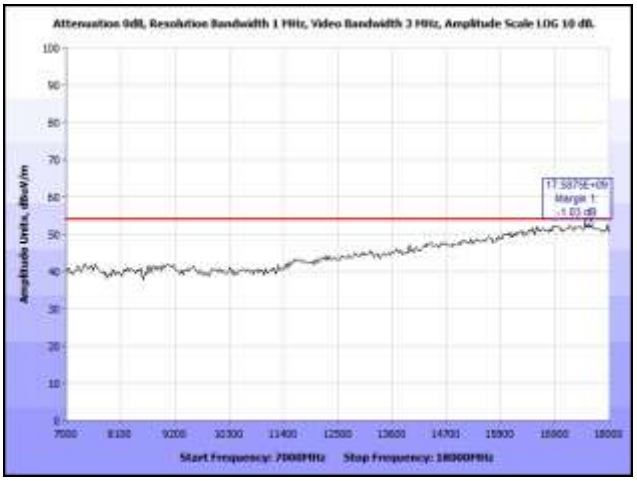
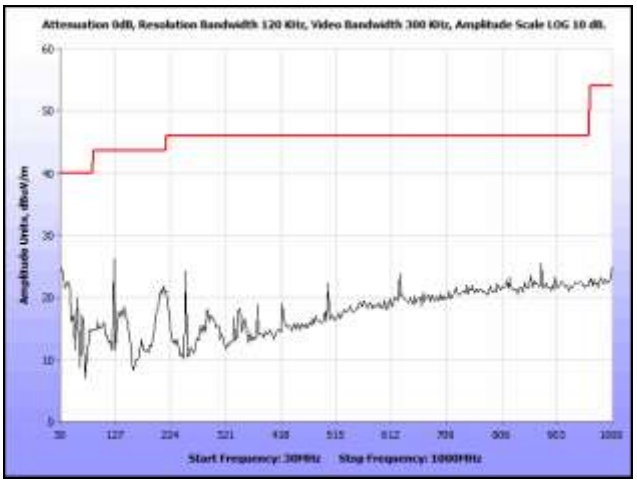
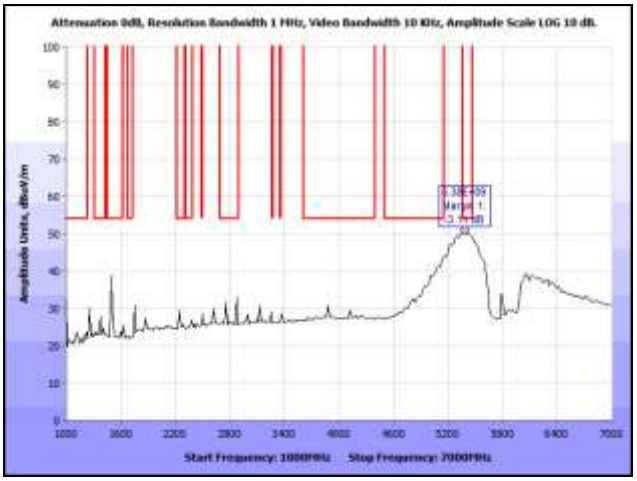


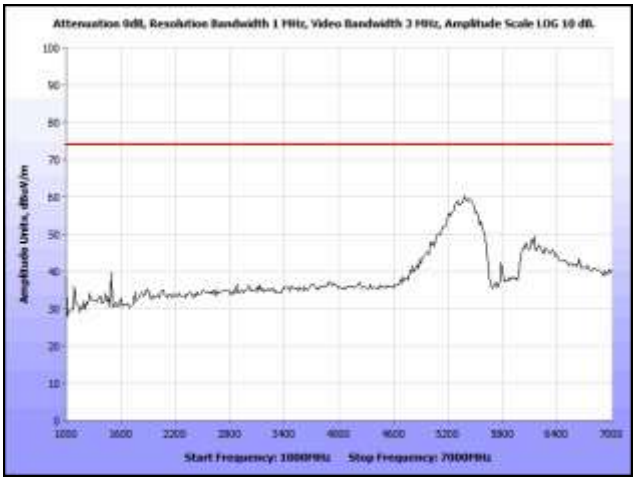
Plot 271. Radiated Spurious Emissions, Low Channel, 802.11a, 7 dBi Patch, 7 – 18 GHz, 5 GHz



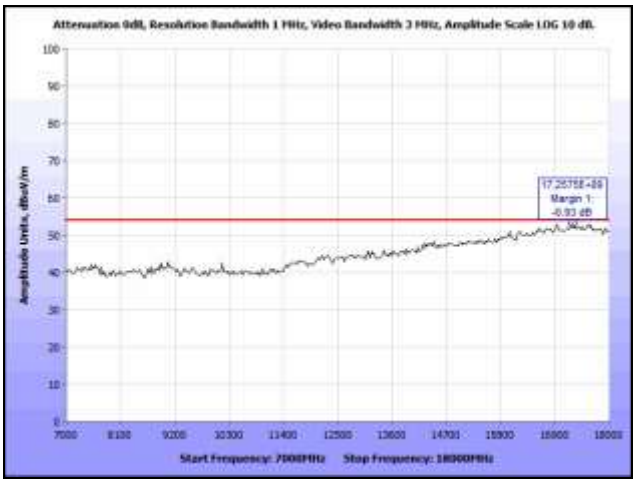
Plot 272. Radiated Spurious Emissions, Mid Channel, 802.11a, 7 dBi Patch, 30 MHz – 1 GHz, 5 GHz



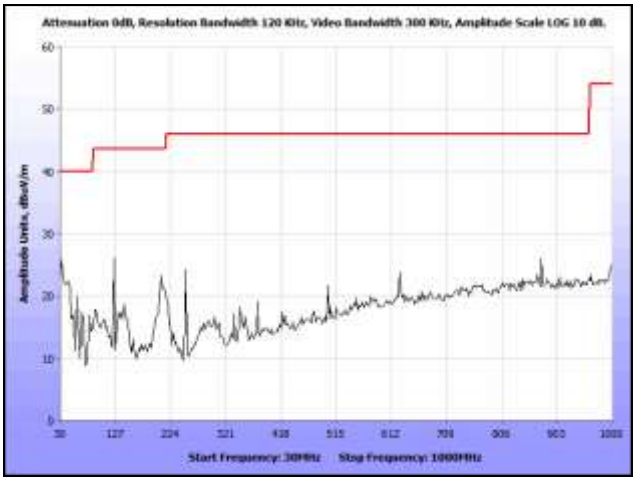
Plot 273. Radiated Spurious Emissions, Mid Channel, 802.11a, 7 dBi Patch, 1 – 7 GHz, Avg., 5 GHz



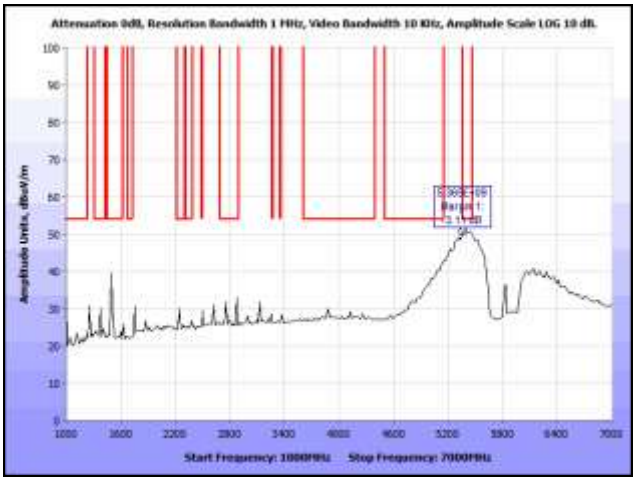
Plot 274. Radiated Spurious Emissions, Mid Channel, 802.11a, 7 dBi Patch, 1 – 7 GHz, Peak, 5 GHz



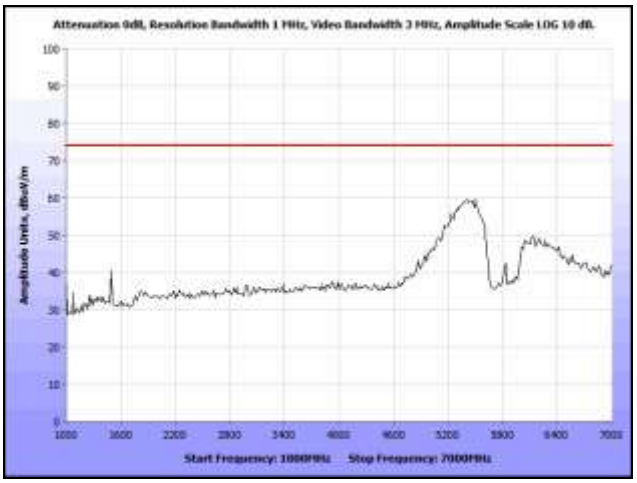
Plot 275. Radiated Spurious Emissions, Mid Channel, 802.11a, 7 dBi Patch, 7 – 18 GHz, 5 GHz



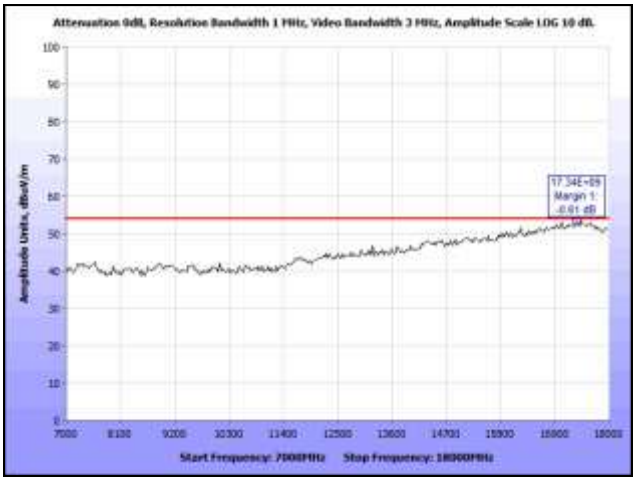
Plot 276. Radiated Spurious Emissions, High Channel, 802.11a, 7 dBi Patch, 30 MHz – 1 GHz, 5 GHz



Plot 277. Radiated Spurious Emissions, High Channel, 802.11a, 7 dBi Patch, 1 – 7 GHz, Avg., 5 GHz

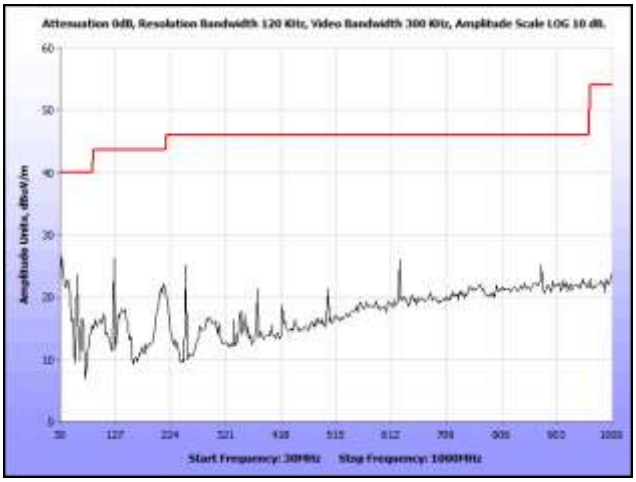


Plot 278. Radiated Spurious Emissions, High Channel, 802.11a, 7 dBi Patch, 1 – 7 GHz, Peak, 5 GHz

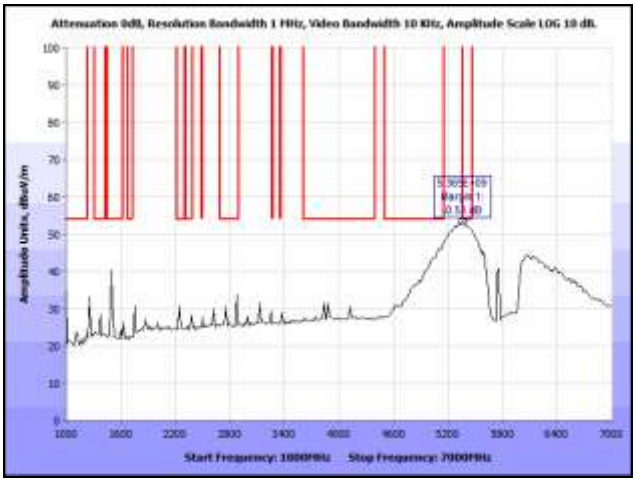


Plot 279. Radiated Spurious Emissions, High Channel, 802.11a, 7 dBi Patch, 7 – 18 GHz, 5 GHz

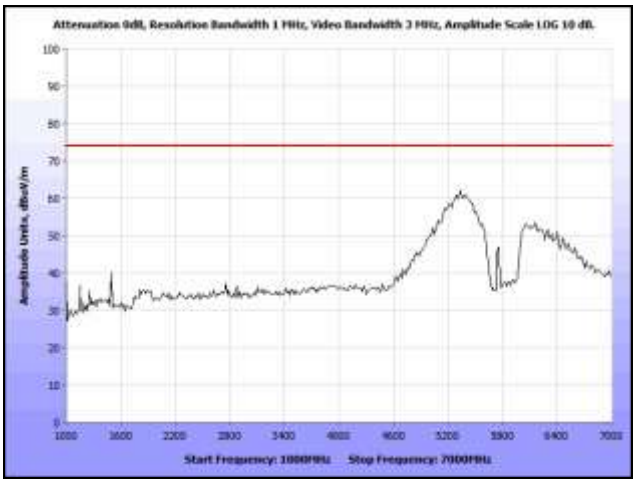
Radiated Spurious Emissions Test Results, 802.11n HT20, 7 dBi Patch Antenna, 5 GHz



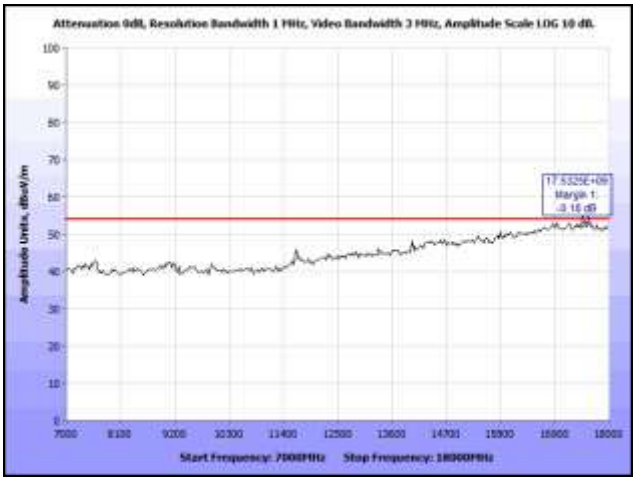
Plot 280. Radiated Spurious Emissions, Low Channel, 802.11n HT20, 7 dBi Patch, 30 MHz – 1 GHz, 5 GHz



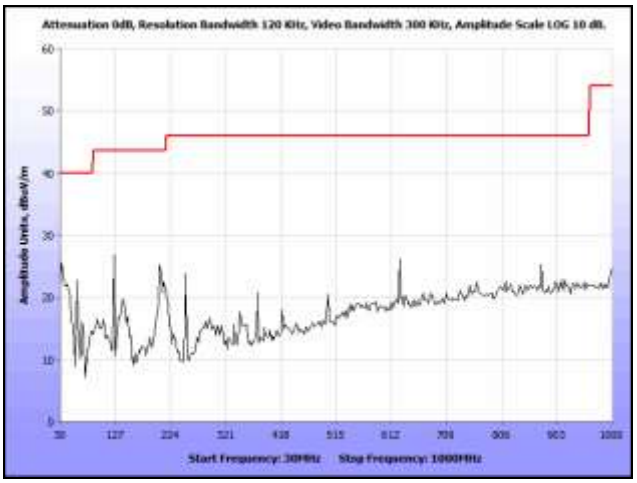
Plot 281. Radiated Spurious Emissions, Low Channel, 802.11n HT20, 7 dBi Patch, 1 – 7 GHz, Avg., 5 GHz



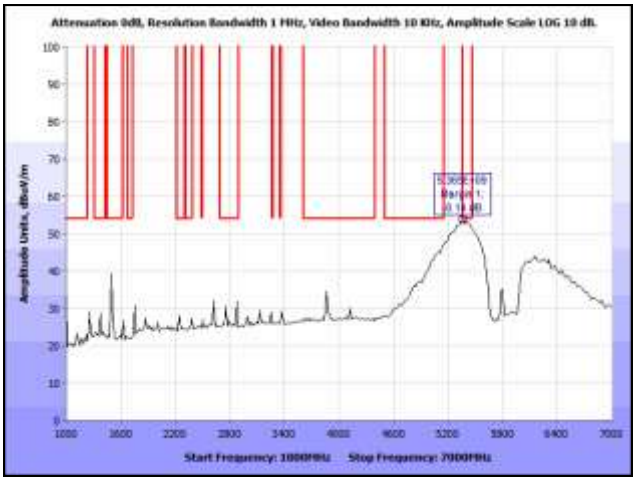
Plot 282. Radiated Spurious Emissions, Low Channel, 802.11n HT20, 7 dBi Patch, 1 – 7 GHz, Peak, 5 GHz



