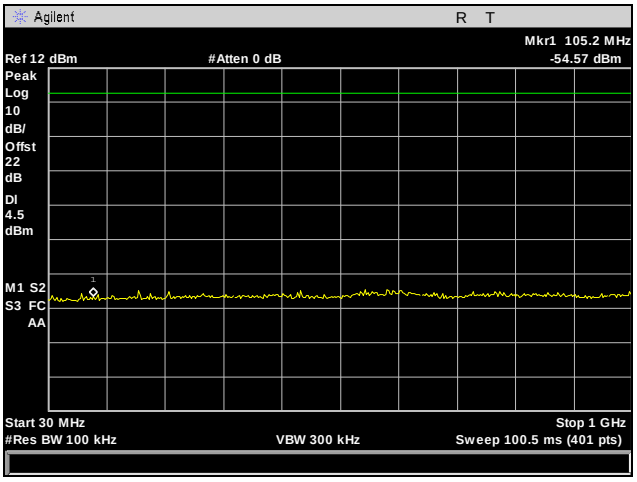
Conducted Spurious Emissions Test Results, 802.11n 20 MHz, Port 3, 2.4 GHz



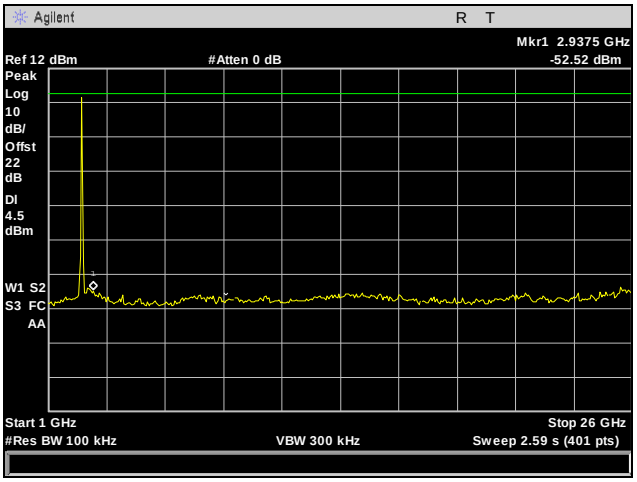
Plot 348. Conducted Spurious Emissions, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 3, 30 MHz, 1 GHz



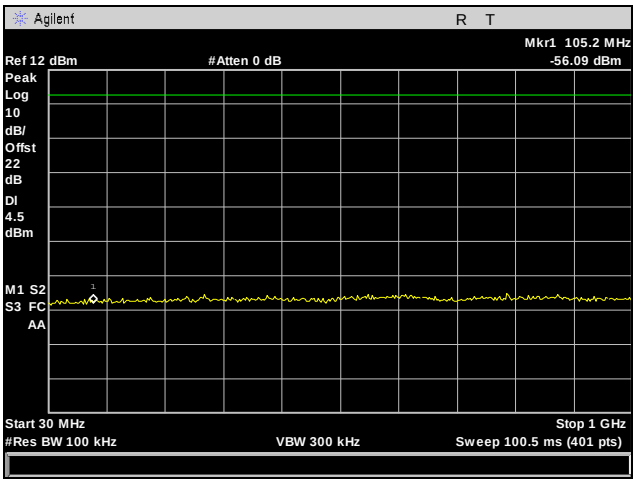
Plot 349. Conducted Spurious Emissions, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 3, 1 GHz - 26 GHz



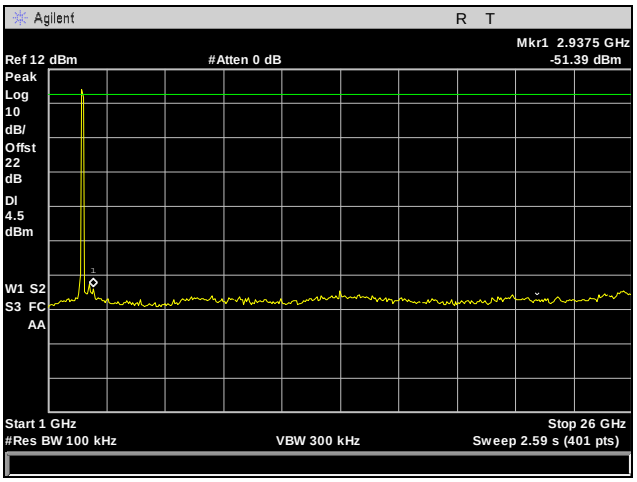
Plot 350. Conducted Spurious Emissions, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 3, 30 MHz, 1 GHz



Plot 351. Conducted Spurious Emissions, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 3, 1 GHz - 26 GHz

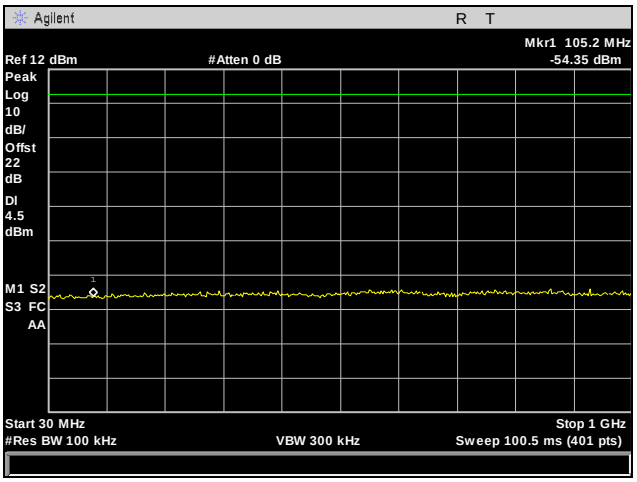


Plot 352. Conducted Spurious Emissions, 802.11n 20 MHz, 2462 MHz, High Channel, Port 3, 30 MHz, 1 GHz

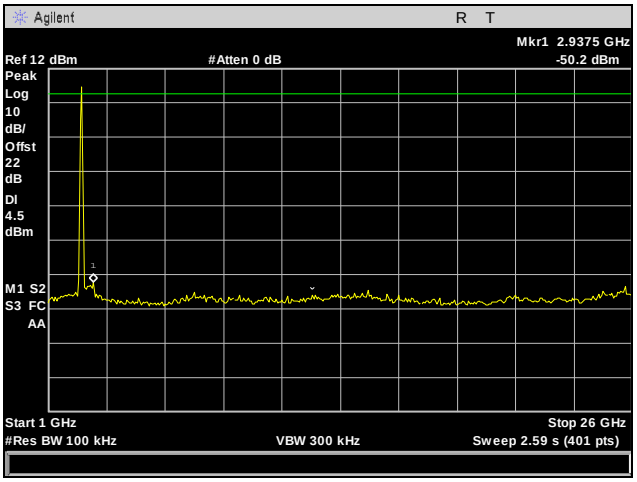


Plot 353. Conducted Spurious Emissions, 802.11n 20 MHz, 2462 MHz, High Channel, Port 3, 1 GHz - 26 GHz

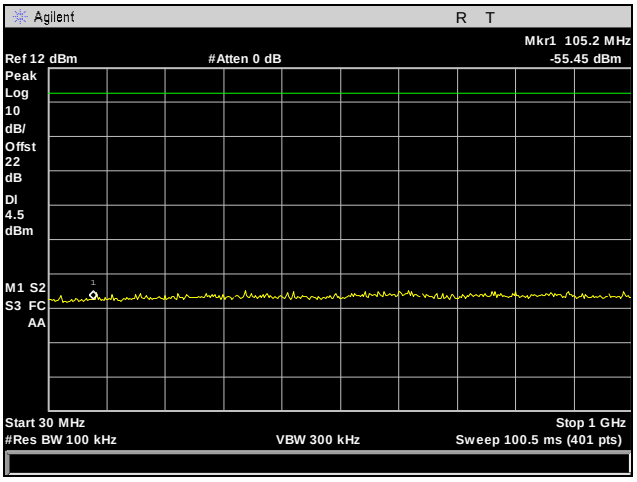
Conducted Spurious Emissions Test Results, 802.11n 40 MHz, Port 1, 2.4 GHz



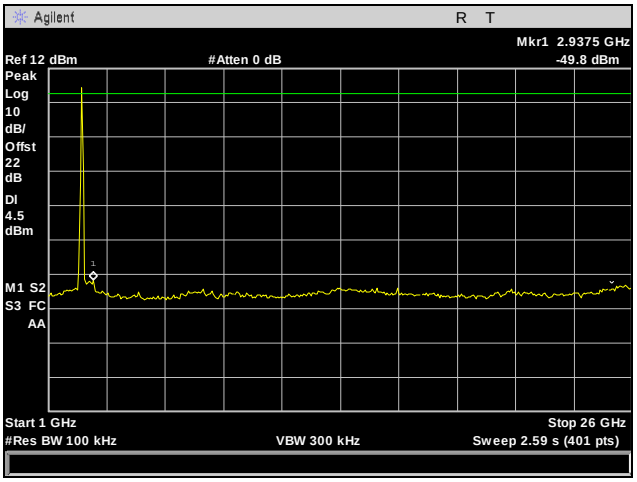
Plot 354. Conducted Spurious Emissions, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 1, 30 MHz - 1 GHz



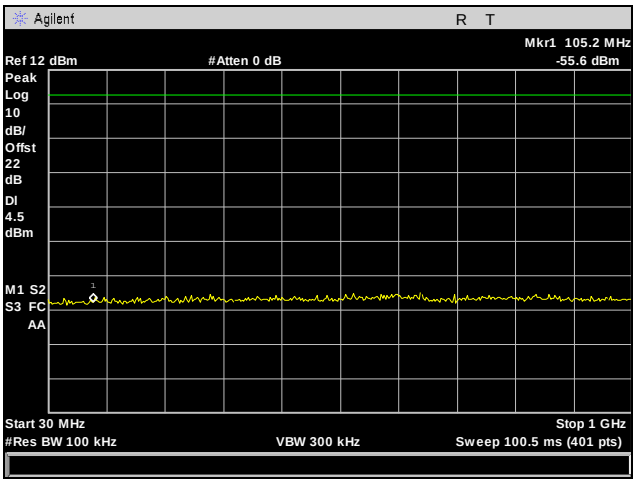
Plot 355. Conducted Spurious Emissions, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 1, 1 GHz - 26 GHz



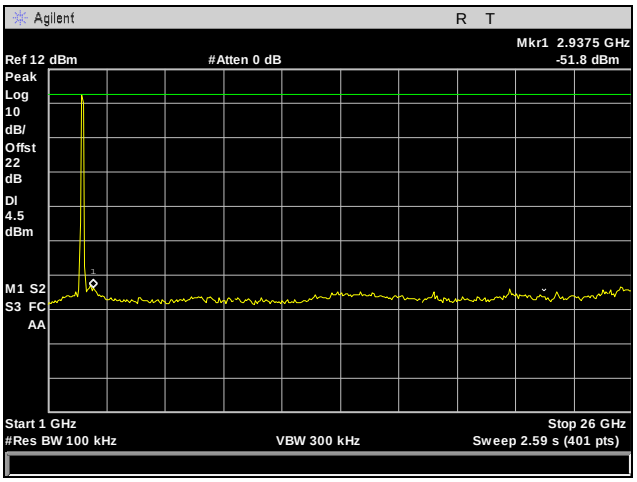
Plot 356. Conducted Spurious Emissions, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 1, 30 MHz - 1 GHz



Plot 357. Conducted Spurious Emissions, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 1, 1 GHz - 26 GHz

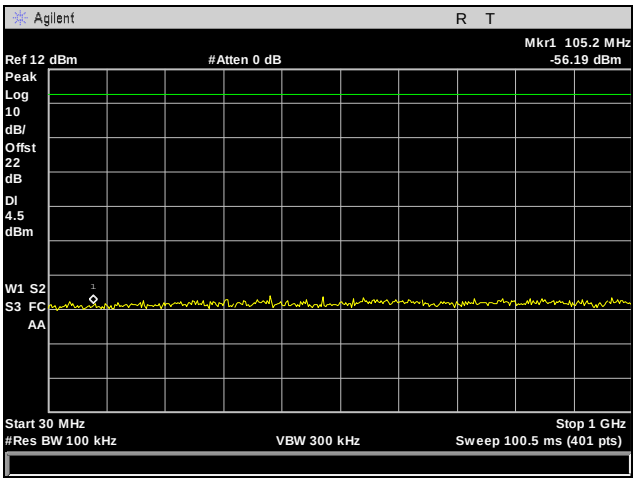


Plot 358. Conducted Spurious Emissions, 802.11n 40 MHz, 2452 MHz, High Channel, Port 1, 30 MHz - 1 GHz

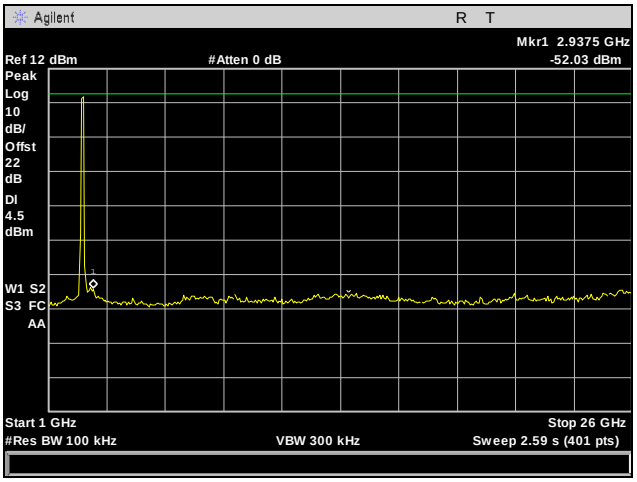


Plot 359. Conducted Spurious Emissions, 802.11n 40 MHz, 2452 MHz, High Channel, Port 1, 1 GHz - 26 GHz

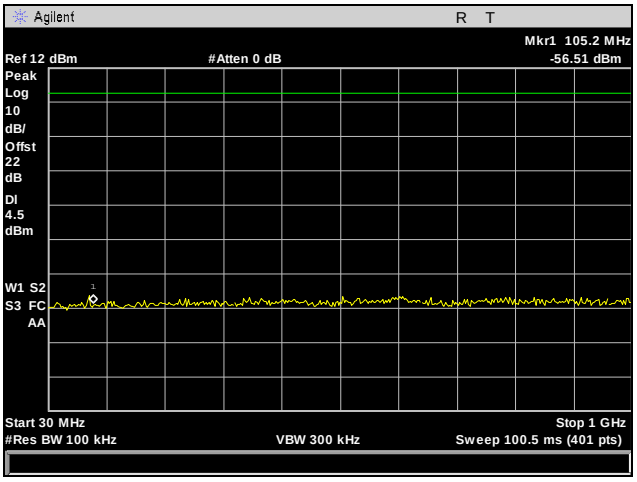
Conducted Spurious Emissions Test Results, 802.11n 40 MHz, Port 2, 2.4 GHz



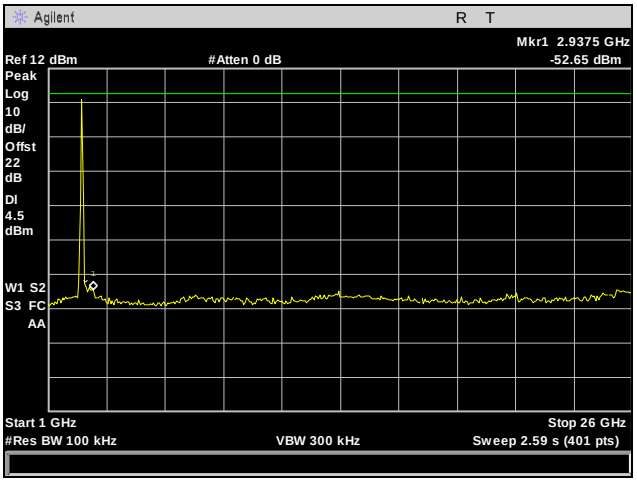
Plot 360. Conducted Spurious Emissions, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 2, 30 MHz, 1 GHz



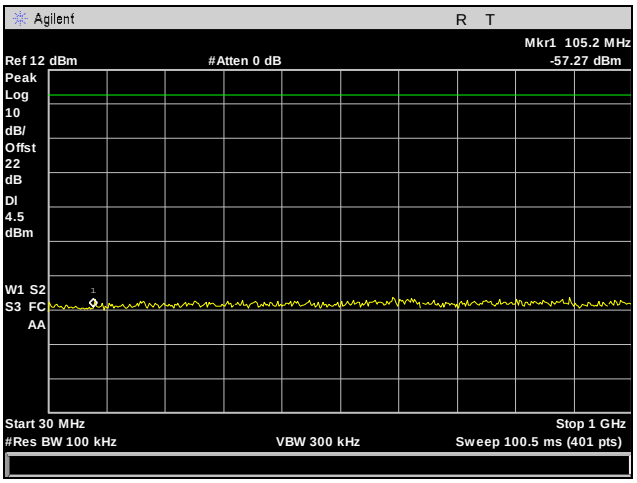
Plot 361. Conducted Spurious Emissions, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 2, 1 GHz - 26 GHz



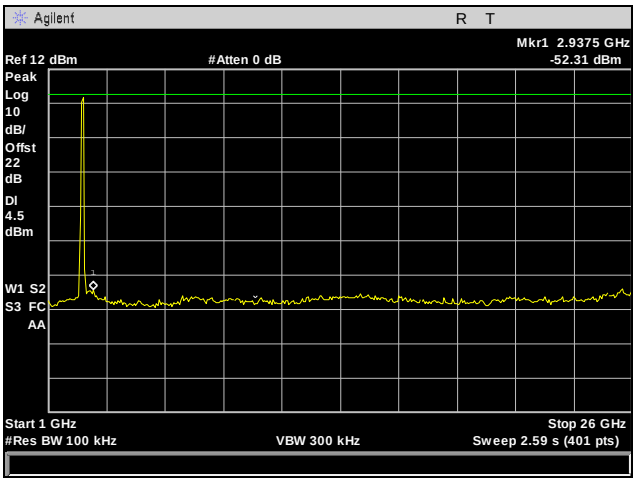
Plot 362. Conducted Spurious Emissions, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 2, 30 MHz, 1 GHz



Plot 363. Conducted Spurious Emissions, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 2, 1 GHz - 26 GHz

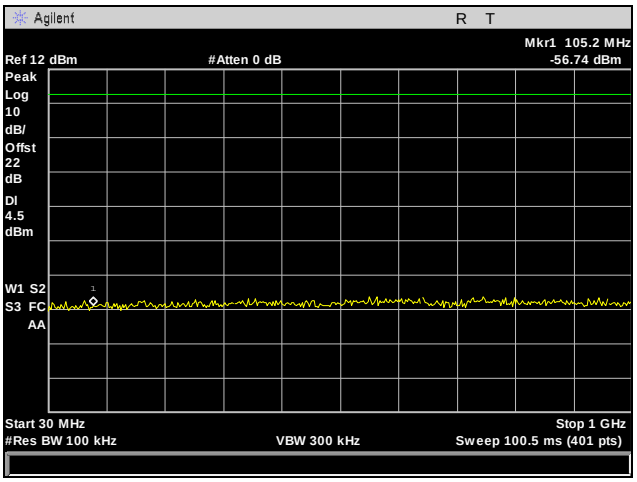


Plot 364. Conducted Spurious Emissions, 802.11n 40 MHz, 2452 MHz, High Channel, Port 2, 30 MHz, 1 GHz

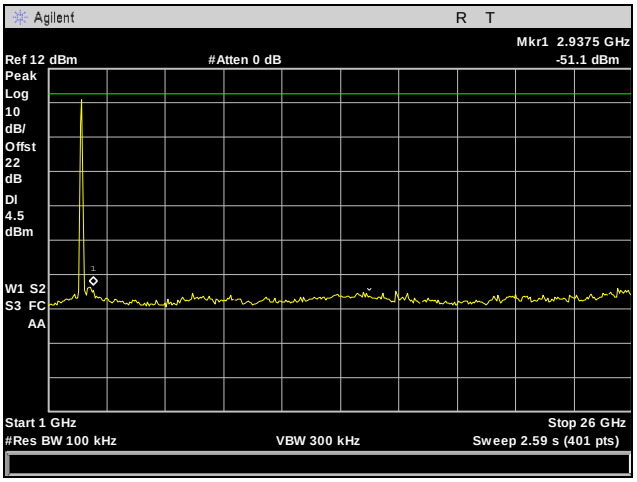


Plot 365. Conducted Spurious Emissions, 802.11n 40 MHz, 2452 MHz, High Channel, Port 2, 1 GHz - 26 GHz

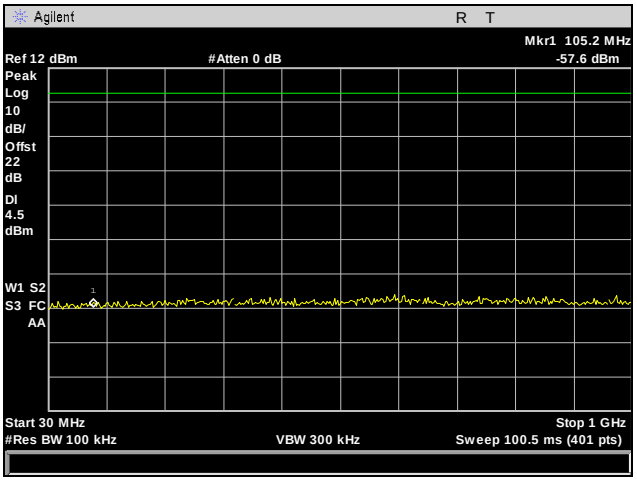
Conducted Spurious Emissions Test Results, 802.11n 40 MHz, Port 3, 2.4 GHz



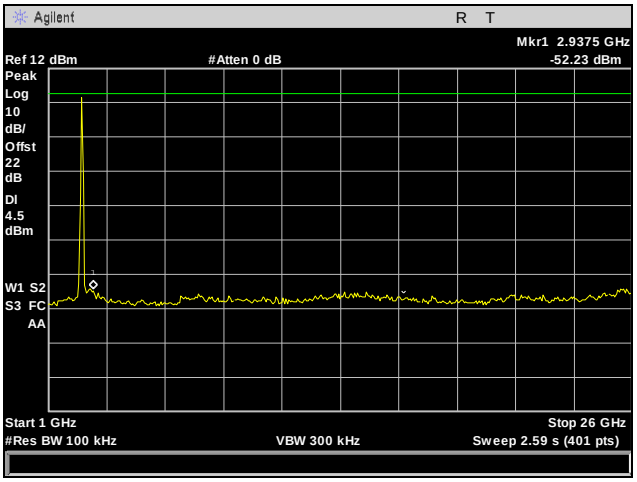
Plot 366. Conducted Spurious Emissions, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 3, 30 MHz, 1 GHz



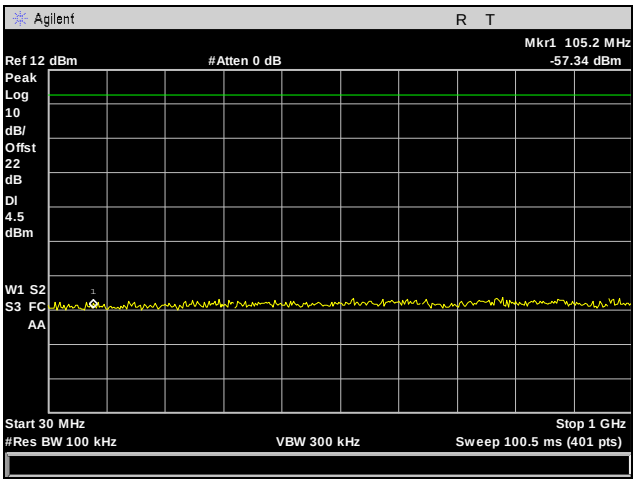
Plot 367. Conducted Spurious Emissions, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 3, 1 GHz - 26 GHz



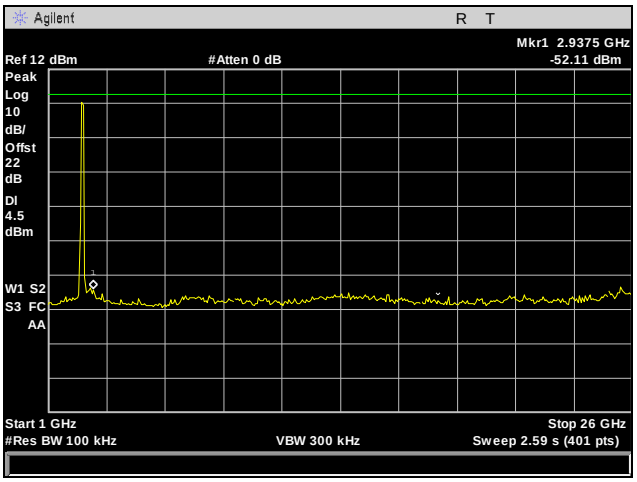
Plot 368. Conducted Spurious Emissions, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 3, 30 MHz, 1 GHz



Plot 369. Conducted Spurious Emissions, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 3, 1 GHz - 26 GHz

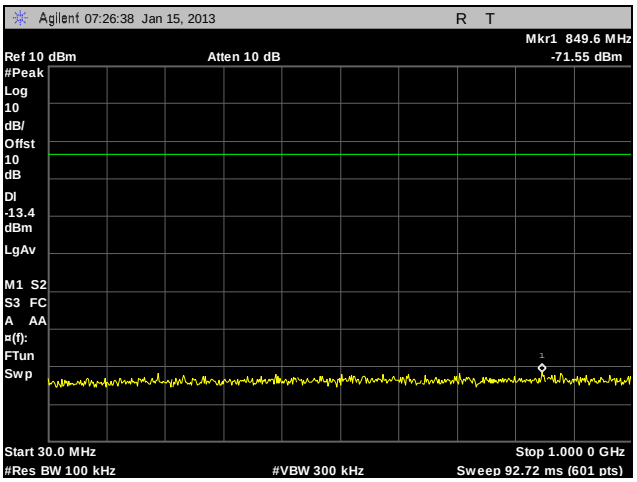


Plot 370. Conducted Spurious Emissions, 802.11n 40 MHz, 2452 MHz, High Channel, Port 3, 30 MHz, 1 GHz

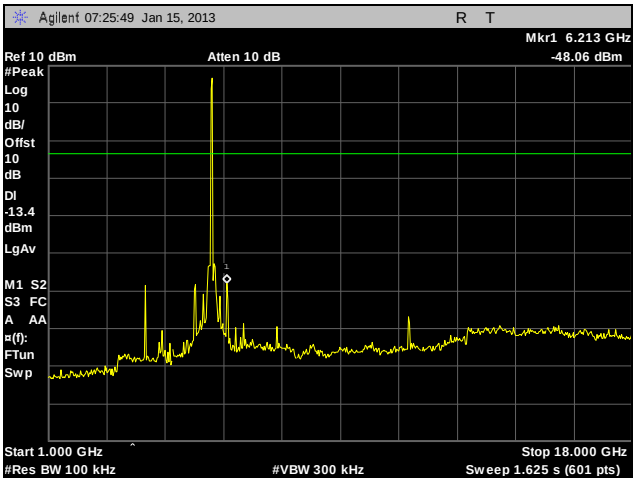


Plot 371. Conducted Spurious Emissions, 802.11n 40 MHz, 2452 MHz, High Channel, Port 3, 1 GHz - 26 GHz

Conducted Spurious Emissions Test Results, 802.11a, 5 GHz

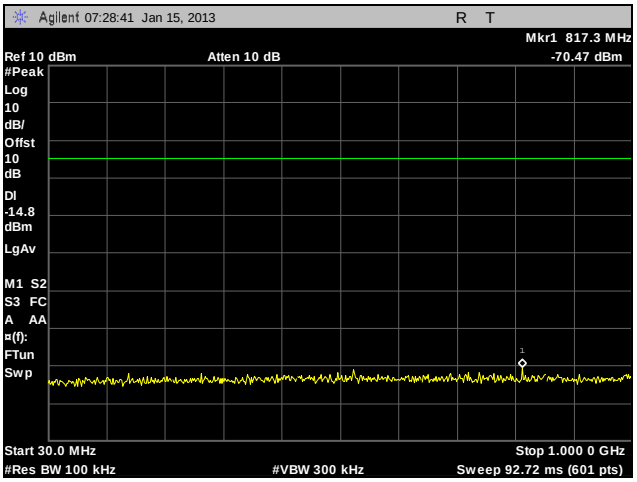


Plot 372. Conducted Spurious Emissions, 802.11a, 5745 MHz, Low Channel, Port 1, 30 MHz - 1 GHz

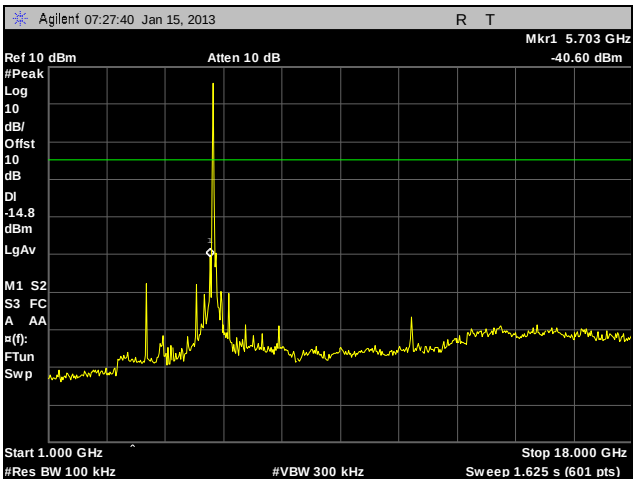


Plot 373. Conducted Spurious Emissions, 802.11a, 5745 MHz, Low Channel, Port 1, 1 GHz - 18 GHz