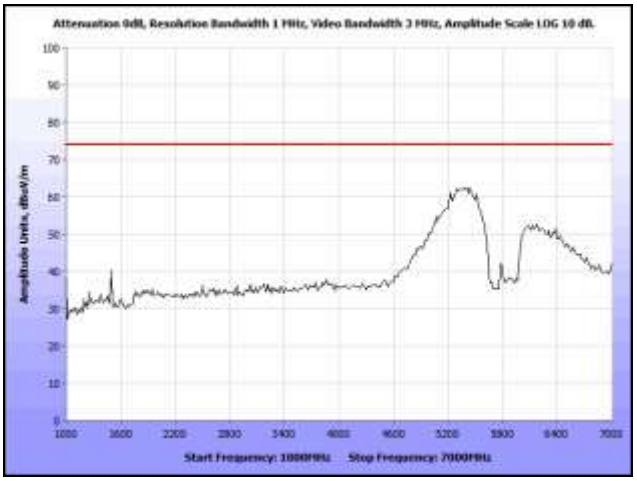
Plot 283. Radiated Spurious Emissions, Low Channel, 802.11n HT20, 7 dBi Patch, 7 – 18 GHz, 5 GHz



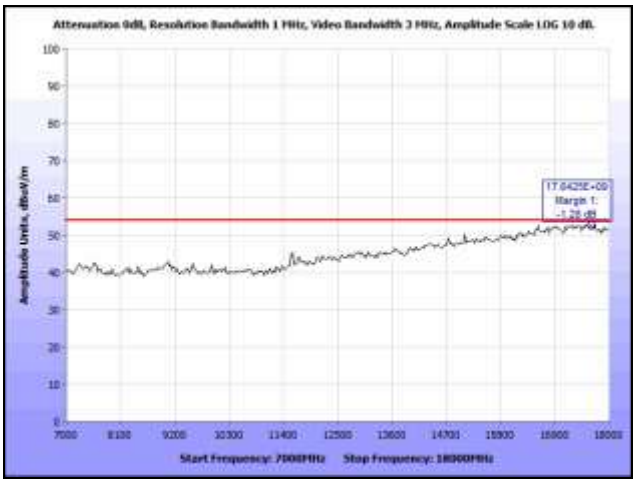
Plot 284. Radiated Spurious Emissions, Mid Channel, 802.11n HT20, 7 dBi Patch, 30 MHz – 1 GHz, 5 GHz



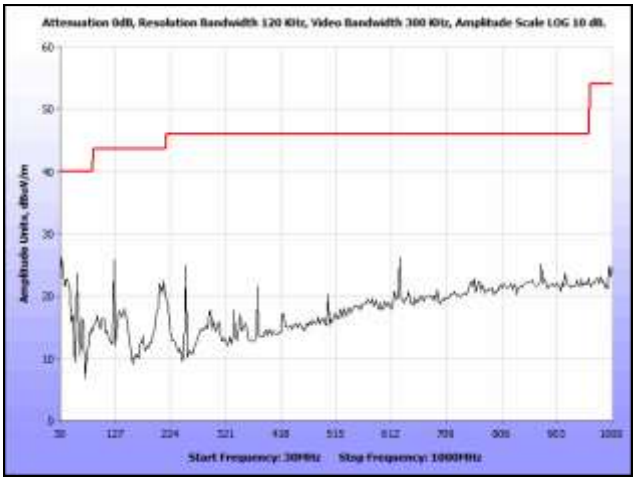
Plot 285. Radiated Spurious Emissions, Mid Channel, 802.11n HT20, 7 dBi Patch, 1 – 7 GHz, Avg., 5 GHz



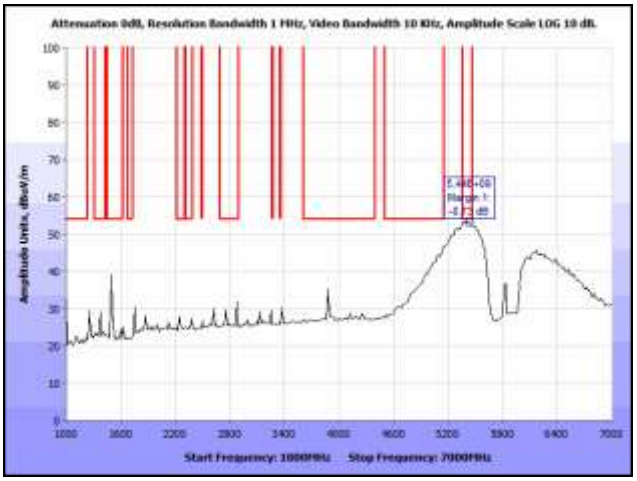
Plot 286. Radiated Spurious Emissions, Mid Channel, 802.11n HT20, 7 dBi Patch, 1 – 7 GHz, Peak, 5 GHz



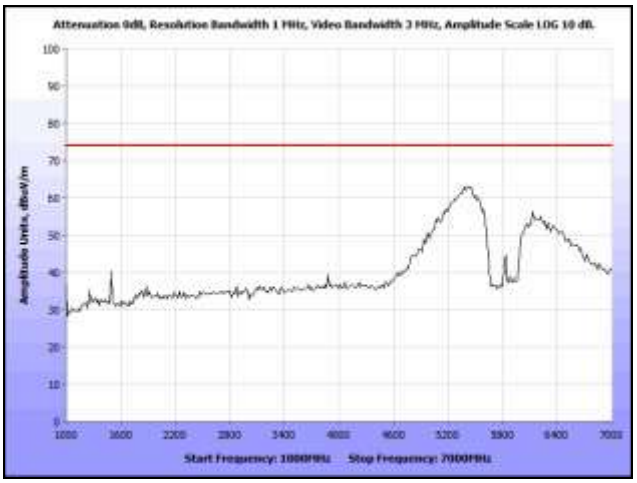
Plot 287. Radiated Spurious Emissions, Mid Channel, 802.11n HT20, 7 dBi Patch, 7 – 18 GHz, 5 GHz



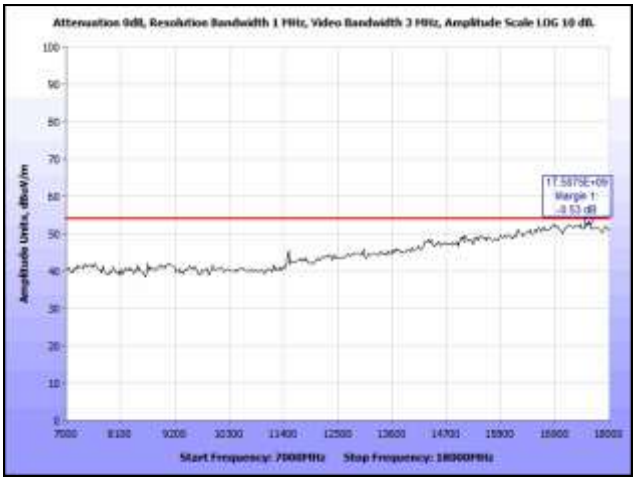
Plot 288. Radiated Spurious Emissions, High Channel, 802.11n HT20, 7 dBi Patch, 30 MHz – 1 GHz, 5 GHz



Plot 289. Radiated Spurious Emissions, High Channel, 802.11n HT20, 7 dBi Patch, 1 – 7 GHz, Avg., 5 GHz

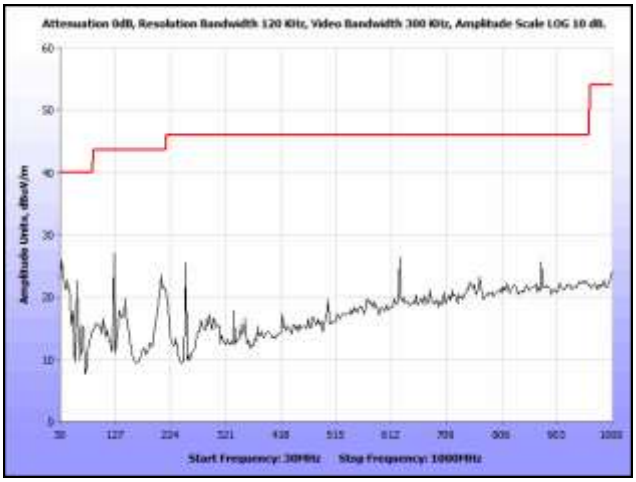


Plot 290. Radiated Spurious Emissions, High Channel, 802.11n HT20, 7 dBi Patch, 1 – 7 GHz, Peak, 5 GHz

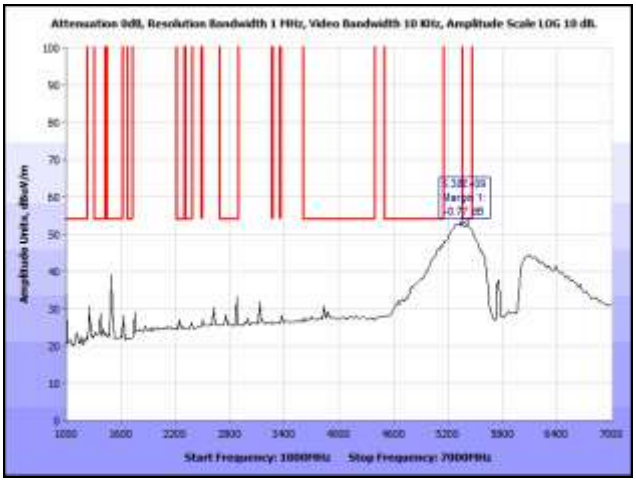


Plot 291. Radiated Spurious Emissions, High Channel, 802.11n HT20, 7 dBi Patch, 7 – 18 GHz, 5 GHz

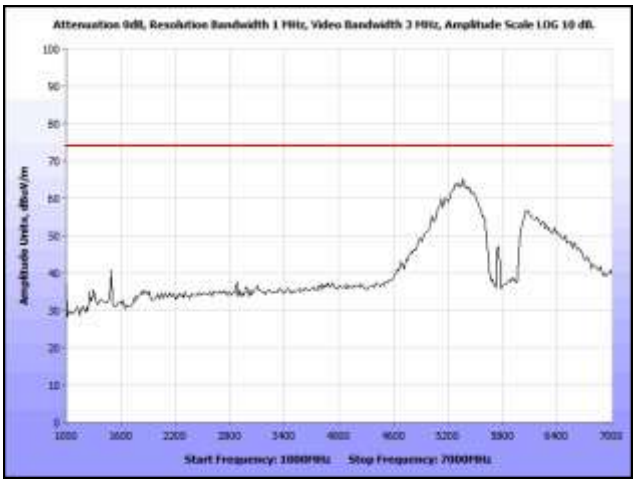
Radiated Spurious Emissions Test Results, 802.11n HT40, 7 dBi Patch Antenna, 5 GHz



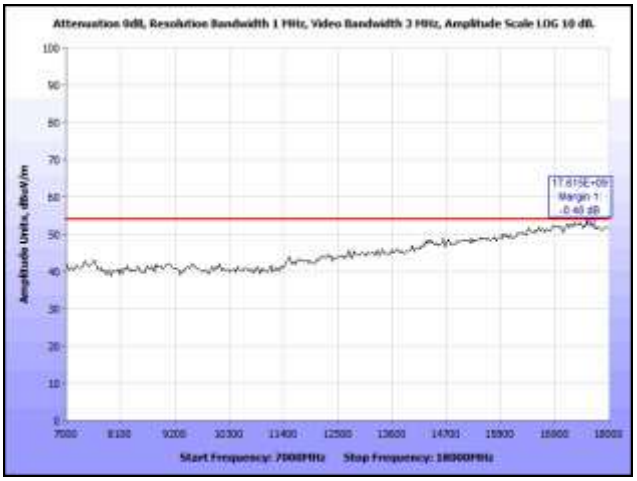
Plot 292. Radiated Spurious Emissions, Low Channel, 802.11n HT40, 7 dBi Patch, 30 MHz – 1 GHz, 5 GHz



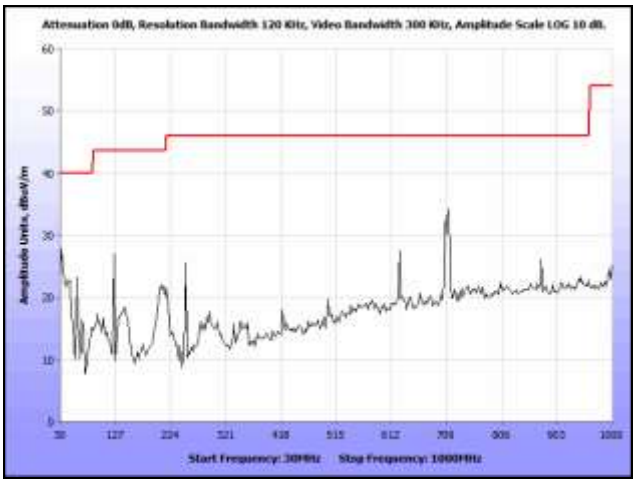
Plot 293. Radiated Spurious Emissions, Low Channel, 802.11n HT40, 7 dBi Patch, 1 – 7 GHz, Avg., 5 GHz



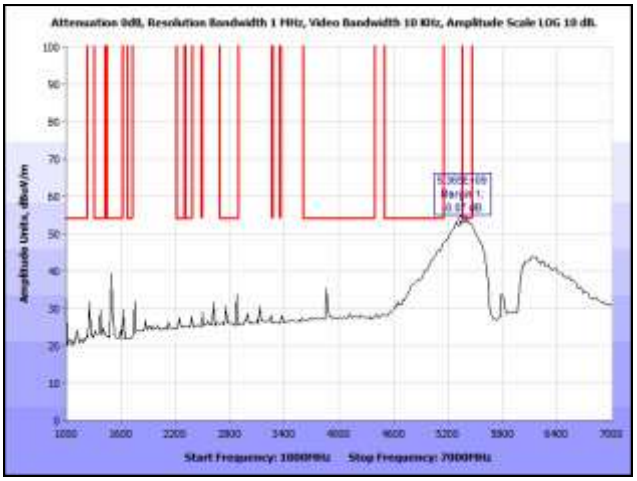
Plot 294. Radiated Spurious Emissions, Low Channel, 802.11n HT40, 7 dBi Patch, 1 – 7 GHz, Peak, 5 GHz



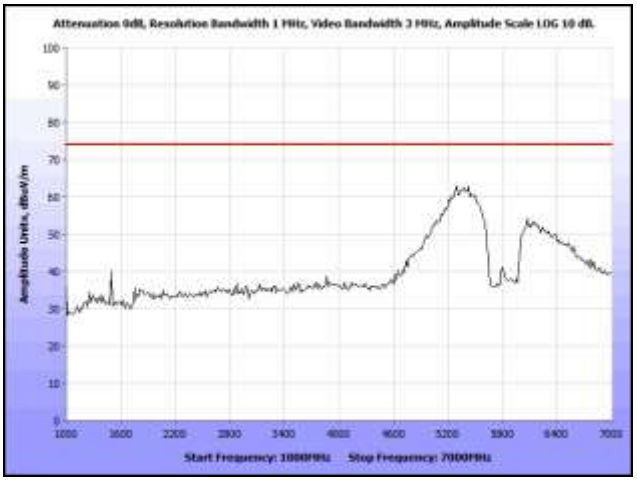
Plot 295. Radiated Spurious Emissions, Low Channel, 802.11n HT40, 7 dBi Patch, 7 – 18 GHz, 5 GHz



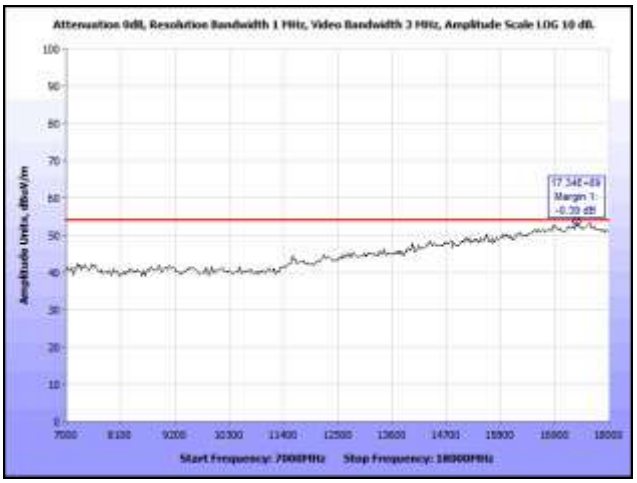
Plot 296. Radiated Spurious Emissions, High Channel, 802.11n HT40, 7 dBi Patch, 30 MHz – 1 GHz, 5 GHz



Plot 297. Radiated Spurious Emissions, High Channel, 802.11n HT40, 7 dBi Patch, 1 – 7 GHz, Avg., 5 GHz

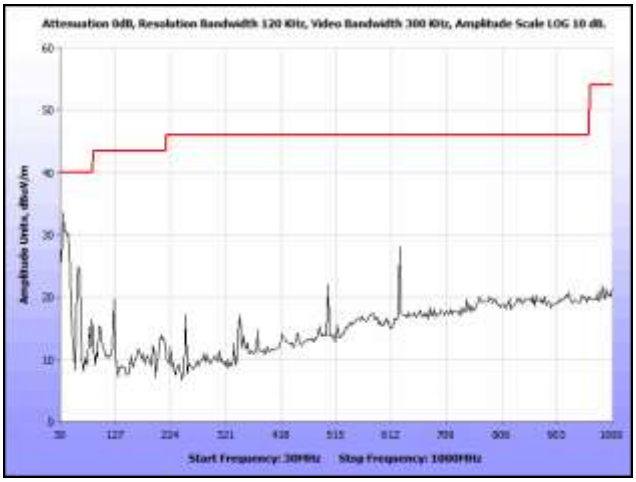


Plot 298. Radiated Spurious Emissions, High Channel, 802.11n HT40, 7 dBi Patch, 1 – 7 GHz, Peak, 5 GHz