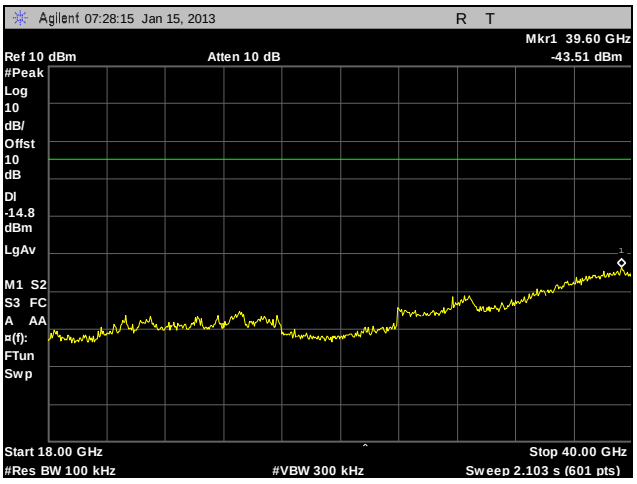
Plot 374. Conducted Spurious Emissions, 802.11a, 5745 MHz, Low Channel, Port 1, 18 GHz - 40 GHz



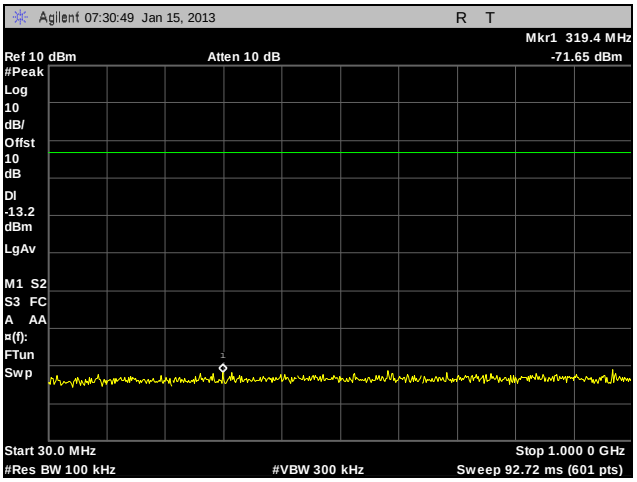
Plot 375. Conducted Spurious Emissions, 802.11a, 5785 MHz, Mid Channel, Port 1, 30 MHz - 1 GHz



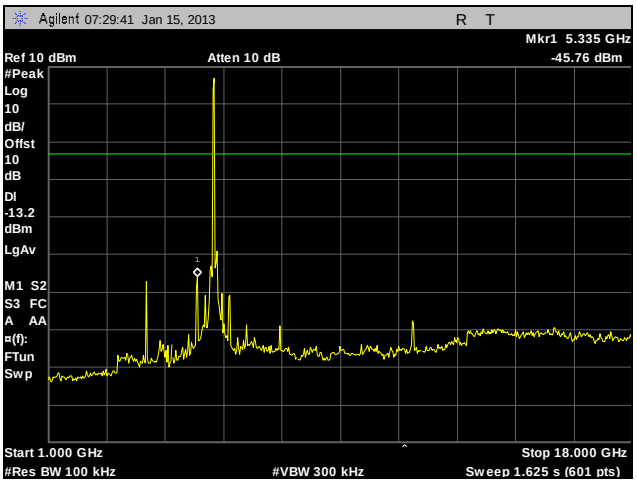
Plot 376. Conducted Spurious Emissions, 802.11a, 5785 MHz, Mid Channel, Port 1, 1 GHz - 18 GHz



Plot 377. Conducted Spurious Emissions, 802.11a, 5785 MHz, Mid Channel, Port 1, 18 GHz - 40 GHz



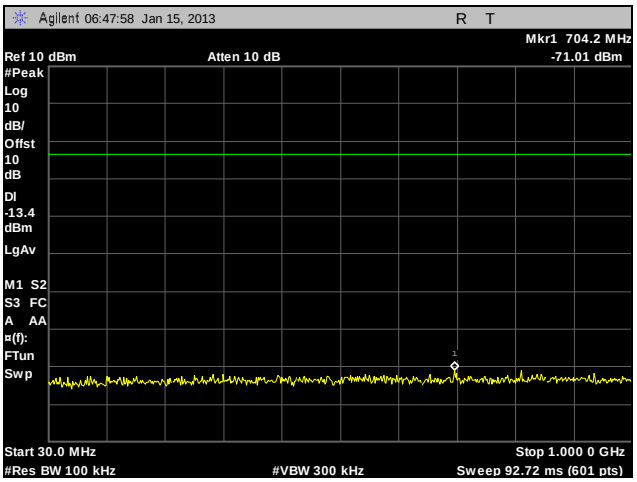
Plot 378. Conducted Spurious Emissions, 802.11a, 5805 MHz, High Channel, Port 1, 30 MHz - 1 GHz



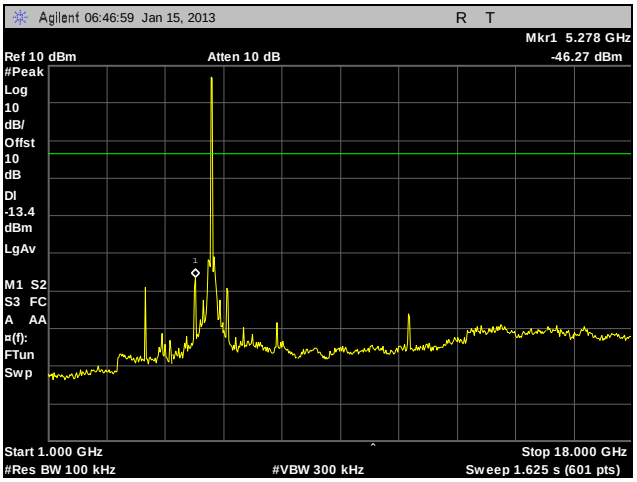
Plot 379. Conducted Spurious Emissions, 802.11a, 5805 MHz, High Channel, Port 1, 1 GHz - 18 GHz

Plot 380. Conducted Spurious Emissions, 802.11a, 5805 MHz, High Channel, Port 1, 18 GHz - 40 GHz

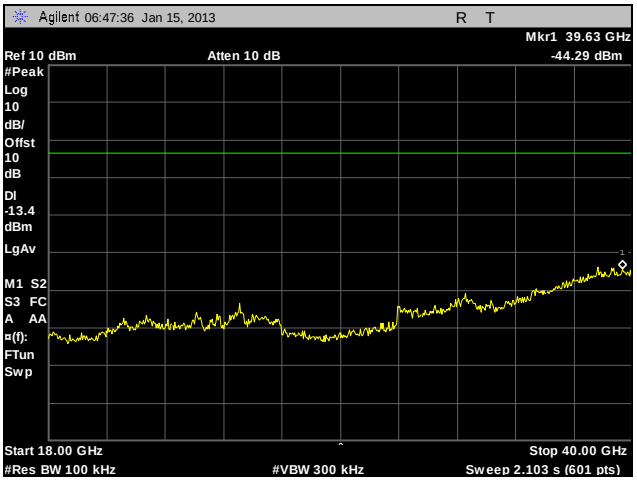
Conducted Spurious Emissions Test Results, 802.11n 20 MHz, Port 1, 5 GHz



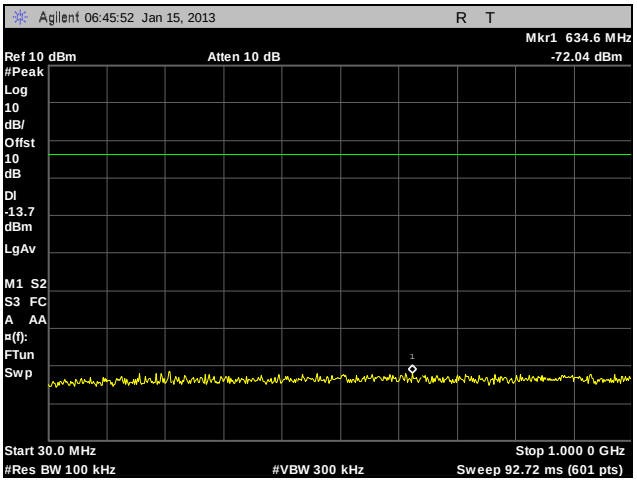
Plot 381. Conducted Spurious Emissions, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 1, 30 MHz - 18 GHz



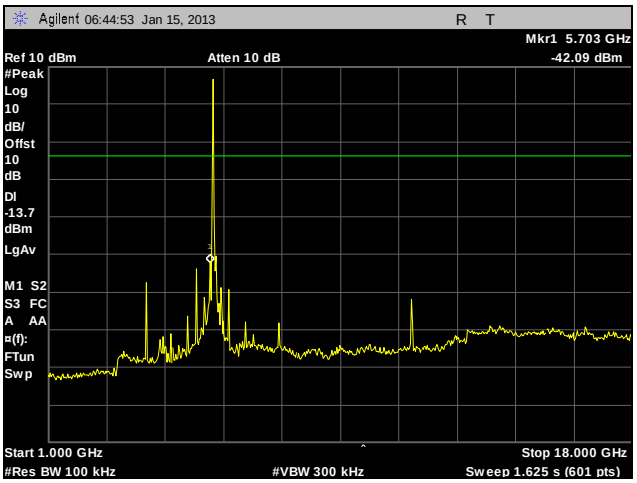
Plot 382. Conducted Spurious Emissions, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 1, 1 GHz - 18 GHz



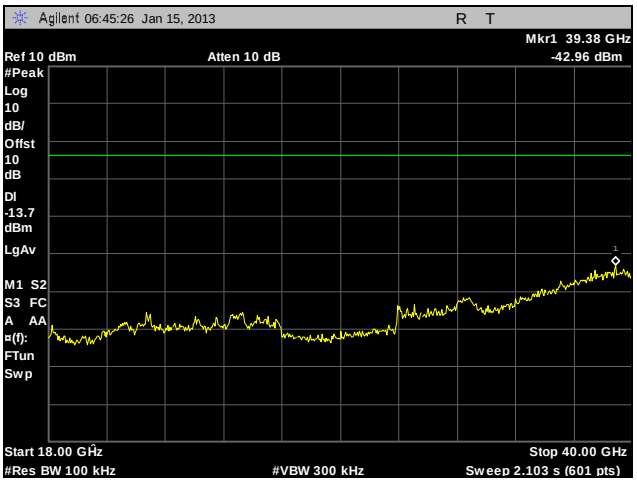
Plot 383. Conducted Spurious Emissions, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 1, 18 GHz - 40 GHz



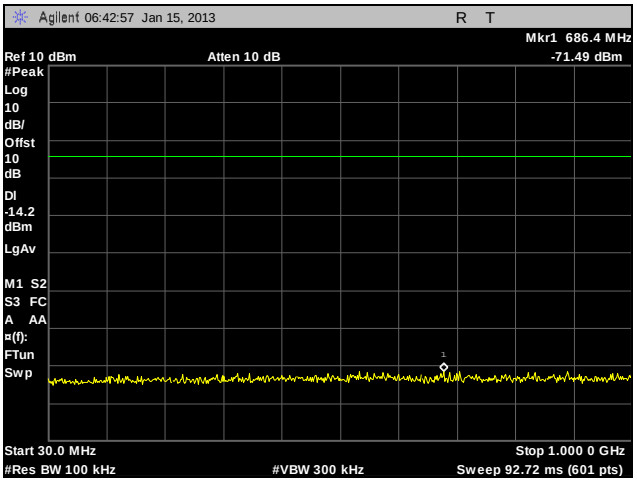
Plot 384. Conducted Spurious Emissions, 802.11n 20 MHz, 5785 MHz, Mid Channel, Port 1, 30 MHz - 18 GHz



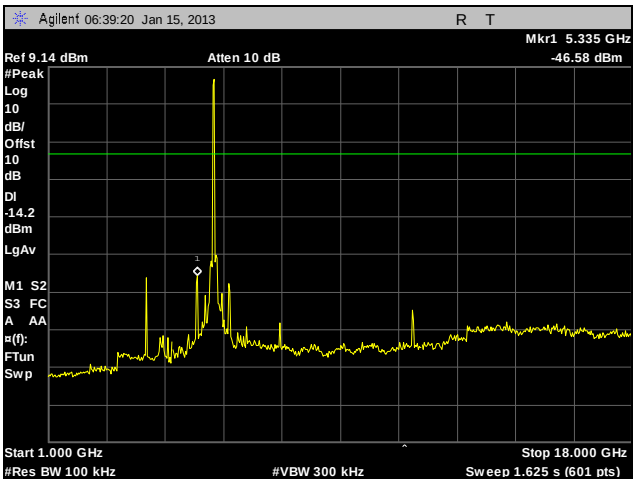
Plot 385. Conducted Spurious Emissions, 802.11n 20 MHz, 5785 MHz, Mid Channel, Port 1, 1 GHz - 18 GHz



Plot 386. Conducted Spurious Emissions, 802.11n 20 MHz, 5785 MHz, Mid Channel, Port 1, 18 GHz - 40 GHz



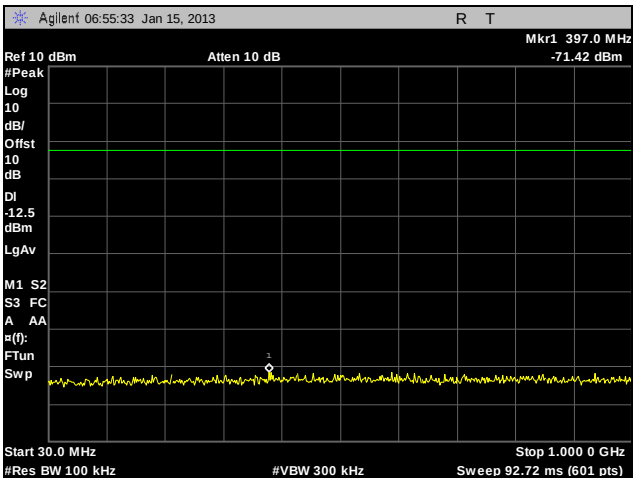
Plot 387. Conducted Spurious Emissions, 802.11n 20 MHz, 5805 MHz, High Channel, Port 1, 30 MHz - 18 GHz



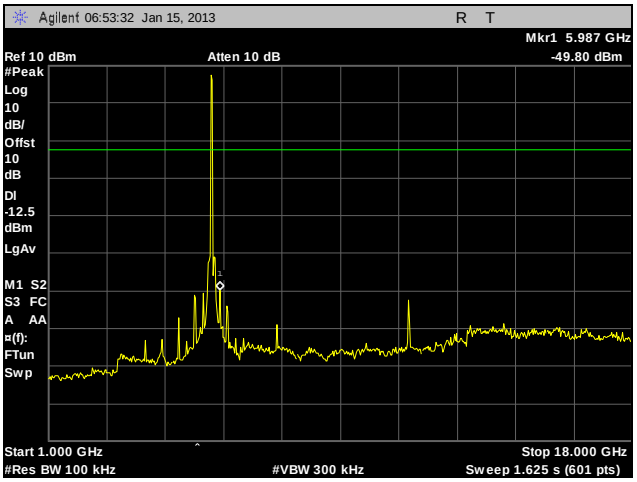
Plot 388. Conducted Spurious Emissions, 802.11n 20 MHz, 5805 MHz, High Channel, Port 1, 1 GHz - 18 GHz

Plot 389. Conducted Spurious Emissions, 802.11n 20 MHz, 5805 MHz, High Channel, Port 1, 18 GHz - 40 GHz

Conducted Spurious Emissions Test Results, 802.11n 20 MHz, Port 2, 5 GHz

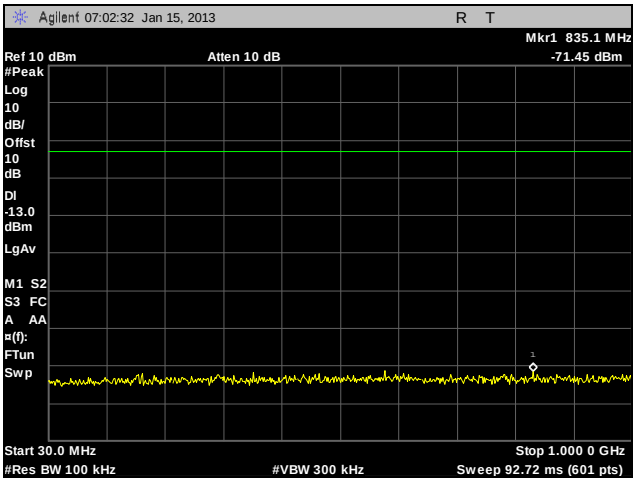


Plot 390. Conducted Spurious Emissions, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 2, 30 MHz - 18 GHz

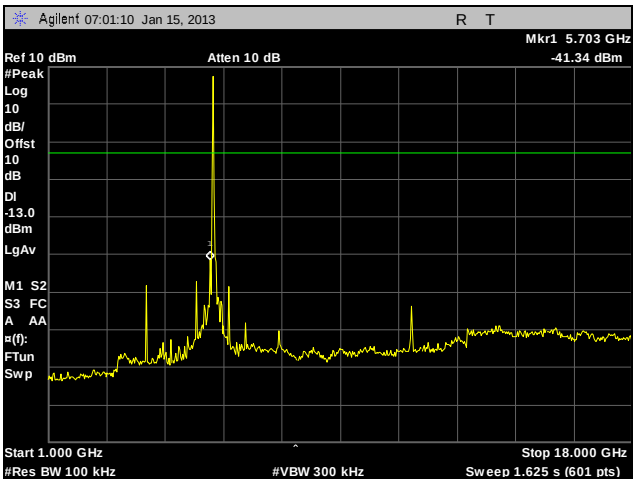


Plot 391. Conducted Spurious Emissions, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 2, 1 GHz - 18 GHz

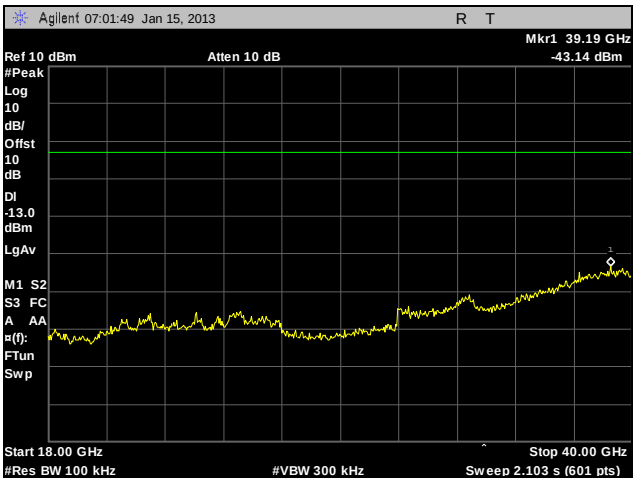
Plot 392. Conducted Spurious Emissions, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 2, 18 GHz - 40 GHz



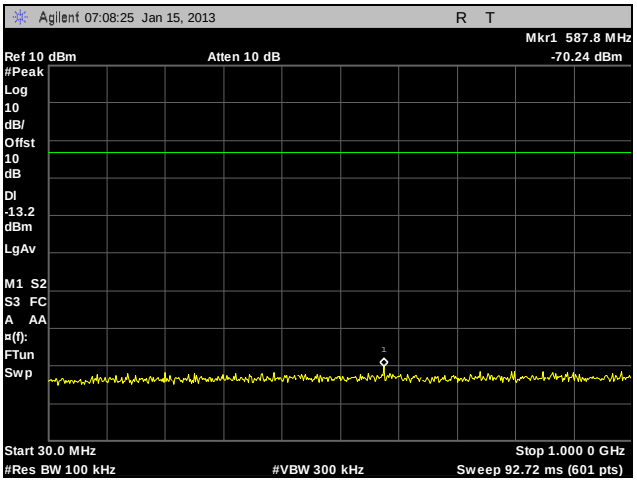
Plot 393. Conducted Spurious Emissions, 802.11n 20 MHz, 5785 MHz, Mid Channel, Port 2, 30 MHz - 18 GHz



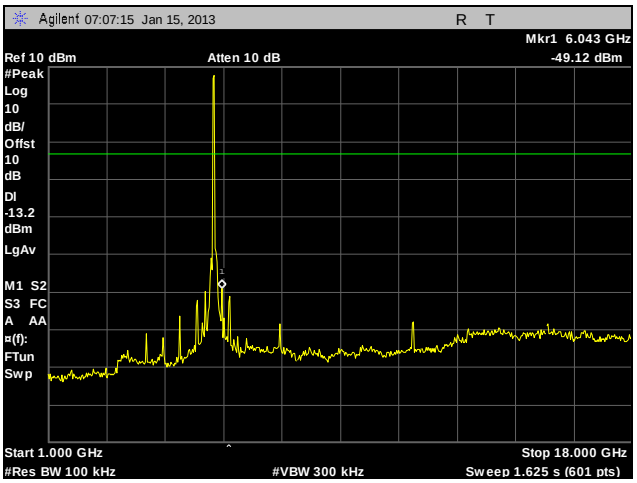
Plot 394. Conducted Spurious Emissions, 802.11n 20 MHz, 5785 MHz, Mid Channel, Port 2, 1 GHz - 18 GHz



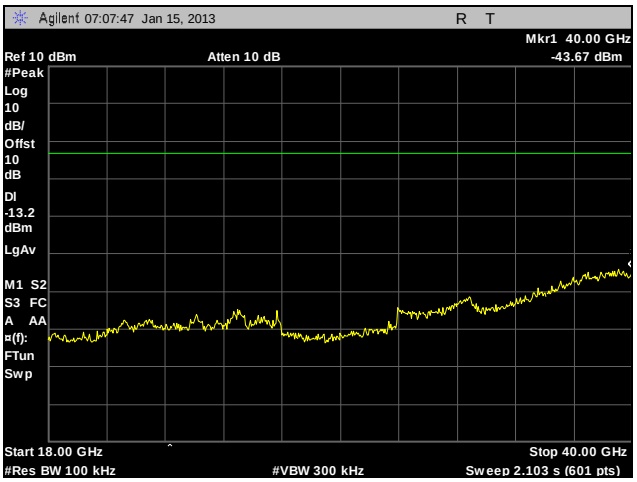
Plot 395. Conducted Spurious Emissions, 802.11n 20 MHz, 5785 MHz, Mid Channel, Port 2, 18 GHz - 40 GHz



Plot 396. Conducted Spurious Emissions, 802.11n 20 MHz, 5805 MHz, High Channel, Port 2, 30 MHz - 18 GHz

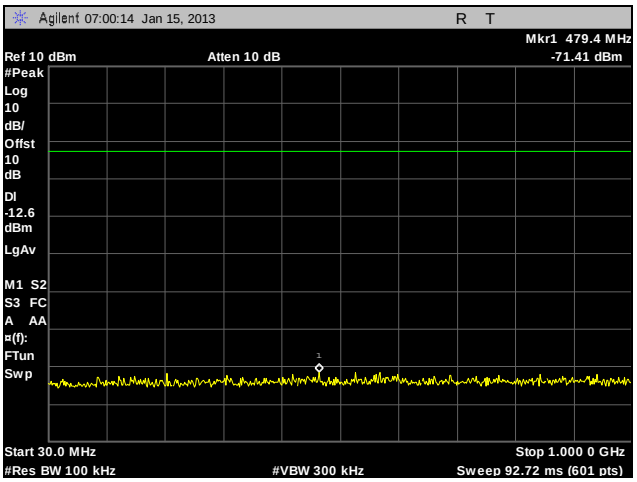


Plot 397. Conducted Spurious Emissions, 802.11n 20 MHz, 5805 MHz, High Channel, Port 2, 1 GHz - 18 GHz

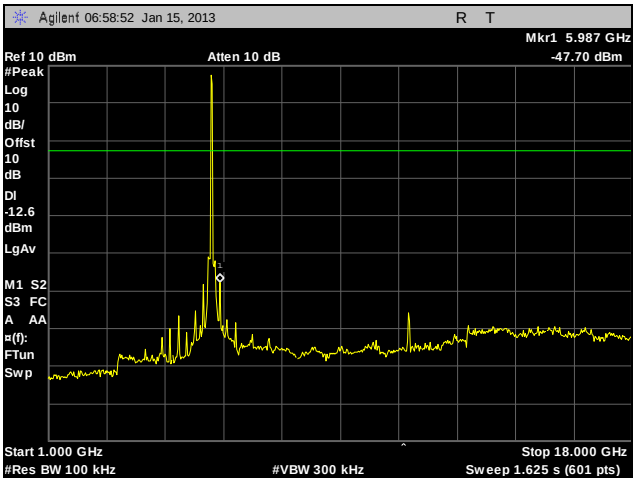


Plot 398. Conducted Spurious Emissions, 802.11n 20 MHz, 5805 MHz, High Channel, Port 2, 18 GHz - 40 GHz

Conducted Spurious Emissions Test Results, 802.11n 20 MHz, Port 3, 5 GHz

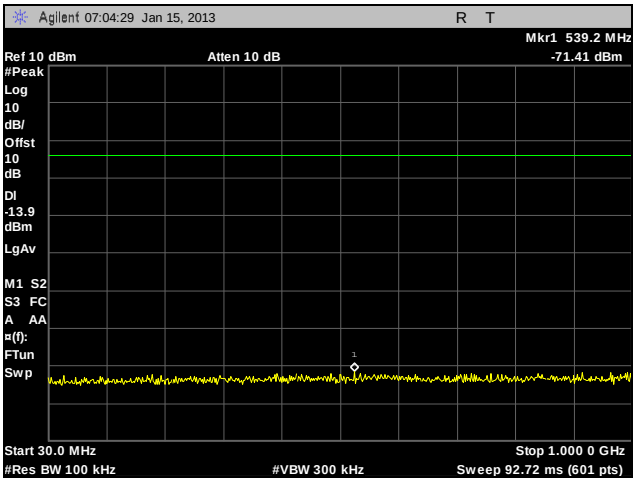


Plot 399. Conducted Spurious Emissions, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 3, 30 MHz - 18 GHz

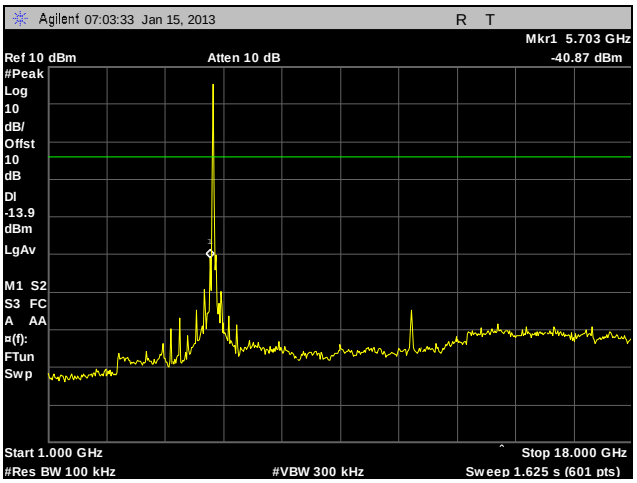


Plot 400. Conducted Spurious Emissions, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 3, 1 GHz - 18 GHz

Plot 401. Conducted Spurious Emissions, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 3, 18 GHz - 40 GHz

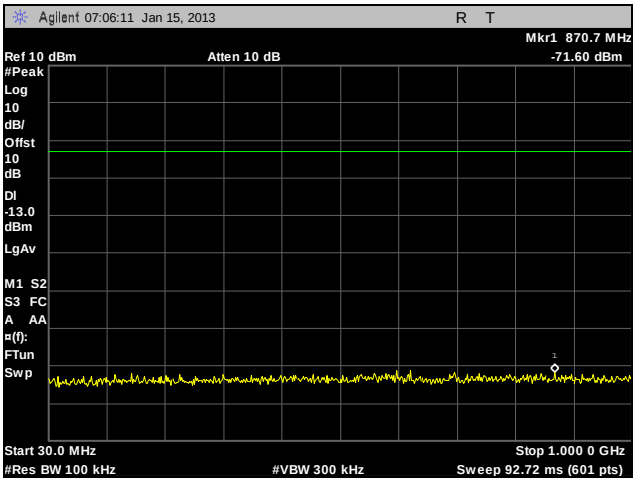


Plot 402. Conducted Spurious Emissions, 802.11n 20 MHz, 5785 MHz, Mid Channel, Port 3, 30 MHz - 18 GHz