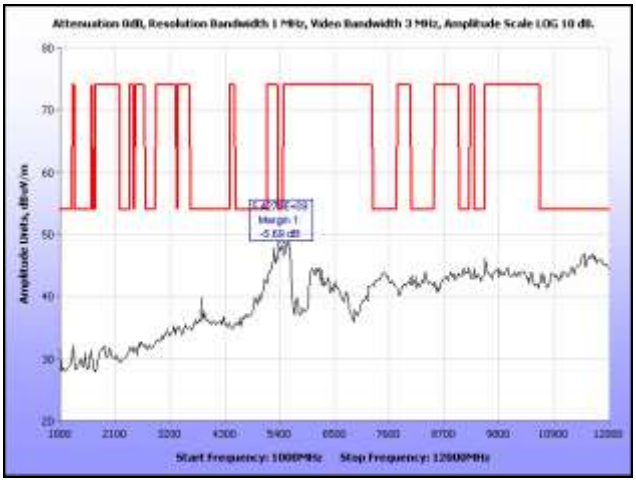


Plot 299. Radiated Spurious Emissions, High Channel, 802.11n HT40, 7 dBi Patch, 7 – 18 GHz, 5 GHz

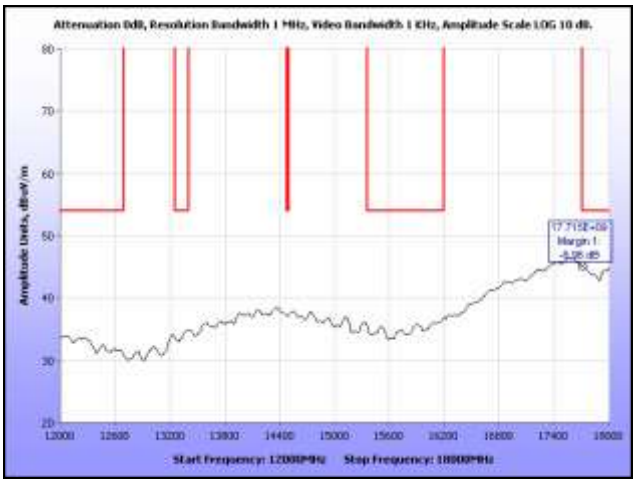
Radiated Spurious Emissions Test Results, 802.11a, 4 dBi Ceiling Mount Omni Antenna, 5 GHz



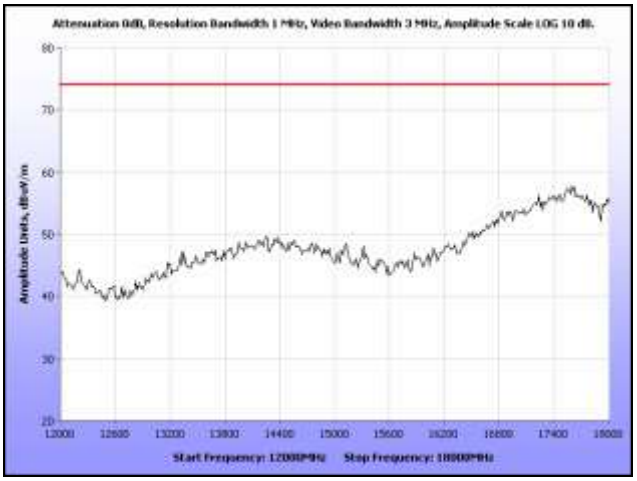
Plot 300. Radiated Spurious Emissions, Low Channel, 802.11a, 4 dBi Ceiling Mount Omni, 30 MHz – 1 GHz, 5 GHz



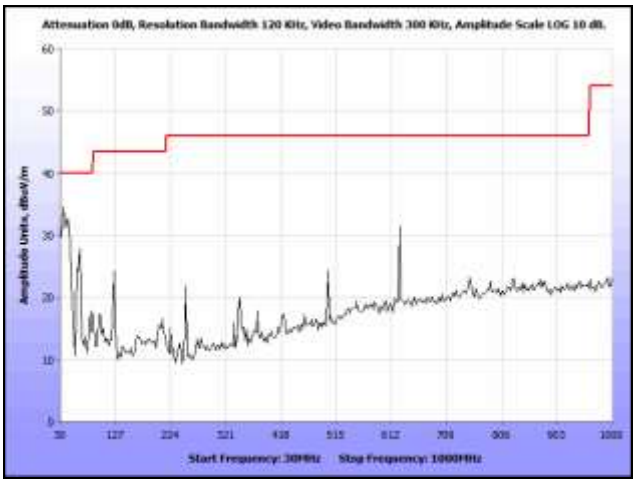
Plot 301. Radiated Spurious Emissions, Low Channel, 802.11a, 4 dBi Ceiling Mount Omni, 1 – 12 GHz, 5 GHz



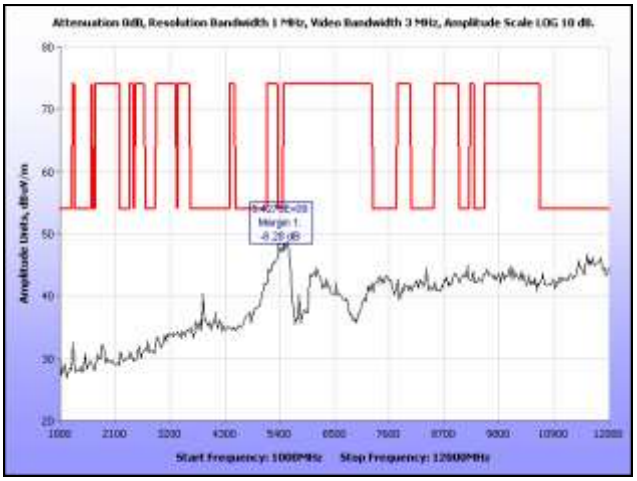
Plot 302. Radiated Spurious Emissions, Low Channel, 802.11a, 4 dBi Ceiling Mount Omni, 12 – 18 GHz, Avg., 5 GHz



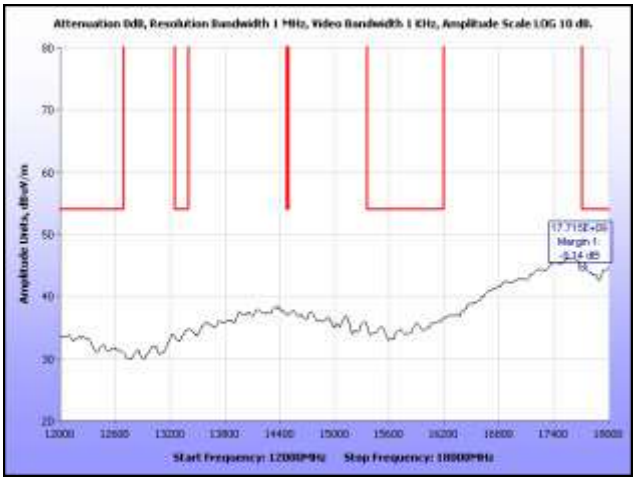
Plot 303. Radiated Spurious Emissions, Low Channel, 802.11a, 4 dBi Ceiling Mount Omni, 12 – 18 GHz, Peak, 5 GHz



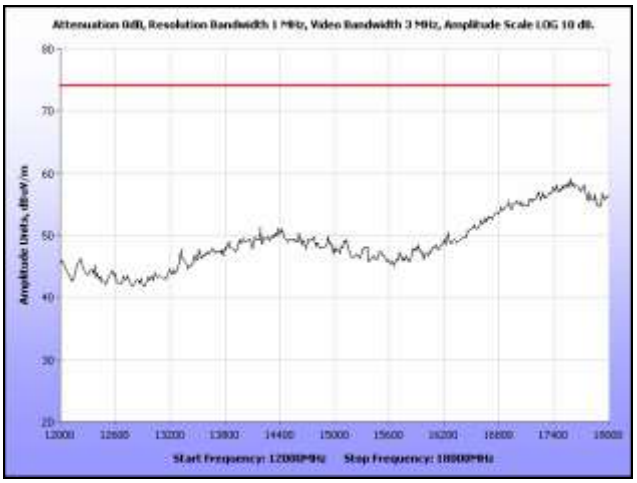
Plot 304. Radiated Spurious Emissions, Mid Channel, 802.11a, 4 dBi Ceiling Mount Omni, 30 MHz – 1 GHz, 5 GHz



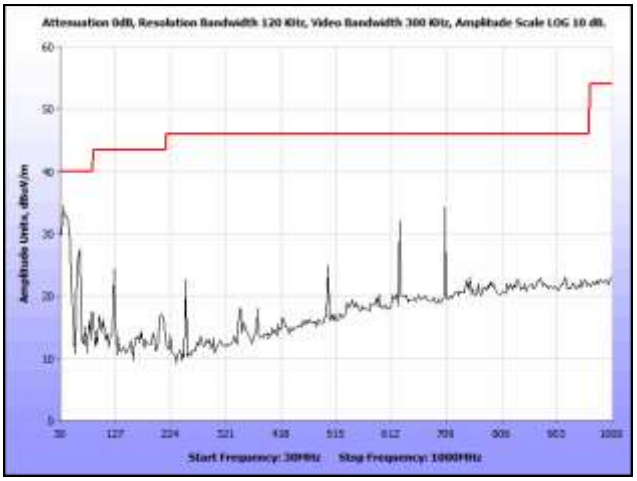
Plot 305. Radiated Spurious Emissions, Mid Channel, 802.11a, 4 dBi Ceiling Mount Omni, 1 – 12 GHz, 5 GHz



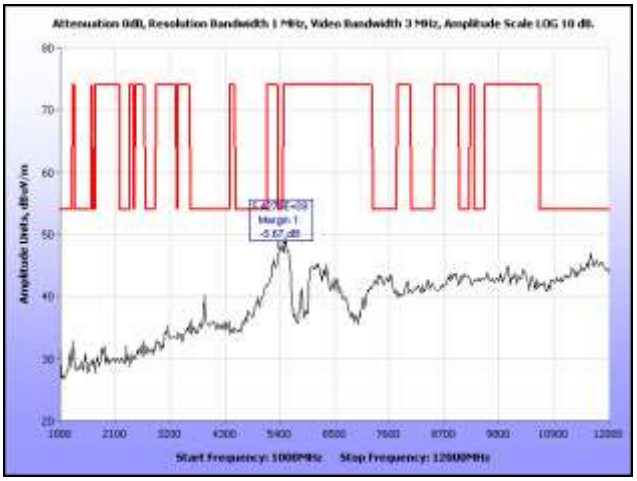
Plot 306. Radiated Spurious Emissions, Mid Channel, 802.11a, 4 dBi Ceiling Mount Omni, 12 – 18 GHz, Avg., 5 GHz



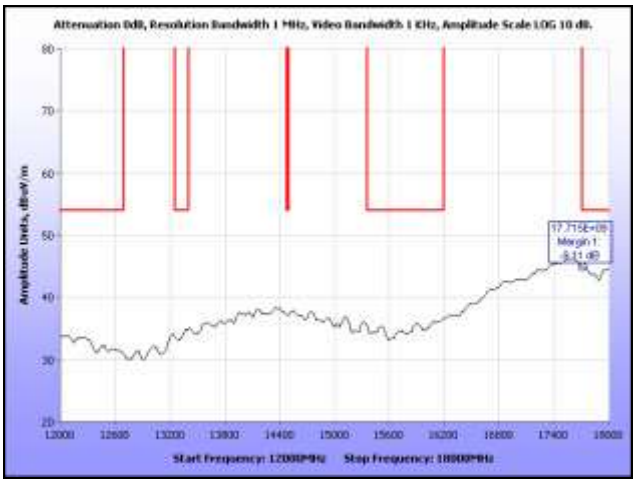
Plot 307. Radiated Spurious Emissions, Mid Channel, 802.11a, 4 dBi Ceiling Mount Omni, 12 – 18 GHz, Peak, 5 GHz



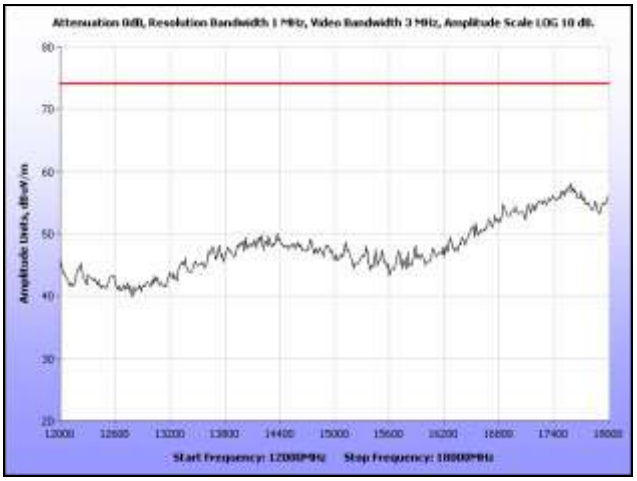
Plot 308. Radiated Spurious Emissions, High Channel, 802.11a, 4 dBi Ceiling Mount Omni, 30 MHz – 1 GHz, 5 GHz



Plot 309. Radiated Spurious Emissions, High Channel, 802.11a, 4 dBi Ceiling Mount Omni, 1 – 12 GHz, 5 GHz

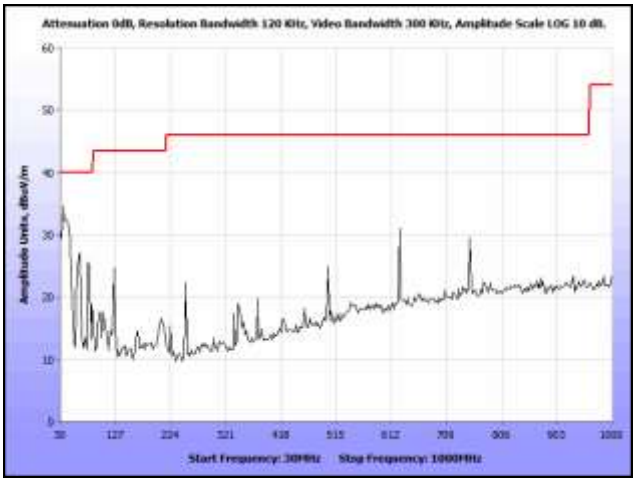


Plot 310. Radiated Spurious Emissions, High Channel, 802.11a, 4 dBi Ceiling Mount Omni, 12 – 18 GHz, Avg., 5 GHz

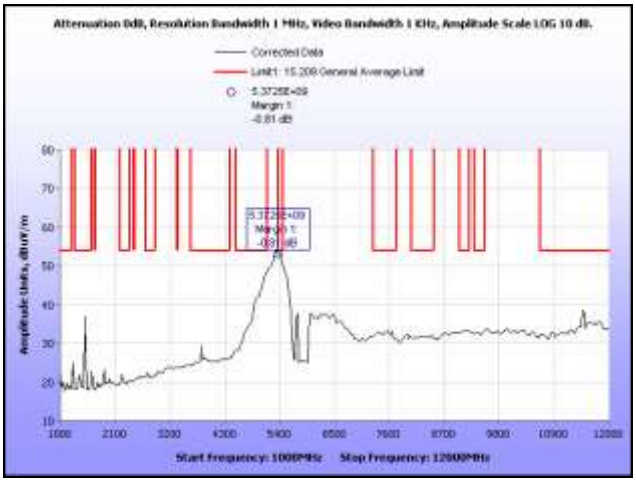


Plot 311. Radiated Spurious Emissions, High Channel, 802.11a, 4 dBi Ceiling Mount Omni, 12 – 18 GHz, Peak, 5 GHz

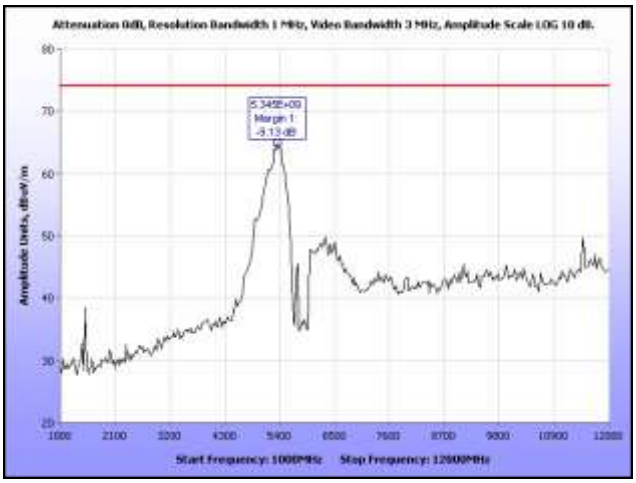
Radiated Spurious Emissions Test Results, 802.11n HT20, 4 dBi Ceiling Mount Omni Antenna, 5 GHz



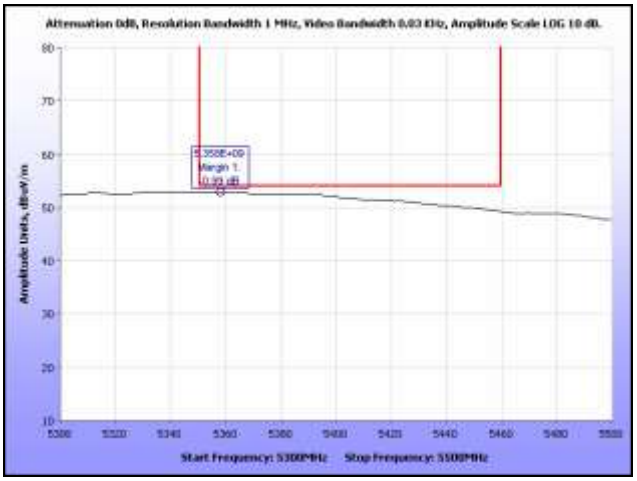
Plot 312. Radiated Spurious Emissions, Low Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 30 MHz – 1 GHz, 5 GHz



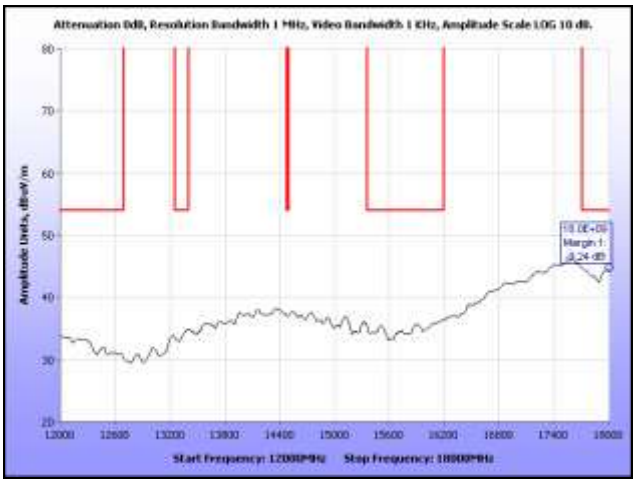
Plot 313. Radiated Spurious Emissions, Low Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 1 – 12 GHz, Avg., 5 GHz



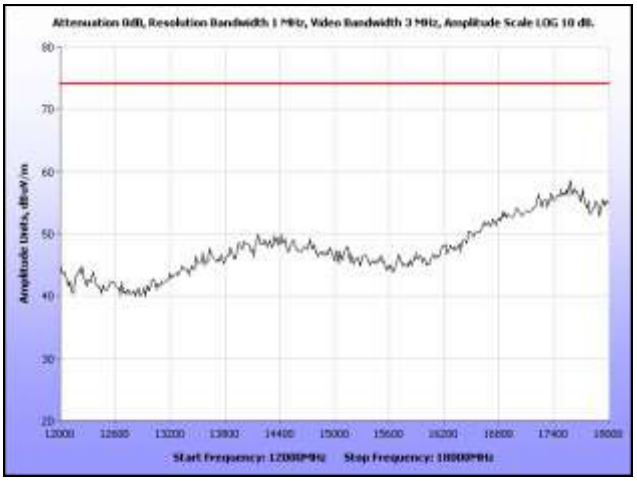
Plot 314. Radiated Spurious Emissions, Low Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 1 – 12 GHz, Peak, 5 GHz



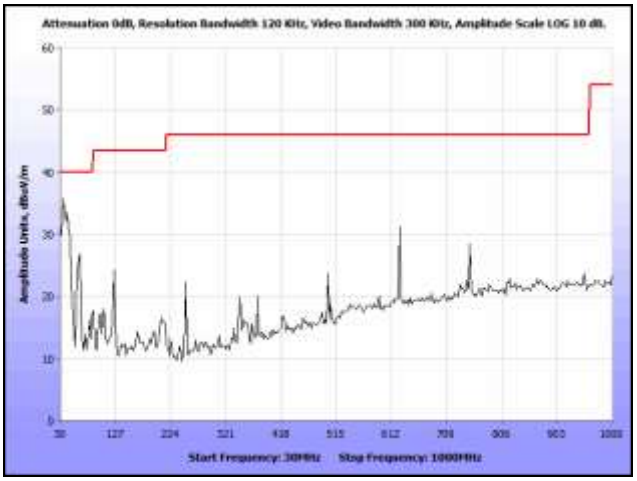
Plot 315. Radiated Spurious Emissions, Low Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 5.3 – 5.5 GHz, 5 GHz



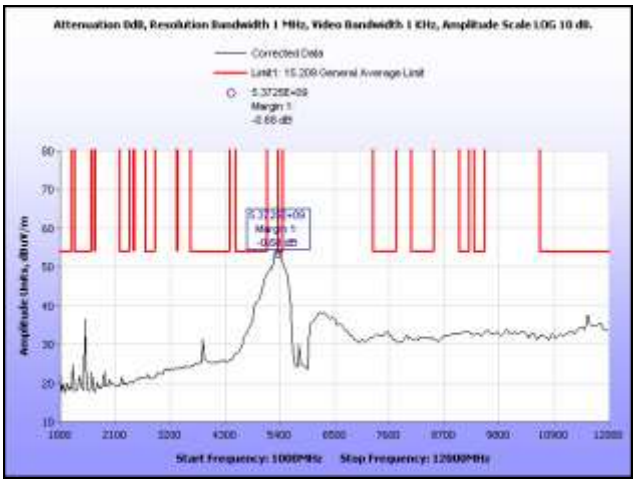
Plot 316. Radiated Spurious Emissions, Low Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 12 – 18 GHz, Avg., 5 GHz



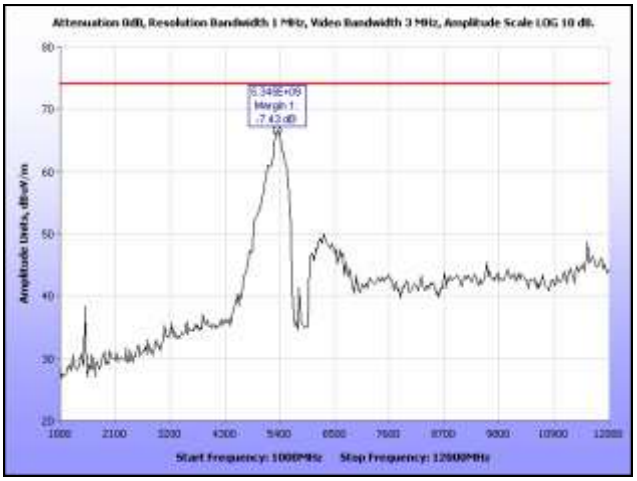
Plot 317. Radiated Spurious Emissions, Low Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 12 – 18 GHz, Peak, 5 GHz



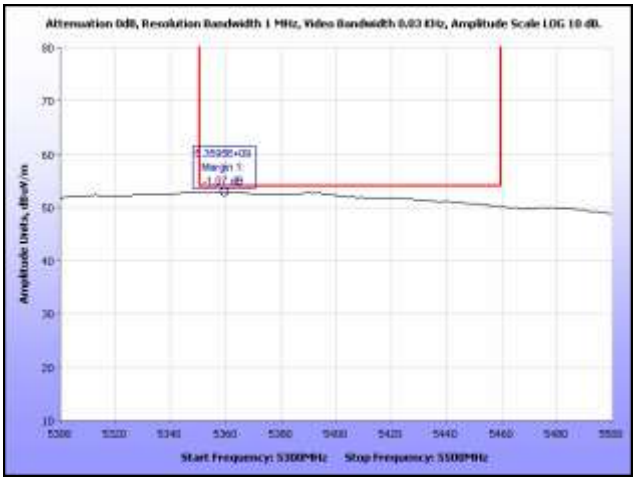
Plot 318. Radiated Spurious Emissions, Mid Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 30 MHz – 1 GHz, 5 GHz



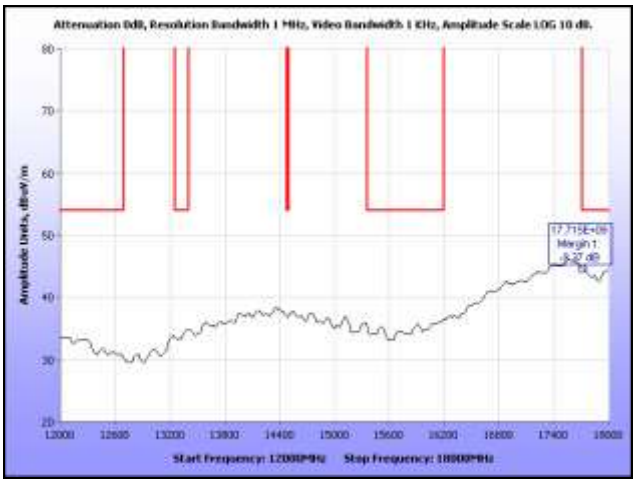
Plot 319. Radiated Spurious Emissions, Mid Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 1 – 12 GHz, Avg., 5 GHz



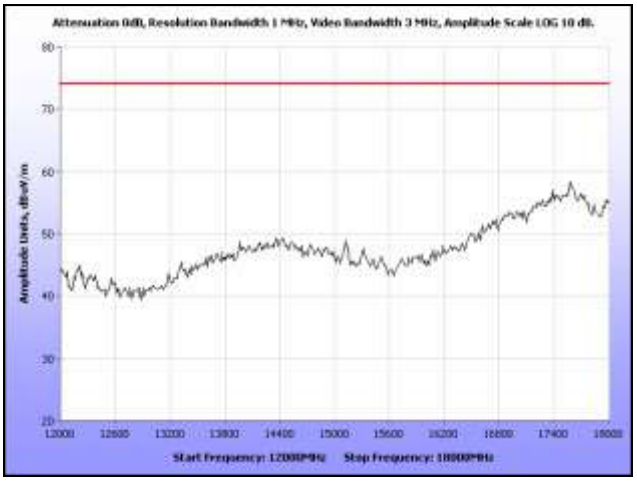
Plot 320. Radiated Spurious Emissions, Mid Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 1 – 12 GHz, Peak, 5 GHz



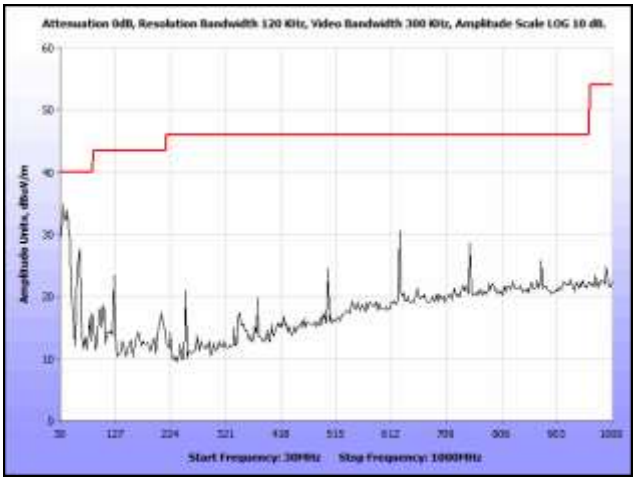
Plot 321. Radiated Spurious Emissions, Mid Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 5.3 – 5.5 GHz, 5 GHz



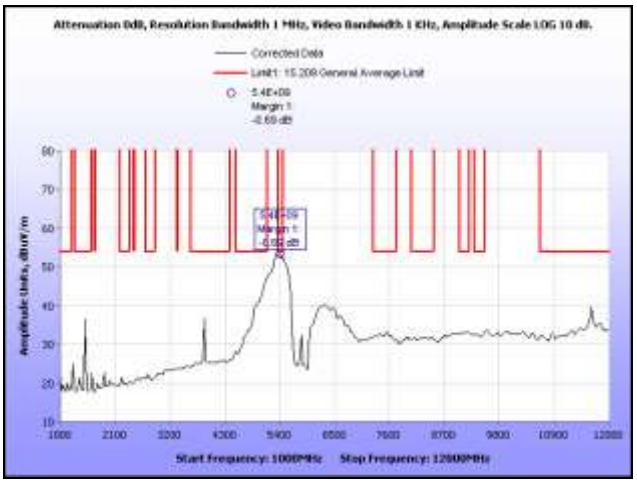
Plot 322. Radiated Spurious Emissions, Mid Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 12 – 18 GHz, Avg., 5 GHz



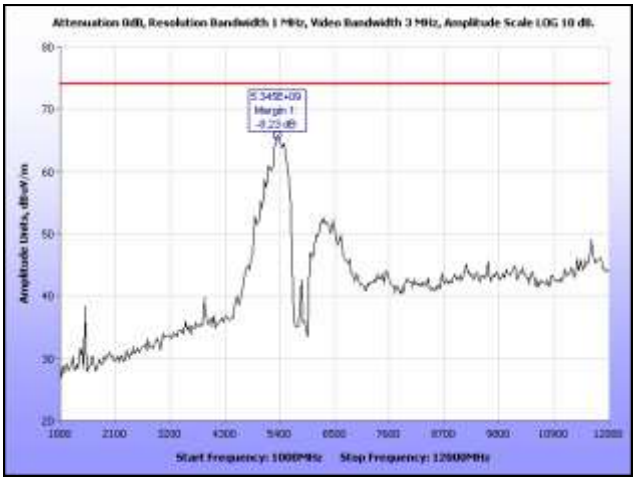
Plot 323. Radiated Spurious Emissions, Mid Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 12 – 18 GHz, Peak, 5 GHz



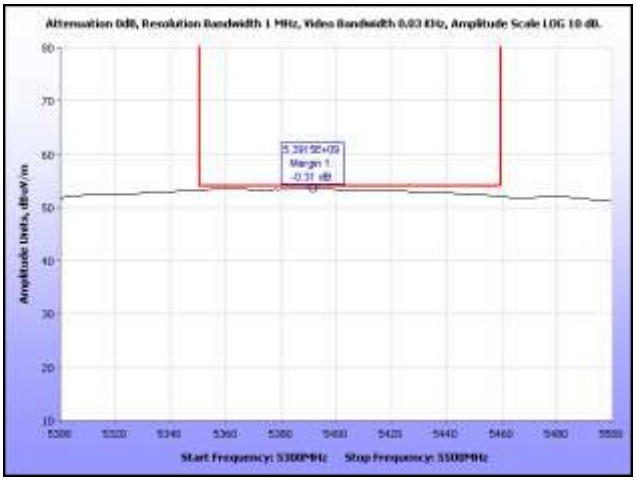
Plot 324. Radiated Spurious Emissions, High Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 30 MHz – 1 GHz, 5 GHz



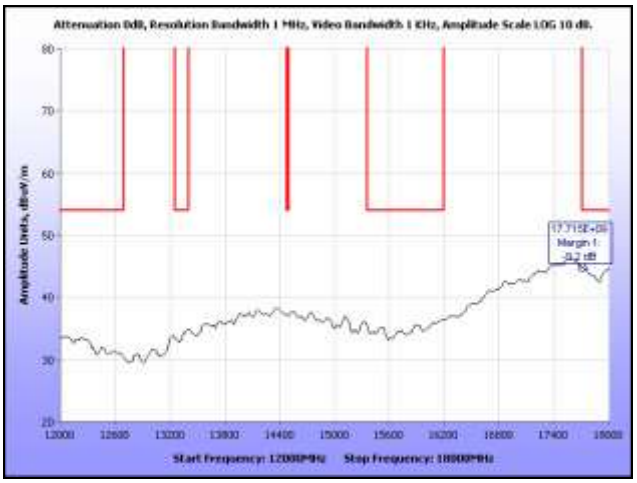
Plot 325. Radiated Spurious Emissions, High Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 1 – 12 GHz, Avg., 5 GHz



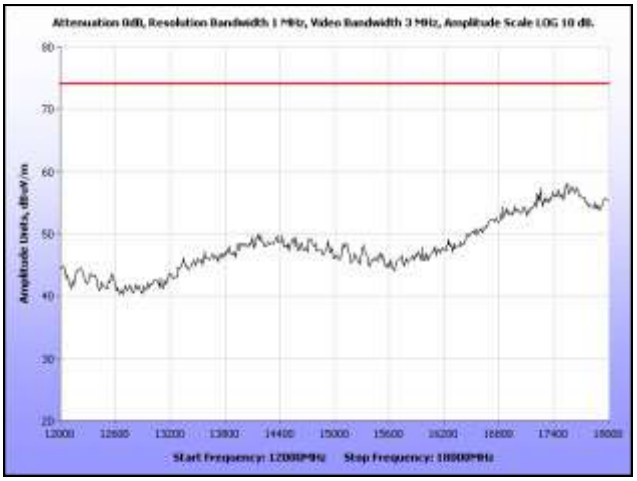
Plot 326. Radiated Spurious Emissions, High Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 1 – 12 GHz, Peak, 5 GHz



Plot 327. Radiated Spurious Emissions, High Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 5.3 – 5.5 GHz, 5 GHz

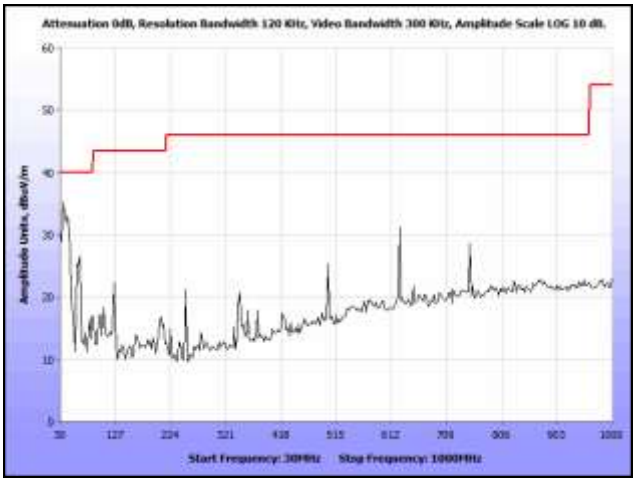


Plot 328. Radiated Spurious Emissions, High Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 12 – 18 GHz, Avg., 5 GHz

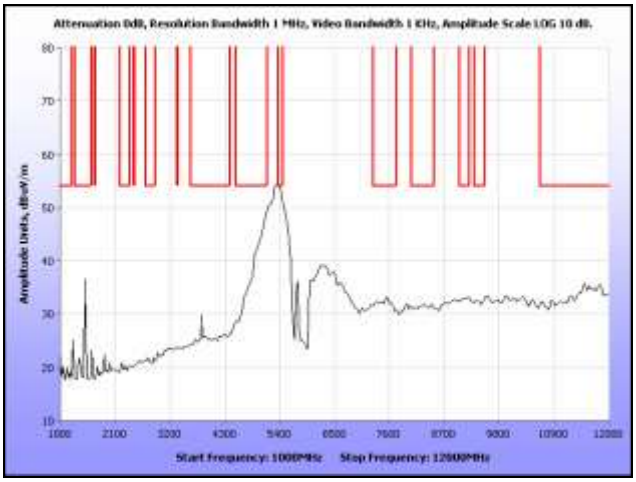


Plot 329. Radiated Spurious Emissions, High Channel, 802.11n HT20, 4 dBi Ceiling Mount Omni, 12 – 18 GHz, Peak, 5 GHz