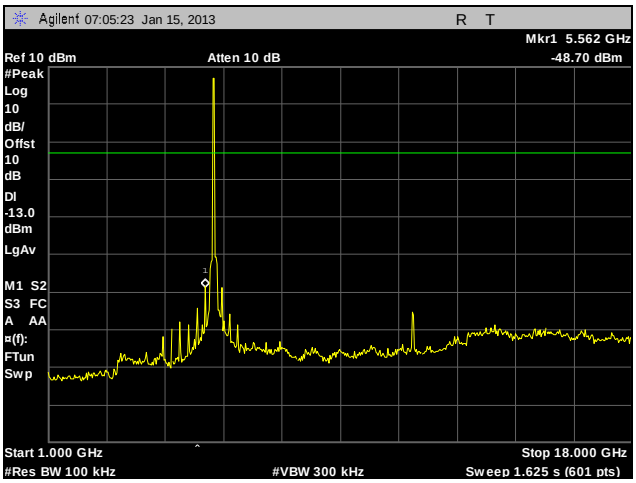


Plot 403. Conducted Spurious Emissions, 802.11n 20 MHz, 5785 MHz, Mid Channel, Port 3, 1 GHz - 18 GHz

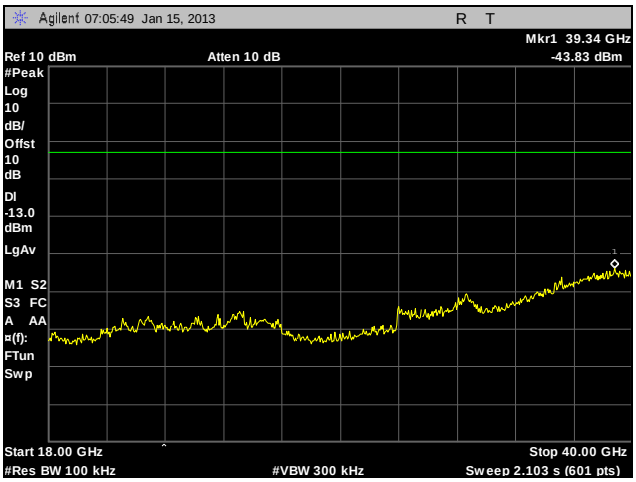
Plot 404. Conducted Spurious Emissions, 802.11n 20 MHz, 5785 MHz, Mid Channel, Port 3, 18 GHz - 40 GHz



Plot 405. Conducted Spurious Emissions, 802.11n 20 MHz, 5805 MHz, High Channel, Port 3, 30 MHz - 18 GHz

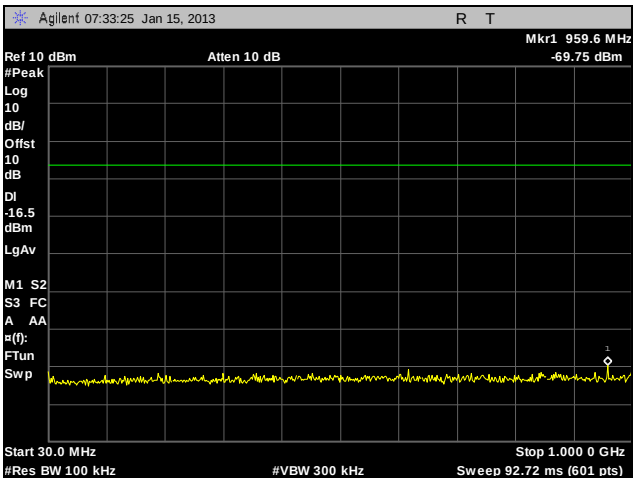


Plot 406. Conducted Spurious Emissions, 802.11n 20 MHz, 5805 MHz, High Channel, Port 3, 1 GHz - 18 GHz

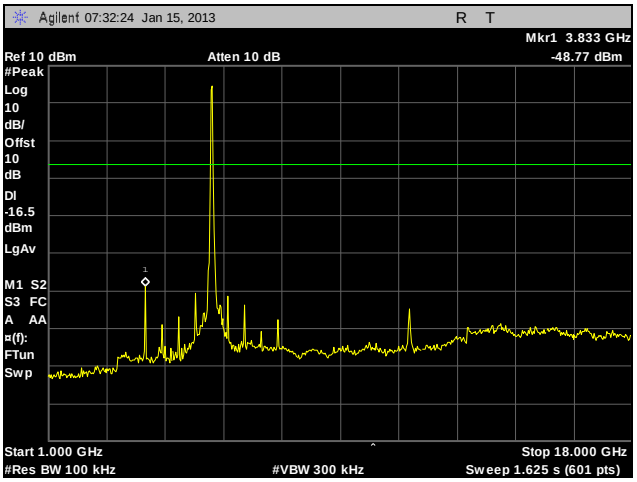


Plot 407. Conducted Spurious Emissions, 802.11n 20 MHz, 5805 MHz, High Channel, Port 3, 18 GHz - 40 GHz

Conducted Spurious Emissions Test Results, 802.11n 40 MHz, Port 1, 5 GHz

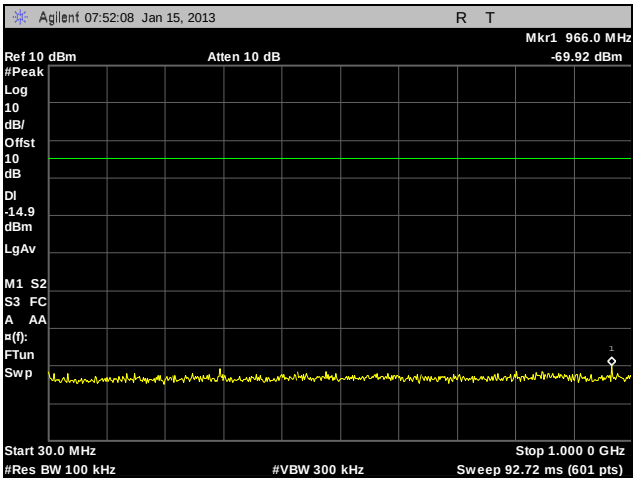


Plot 408. Conducted Spurious Emissions, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 1, 30 MHz - 18 GHz

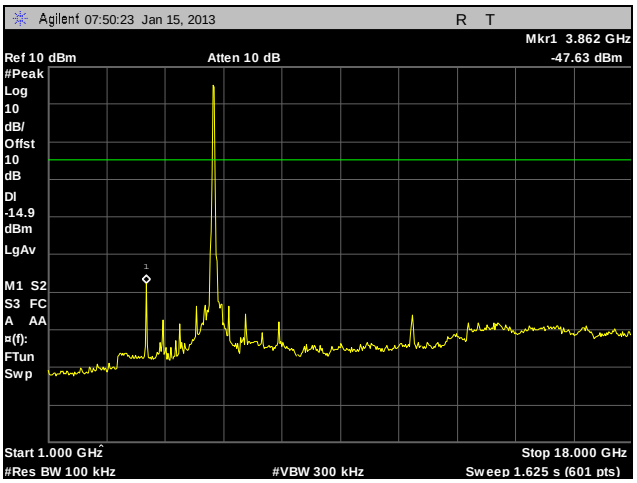


Plot 409. Conducted Spurious Emissions, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 1, 1 GHz - 18 GHz

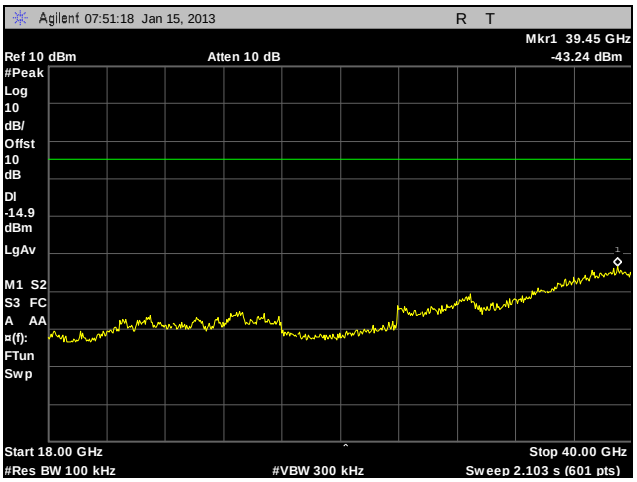
Plot 410. Conducted Spurious Emissions, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 1, 18 GHz - 40 GHz



Plot 411. Conducted Spurious Emissions, 802.11n 40 MHz, 5795 MHz, High Channel, Port 1, 30 MHz - 1 GHz

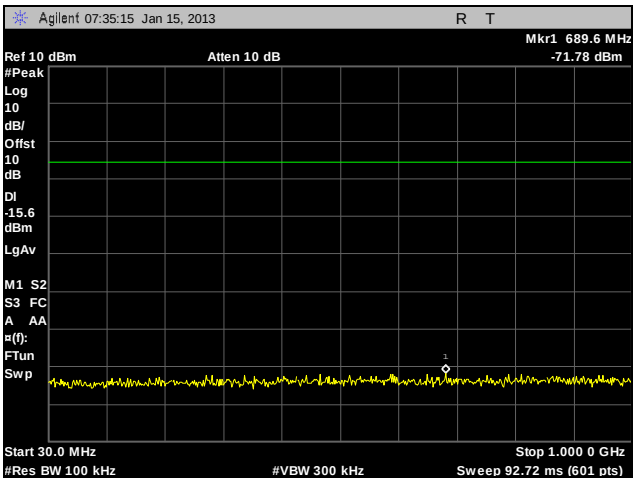


Plot 412. Conducted Spurious Emissions, 802.11n 40 MHz, 5795 MHz, High Channel, Port 1, 1 GHz - 18 GHz

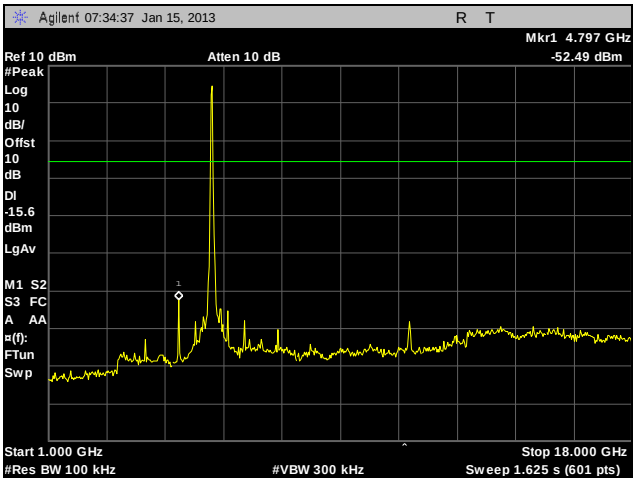


Plot 413. Conducted Spurious Emissions, 802.11n 40 MHz, 5795 MHz, High Channel, Port 1, 18 GHz - 40 GHz

Conducted Spurious Emissions Test Results, 802.11n 40 MHz, Port 2, 5 GHz

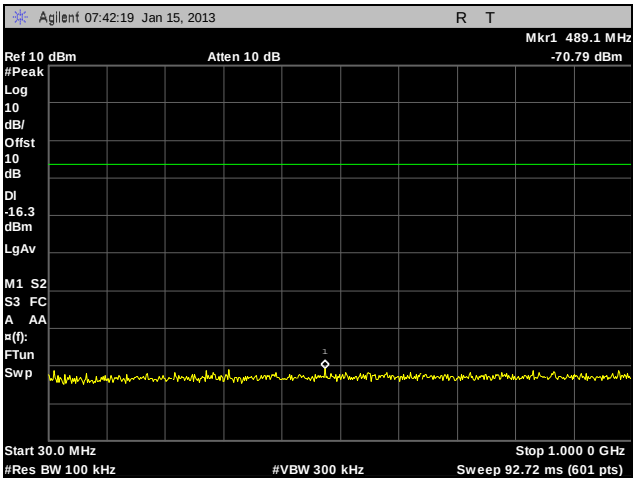


Plot 414. Conducted Spurious Emissions, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 2, 30 MHz - 18 GHz

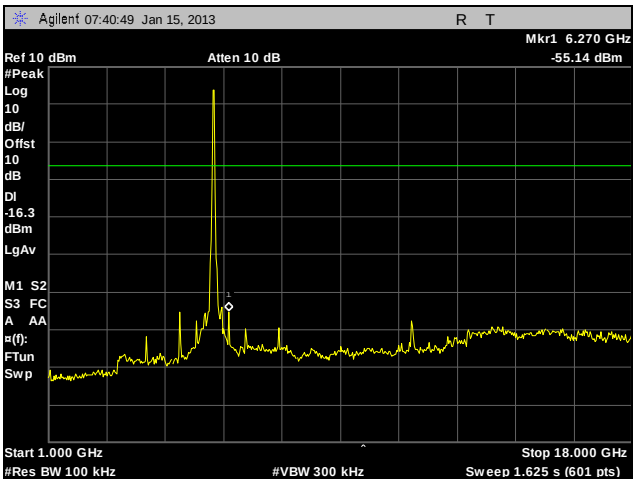


Plot 415. Conducted Spurious Emissions, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 2, 1 GHz - 18 GHz

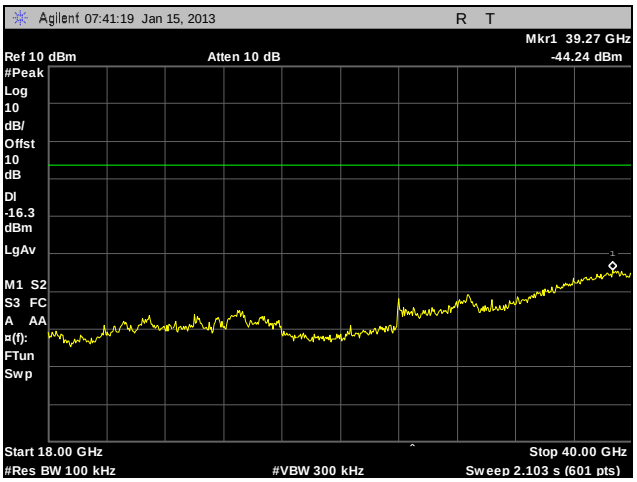
Plot 416. Conducted Spurious Emissions, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 2, 18 GHz - 40 GHz



Plot 417. Conducted Spurious Emissions, 802.11n 40 MHz, 5795 MHz, High Channel, Port 2, 30 MHz - 1 GHz

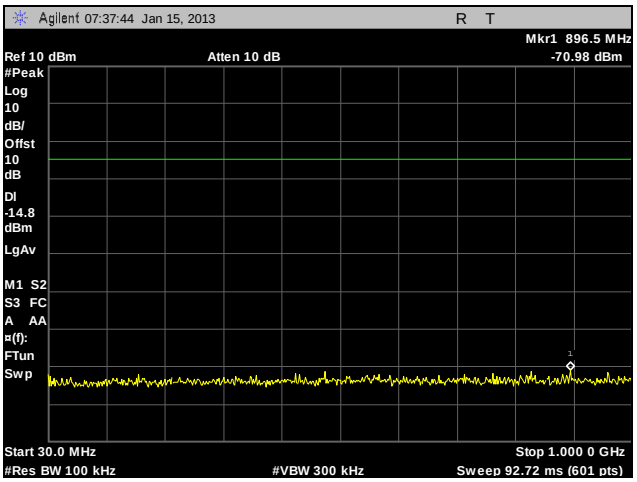


Plot 418. Conducted Spurious Emissions, 802.11n 40 MHz, 5795 MHz, High Channel, Port 2, 1 GHz - 18 GHz

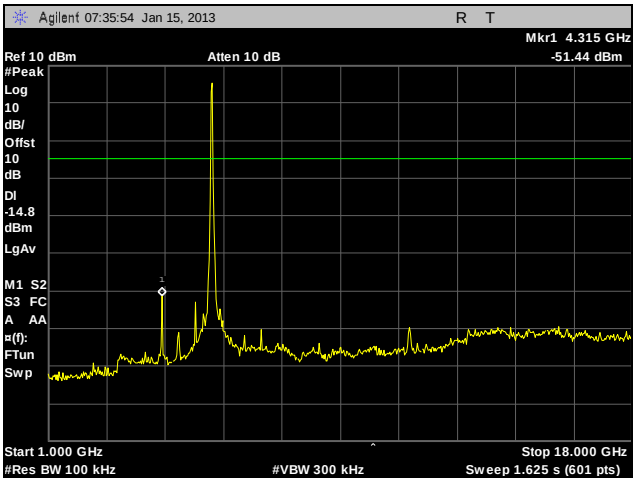


Plot 419. Conducted Spurious Emissions, 802.11n 40 MHz, 5795 MHz, High Channel, Port 2, 18 GHz - 40 GHz

Conducted Spurious Emissions Test Results, 802.11n 40 MHz, Port 3, 5 GHz

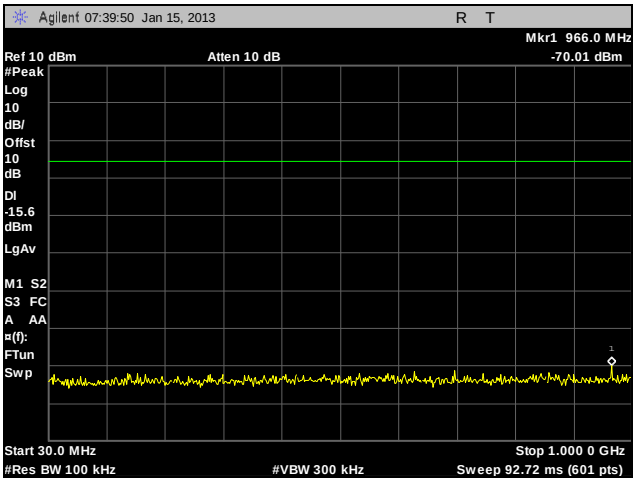


Plot 420. Conducted Spurious Emissions, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 3, 30 MHz - 18 GHz

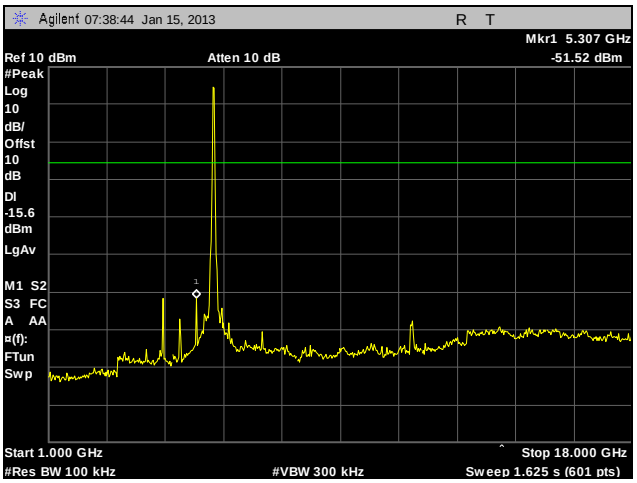


Plot 421. Conducted Spurious Emissions, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 3, 1 GHz - 18 GHz

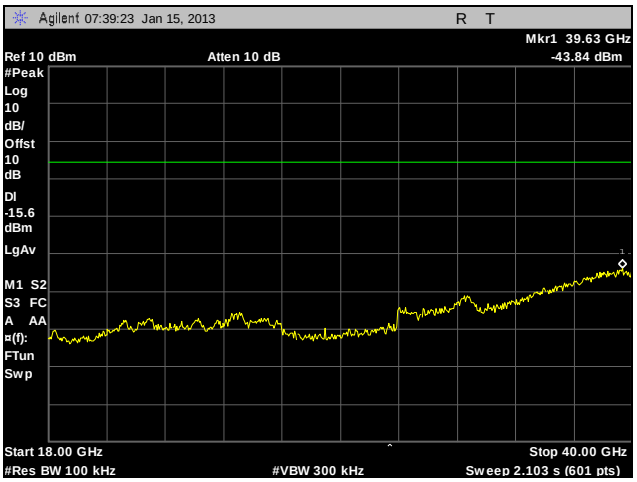
Plot 422. Conducted Spurious Emissions, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 3, 18 GHz - 40 GHz



Plot 423. Conducted Spurious Emissions, 802.11n 40 MHz, 5795 MHz, High Channel, Port 3, 30 MHz - 1 GHz

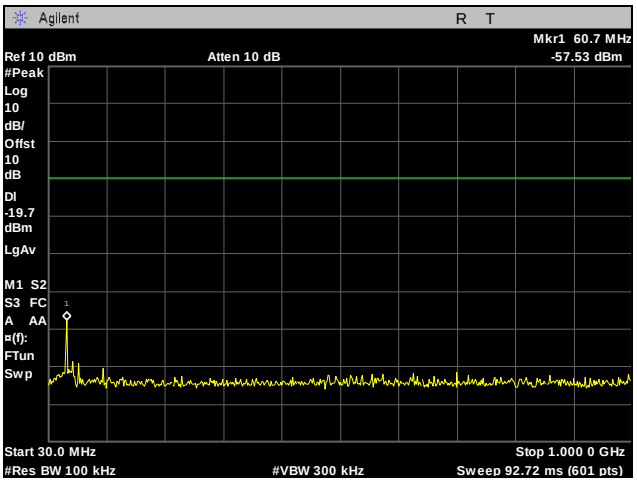


Plot 424. Conducted Spurious Emissions, 802.11n 40 MHz, 5795 MHz, High Channel, Port 3, 1 GHz - 18 GHz

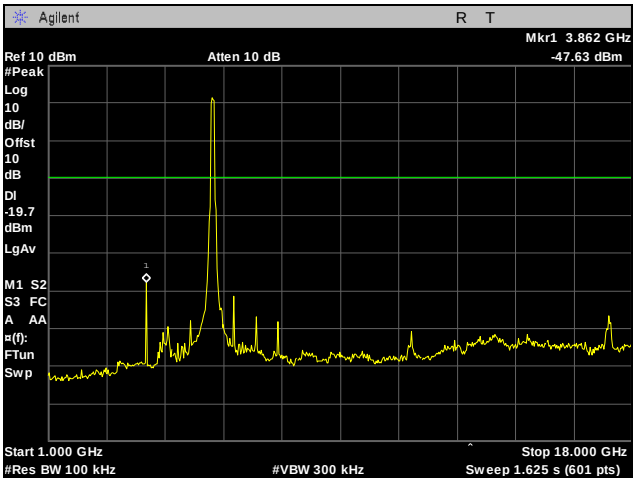


Plot 425. Conducted Spurious Emissions, 802.11n 40 MHz, 5795 MHz, High Channel, Port 3, 18 GHz - 40 GHz

Conducted Spurious Emissions Test Results, 802.11n 80 MHz, Port 1, 5 GHz



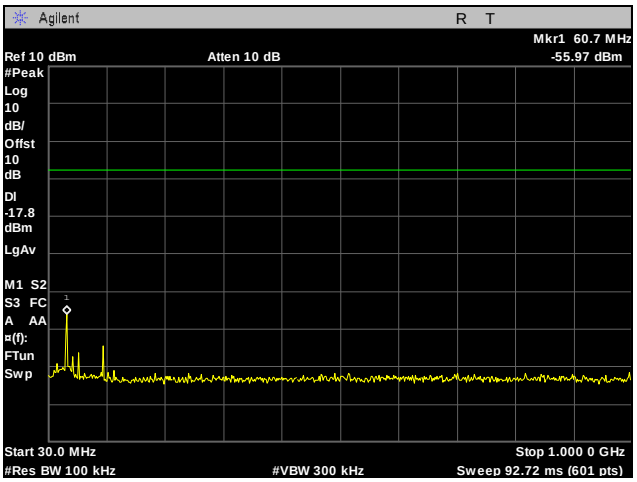
Plot 426. Conducted Spurious Emissions, 802.11n 80MHz, 5775 MHz, Port 1, 30 MHz - 18 GHz



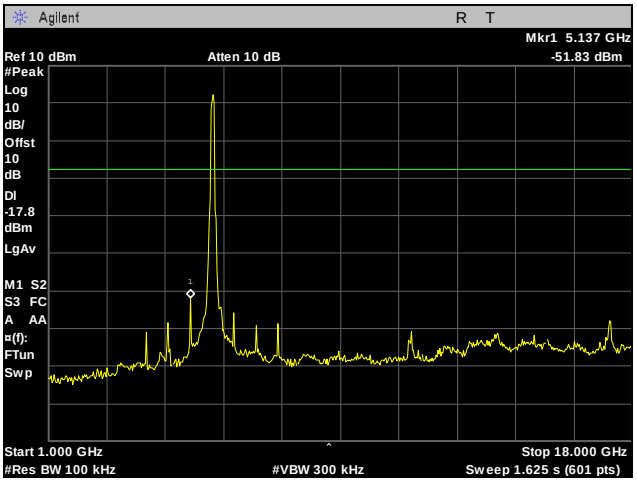
Plot 427. Conducted Spurious Emissions, 802.11n 80MHz, 5775 MHz, Port 1, 1 GHz - 18 GHz

Plot 428. Conducted Spurious Emissions, 802.11n 80MHz, 5775 MHz, Port 1, 18 GHz - 40 GHz

Conducted Spurious Emissions Test Results, 802.11n 80 MHz, Port 2, 5 GHz



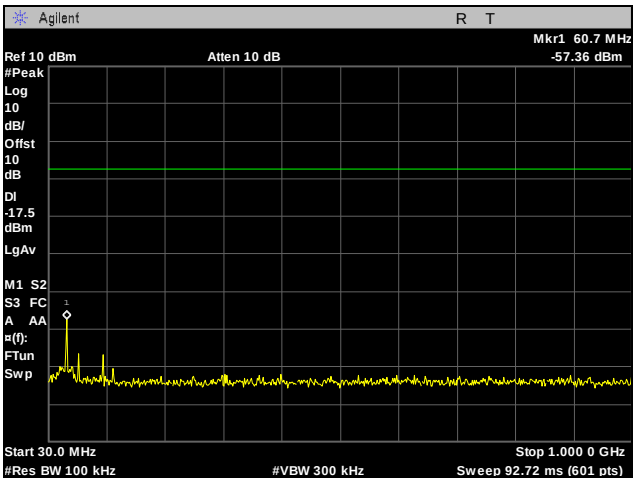
Plot 429. Conducted Spurious Emissions, 802.11n 80MHz, 5775 MHz, Port 2, 30 MHz - 18 GHz



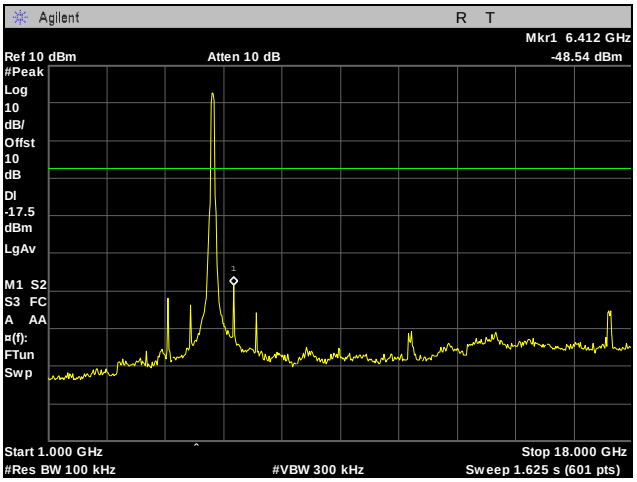
Plot 430. Conducted Spurious Emissions, 802.11n 80MHz, 5775 MHz, Port 2, 1 GHz - 18 GHz

Plot 431. Conducted Spurious Emissions, 802.11n 80MHz, 5775 MHz, Port 2, 18 GHz - 40 GHz

Conducted Spurious Emissions Test Results, 802.11n 80 MHz, Port 3, 5 GHz



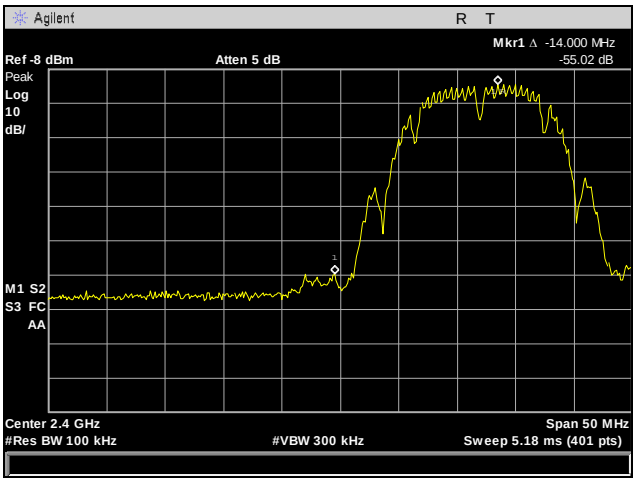
Plot 432. Conducted Spurious Emissions, 802.11n 80MHz, 5775 MHz, Port 3, 30 MHz - 18 GHz



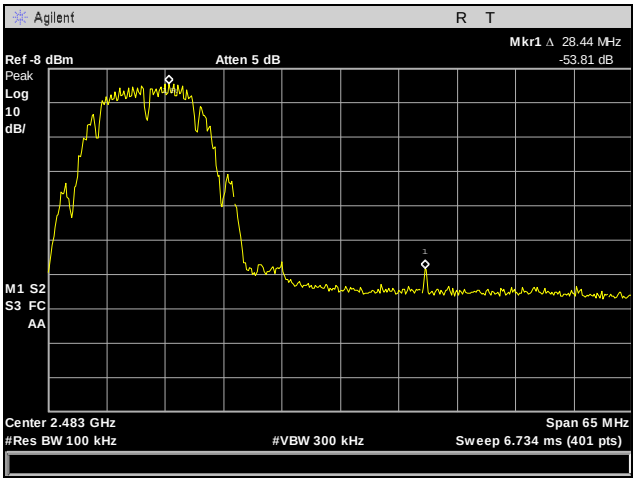
Plot 433. Conducted Spurious Emissions, 802.11n 80MHz, 5775 MHz, Port 3, 1 GHz - 18 GHz