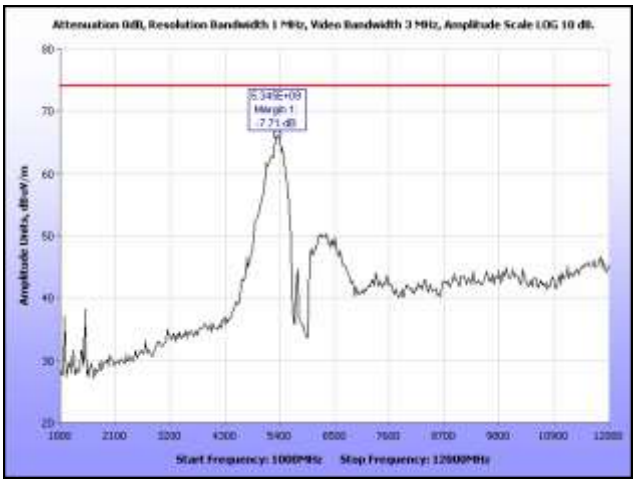
Radiated Spurious Emissions Test Results, 802.11n HT40, 4 dBi Ceiling Mount Omni Antenna, 5 GHz



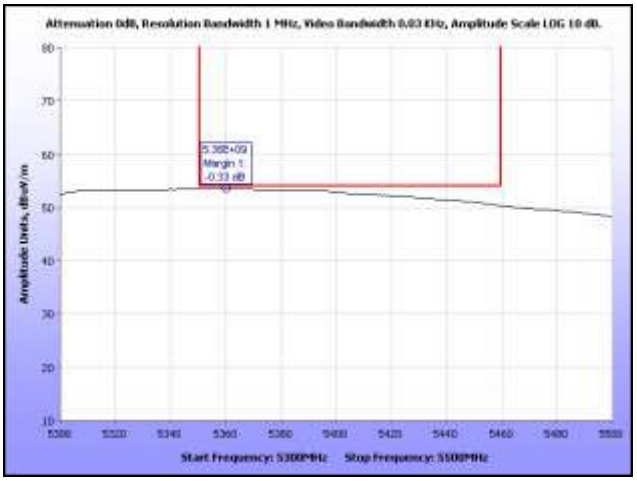
Plot 330. Radiated Spurious Emissions, Low Channel, 802.11n HT40, 4 dBi Ceiling Mount Omni, 30 MHz – 1 GHz, 5 GHz



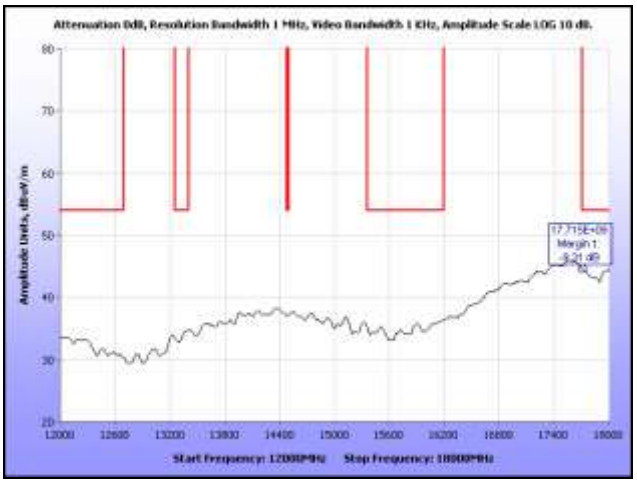
Plot 331. Radiated Spurious Emissions, Low Channel, 802.11n HT40, 4 dBi Ceiling Mount Omni, 1 – 12 GHz, Avg., 5 GHz



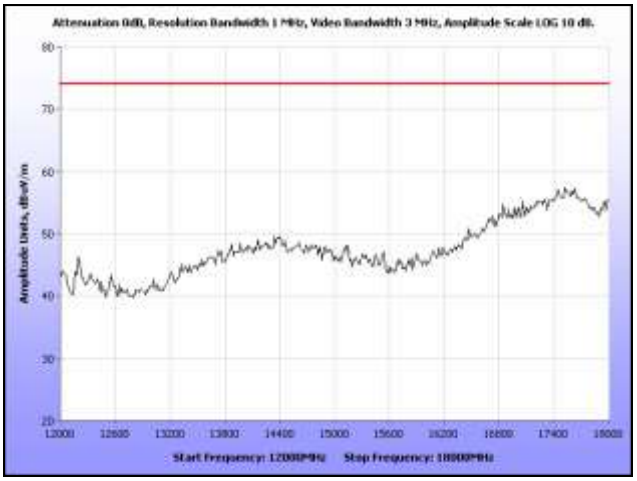
Plot 332. Radiated Spurious Emissions, Low Channel, 802.11n HT40, 4 dBi Ceiling Mount Omni, 1 – 12 GHz, Peak, 5 GHz



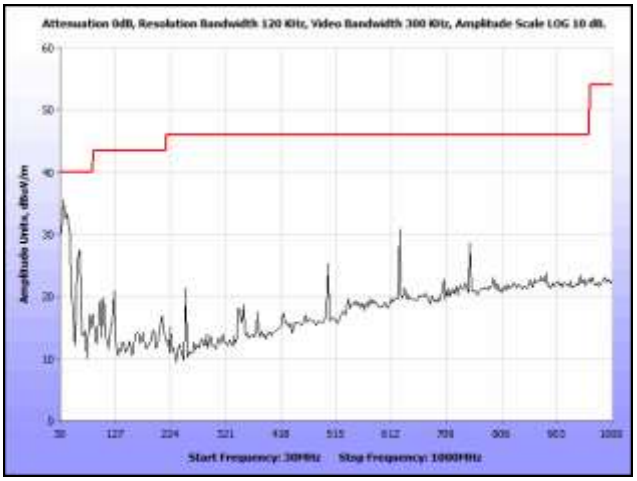
Plot 333. Radiated Spurious Emissions, Low Channel, 802.11n HT40, 4 dBi Ceiling Mount Omni, 5.3 – 5.5 GHz, 5 GHz



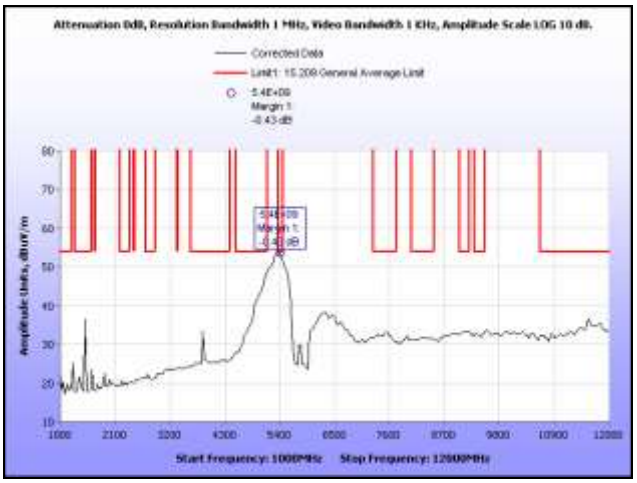
Plot 334. Radiated Spurious Emissions, Low Channel, 802.11n HT40, 4 dBi Ceiling Mount Omni, 12 – 18 GHz, Avg., 5 GHz



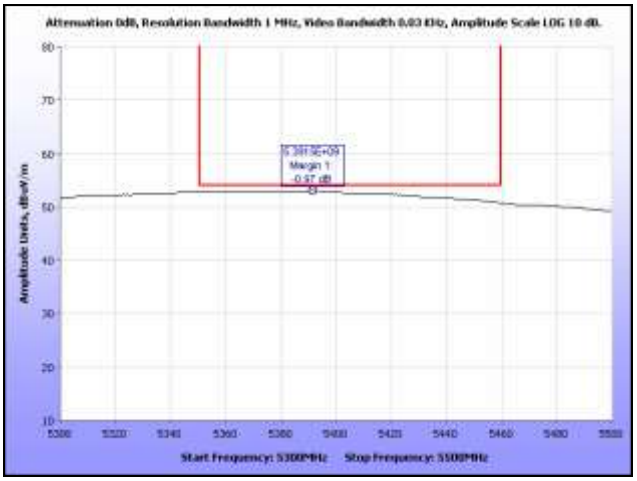
Plot 335. Radiated Spurious Emissions, Low Channel, 802.11n HT40, 4 dBi Ceiling Mount Omni, 12 – 18 GHz, Peak, 5 GHz



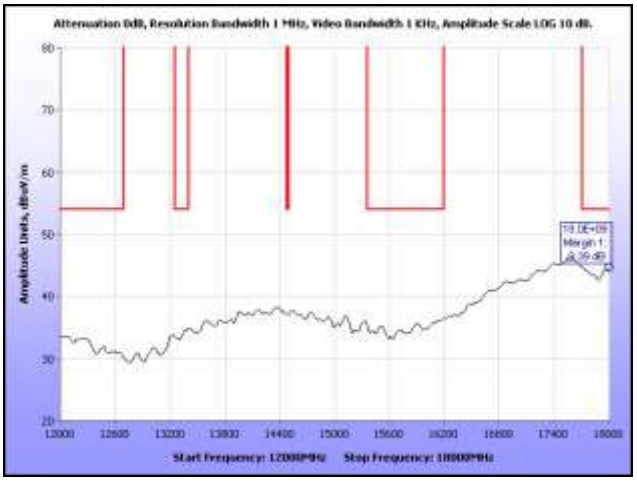
Plot 336. Radiated Spurious Emissions, High Channel, 802.11n HT40, 4 dBi Ceiling Mount Omni, 30 MHz – 1 GHz, 5 GHz



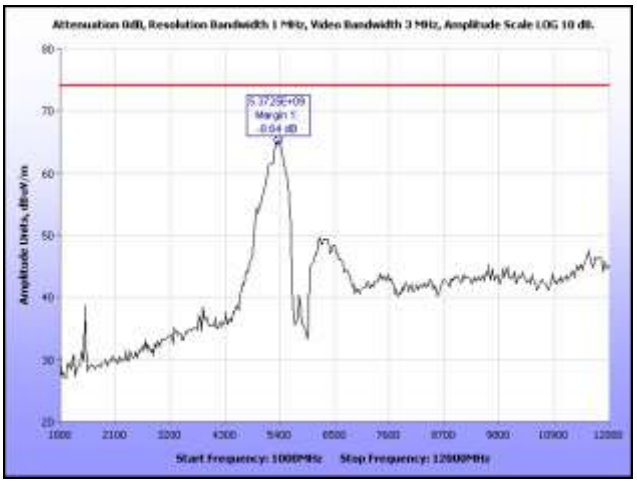
Plot 337. Radiated Spurious Emissions, High Channel, 802.11n HT40, 4 dBi Ceiling Mount Omni, 1 – 12 GHz, 5 GHz



Plot 338. Radiated Spurious Emissions, High Channel, 802.11n HT40, 4 dBi Ceiling Mount Omni, 5.3 – 5.5 GHz, 5 GHz



Plot 339. Radiated Spurious Emissions, High Channel, 802.11n HT40, 4 dBi Ceiling Mount Omni, 12 – 18 GHz, Avg., 5 GHz



Plot 340. Radiated Spurious Emissions, High Channel, 802.11n HT40, 4 dBi Ceiling Mount Omni, 12 – 18 GHz, Peak, 5 GHz

Radiated Band Edge Measurements

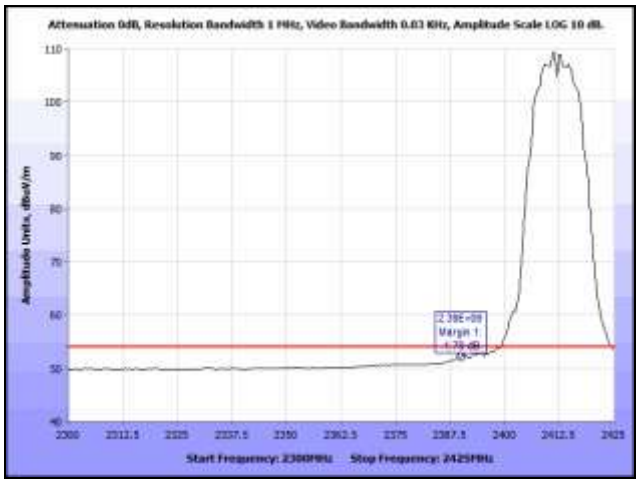
Test Procedures: The transmitter was turned on. Measurements were performed of the low, mid and high Channels. The EUT was rotated orthogonally through all three axes. Plots shown are corrected for both antenna correction factor and distance and compared to a 3 m limit line.

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

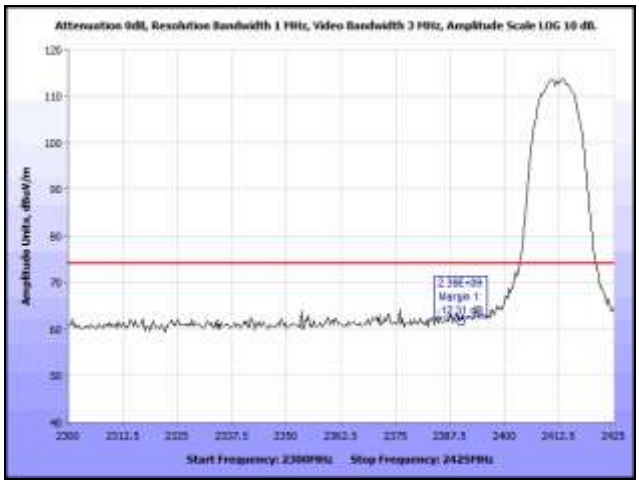
Test Engineer(s): Anderson Soungpanya

Test Date(s): 05/11/12

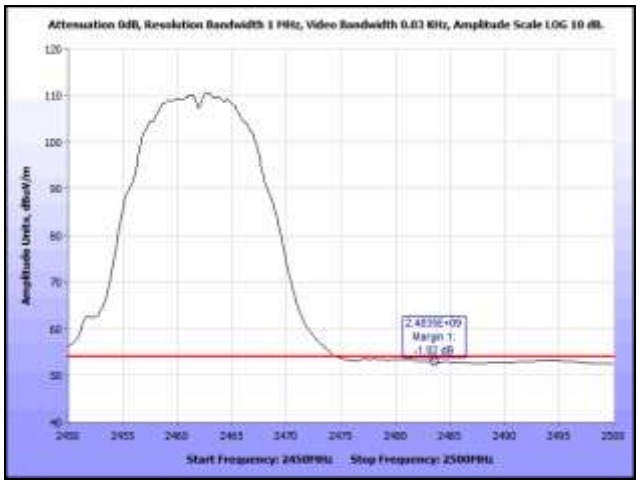
Radiated Band Edge Measurements, 802.11b, 6 dBi Omni Antenna, 2.4 GHz



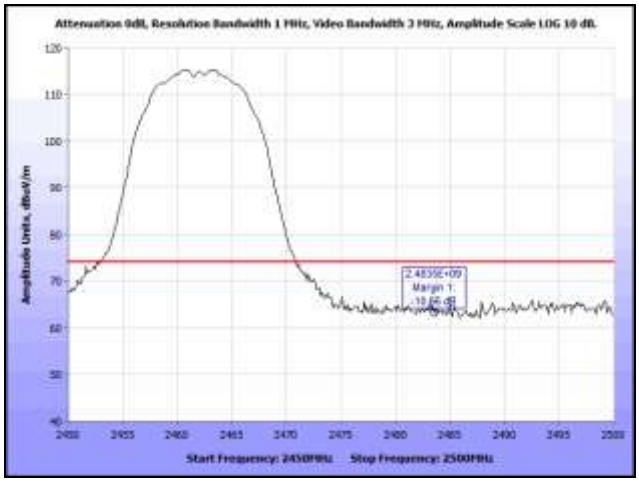
Plot 341. Radiated Band Edge, 802.11b, Low Channel, 6 dBi Omni, Avg., 2.4 GHz