Plot 434. Conducted Spurious Emissions, 802.11n 80MHz, 5775 MHz, Port 3, 18 GHz - 40 GHz

Conducted Band Edge Test Results, 802.11b, 2.4 GHz

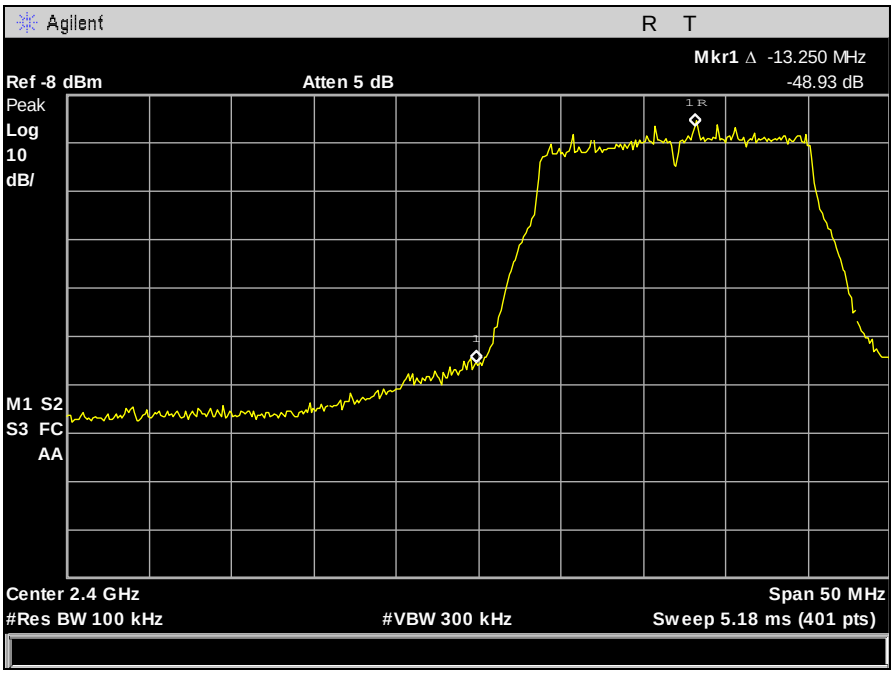


Plot 435. Conducted Band Edge, 802.11b, 2412 MHz, Port 1

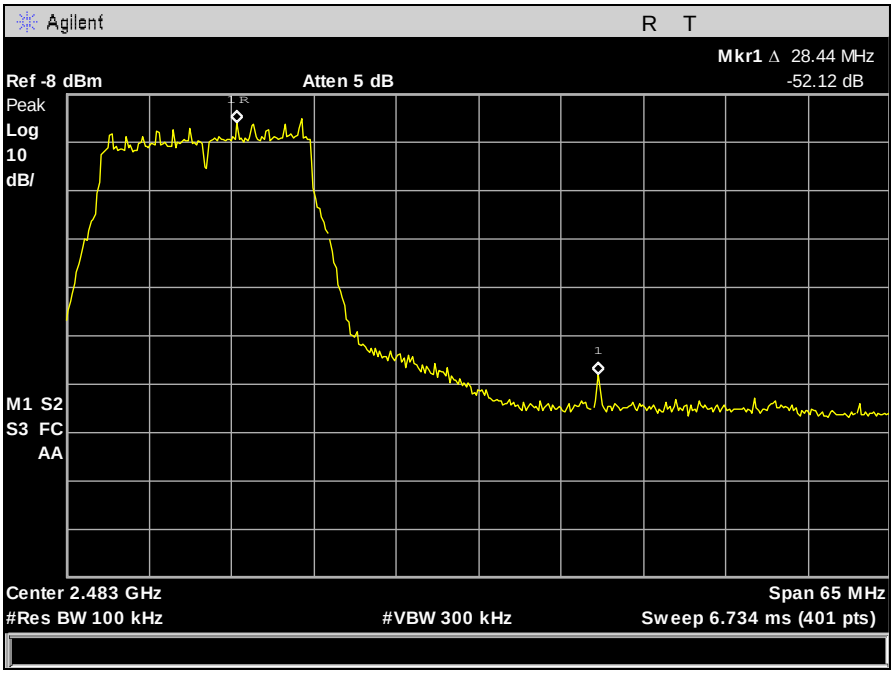


Plot 436. Conducted Band Edge, 802.11b, 2462 MHz, Port 1

Conducted Band Edge Test Results, 802.11g, 2.4 GHz

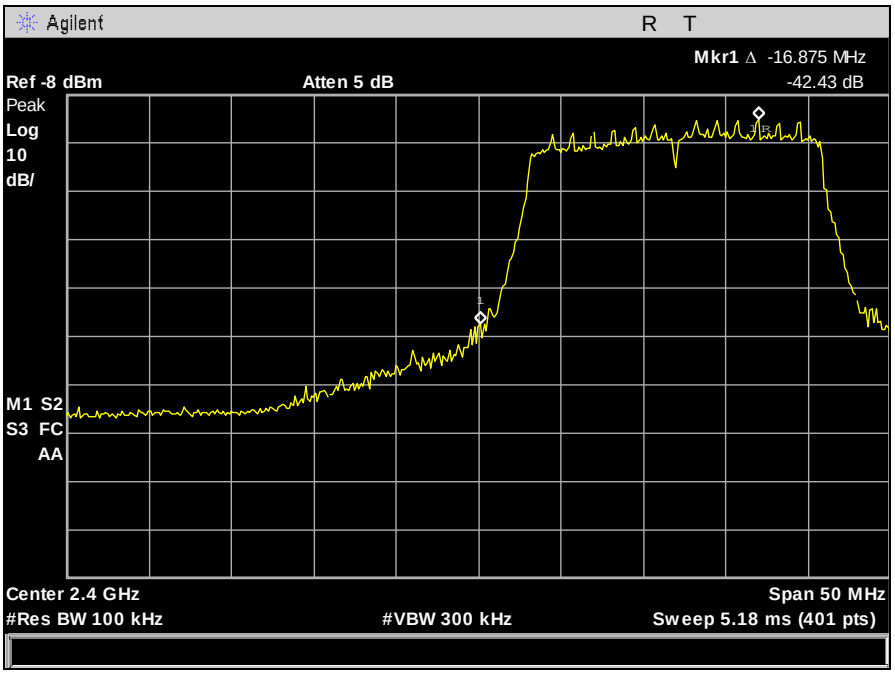


Plot 437. Conducted Band Edge, 802.11g, 2412 MHz, Port 1

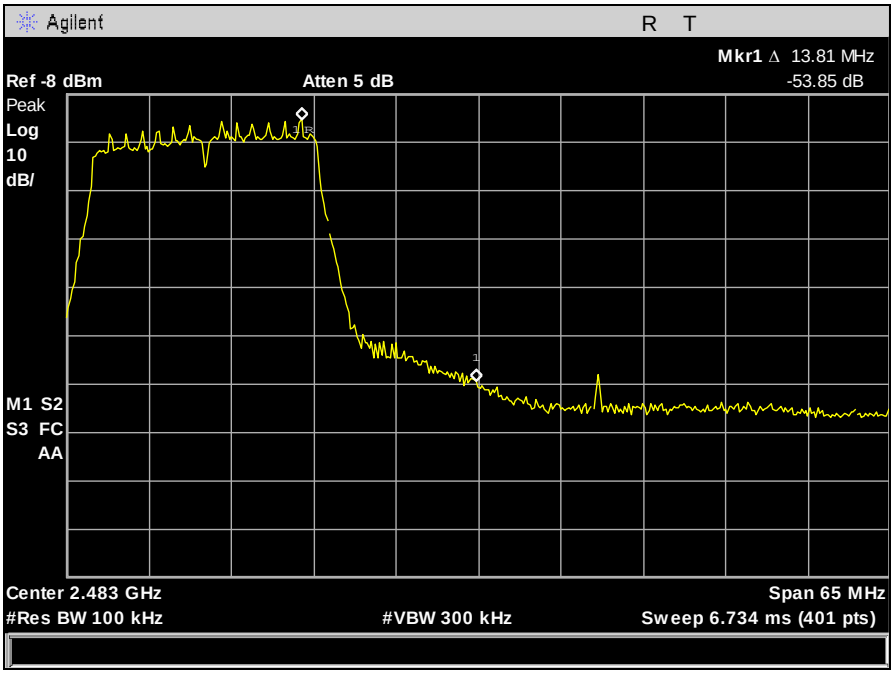


Plot 438. Conducted Band Edge, 802.11g, 2462 MHz, Port 1

Conducted Band Edge Test Results, 802.11n 20 MHz, Port 1, 2.4 GHz

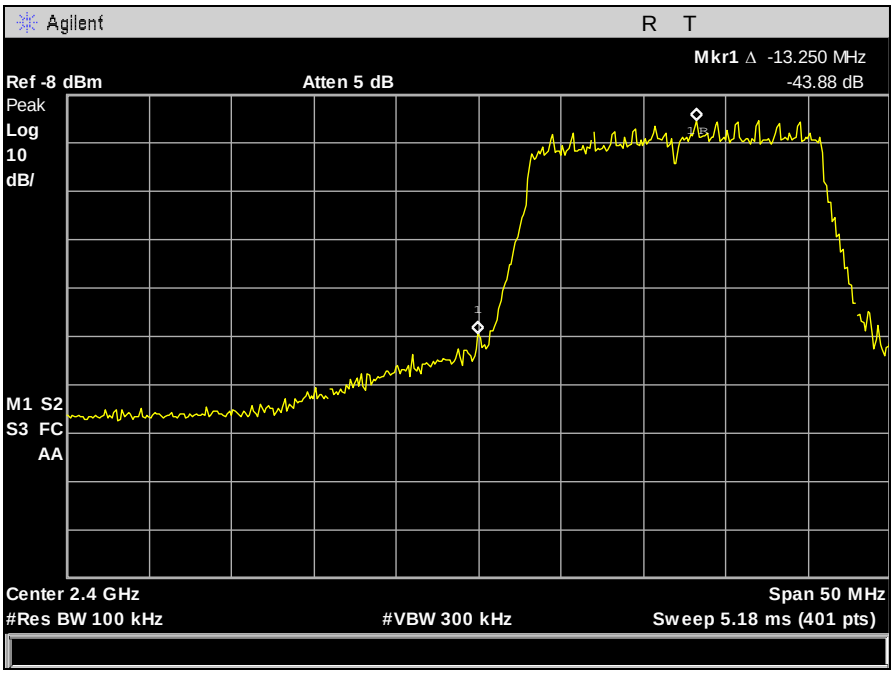


Plot 439. Conducted Band Edge, 802.11n 20 MHz, 2412 MHz, Port 1

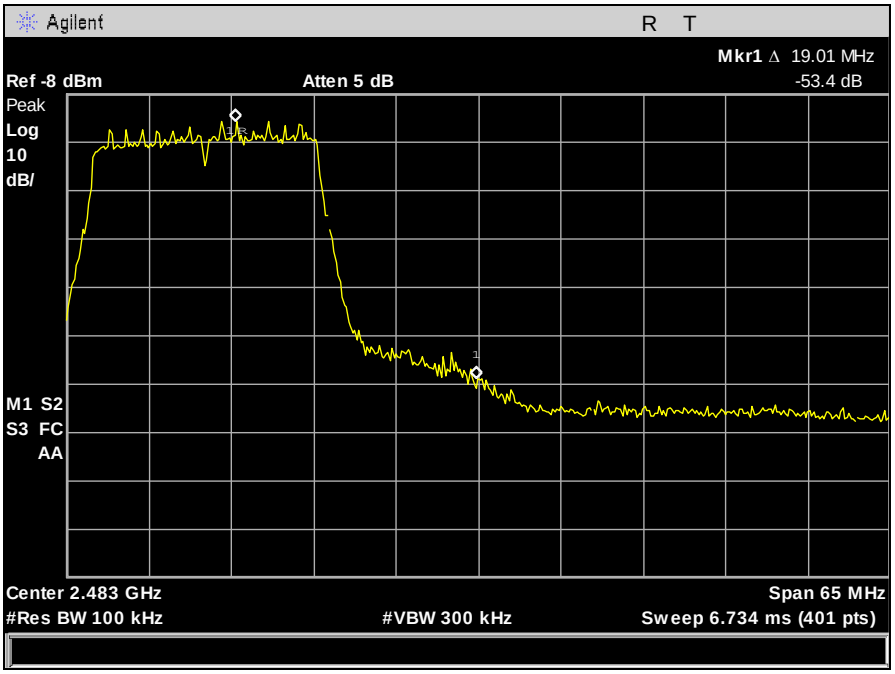


Plot 440. Conducted Band Edge, 802.11n 20 MHz, 2462 MHz, Port 1

Conducted Band Edge Test Results, 802.11n 20 MHz, Port 2, 2.4 GHz

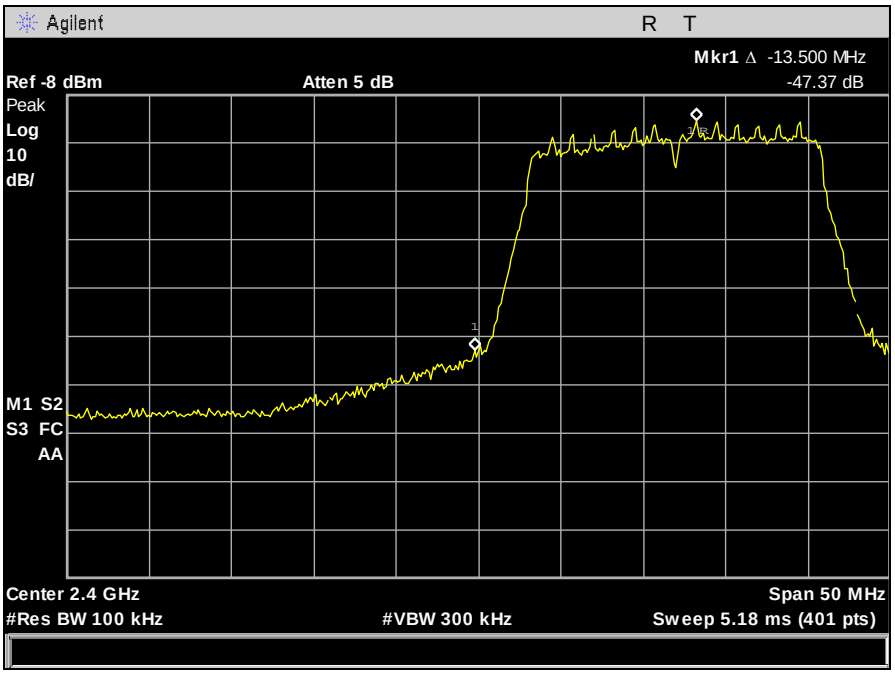


Plot 441. Conducted Band Edge, 802.11n 20 MHz, 2412 MHz, Port 2

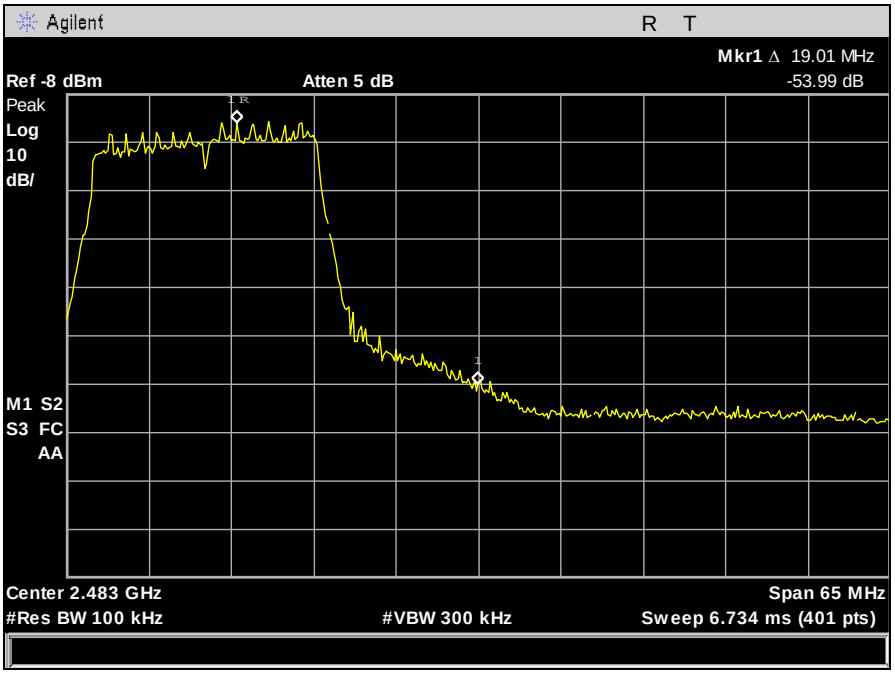


Plot 442. Conducted Band Edge, 802.11n 20 MHz, 2462 MHz, Port 2

Conducted Band Edge Test Results, 802.11n 20 MHz, Port 3, 2.4 GHz

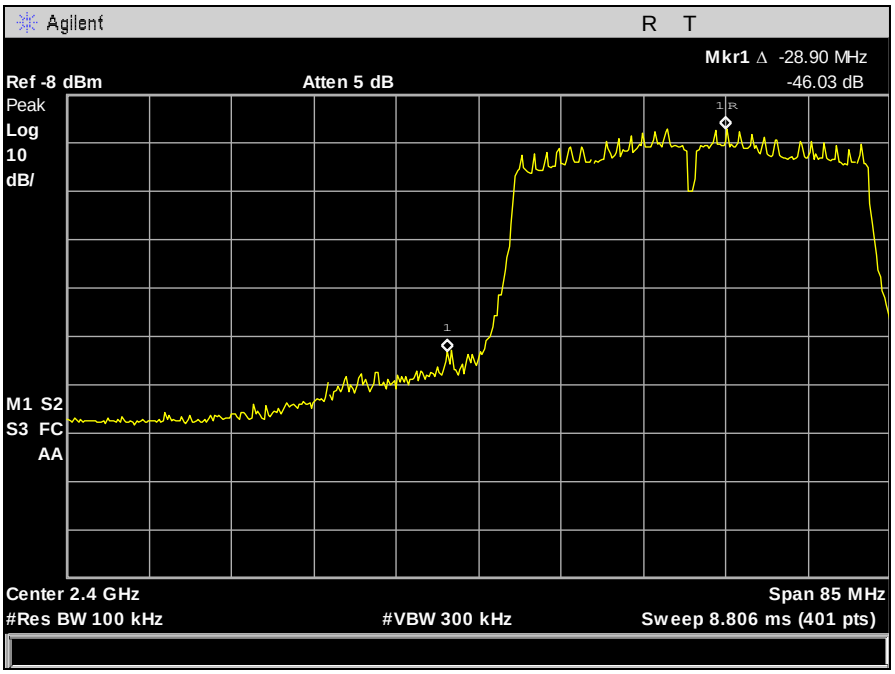


Plot 443. Conducted Band Edge, 802.11n 20 MHz, 2412 MHz, Port 3

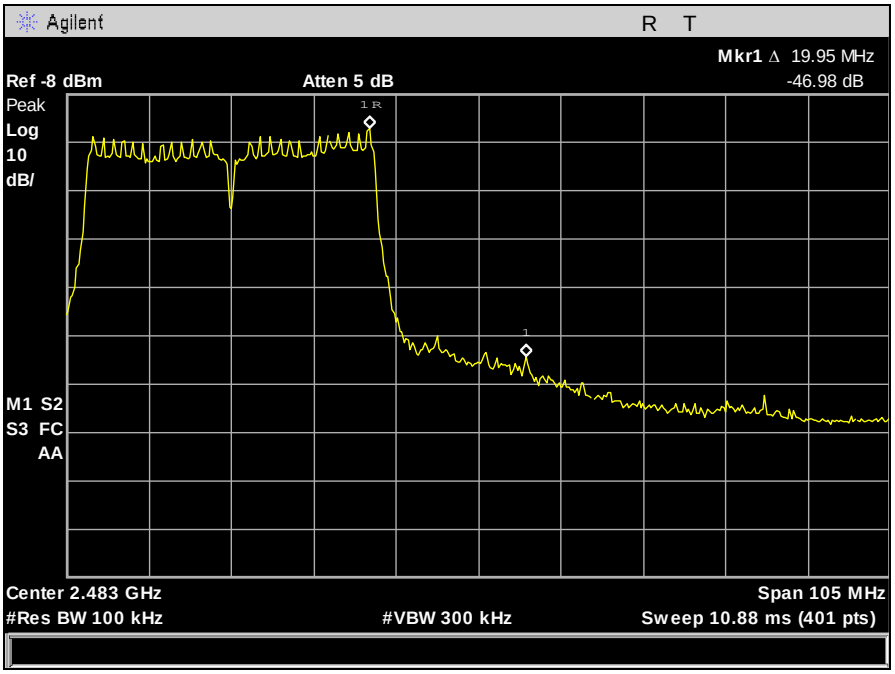


Plot 444. Conducted Band Edge, 802.11n 20 MHz, 2462 MHz, Port 3

Conducted Band Edge Test Results, 802.11n 40 MHz, Port 1, 2.4 GHz

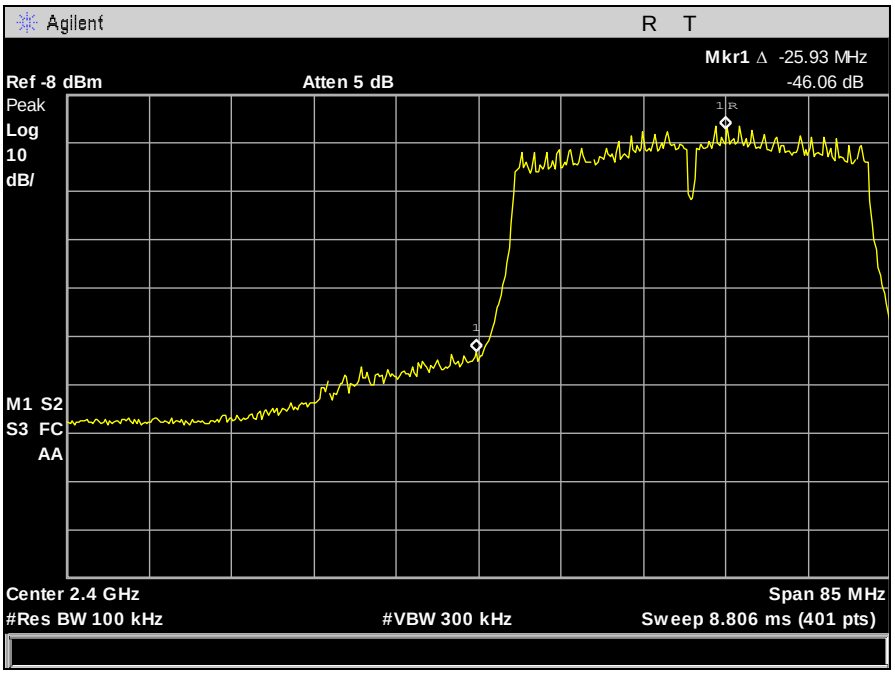


Plot 445. Conducted Band Edge, 802.11n 40 MHz, 2422 MHz, Port 1

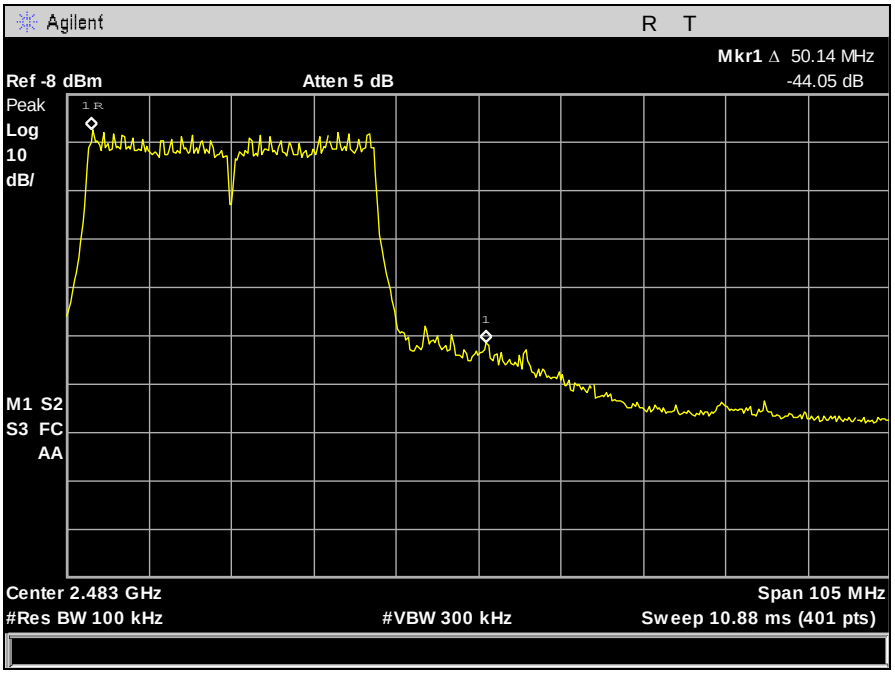


Plot 446. Conducted Band Edge, 802.11n 40 MHz, 2452 MHz, Port 1

Conducted Band Edge Test Results, 802.11n 40 MHz, Port 2, 2.4 GHz

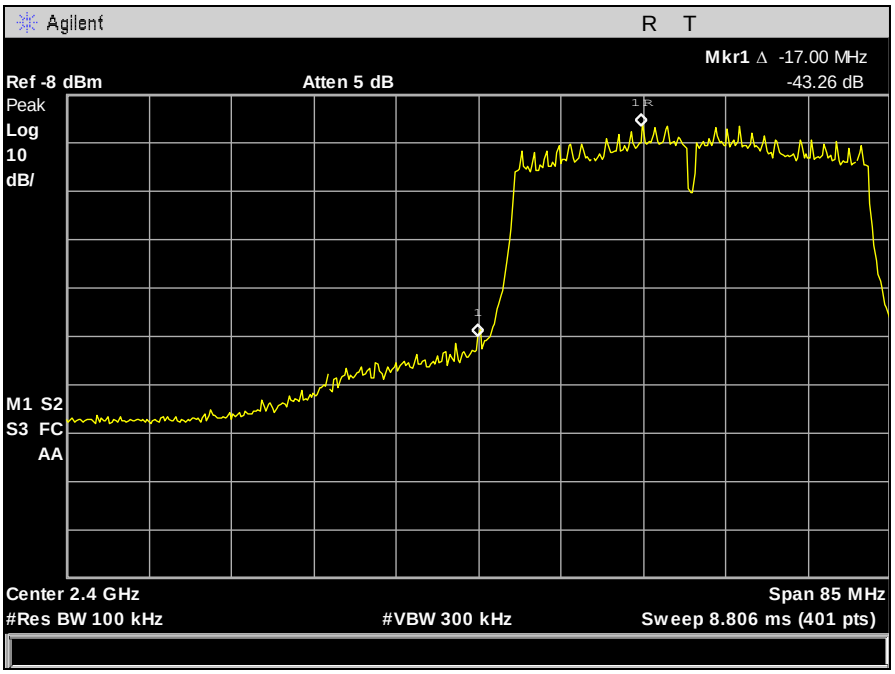


Plot 447. Conducted Band Edge, 802.11n 40 MHz, 2422 MHz, Port 2

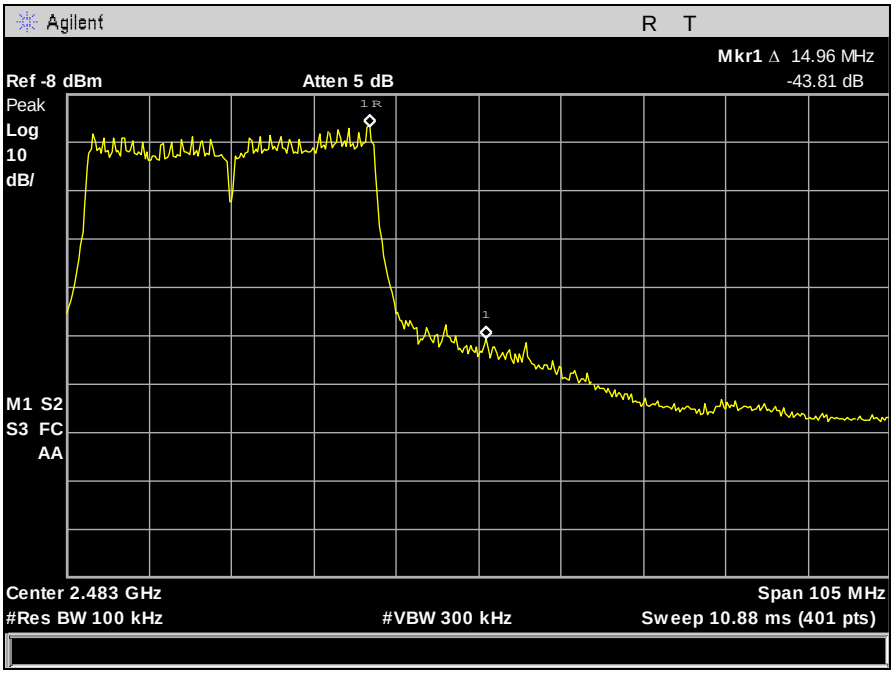


Plot 448. Conducted Band Edge, 802.11n 40 MHz, 2452 MHz, Port 2