Plot 342. Radiated Band Edge, 802.11b, Low Channel, 6 dBi Omni, Peak, 2.4 GHz

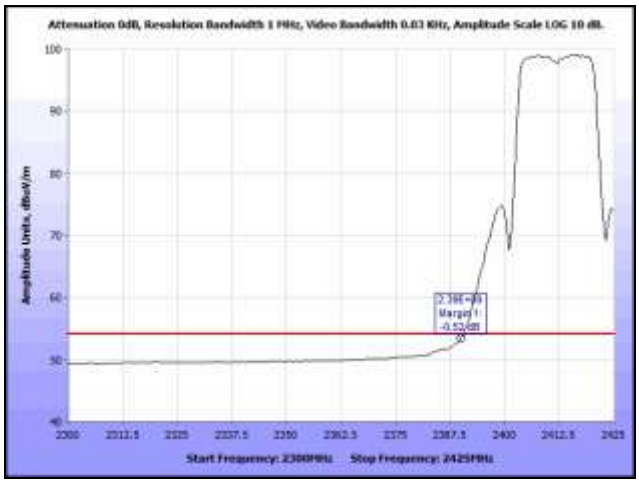


Plot 343. Radiated Band Edge, 802.11b, High Channel, 6 dBi Omni, Avg., 2.4 GHz

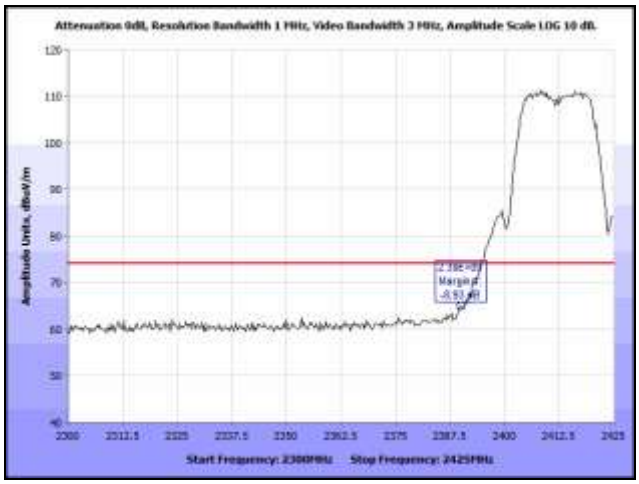


Plot 344. Radiated Band Edge, 802.11b, High Channel, 6 dBi Omni, Peak, 2.4 GHz

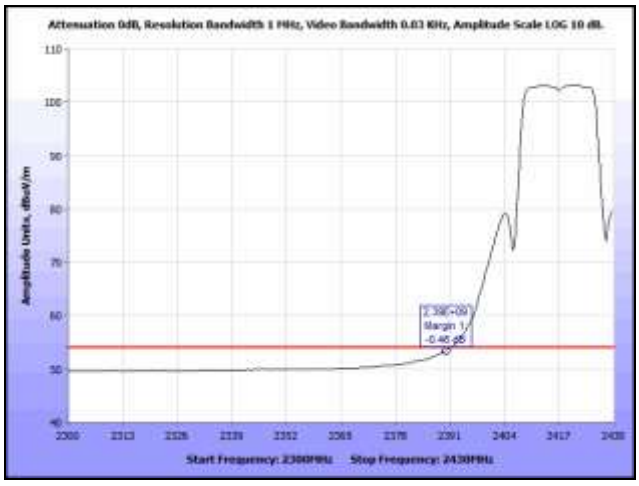
Radiated Band Edge Measurements, 802.11g, 6 dBi Omni Antenna, 2.4 GHz



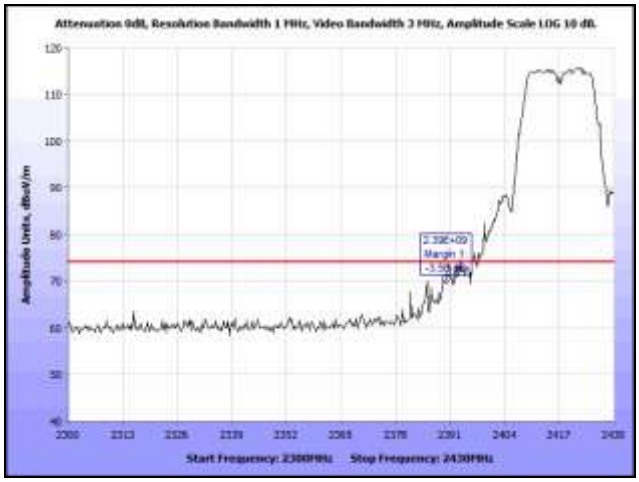
Plot 345. Radiated Band Edge, 802.11g, Low Channel, 6 dBi Omni, Avg., 2.4 GHz



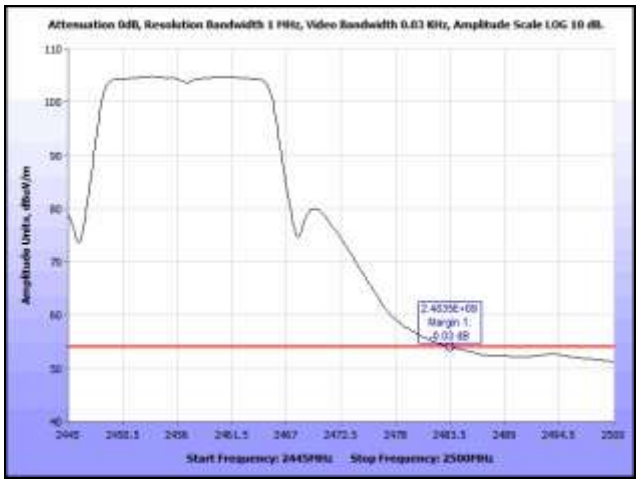
Plot 346. Radiated Band Edge, 802.11g Low Channel, 6 dBi Omni, Peak, 2.4 GHz



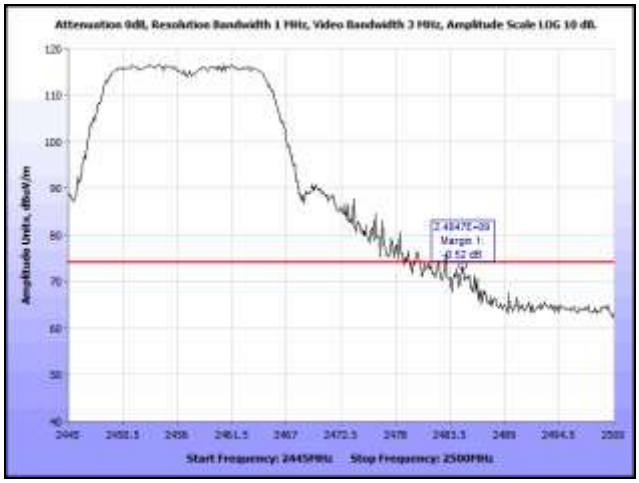
Plot 347. Radiated Band Edge, 802.11g, Channel 2, 6 dBi Omni, Avg., 2.4 GHz



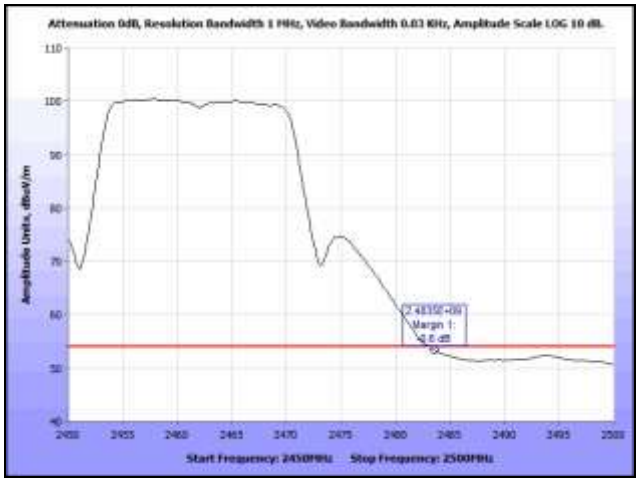
Plot 348. Radiated Band Edge, 802.11g, Channel 2, 6 dBi Omni, Peak, 2.4 GHz



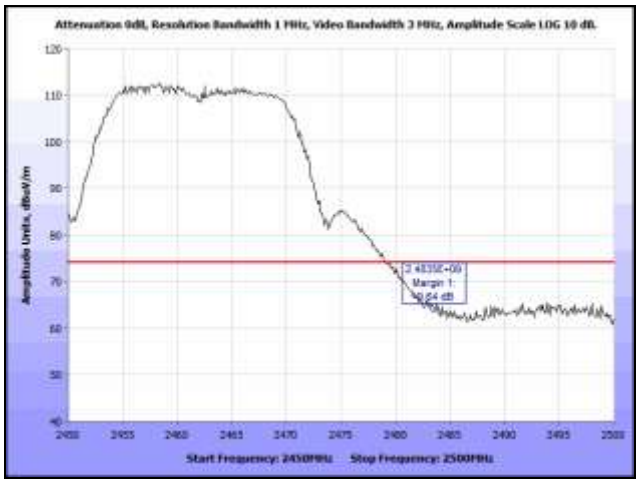
Plot 349. Radiated Band Edge, 802.11g, Channel 10, 6 dBi Omni, Avg., 2.4 GHz



Plot 350. Radiated Band Edge, 802.11g, Channel 10, 6 dBi Omni, Peak, 2.4 GHz

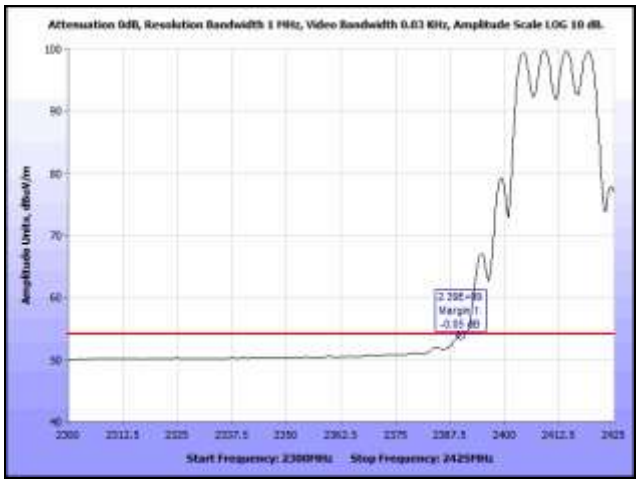


Plot 351. Radiated Band Edge, 802.11g, High Channel, 6 dBi Omni, Avg., 2.4 GHz

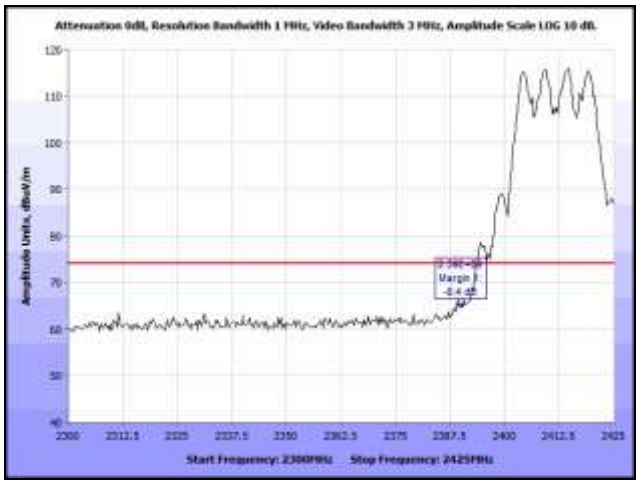


Plot 352. Radiated Band Edge, 802.11g, High Channel, 6 dBi Omni, Peak, 2.4 GHz

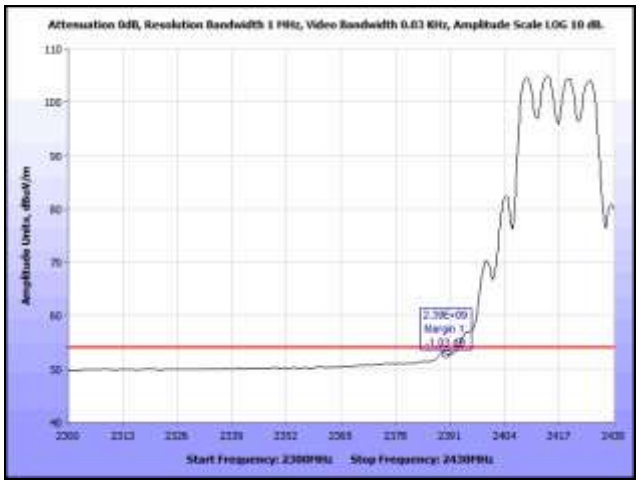
Radiated Band Edge Measurements, 802.11n HT20, 6 dBi Omni Antenna, 2.4 GHz



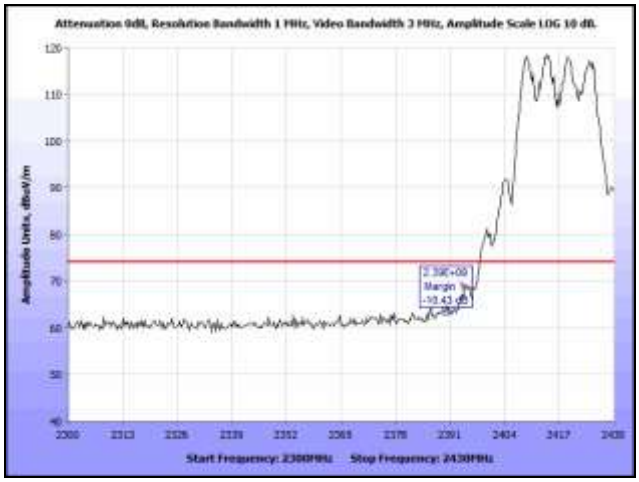
Plot 353. Radiated Band Edge, 802.11n HT20, Low Channel, 6 dBi Omni, Avg., 2.4 GHz



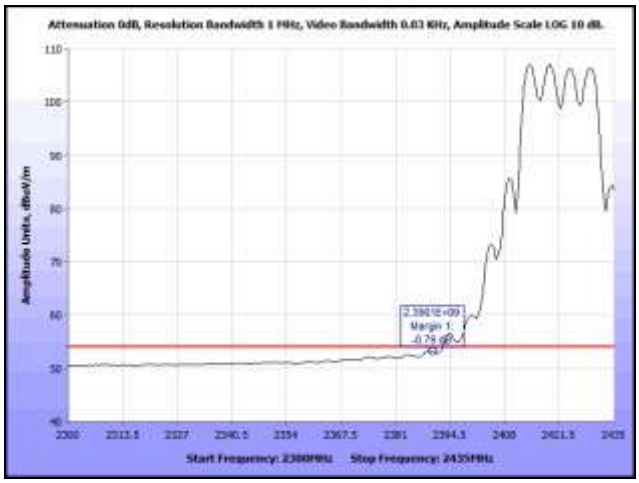
Plot 354. Radiated Band Edge, 802.11n HT20 Low Channel, 6 dBi Omni, Peak, 2.4 GHz



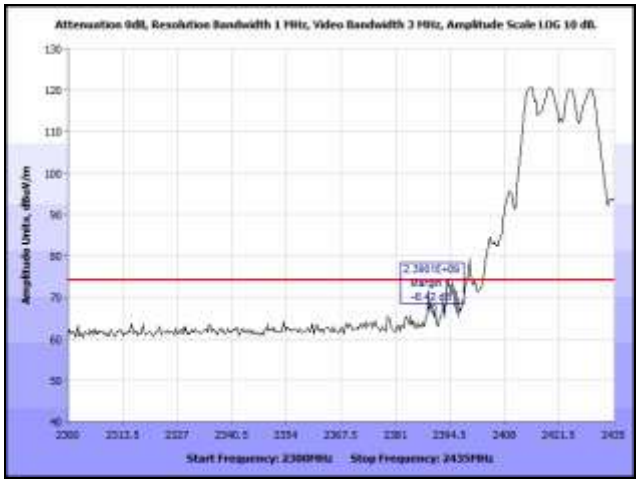
Plot 355. Radiated Band Edge, 802.11n HT20, Channel 2, 6 dBi Omni, Avg., 2.4 GHz



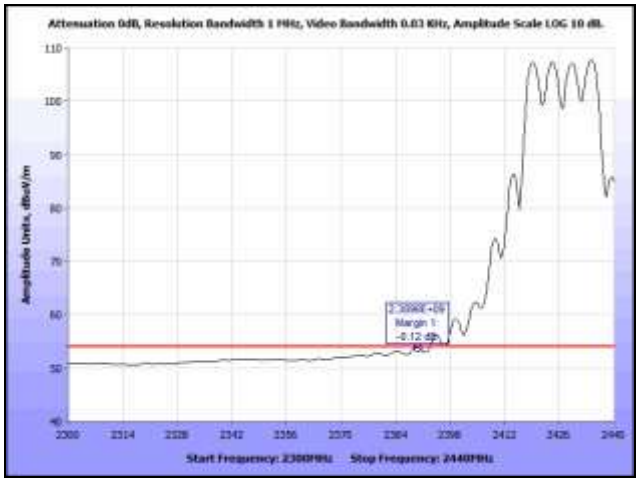
Plot 356. Radiated Band Edge, 802.11n HT20, Channel 2, 6 dBi Omni, Peak, 2.4 GHz



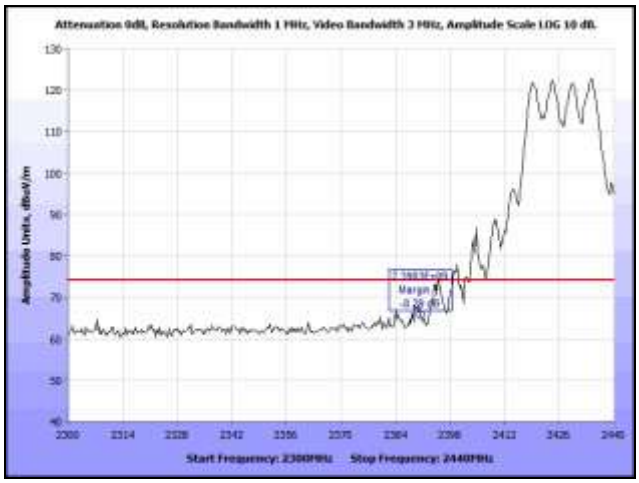
Plot 357. Radiated Band Edge, 802.11n HT20, Channel 3, 6 dBi Omni, Avg., 2.4 GHz



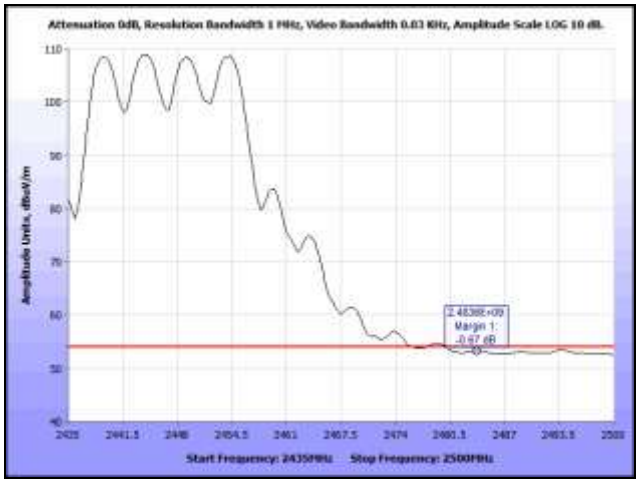
Plot 358. Radiated Band Edge, 802.11n HT20, Channel 3, 6 dBi Omni, Peak, 2.4 GHz