Conducted Band Edge Test Results, 802.11n 40 MHz, Port 3, 2.4 GHz

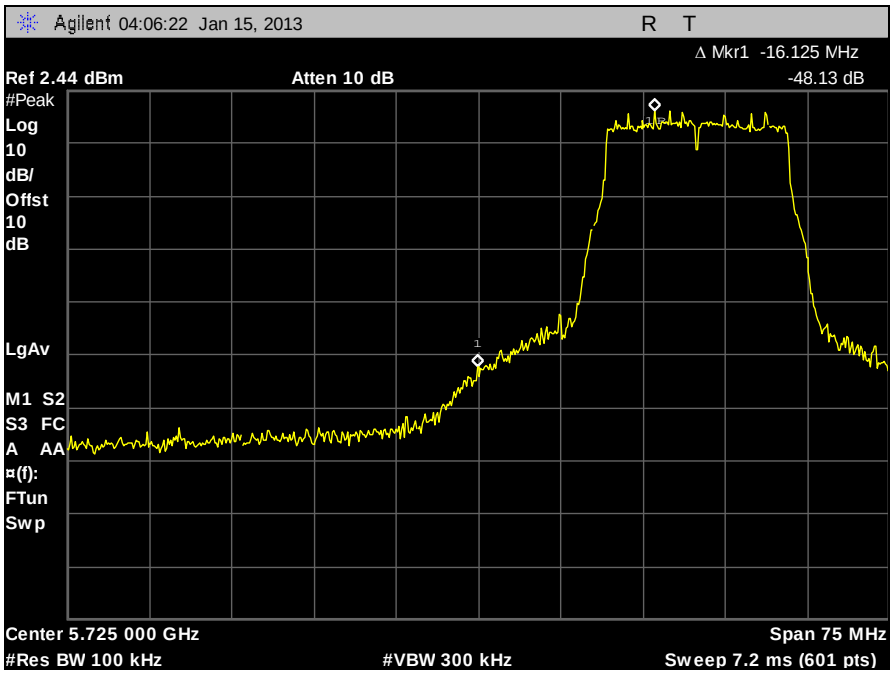


Plot 449. Conducted Band Edge, 802.11n 40 MHz, 2422 MHz, Port 3

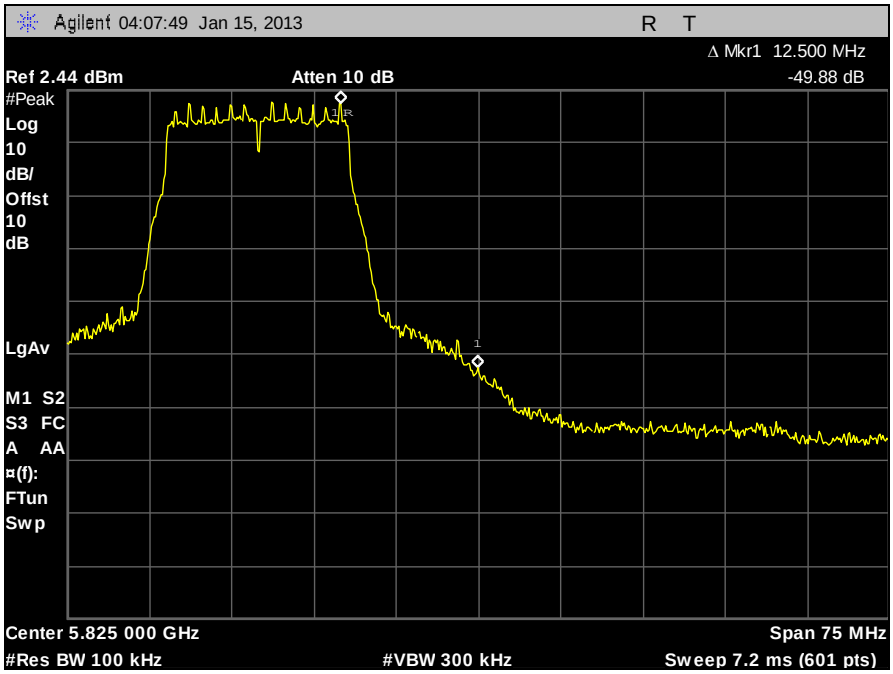


Plot 450. Conducted Band Edge, 802.11n 40 MHz, 2452 MHz, Port 3

Conducted Band Edge Test Results, 802.11a 20 MHz, 5 GHz

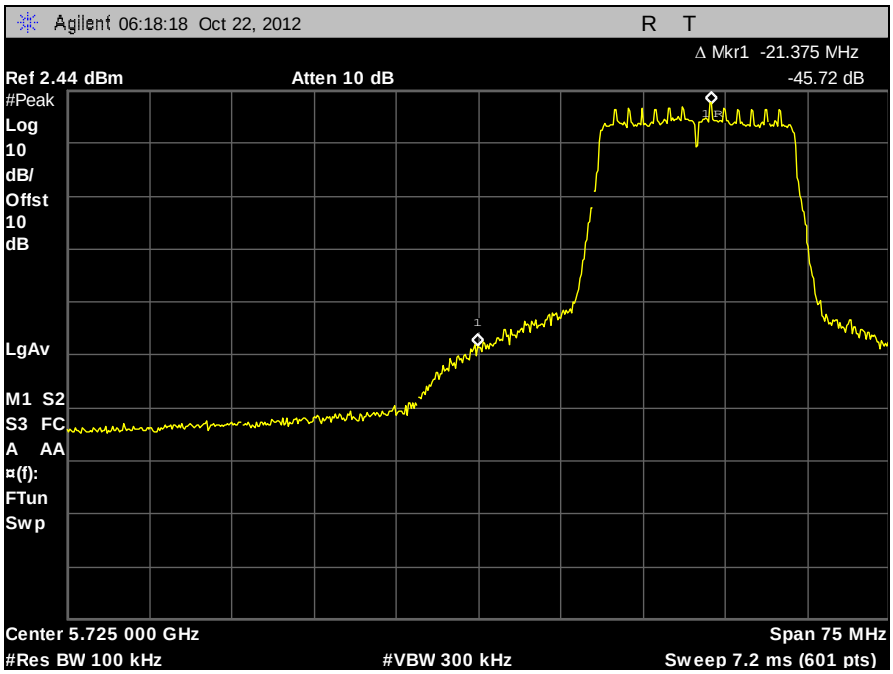


Plot 451. Conducted Band Edge, 802.11a 20 MHz, 5745 MHz, Low Channel, Port 1

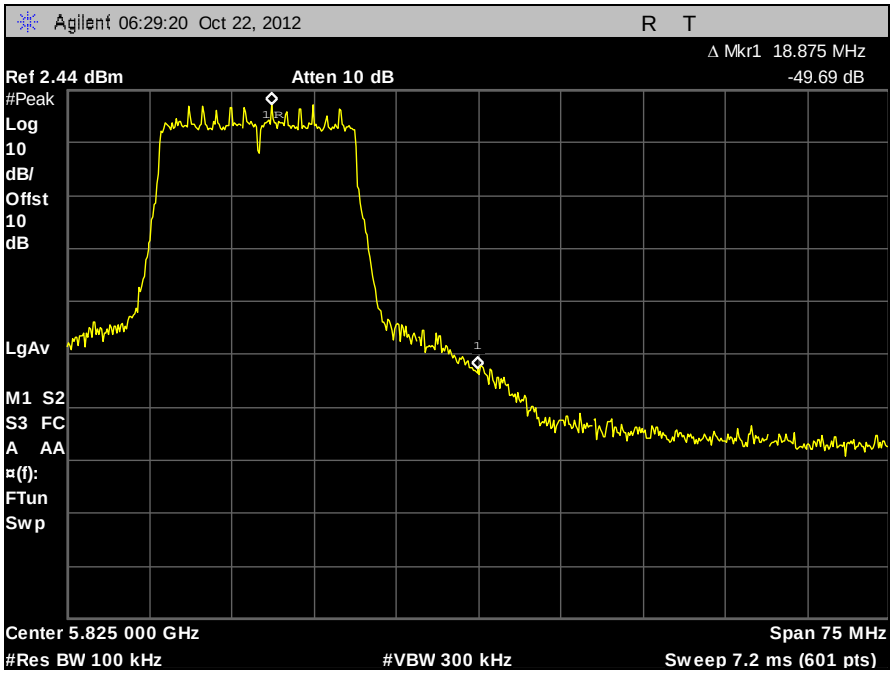


Plot 452. Conducted Band Edge, 802.11a 20 MHz, 5805 MHz, High Channel, Port 1

Conducted Band Edge Test Results, 802.11n 20 MHz, Port 1, 5 GHz

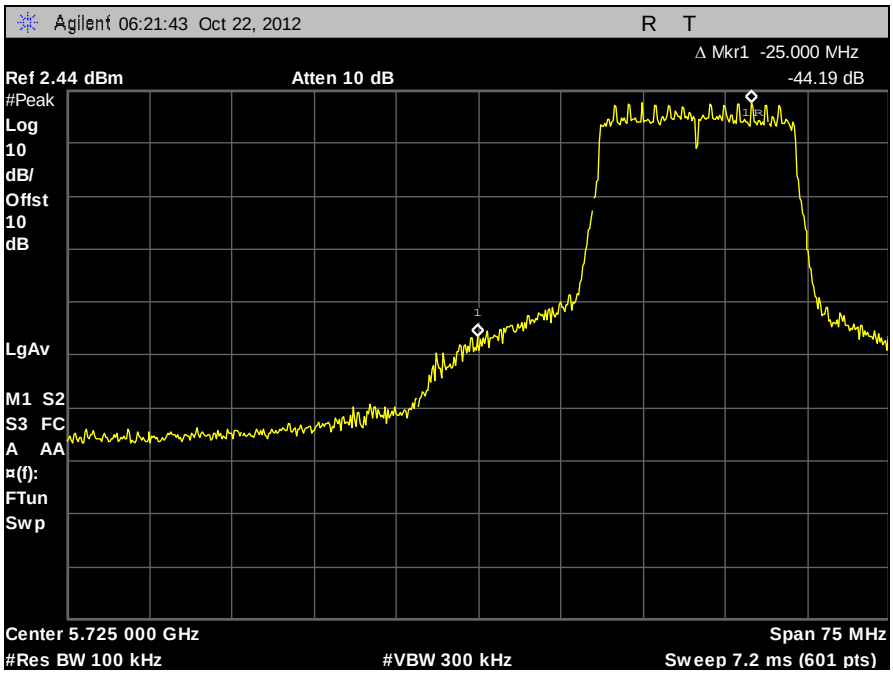


Plot 453. Conducted Band Edge, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 1

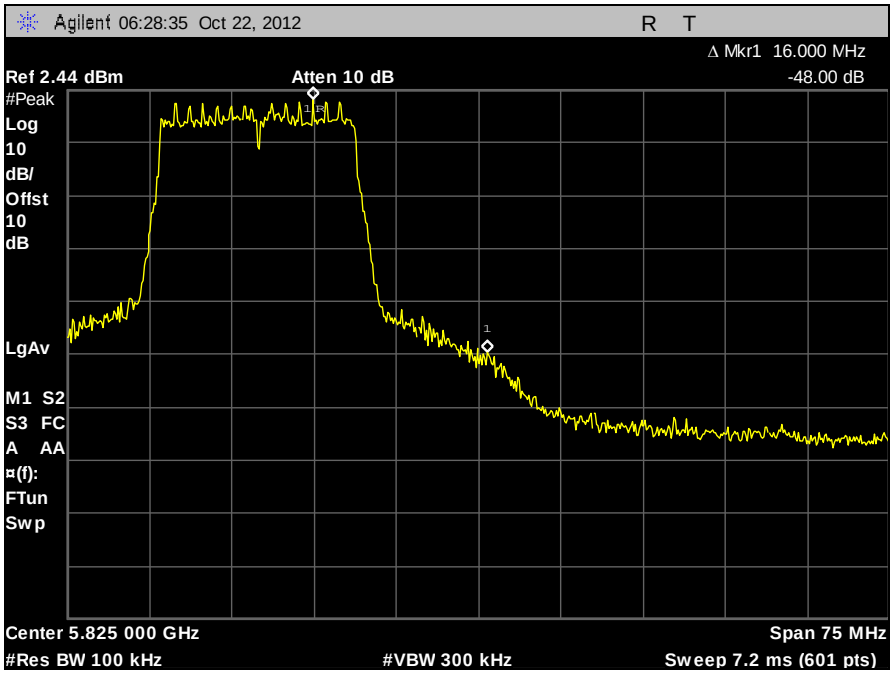


Plot 454. Conducted Band Edge, 802.11n 20 MHz, 5805 MHz, High Channel, Port 1

Conducted Band Edge Test Results, 802.11n 20 MHz, Port 2, 5 GHz

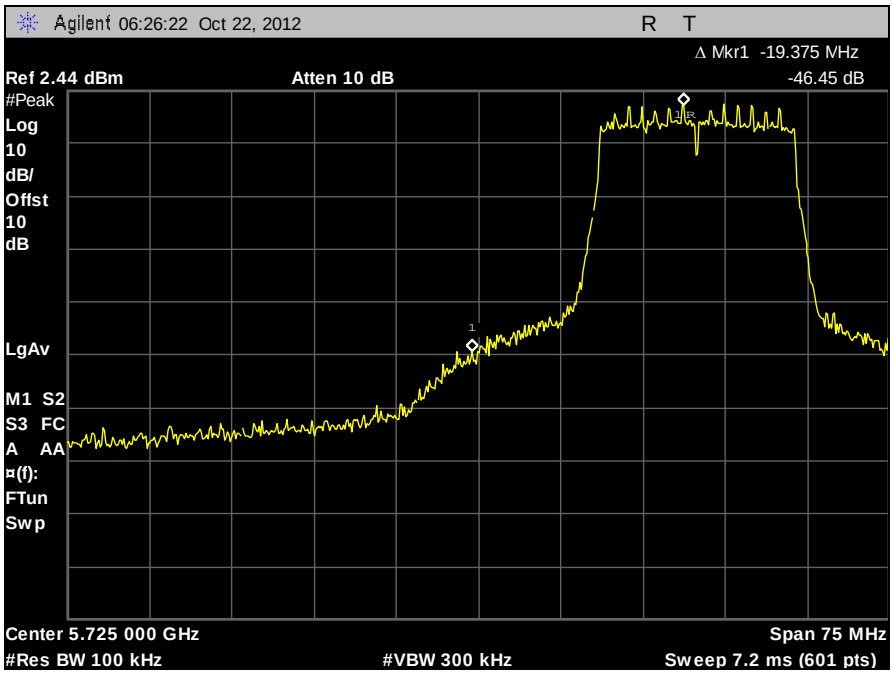


Plot 455. Conducted Band Edge, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 2

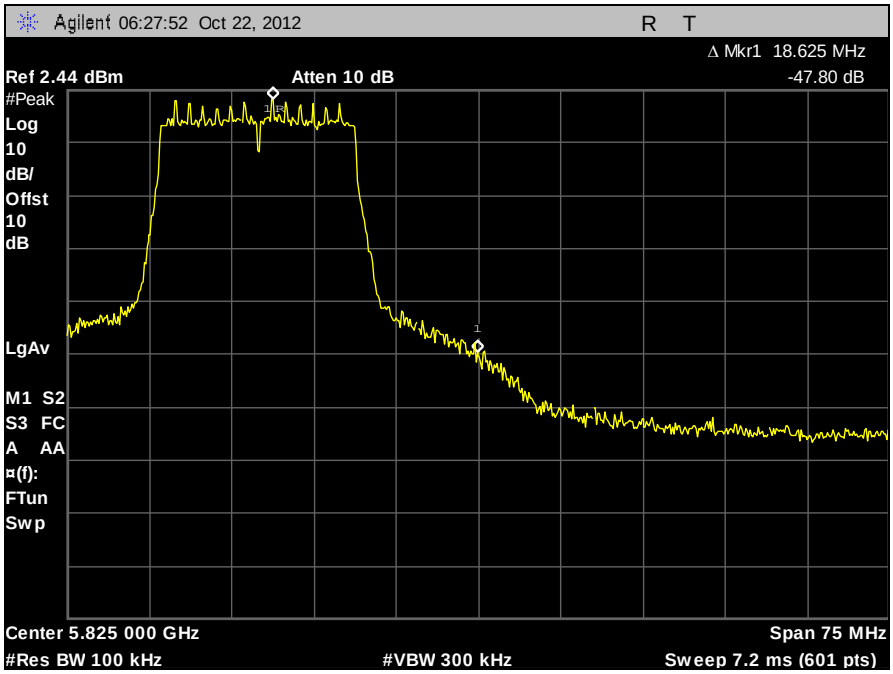


Plot 456. Conducted Band Edge, 802.11n 20 MHz, 5805 MHz, High Channel, Port 2

Conducted Band Edge Test Results, 802.11n 20 MHz, Port 3, 5 GHz

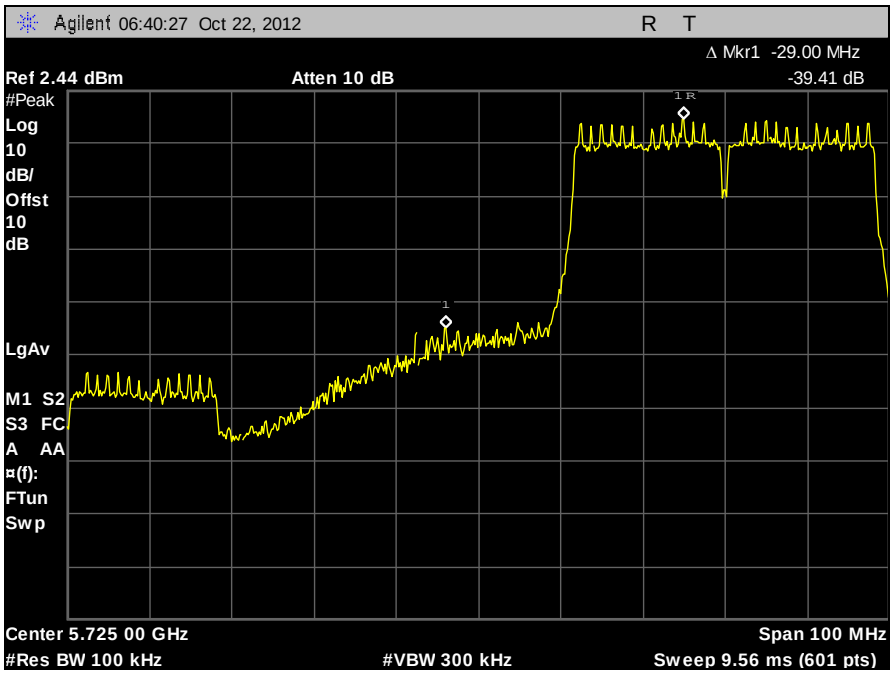


Plot 457. Conducted Band Edge, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 3

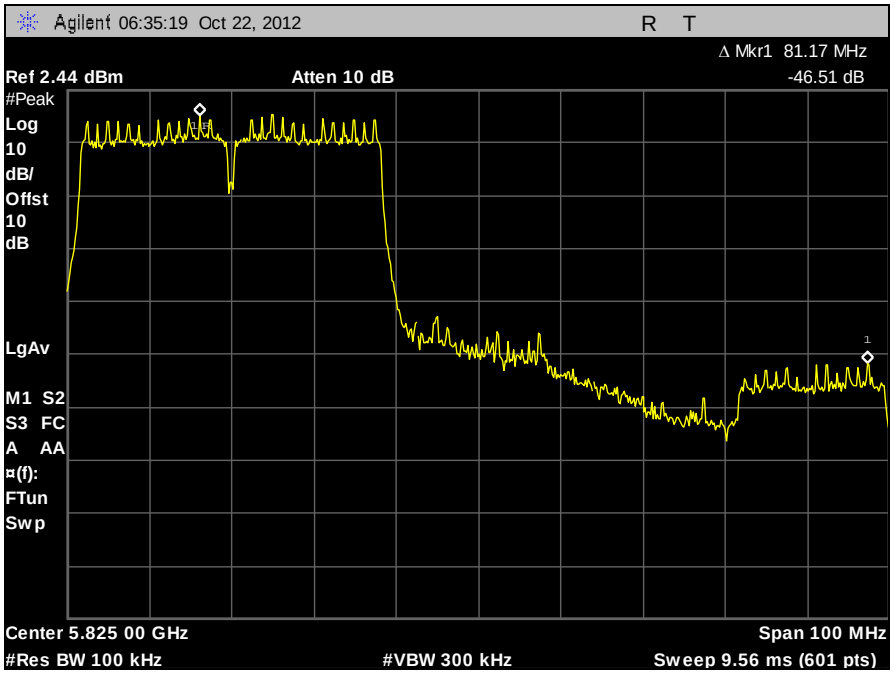


Plot 458. Conducted Band Edge, 802.11n 20 MHz, 5805 MHz, High Channel, Port 3

Conducted Band Edge Test Results, 802.11n 40 MHz, Port 1, 5 GHz

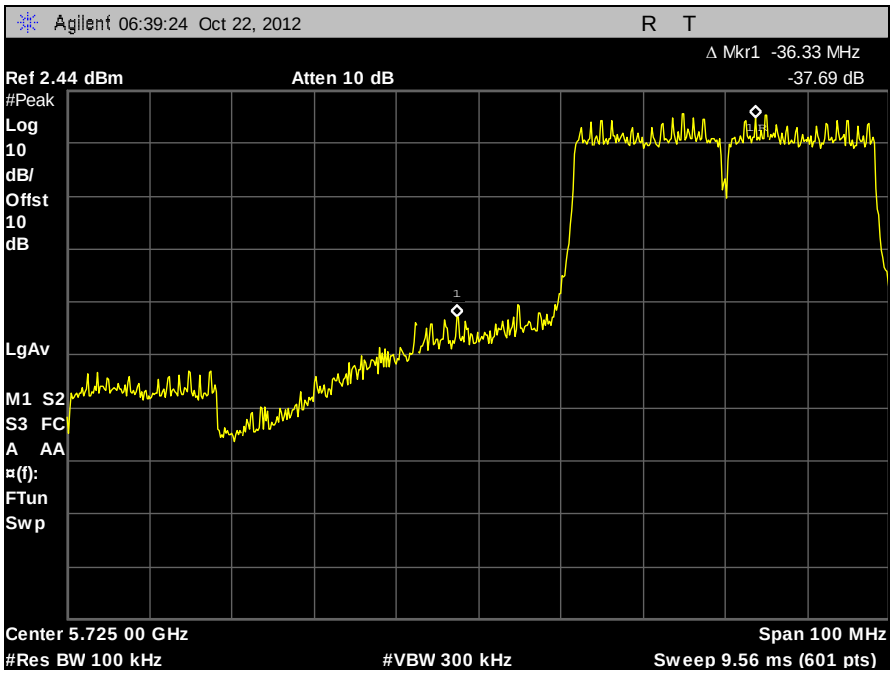


Plot 459. Conducted Band Edge, 802.11n 40 MHz, 5755 MHz Low Channel, Port 1

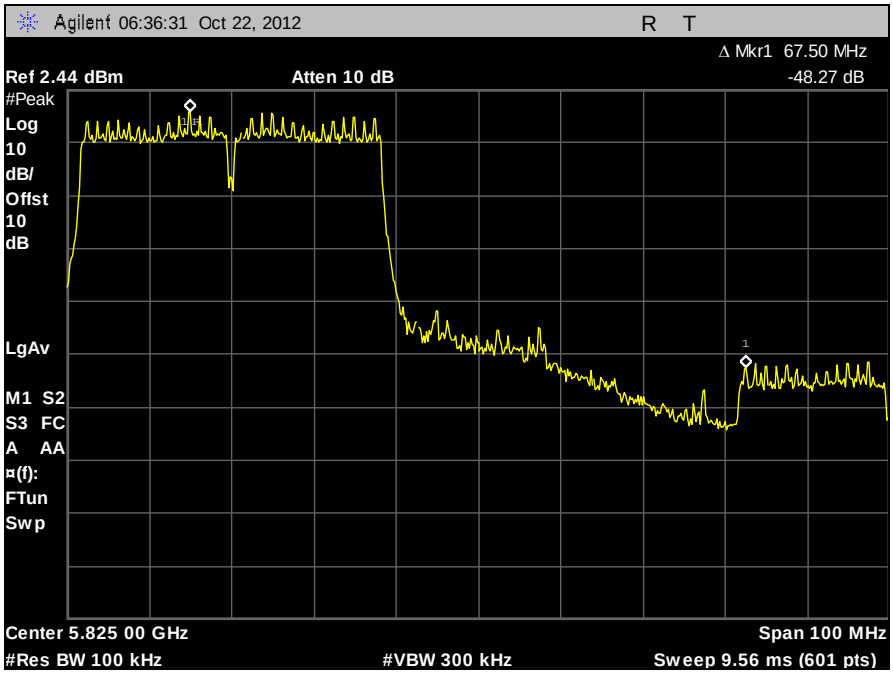


Plot 460. Conducted Band Edge, 802.11n 40 MHz, 5795 MHz, High Channel, Port 1

Conducted Band Edge Test Results, 802.11n 40 MHz, Port 2, 5 GHz

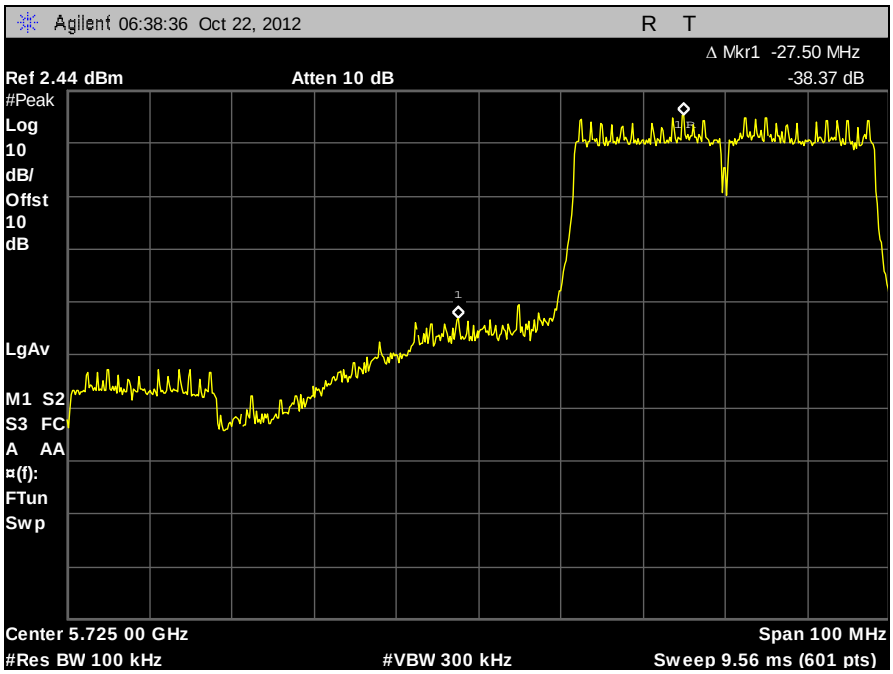


Plot 461. Conducted Band Edge, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 2

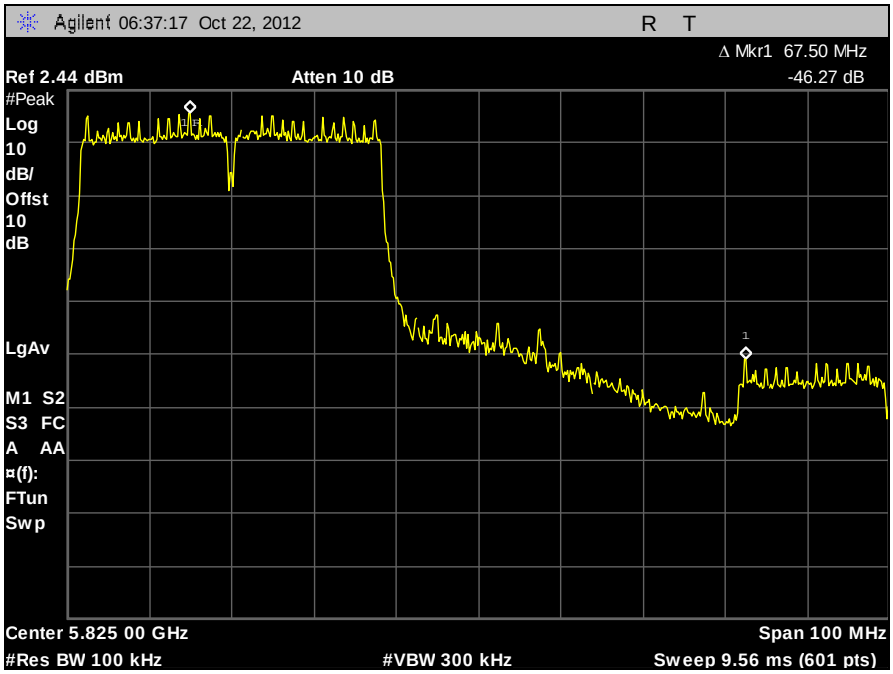


Plot 462. Conducted Band Edge, 802.11n 40 MHz, 5795 MHz, High Channel, Port 2

Conducted Band Edge Test Results, 802.11n 40 MHz, Port 3, 5 GHz

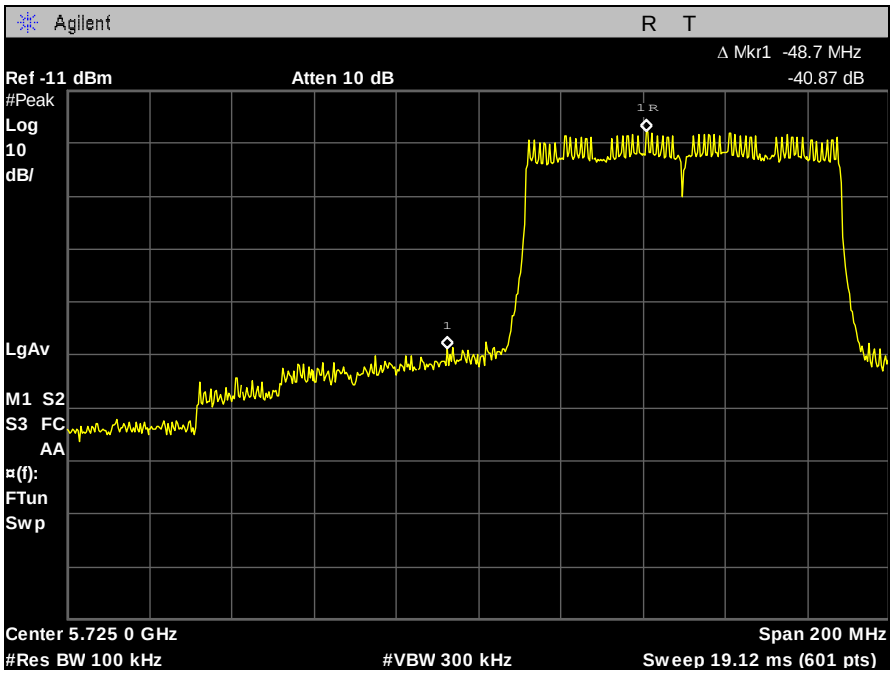


Plot 463. Conducted Band Edge, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 3

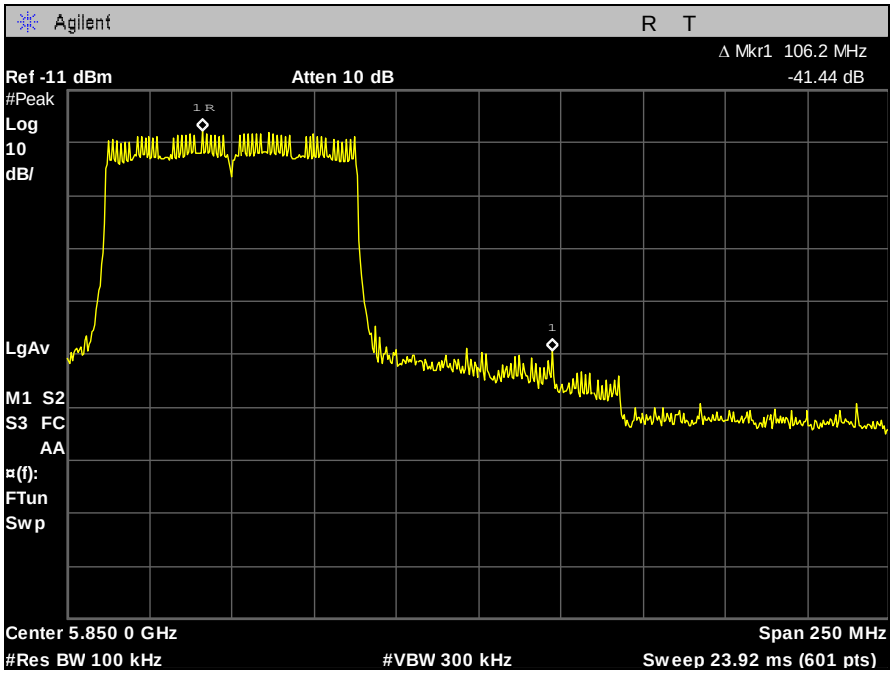


Plot 464. Conducted Band Edge, 802.11n 40 MHz, 5795 MHz, High Channel, Port 3

Conducted Band Edge Test Results, 802.11n 80 MHz, Port 1, 5 GHz

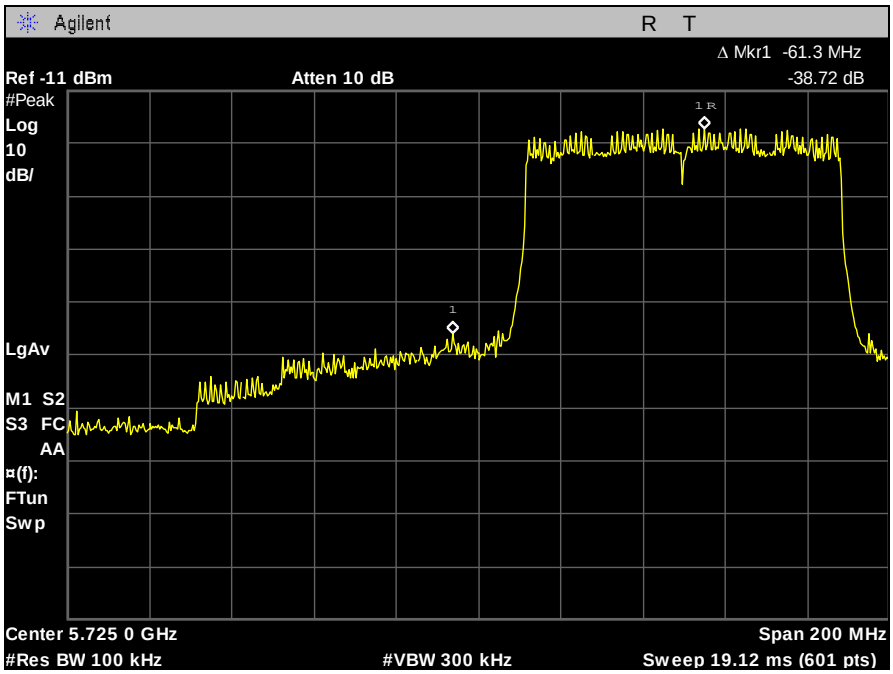


Plot 465. Conducted Band Edge, 802.11n 80 MHz, 5775 MHz, Port 1, Low Band Edge

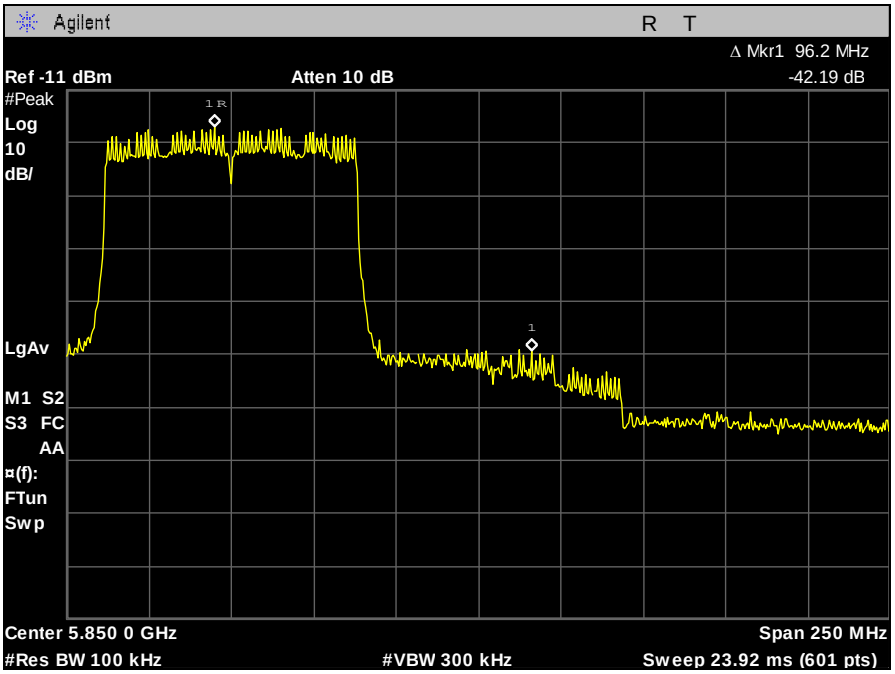


Plot 466. Conducted Band Edge, 802.11n 80 MHz, 5775 MHz, Port 1, High Band Edge

Conducted Band Edge Test Results, 802.11n 80 MHz, Port 2, 5 GHz

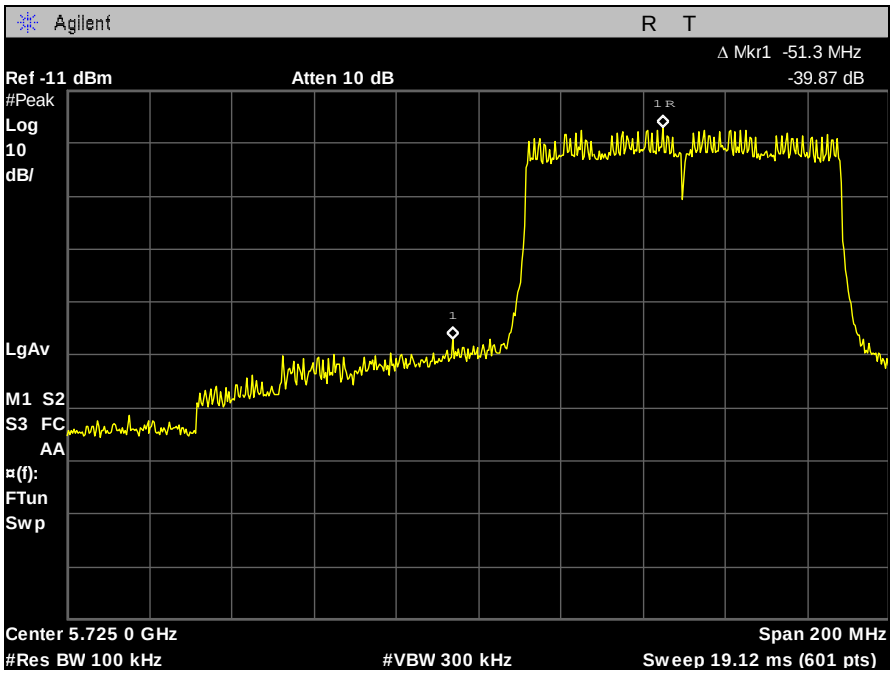


Plot 467. Conducted Band Edge, 802.11n 80 MHz, 5775 MHz, Port 2, Low Band Edge

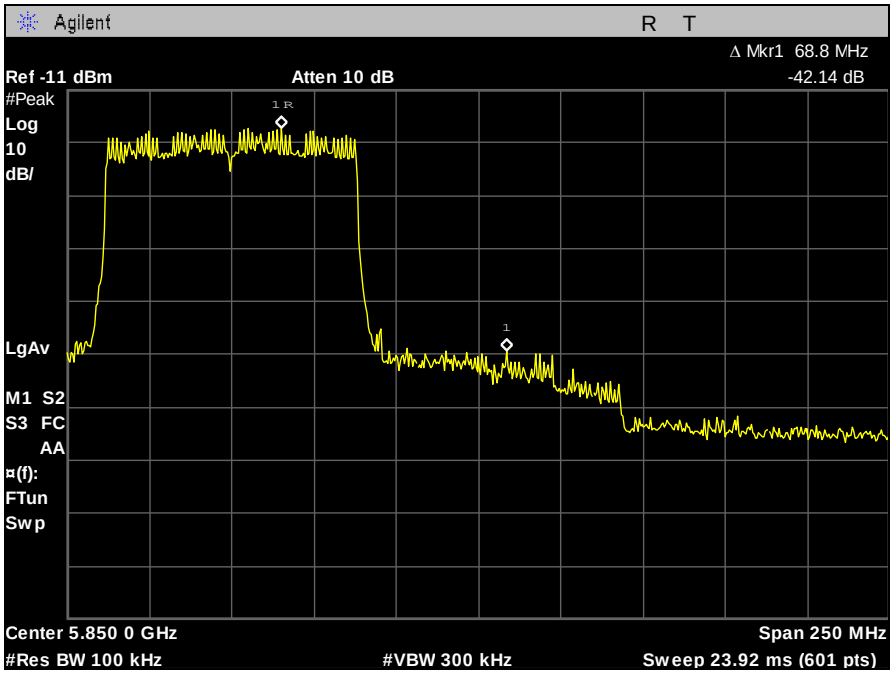


Plot 468. Conducted Band Edge, 802.11n 80 MHz, 5775 MHz, Port 2, High Band Edge

Conducted Band Edge Test Results, 802.11n 80 MHz, Port 3, 5 GHz



Plot 469. Conducted Band Edge, 802.11n 80 MHz, 5775 MHz, Port 3, Low Band Edge



Plot 470. Band Edge, 802.11n 80 MHz, 5775 MHz, Port 3, High Band Edge

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(e) Peak Power Spectral Density

Test Requirements: **§15.247(e):** For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

Test Procedure: The transmitter was connected directly to a Spectrum Analyzer through an attenuator. The power level was set to the maximum level. A RBW of 3 kHz and VBW of 10 kHz were used to determine the peak emissions within the band. The Peak Marker function of the analyzer was used to determine the highest peak spectral density. Measurements were carried out at the low, mid and high channels.

Test Results: The EUT was compliant with the peak power spectral density limits of **§ 15.247 (e)**.

The peak power spectral density was determined from plots on the following page(s).

Test Engineer: Jonathan Chao

Test Date: 02/18/13

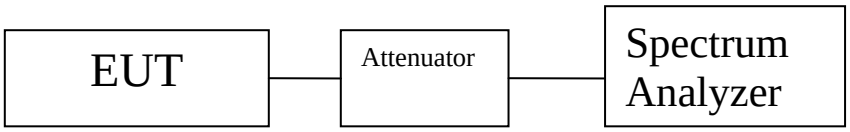


Figure 5. Block Diagram, Peak Power Spectral Density Test Setup

Peak Power Spectral Density Test Results

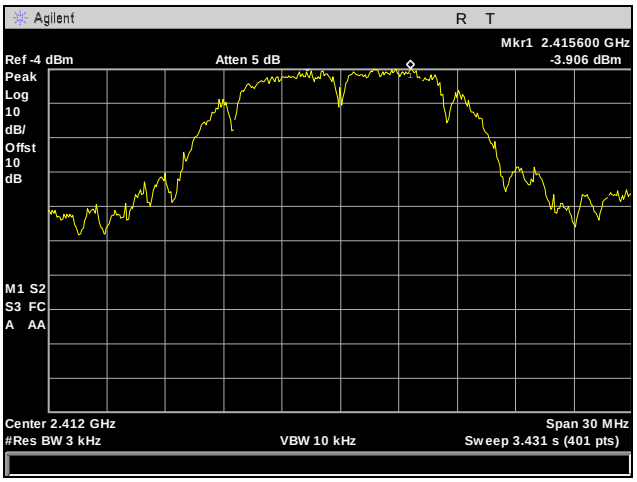
	Peak Power Spectral Density				
	Carrier Channel	Frequency (MHz)	Measured PPSD (dBm)	Limit (dBm)	Margin (dB)
802.11b	Low	2412	-3.906	8	-11.906
	Mid	3437	-4.381	8	-12.381
	High	2462	-3.548	8	-11.548
802.11g	Low	2412	-6.989	8	-14.989
	Mid	2437	-6.181	8	-14.181
	High	2462	-8.899	8	-16.899
802.11n 20 MHz Port 1	Low	2412	-8.678	8	-16.678
	Mid	2437	-5.45	8	-13.45
	High	2462	-9.778	8	-17.778
802.11n 20 MHz Port 2	Low	2412	-7.049	8	-15.049
	Mid	2437	-5.45	8	-13.45
	High	2462	-8.949	8	-16.949
802.11n 20 MHz Port 3	Low	2412	-12.26	8	-20.26
	Mid	2437	-5.011	8	-13.011
	High	2462	-6.896	8	-14.896
802.11n 20 MHz Summed	Low	2422	-4.06	6.23	-6.29
	Mid	2437	-0.53	6.23	-2.76
	High	2452	-3.60	6.23	-5.83
802.11n 40 MHz Port 1	Low	2422	-11.44	8	-19.44
	Mid	2437	-10.06	8	-18.06
	High	2452	-12.67	8	-20.67
802.11n 40 MHz Port 2	Low	2422	-11.31	8	-19.31
	Mid	2437	-10.36	8	-18.36
	High	2452	-12.9	8	-20.9
802.11n 40 MHz Port 3	Low	2422	-10.74	8	-18.74
	Mid	2437	-10.28	8	-18.28
	High	2452	-13.47	8	-21.47
802.11n 40 MHz Summed	Low	2422	-6.38	6.23	-8.61
	Mid	2437	-5.46	6.23	-7.69
	High	2452	-8.23	6.23	-10.46

Table 33. Peak Power Spectral Density, Test Results, 2.4 GHz

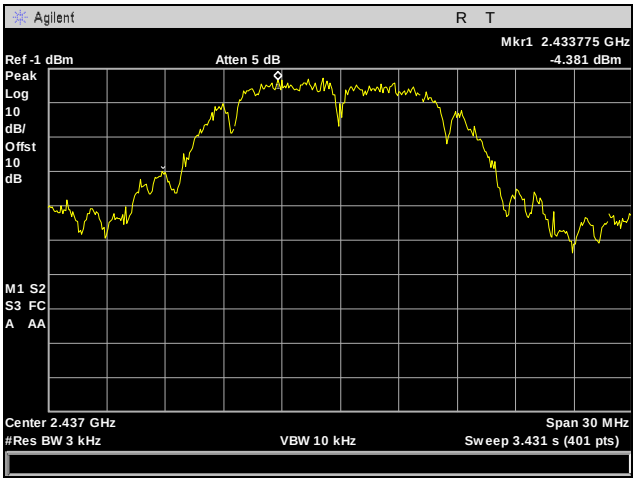
	Peak Power Spectral Density				
	Carrier Channel	Frequency (MHz)	Measured PPSD (dBm)	Limit (dBm)	Margin (dB)
802.11a	Low	5745	-4.763	8	-12.763
	Mid	5785	-4.061	8	-12.061
	High	5825	-3.627	8	-11.627
802.11n 20 MHz Port 1	Low	5745	-4.697	8	-12.697
	Mid	5785	-2.565	8	-10.565
	High	5825	-2.608	8	-10.608
802.11n 20 MHz Port 2	Low	5745	-3.807	8	-11.807
	Mid	5785	-3.774	8	-11.774
	High	5825	-3.572	8	-11.572
802.11n 20 MHz Port 3	Low	5745	-3.328	8	-11.328
	Mid	5785	-3.88	8	-11.88
	High	5825	-3.209	8	-11.209
802.11n 20 MHz Summed	Low	5745	0.86	5.23	-1.37
	Mid	5785	1.41	5.23	-0.82
	High	5825	1.66	5.23	-0.57
802.11n 40 MHz Port 1	Low	5755	-6.956	8	-14.956
	High	5795	-7.46	8	-15.46
802.11n 40 MHz Port 2	Low	5755	-6.342	8	-14.342
	High	5795	-7.067	8	-15.067
802.11n 40 MHz Port 3	Low	5755	-6.657	8	-14.657
	High	5795	-6.552	8	-14.552
802.11n 40 MHz Summed	Low	5755	-1.87	5.23	-4.1
	High	5795	-2.24	5.23	-4.47
802.11n 80 MHz Port 1	--	5775	-11.11	8	-19.11
802.11n 80 MHz Port 2	--	5775	-10.78	8	-18.78
802.11n 80 MHz Port 3	--	5775	-10.78	8	-18.78
802.11n 80 MHz Summed	--	5775	-6.12	5.23	-8.35

Table 34. Peak Power Spectral Density, Test Results, 5 GHz

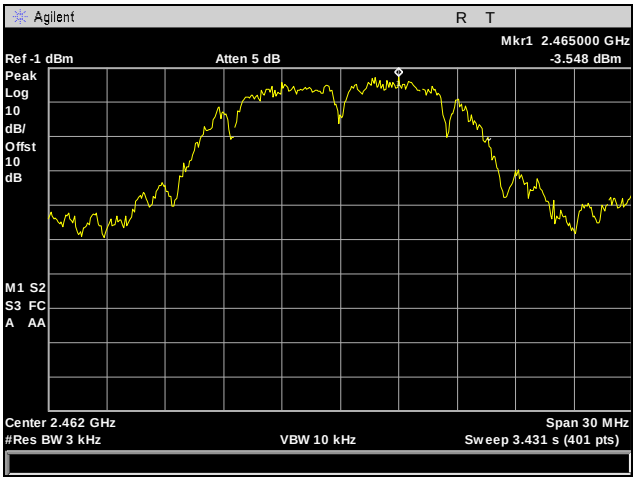
Peak Power Spectral Density, 802.11b, 2.4 GHz



Plot 471. Peak Spectral Density, 802.11b 20 MHz, 2412 MHz, Low Channel

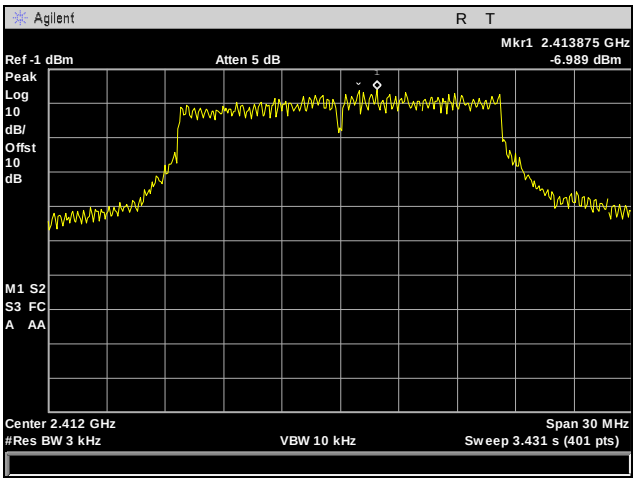


Plot 472. Peak Spectral Density, 802.11b 20 MHz, 2437 MHz, Mid Channel

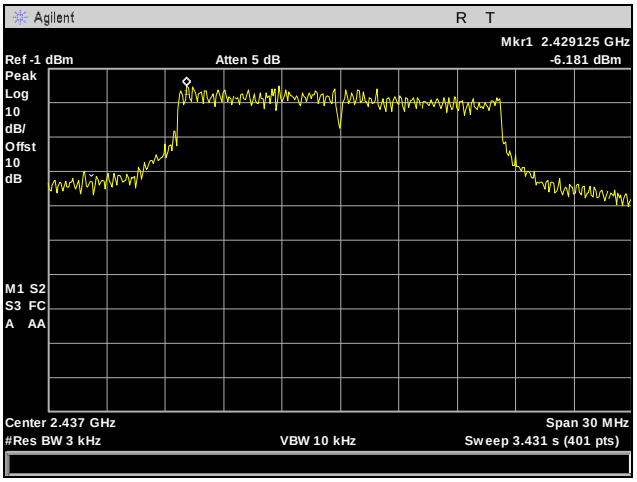


Plot 473. Peak Spectral Density, 802.11b 20 MHz, 2462 MHz, High Channel

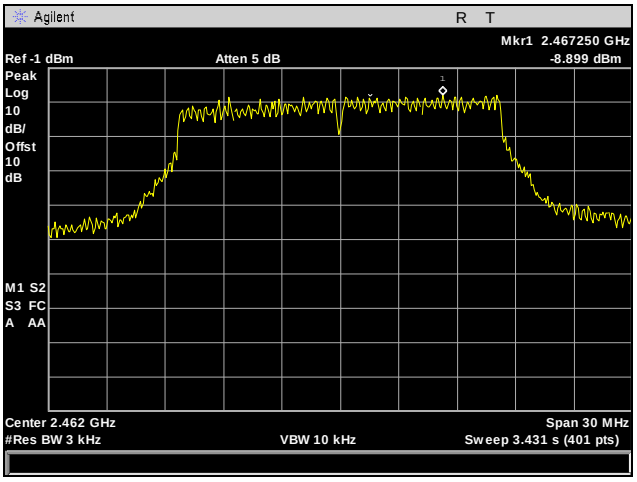
Peak Power Spectral Density, 802.11g, 2.4 GHz



Plot 474. Peak Spectral Density, 802.11g 20 MHz, 2412 MHz, Low Channel

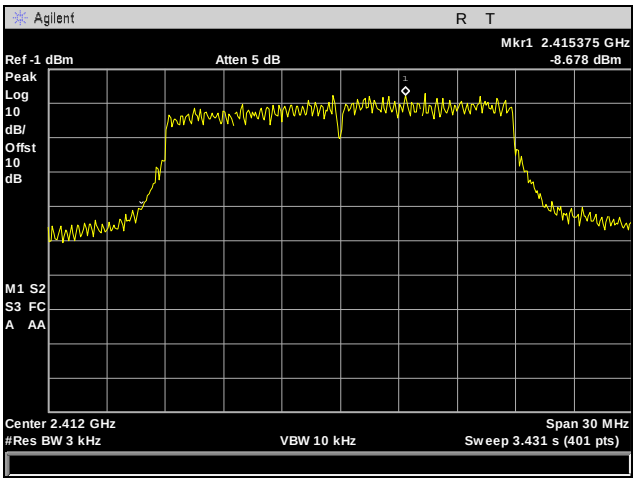


Plot 475. Peak Spectral Density, 802.11g 20 MHz, 2437 MHz, Mid Channel

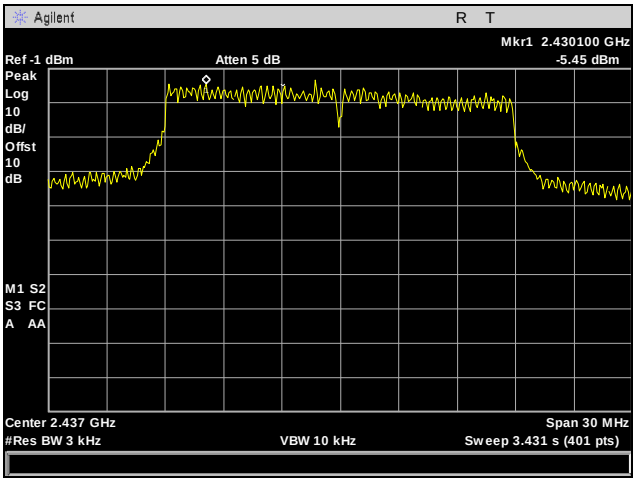


Plot 476. Peak Spectral Density, 802.11g 20 MHz, 2462 MHz, High Channel

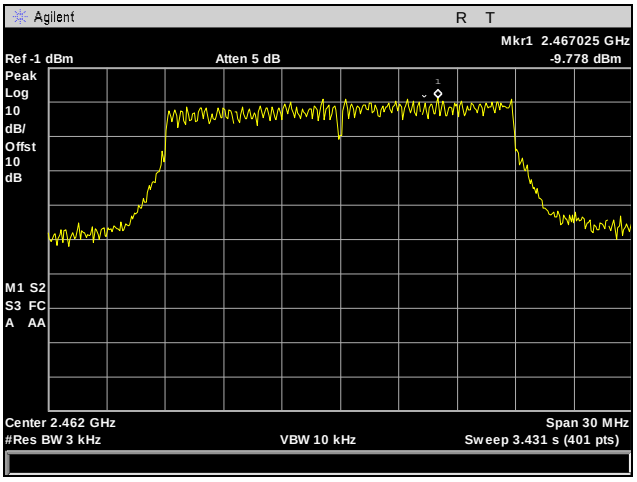
Peak Power Spectral Density, 802.11n 20 MHz, Port 1, 2.4 GHz



Plot 477. Peak Spectral Density, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 1

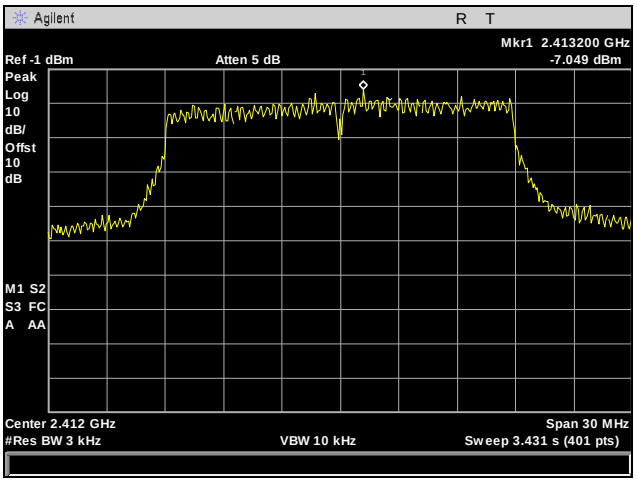


Plot 478. Peak Spectral Density, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 1