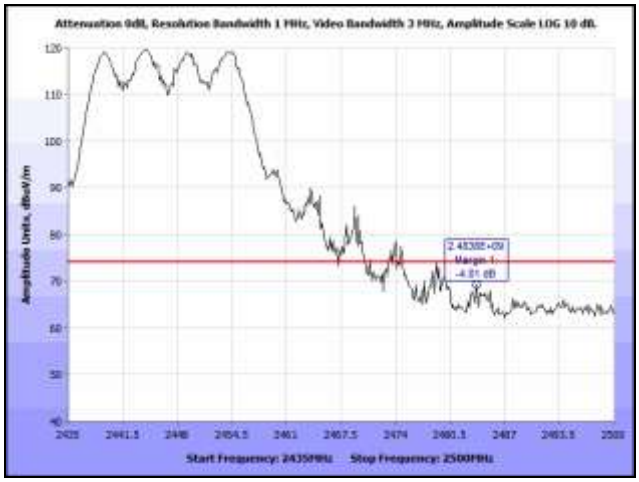
Plot 359. Radiated Band Edge, 802.11n HT20, Channel 4, 6 dBi Omni, Avg., 2.4 GHz



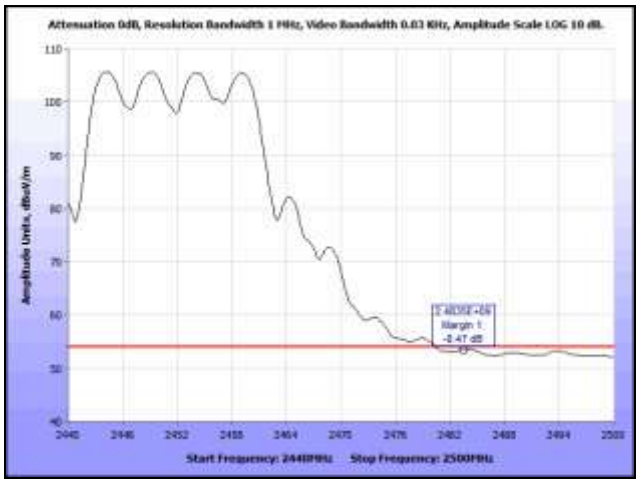
Plot 360. Radiated Band Edge, 802.11n HT20, Channel 4, 6 dBi Omni, Peak, 2.4 GHz



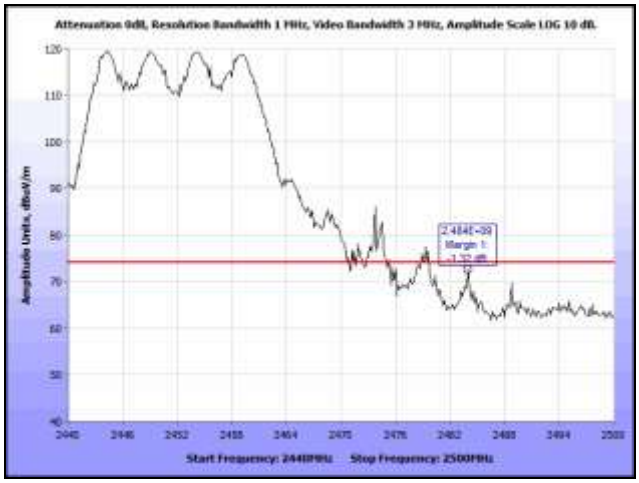
Plot 361. Radiated Band Edge, 802.11n HT20, Channel 8, 6 dBi Omni, Avg., 2.4 GHz



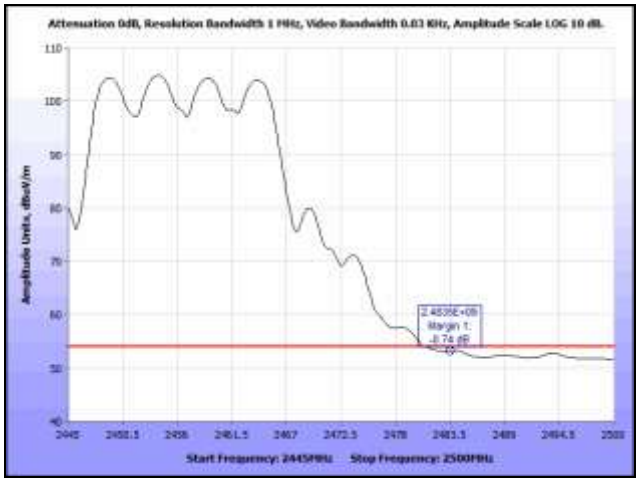
Plot 362. Radiated Band Edge, 802.11n HT20, Channel 8, 6 dBi Omni, Peak, 2.4 GHz



Plot 363. Radiated Band Edge, 802.11n HT20, Channel 9, 6 dBi Omni, Avg., 2.4 GHz

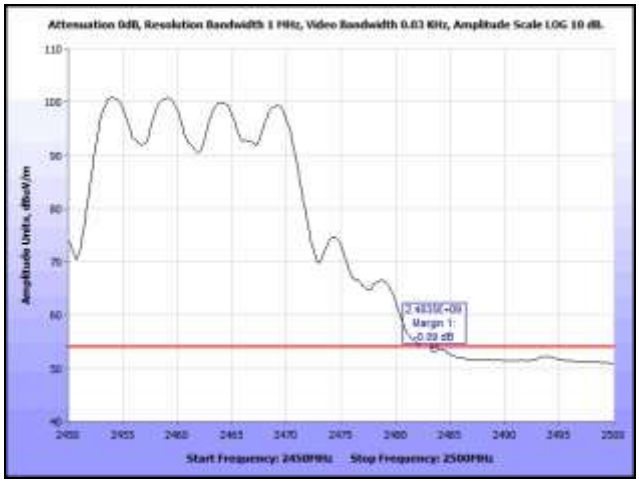


Plot 364. Radiated Band Edge, 802.11n HT20, Channel 9, 6 dBi Omni, Peak, 2.4 GHz



Plot 365. Radiated Band Edge, 802.11n HT20, Channel 10, 6 dBi Omni, Avg., 2.4 GHz

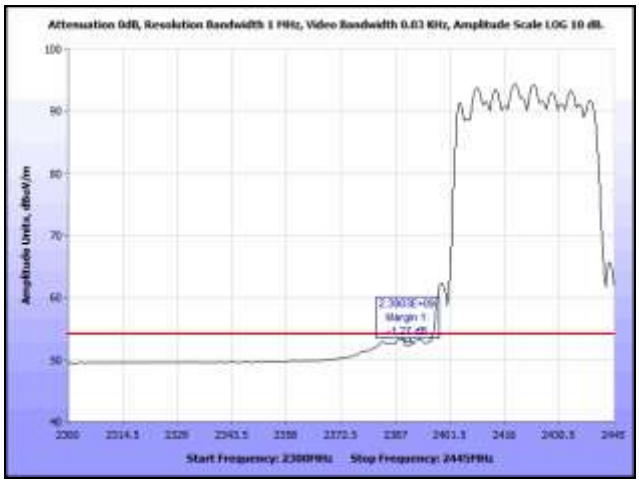
Plot 366. Radiated Band Edge, 802.11n HT20, Channel 10, 6 dBi Omni, Peak, 2.4 GHz



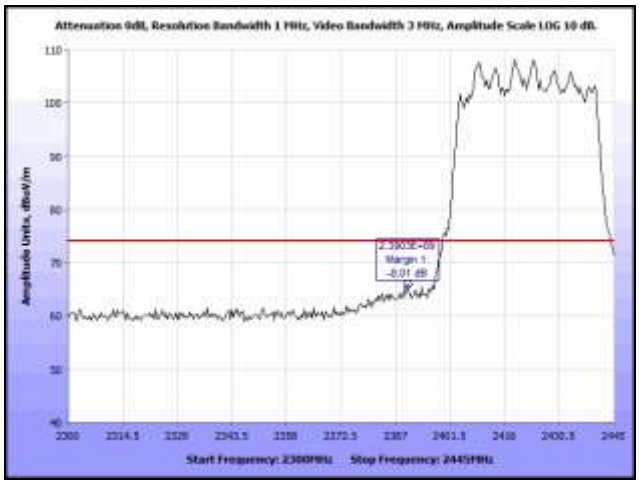
Plot 367. Radiated Band Edge, 802.11n HT20, High Channel, 6 dBi Omni, Avg., 2.4 GHz

Plot 368. Radiated Band Edge, 802.11n HT20, High Channel, 6 dBi Omni, Peak, 2.4 GHz

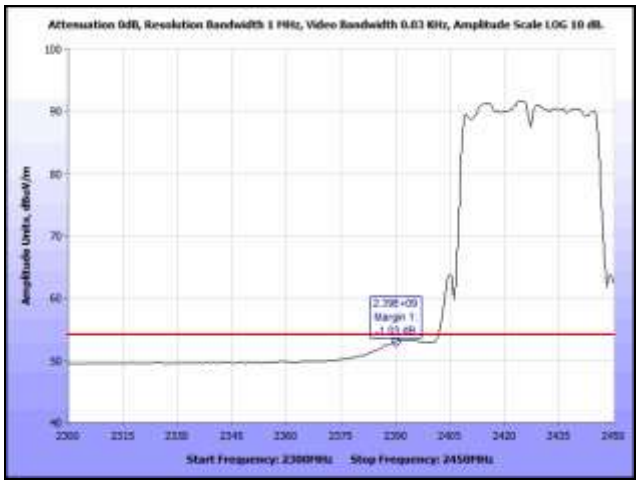
Radiated Band Edge Measurements, 802.11n HT40, 6 dBi Omni Antenna, 2.4 GHz



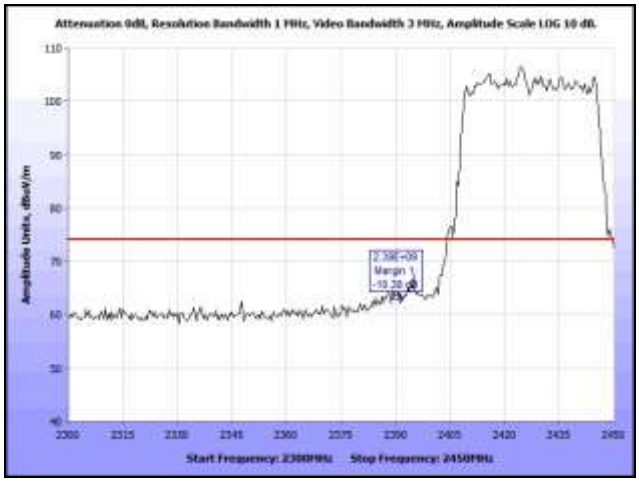
Plot 369. Radiated Band Edge, 802.11n HT40, Low Channel, 6 dBi Omni, Avg., 2.4 GHz



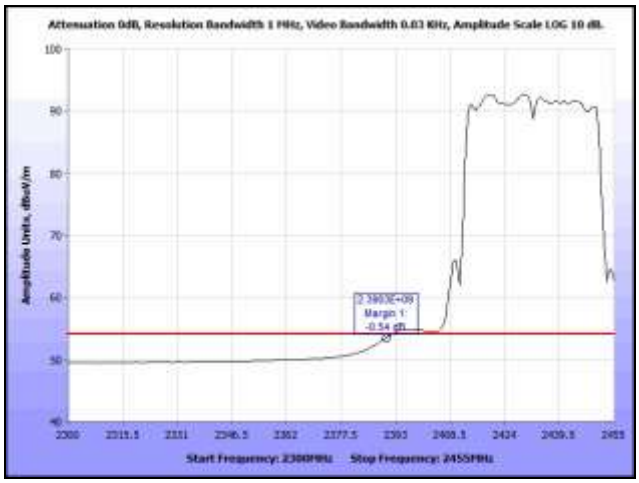
Plot 370. Radiated Band Edge, 802.11n HT40 Low Channel, 6 dBi Omni, Peak, 2.4 GHz



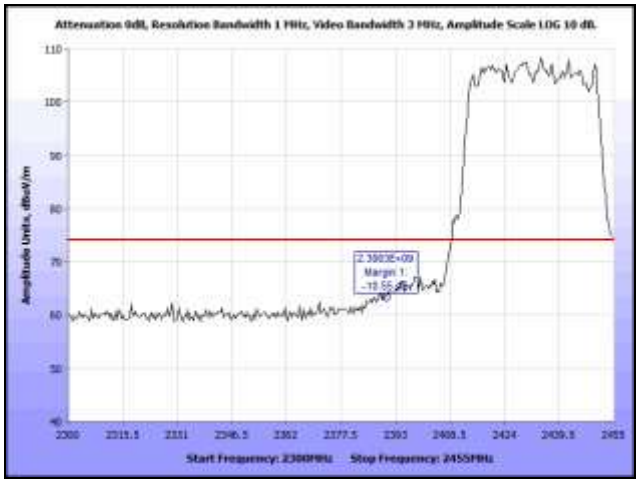
Plot 371. Radiated Band Edge, 802.11n HT40, Channel 4, 6 dBi Omni, Avg., 2.4 GHz



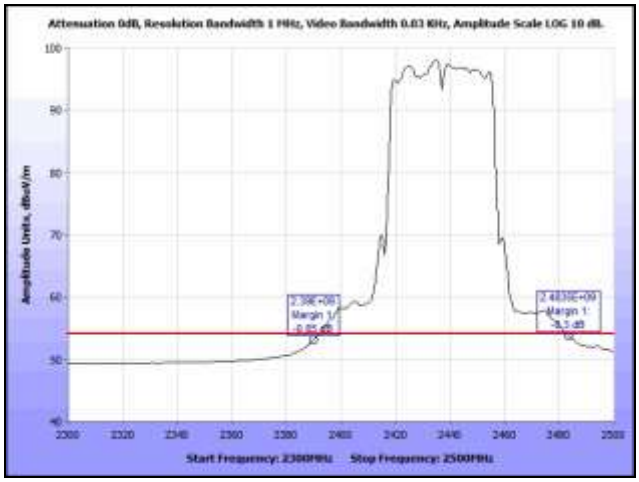
Plot 372. Radiated Band Edge, 802.11n HT40, Channel 4, 6 dBi Omni, Peak, 2.4 GHz



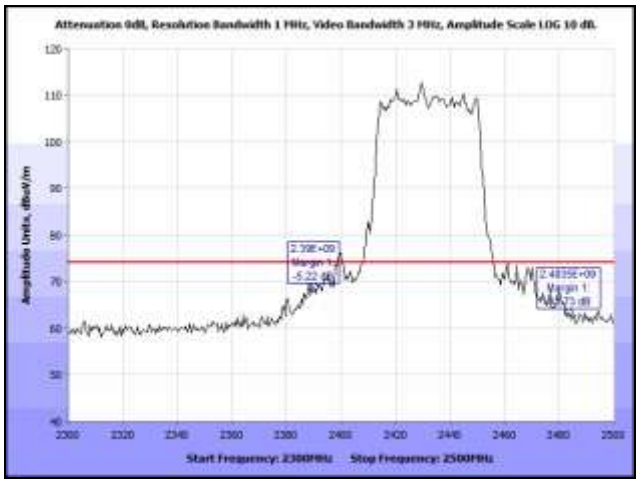
Plot 373. Radiated Band Edge, 802.11n HT40, Channel 5, 6 dBi Omni, Avg., 2.4 GHz



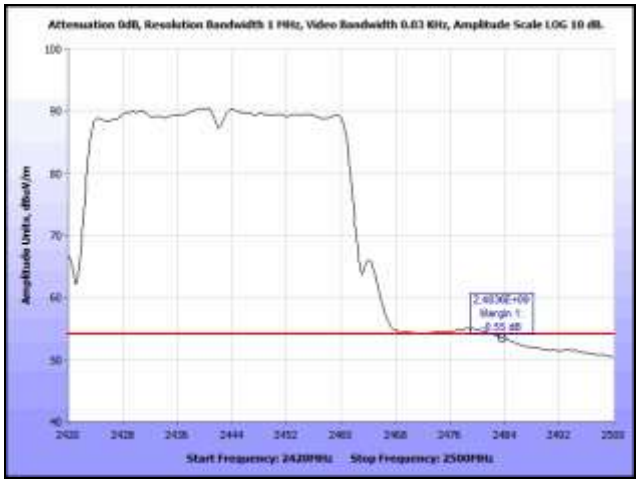
Plot 374. Radiated Band Edge, 802.11n HT40, Channel 5, 6 dBi Omni, Peak, 2.4 GHz



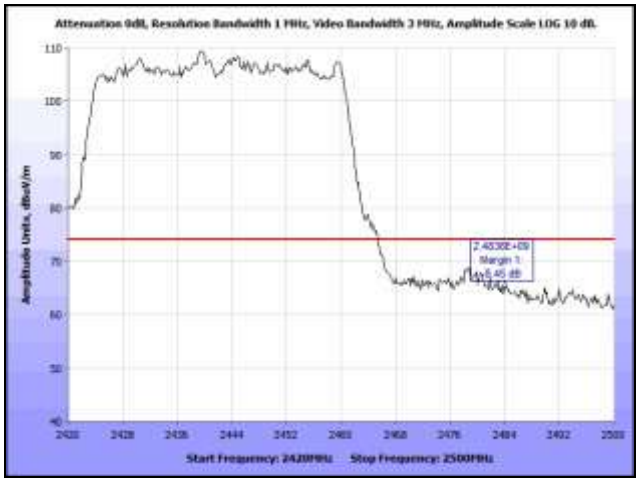
Plot 375. Radiated Band Edge, 802.11n HT40, Channel 6, 6 dBi Omni, Avg., 2.4 GHz