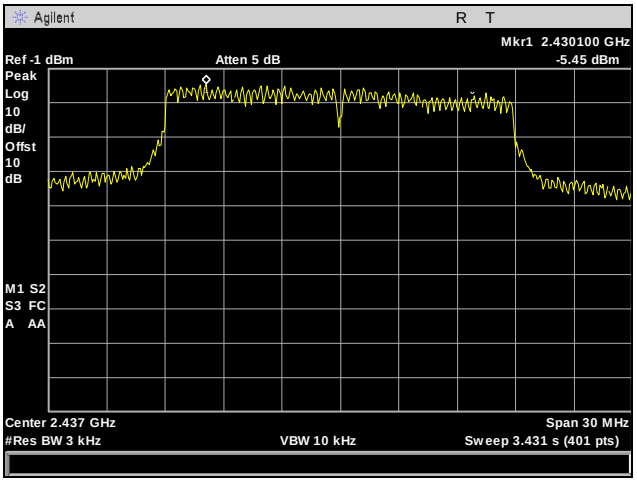


Plot 479. Peak Spectral Density, 802.11n 20 MHz, 2462 MHz, High Channel, Port 1

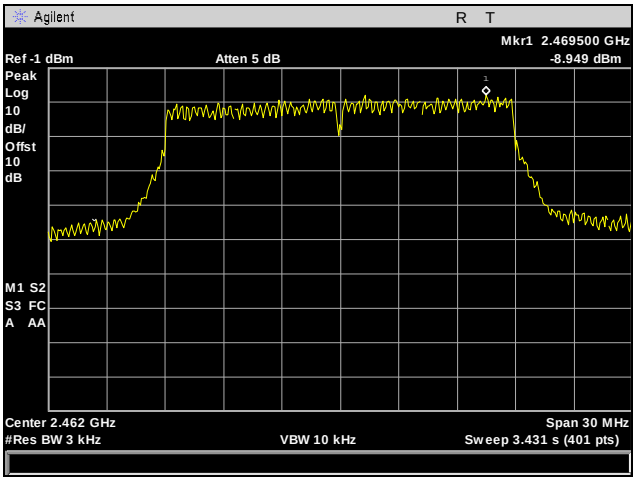
Peak Power Spectral Density, 802.11n 20 MHz, Port 2, 2.4 GHz



Plot 480. Peak Spectral Density, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 2

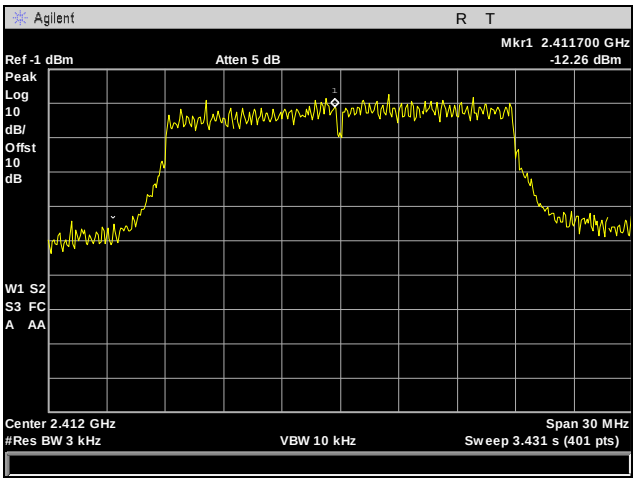


Plot 481. Peak Spectral Density, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 2

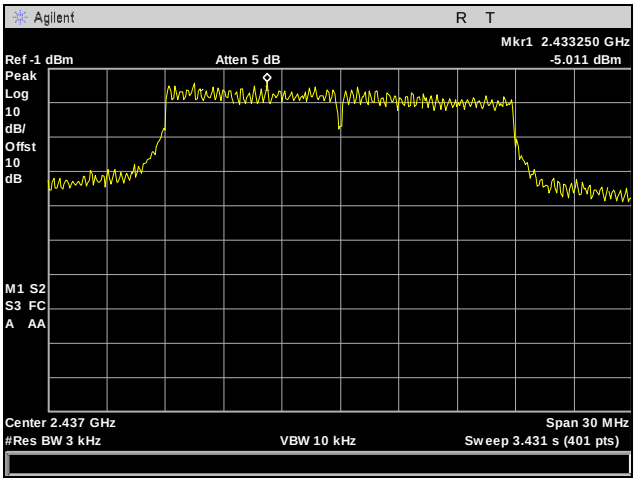


Plot 482. Peak Spectral Density, 802.11n 20 MHz, 2462 MHz, High Channel, Port 2

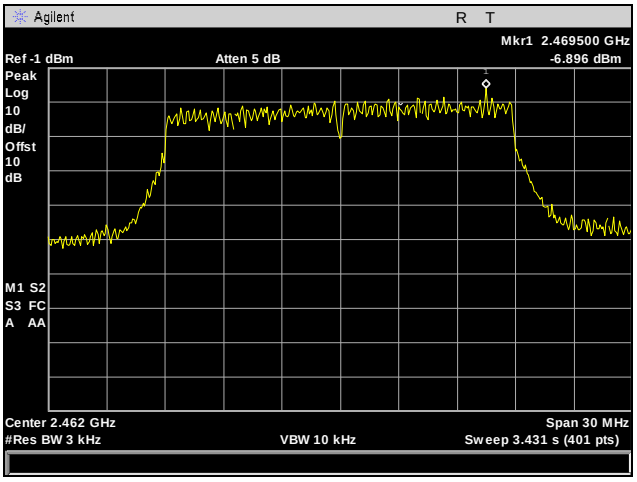
Peak Power Spectral Density, 802.11n 20 MHz, Port 3, 2.4 GHz



Plot 483. Peak Spectral Density, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 3

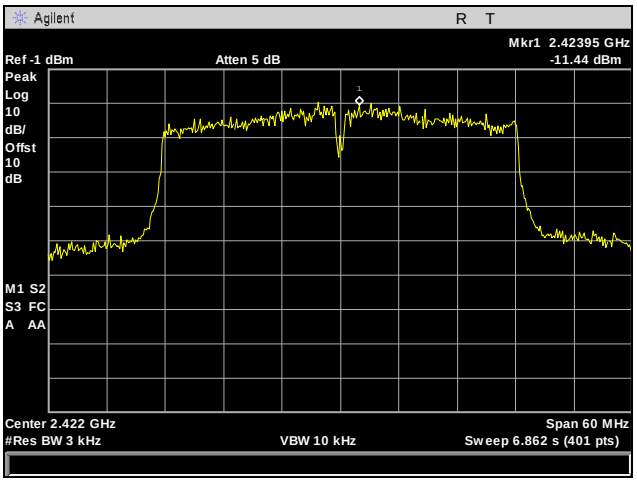


Plot 484. Peak Spectral Density, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 3

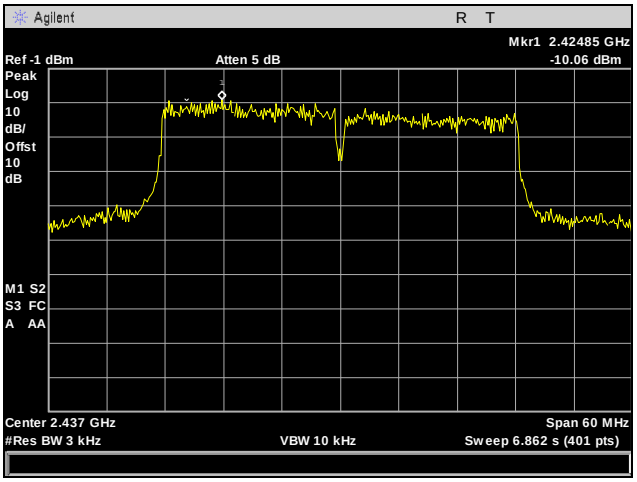


Plot 485. Peak Spectral Density, 802.11n 20 MHz, 2462 MHz, High Channel, Port 3

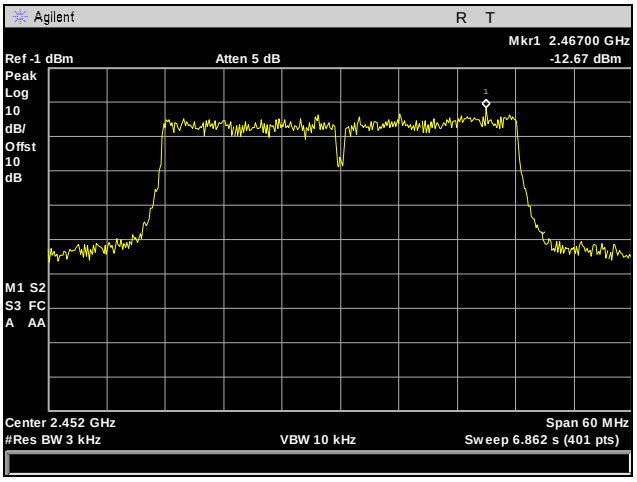
Peak Power Spectral Density, 802.11n 40 MHz, Port 1, 2.4 GHz



Plot 486. Peak Spectral Density, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 1

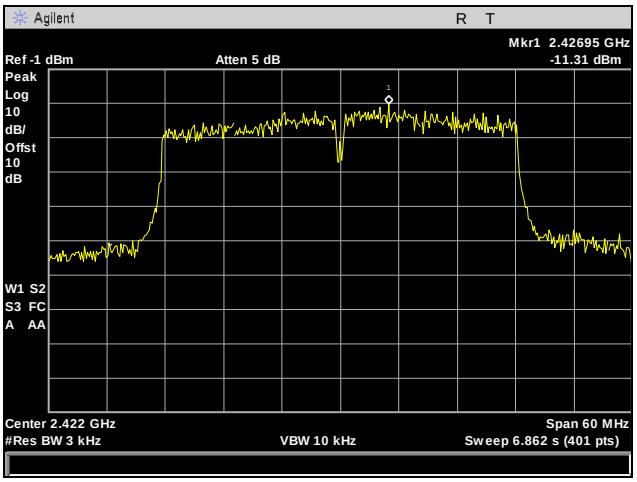


Plot 487. Peak Spectral Density, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 1

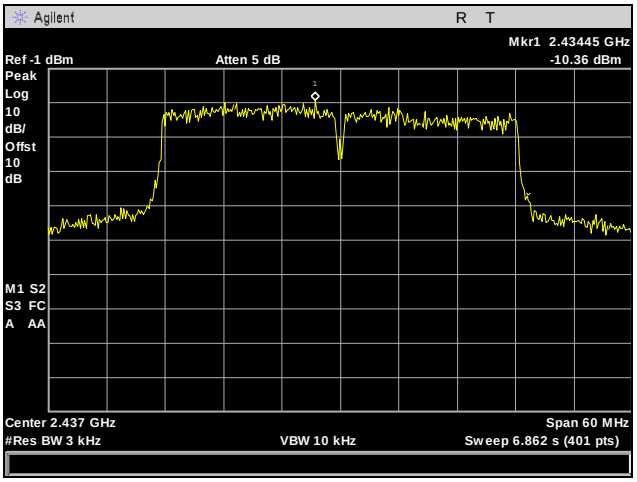


Plot 488. Peak Spectral Density, 802.11n 40 MHz, 2452 MHz, High Channel, Port 1

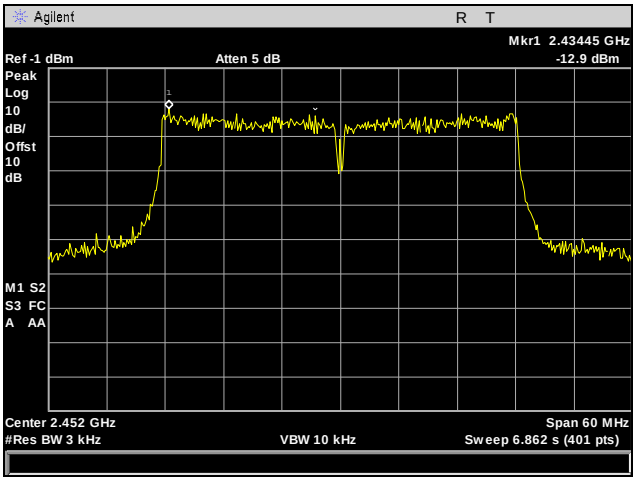
Peak Power Spectral Density, 802.11n 40 MHz, Port 2, 2.4 GHz



Plot 489. Peak Spectral Density, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 2

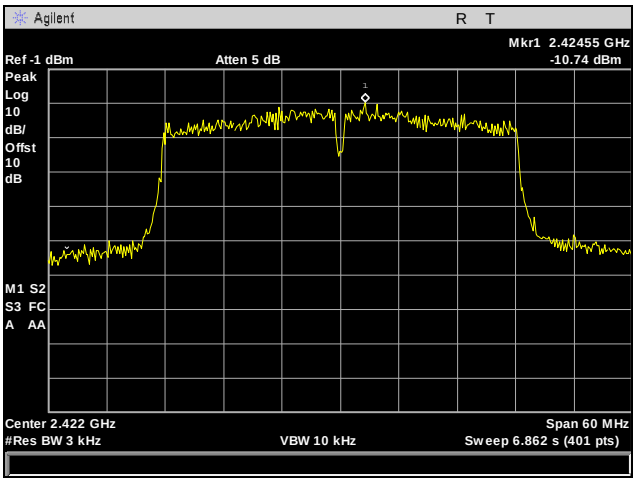


Plot 490. Peak Spectral Density, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 2

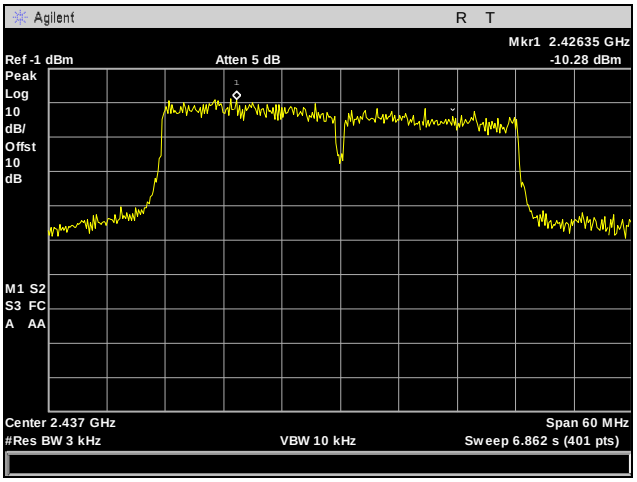


Plot 491. Peak Spectral Density, 802.11n 40 MHz, 2452 MHz, High Channel, Port 2

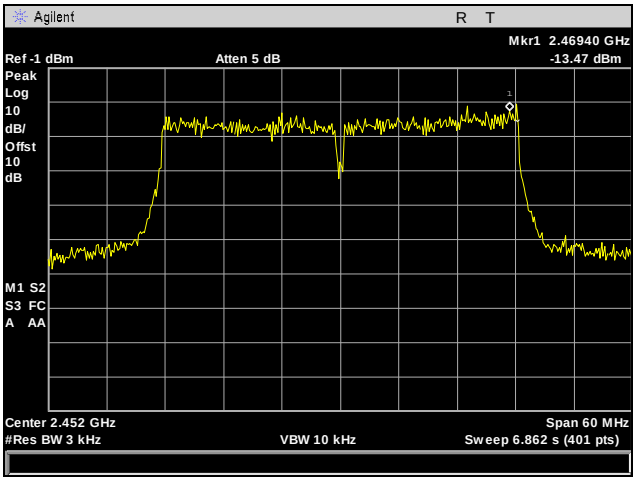
Peak Power Spectral Density, 802.11n 40 MHz, Port 3, 2.4 GHz



Plot 492. Peak Spectral Density, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 3

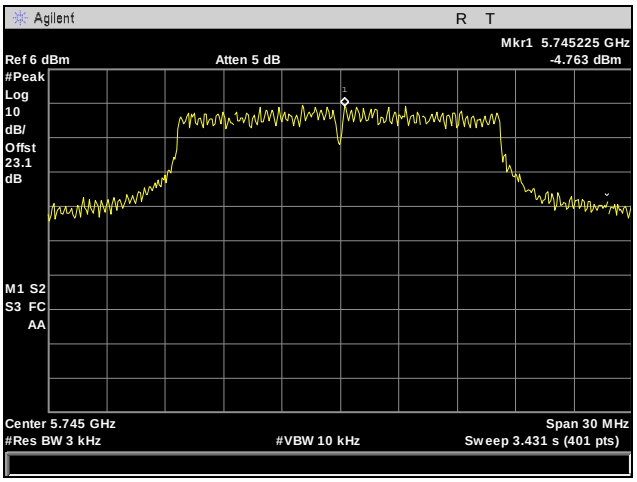


Plot 493. Peak Spectral Density, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 3

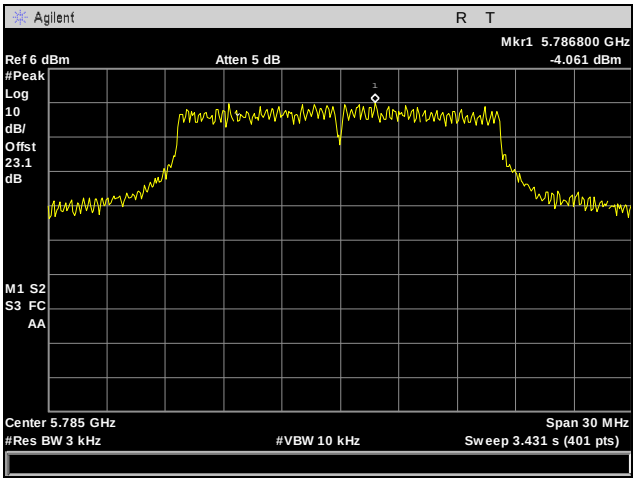


Plot 494. Peak Spectral Density, 802.11n 40 MHz, 2452 MHz, High Channel, Port 3

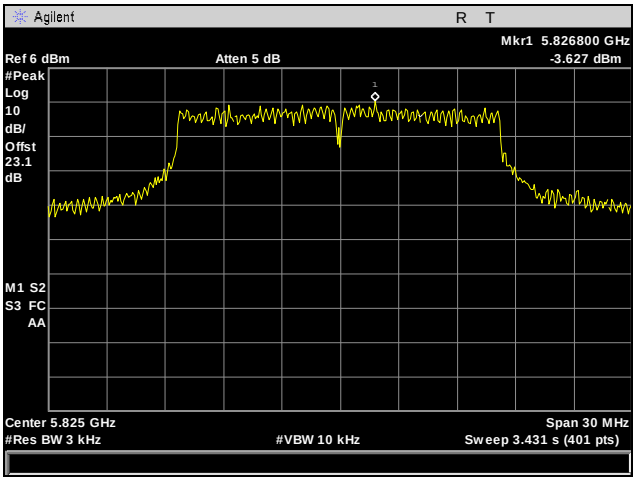
Peak Power Spectral Density, 802.11a, 5 GHz



Plot 495. Power Spectral Density, 802.11a, 5745 MHz, Low Channel, Port 1

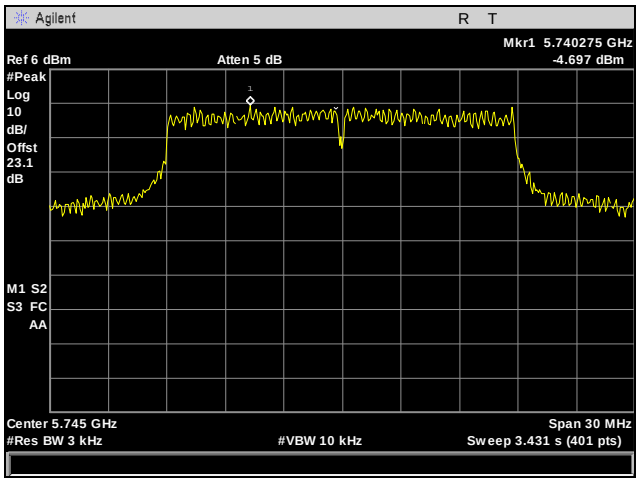


Plot 496. Power Spectral Density, 802.11a, 5785 MHz, Mid Channel, Port 1

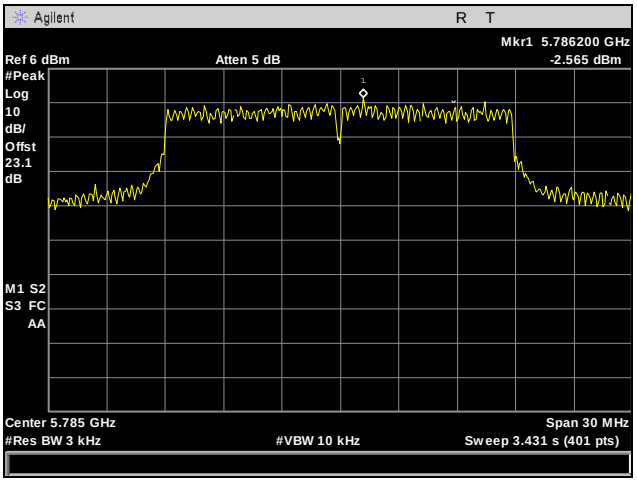


Plot 497. Power Spectral Density, 802.11a, 5825 MHz, High Channel, Port 1

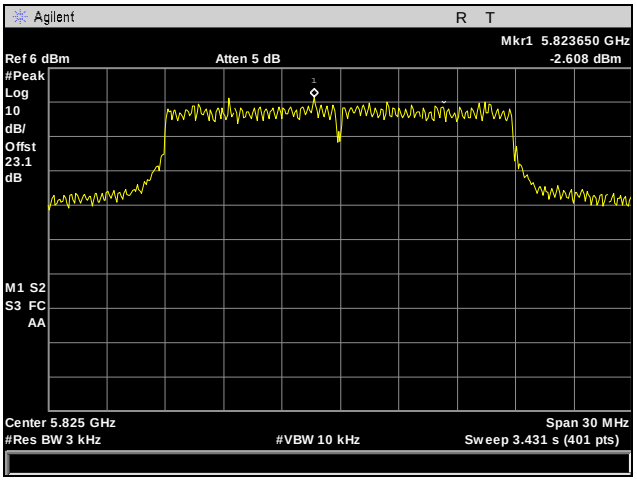
Peak Power Spectral Density, 802.11n 20 MHz, Port 1, 5 GHz



Plot 498. Power Spectral Density, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 1

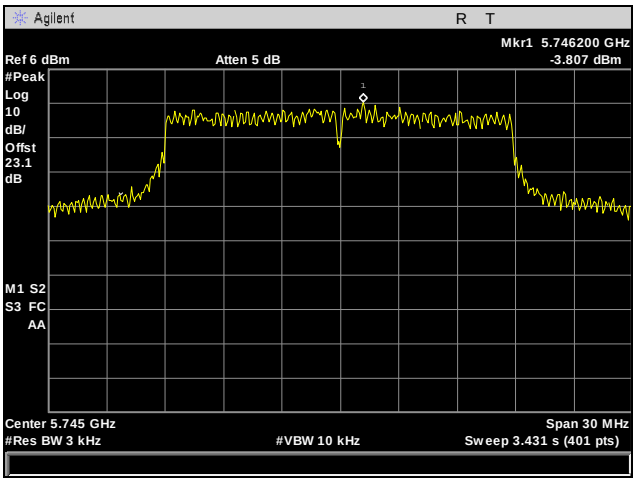


Plot 499. Power Spectral Density, 802.11n 20 MHz, 5785 MHz, Mid Channel, Port 1

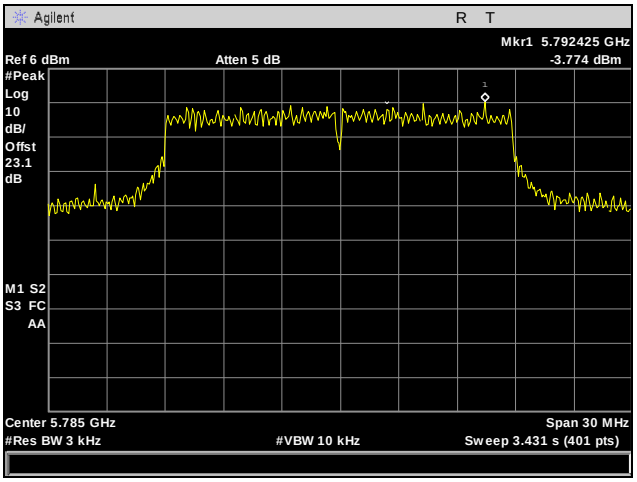


Plot 500. Power Spectral Density, 802.11n 20 MHz, 5825 MHz, High Channel, Port 1

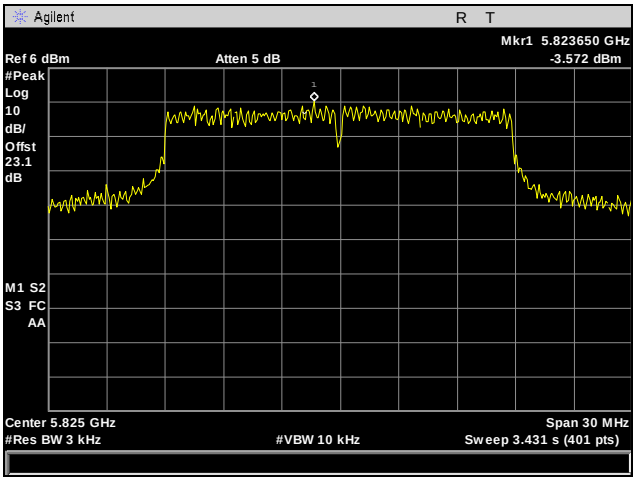
Peak Power Spectral Density, 802.11n 20 MHz, Port 2, 5 GHz



Plot 501. Power Spectral Density, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 2

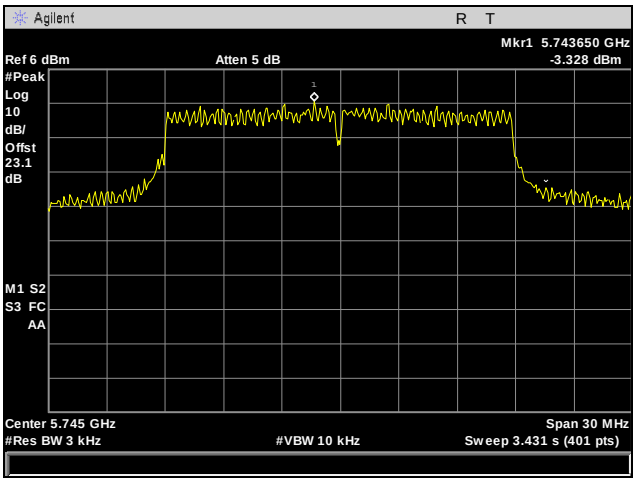


Plot 502. Power Spectral Density, 802.11n 20 MHz, 5785 MHz, Mid Channel, Port 2

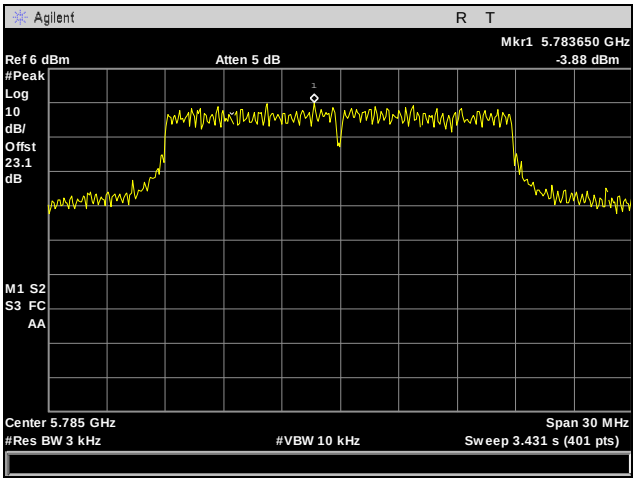


Plot 503. Power Spectral Density, 802.11n 20 MHz, 5825 MHz, High Channel, Port 2

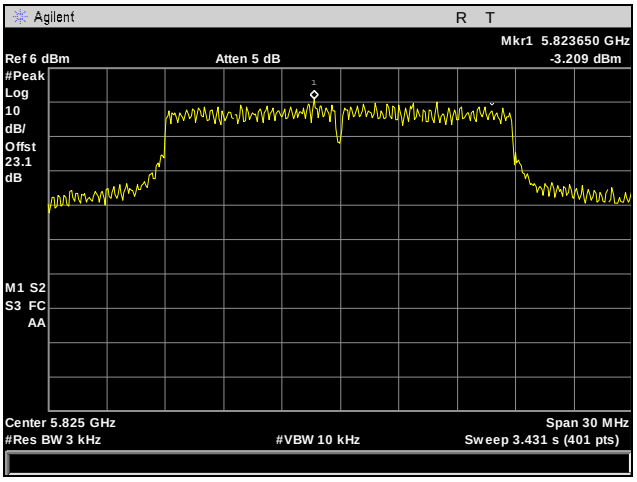
Peak Power Spectral Density, 802.11n 20 MHz, Port 3, 5 GHz



Plot 504. Power Spectral Density, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 3

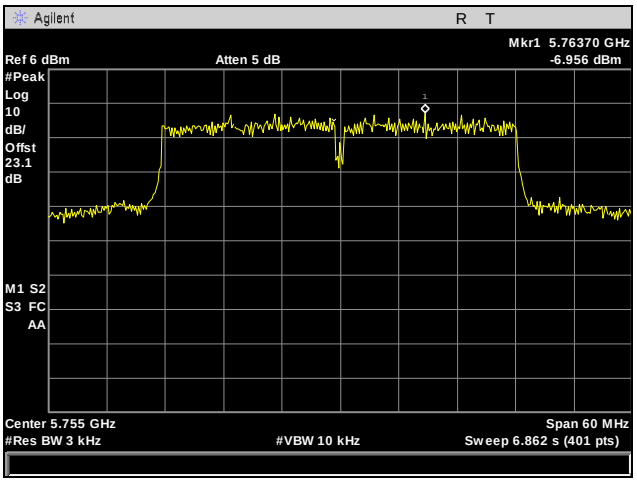


Plot 505. Power Spectral Density, 802.11n 20 MHz, 5785 MHz, Mid Channel, Port 3

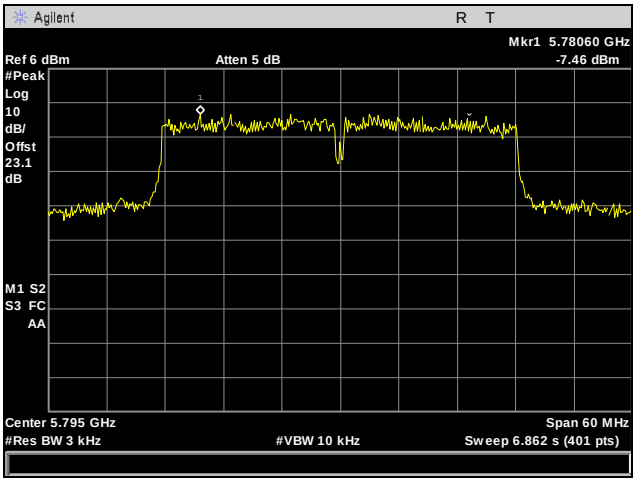


Plot 506. Power Spectral Density, 802.11n 20 MHz, 5825 MHz, High Channel, Port 3

Peak Power Spectral Density, 802.11n 40 MHz, Port 1, 5 GHz

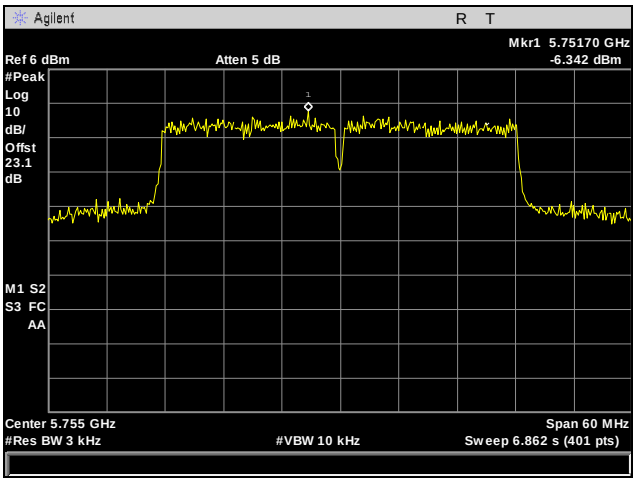


Plot 507. Power Spectral Density, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 1

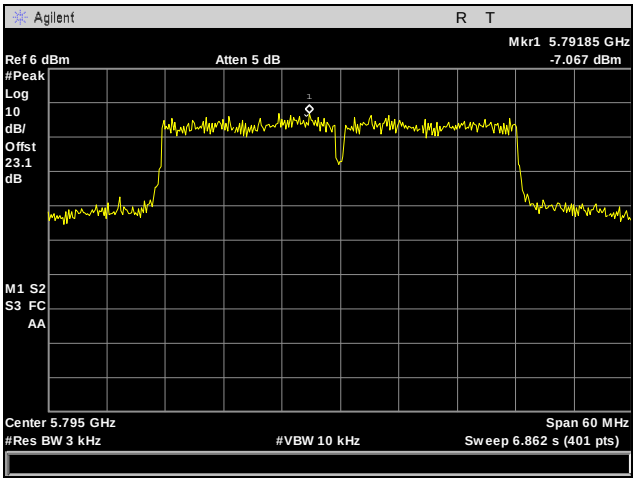


Plot 508. Power Spectral Density, 802.11n 40 MHz, 5795 MHz, High Channel, Port 1

Peak Power Spectral Density, 802.11n 40 MHz, Port 2, 5 GHz

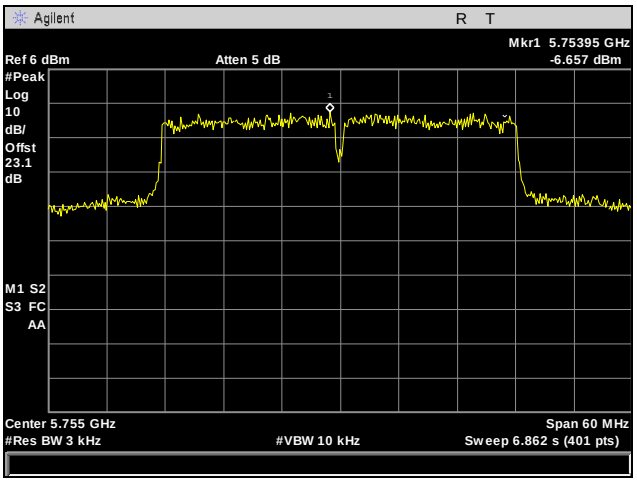


Plot 509. Power Spectral Density, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 2

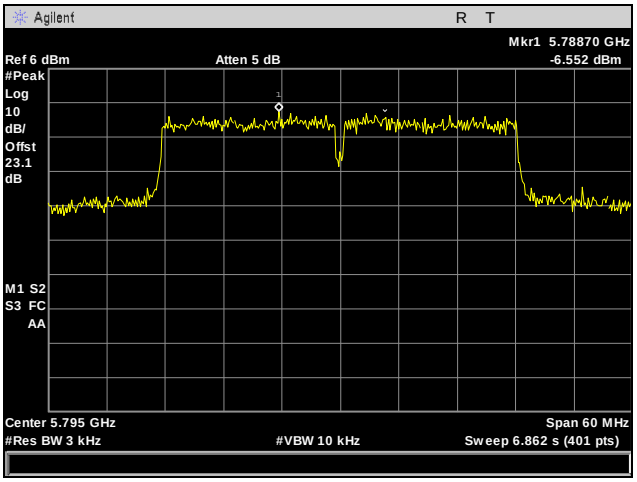


Plot 510. Power Spectral Density, 802.11n 40 MHz, 5795 MHz, High Channel, Port 2

Peak Power Spectral Density, 802.11n 40 MHz, Port 3, 5 GHz

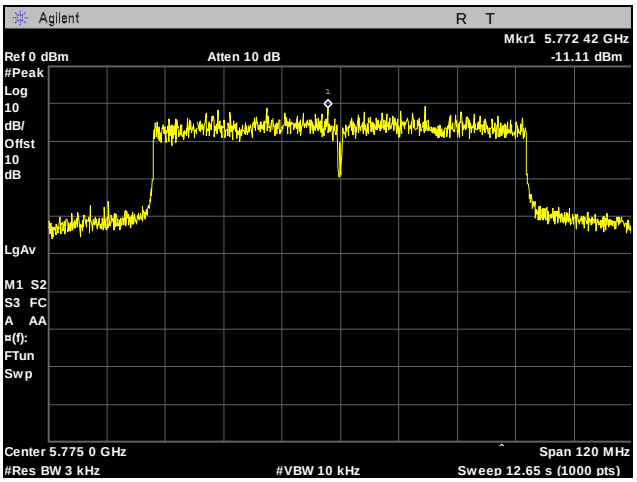


Plot 511. Power Spectral Density, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 3

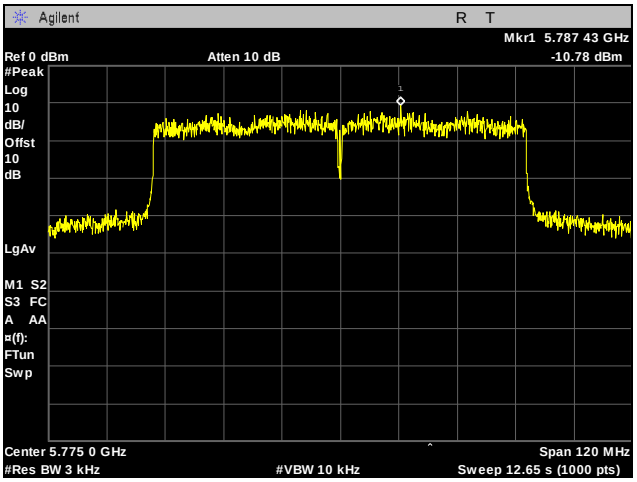


Plot 512. Power Spectral Density, 802.11n 40 MHz, 5795 MHz, High Channel, Port 3

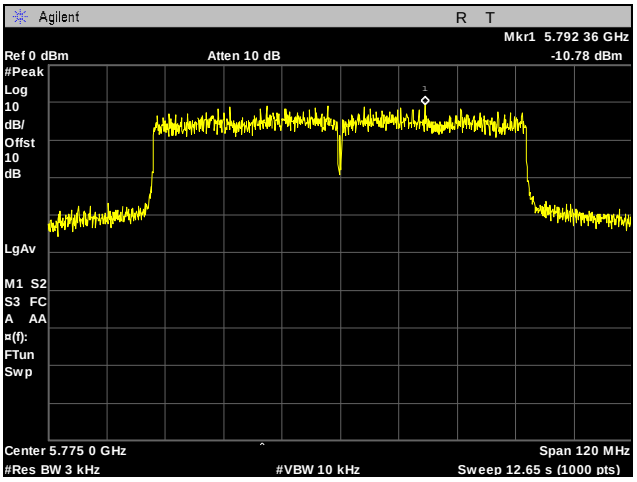
Peak Power Spectral Density, 802.11n 80 MHz, 5 GHz



Plot 513. Power Spectral Density, 802.11n 80 MHz, 5775 MHz, Port 1



Plot 514. Power Spectral Density, 802.11n 80 MHz, 5775 MHz, Port 2



Plot 515. Power Spectral Density, 802.11n 80 MHz, 5775 MHz, Port 3

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(i) Maximum Permissible 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 @ 2400-2483.5 MHz & 5745-5725MHz; highest conducted power = *26.00dBm* (peak) therefore, **Limit for Uncontrolled exposure: 1 mW/cm^2 or 10 W/m^2**

EUT maximum antenna gain = (4dBi x 3 antennas) 8.77 *dBi.*

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

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

where, S = Power Density (1 mW/cm^2)
P = Power Input to antenna (398.1mW)
G = Antenna Gain (7.53 numeric)

$R = (398.1*7.53/ 4*3.14*1.0)^{1/2} = (2997.693 / 12.56)^{1/2} = 15.45cm$

Electromagnetic Compatibility Criteria for Intentional Radiators

RSS-GEN Receiver Spurious Emissions Requirements

Test Requirements: 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 35.

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

Table 35. 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 Procedures: The EUT was programmed for receive mode only. Conducted measurements were taken at the antenna port of the EUT. 300 kHz resolution bandwidth was used from 30 MHz - 1 GHz and 1MHz resolution was used for measurements done above 1 GHz. All plots are corrected for cable loss.

Test Results: Equipment is compliant with the Receiver Spurious Emissions Requirements of RSS-GEN.

Test Engineer(s): Jonathan Chao

Test Date(s): 02/18/13

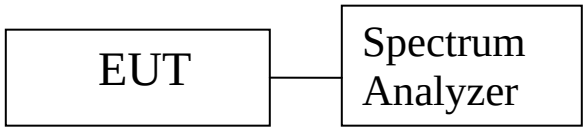
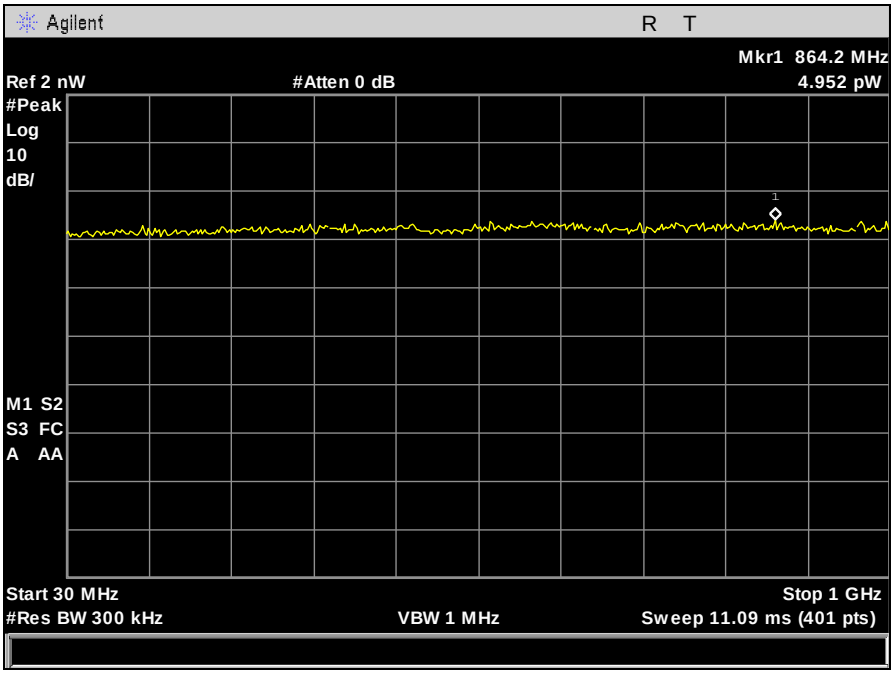
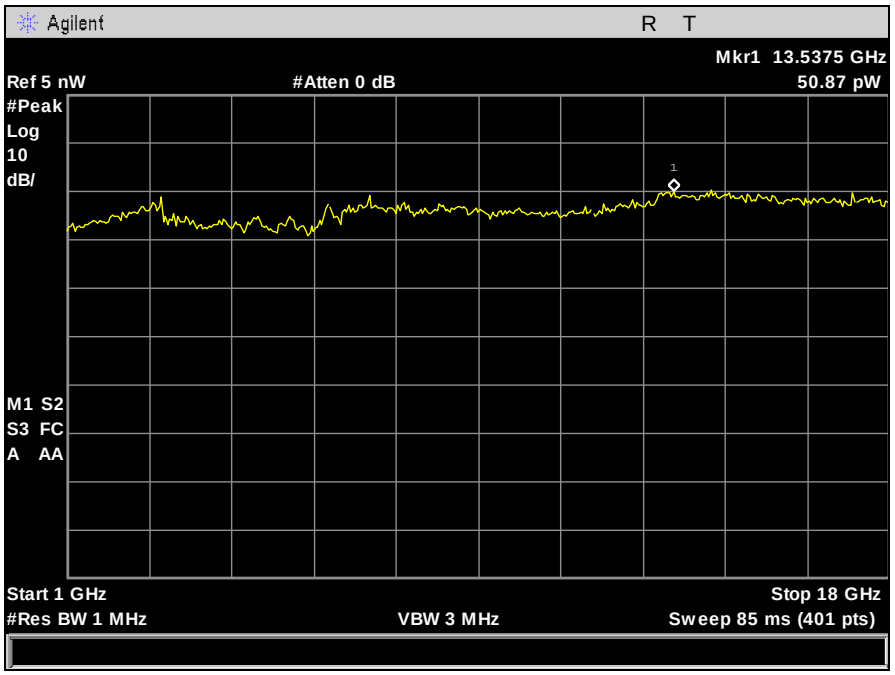


Figure 6. Block Diagram, Conducted Receiver Spurious Emissions Test Setup

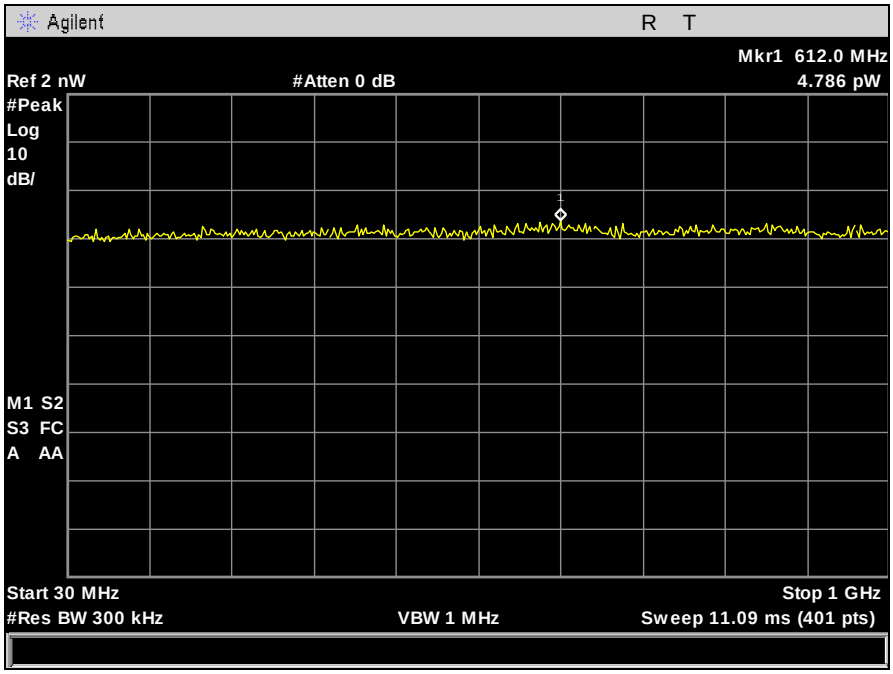
Conducted Receiver Spurious Emissions



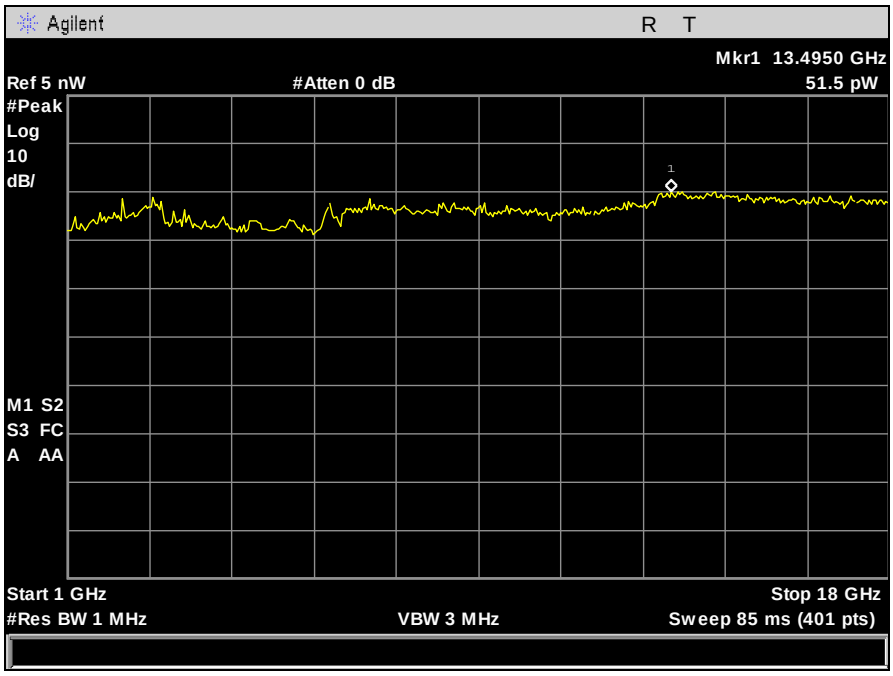
Plot 516. Receiver Spurious Emission, 30 MHz – 1 GHz, Port 1



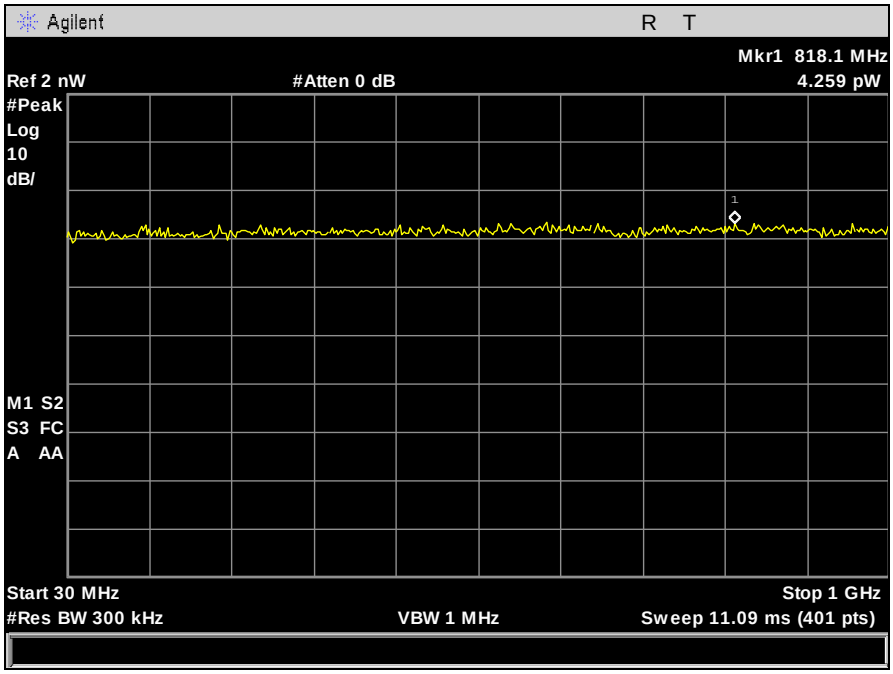
Plot 517. Receiver Spurious Emission, 1 GHz – 18 GHz, Port 1



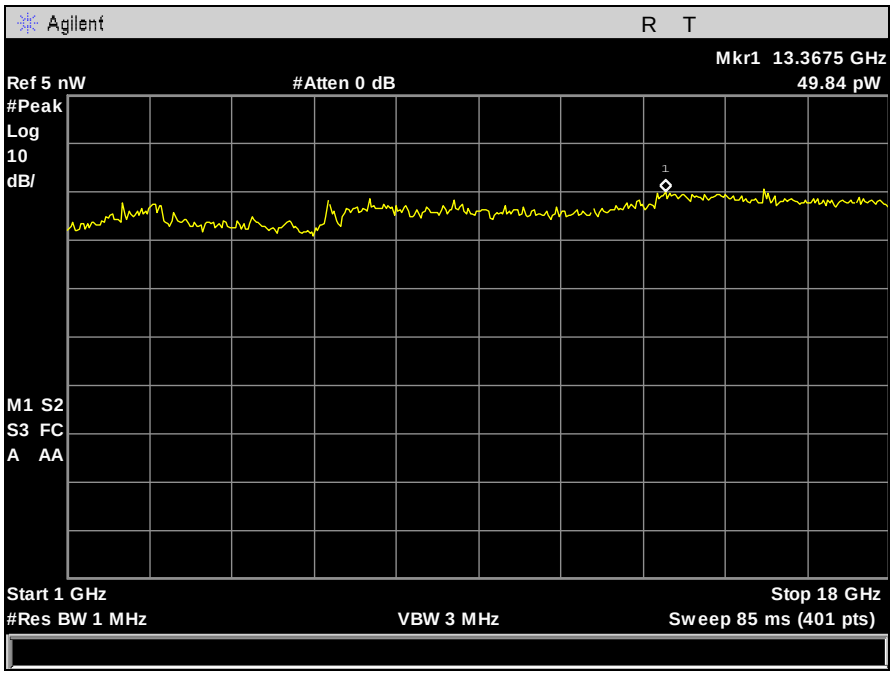
Plot 518. Receiver Spurious Emission, 30 MHz – 1 GHz, Port 2



Plot 519. Receiver Spurious Emission, 1 GHz – 18 GHz, Port 2



Plot 520. Receiver Spurious Emission, 30 MHz – 1 GHz, Port 3



Plot 521. Receiver Spurious Emission, 1 GHz – 18 GHz, Port 3

V. Test Equipment

Test Equipment

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ISO/IEC 17025:2005.

MET Asset #	Equipment	Manufacturer	Model	Last Cal Date	Cal Due Date
1S2600	BILOG ANTENNA	TESEQ	CBL6112D	4/14/2010	4/14/2013
1S2482	5 METER CHAMBER (NSA)	PANASHIELD	5 METER SEMI-ANECHOIC CHAMBER	11/22/2011	5/22/2013
1S2501	EMI TEST RECEIVER 20HZ-40GHZ	ROHDE & SCHWARZ	ESU40	7/16/2012	7/16/2013
1S2583	SPECTRUM ANALYZER	AGILENT/HP	E4447A	3/27/2012	9/27/2013
1S2603	DOUBLE RIDGED WAVEGUIDE HORN	ETS-LINDGREN	3117	4/15/2011	4/15/2013
1S2583	SPECTRUM ANALYZER	AGILENT/HP	E4447A	3/27/2012	9/27/2013
1S2460	1-26GHZ SPECTRUM ANALYZER	AGILENT TECHNOLOGIES	E4407B	7/27/2012	1/27/2014
1S2202	HORN ANTENNA (1 METER)	EMCO	3116	4/23/2010	4/23/2013
1S2523	PREAMPLIFIER	AGILENT TECHNOLOGIES	8449B	SEE NOTE	
1S2603	DOUBLE RIDGED WAVEGUIDE HORN	ETS-LINDGREN	3117	4/15/2011	4/15/2013
1S2729	SONOMA AMPLIFIER	SONOMA INSTRUMENT	310N	4/18/2012	10/18/2013
1S2229	TEMPERATURE CHAMBER	TENNY ENGINEERING	T63C	2/18/2012	8/18/2013
1S2710	DRG HORN ANTENNA	AH SYSTEMS, INC	SAS-574	12/13/2012	6/13/2014
NA	HIGH PASS FILTER	MICRO-TRONICS	HPM13147	SEE NOTE	
NA	NOTCH FILTER	MICRO-TRONICS	BRM50702	SEE NOTE	

Table 36. Test Equipment List

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

VI. 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

1. 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 user's 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 5 August 2012:

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 users' manual.

Labeling Requirements:

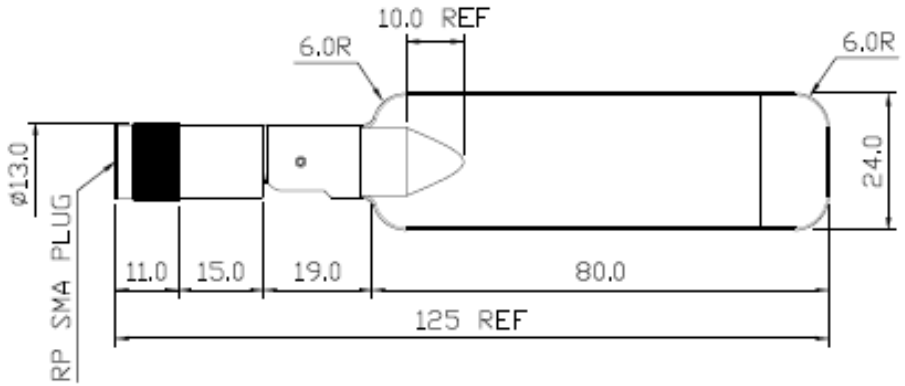
The suggested text for the notice, in English and in French, is provided below, from the Annex of ICES-003:

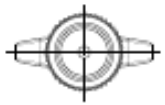
> This Class [2] digital apparatus complies with Canadian ICES-003.
>
> Cet appareil numérique de la classe [1] est conforme à la norme NMB-003 du Canada.

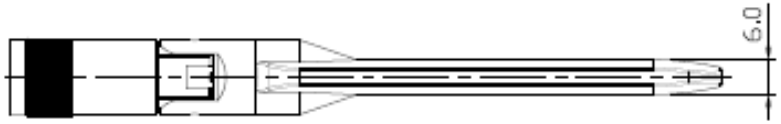
[2] Insert either A or B but not both as appropriate for the equipment requirements.

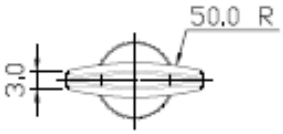
VII. Appendix

REVISION		
ISS	ZONE	DESCRIPTION









NOTE :
1.Freq : 2.4~2.5GHz & 5~5.9GHz
2.Gain : 2.4~2.5 GHz 3.5 dBi
5.0~5.9 GHz 6.0 dBi
3.SWR : 2.0 Max
4.Pattern : Omni
5.Flammability Class : UL-94 HB

NO.	DESCRIPTION	MATERIAL	FINISH	Q'TY	DRAWN NO.
5	TWIN ADHESIVE TAPE	AP7000	NONE	1	D-0171
4	PCB	FR4	NONE	1	P-0020
3	M-DUAL BAND PADDLE ANTENNA TB	ABS	IVORY	1	I-0123
2	M-DUAL BAND PADDLE ANTENNA JB	ABS	IVORY	1	I-0122
1	RP-SMA (P) FOR RG.32 CABLE ASSY.			1	CA-0038

TOLERANCES
DIMENSIONS ARE IN MILLIMETER
UNLESS OTHERWISE SPECIFIED
.X ±0.2
.XX ±0.1
.XXX ±0.05
ANGLES ±5°

SCALE 1/1 | ISSUE A-0

TITLE: ANT-ABGN-0406-W

PART NO.: 831-00043

REVISION: A

FILE PATH:

Meru Networks

APPROVED DATE

CHECKED DATE

DRAWN DATE