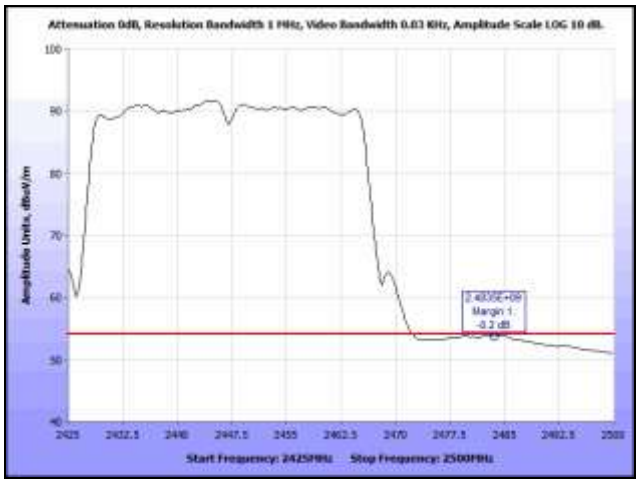
Plot 376. Radiated Band Edge, 802.11n HT40, Channel 6, 6 dBi Omni, Peak, 2.4 GHz



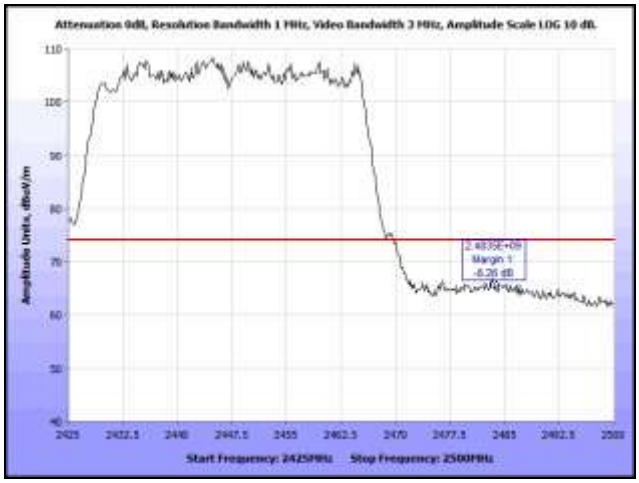
Plot 377. Radiated Band Edge, 802.11n HT40, Channel 7, 6 dBi Omni, Avg., 2.4 GHz



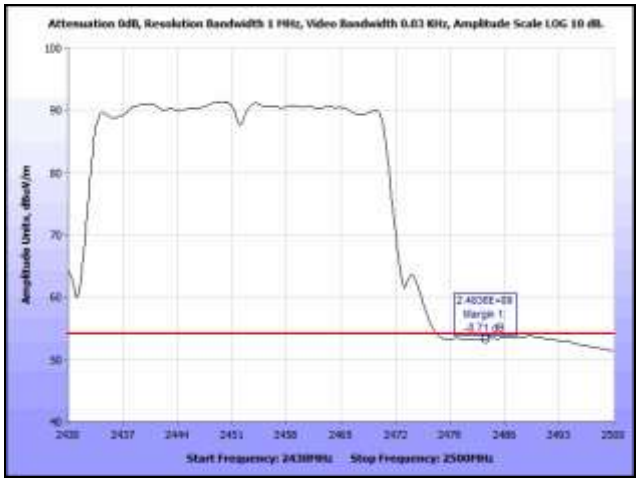
Plot 378. Radiated Band Edge, 802.11n HT40, Channel 7, 6 dBi Omni, Peak, 2.4 GHz



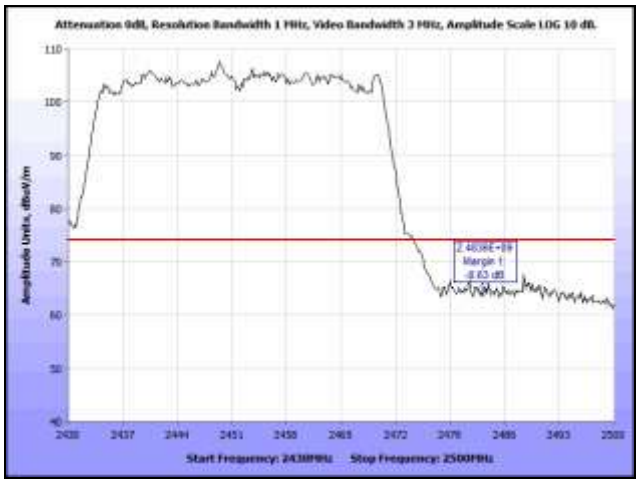
Plot 379. Radiated Band Edge, 802.11n HT40, Channel 8, 6 dBi Omni, Avg., 2.4 GHz



Plot 380. Radiated Band Edge, 802.11n HT40, Channel 8, 6 dBi Omni, Peak, 2.4 GHz

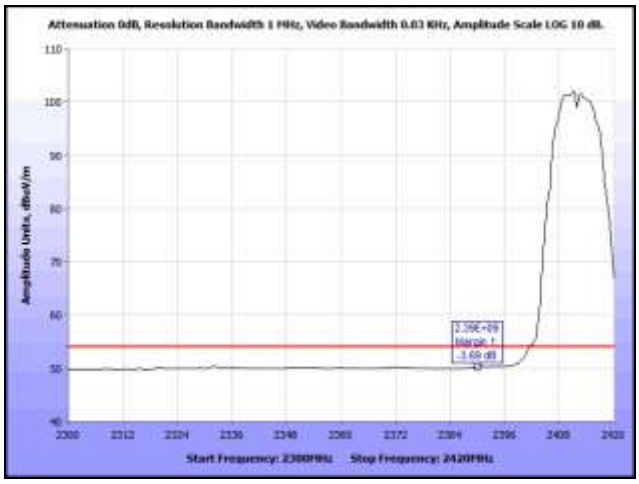


Plot 381. Radiated Band Edge, 802.11n HT40, High Channel, 6 dBi Omni, Avg., 2.4 GHz

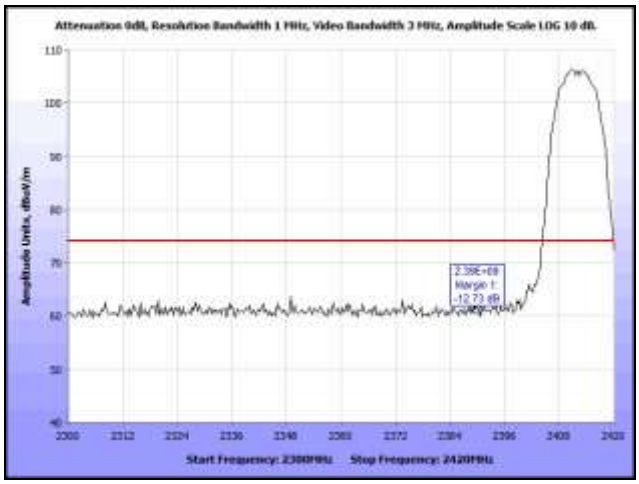


Plot 382. Radiated Band Edge, 802.11n HT40, High Channel, 6 dBi Omni, Peak, 2.4 GHz

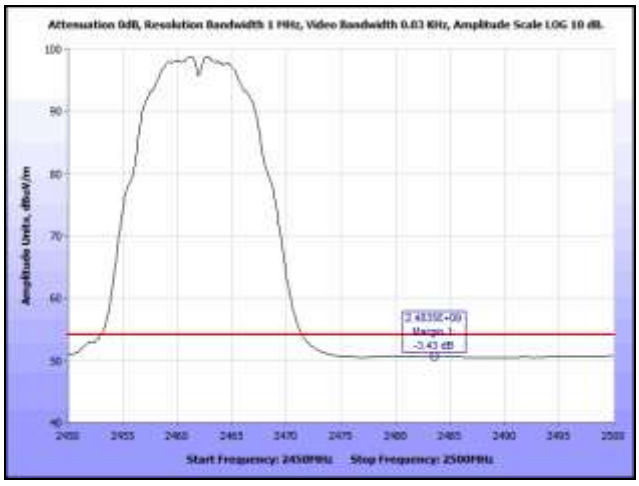
Radiated Band Edge Measurements, 802.11b, 6 dBi Patch Antenna, 2.4 GHz



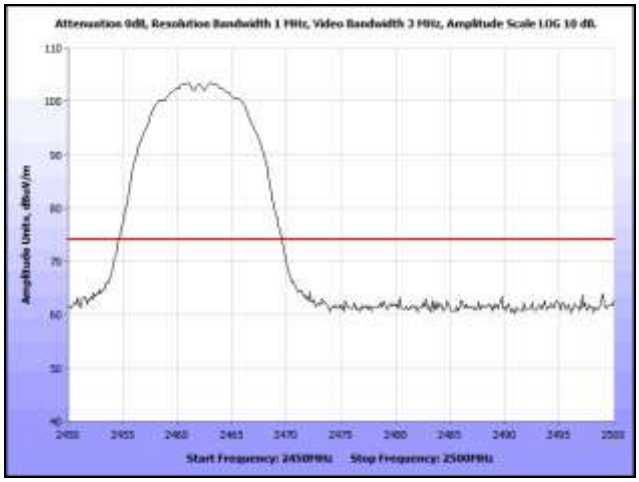
Plot 383. Radiated Band Edge, 802.11b, Low Channel, 6 dBi Patch, Avg., 2.4 GHz



Plot 384. Radiated Band Edge, 802.11b, Low Channel, 6 dBi Patch, Peak, 2.4 GHz

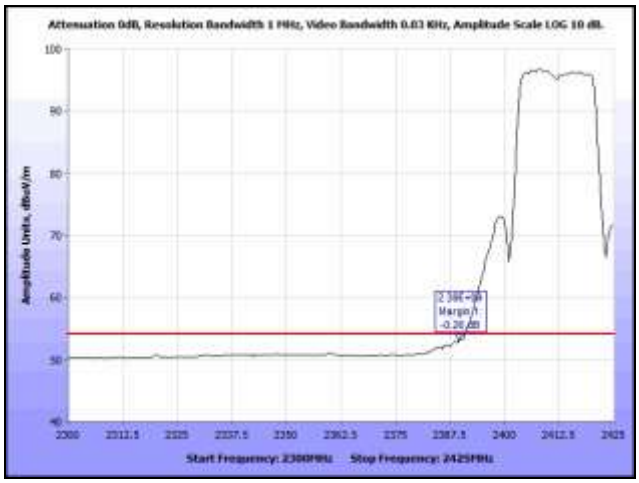


Plot 385. Radiated Band Edge, 802.11b, High Channel, 6 dBi Patch, Avg., 2.4 GHz

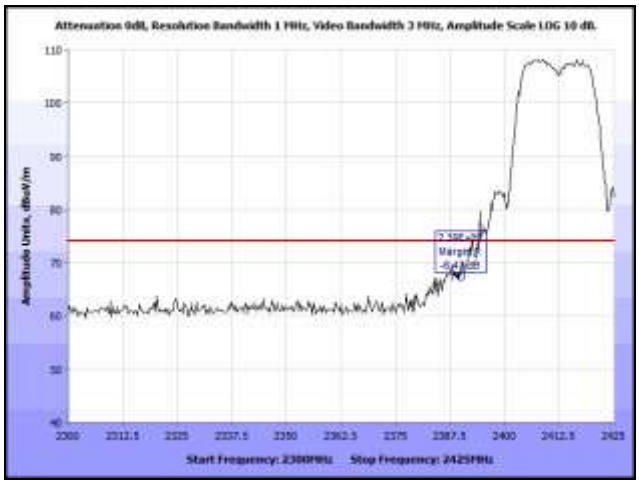


Plot 386. Radiated Band Edge, 802.11b, High Channel, 6 dBi Patch, Peak, 2.4 GHz

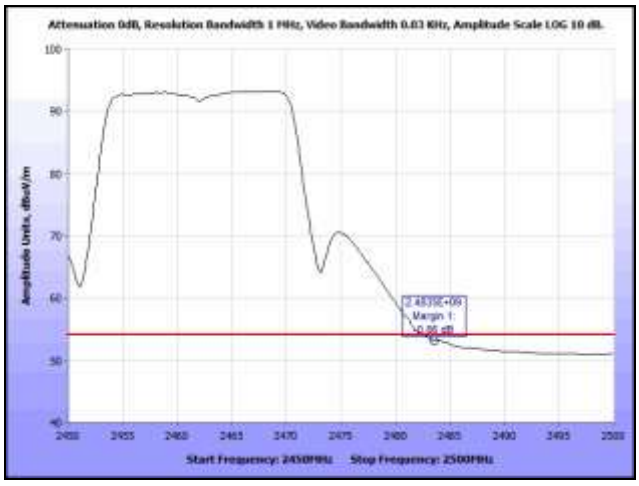
Radiated Band Edge Measurements, 802.11g, 6 dBi Patch Antenna, 2.4 GHz



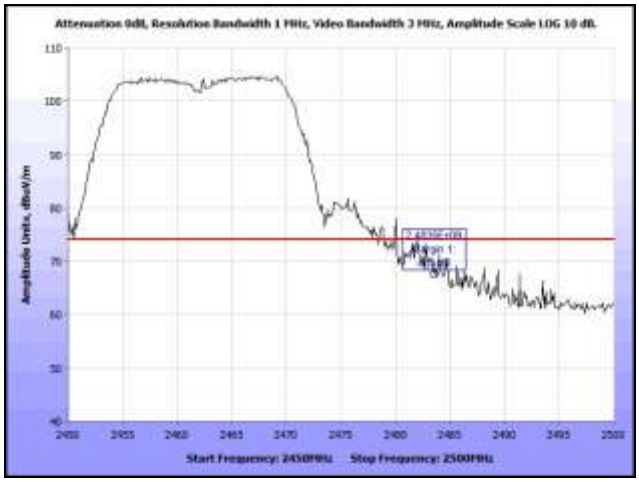
Plot 387. Radiated Band Edge, 802.11g, Low Channel, 6 dBi Patch, Avg., 2.4 GHz



Plot 388. Radiated Band Edge, 802.11g Low Channel, 6 dBi Patch, Peak, 2.4 GHz

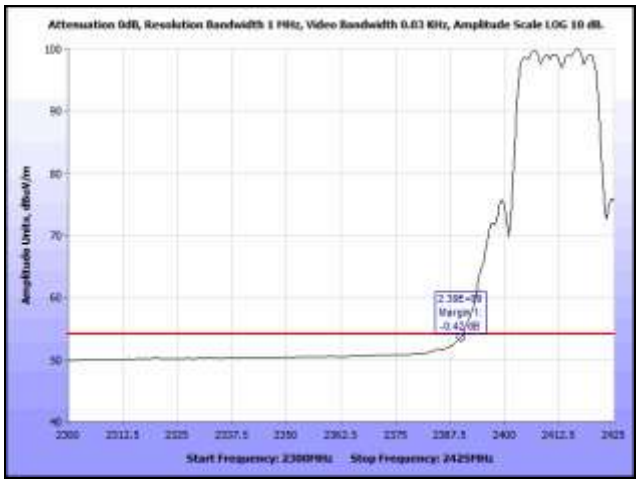


Plot 389. Radiated Band Edge, 802.11g, High Channel, 6 dBi Patch, Avg., 2.4 GHz

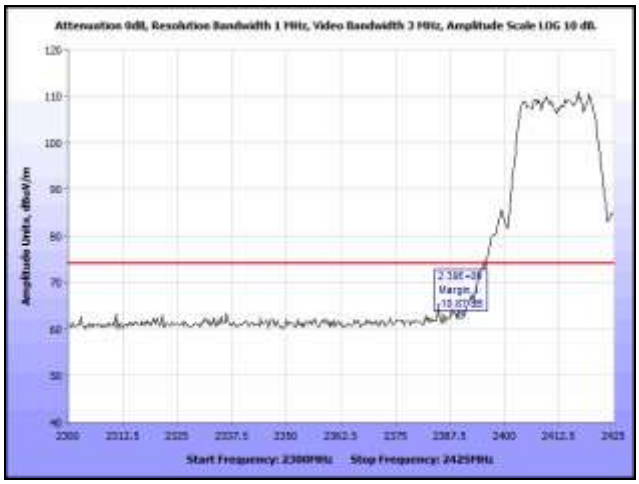


Plot 390. Radiated Band Edge, 802.11g, High Channel, 6 dBi Patch, Peak, 2.4 GHz

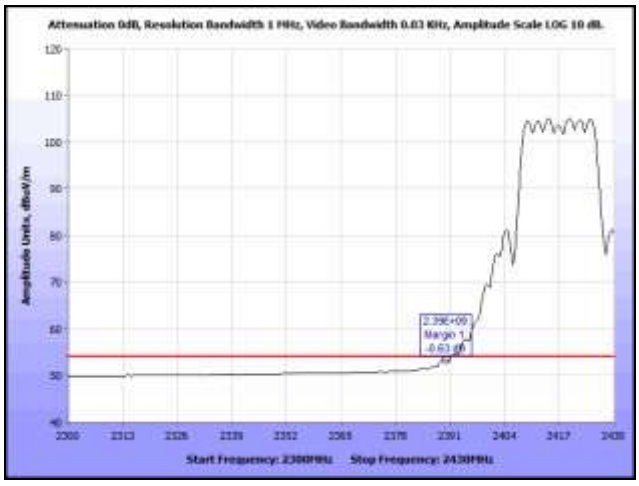
Radiated Band Edge Measurements, 802.11n HT20, 6 dBi Patch Antenna, 2.4 GHz



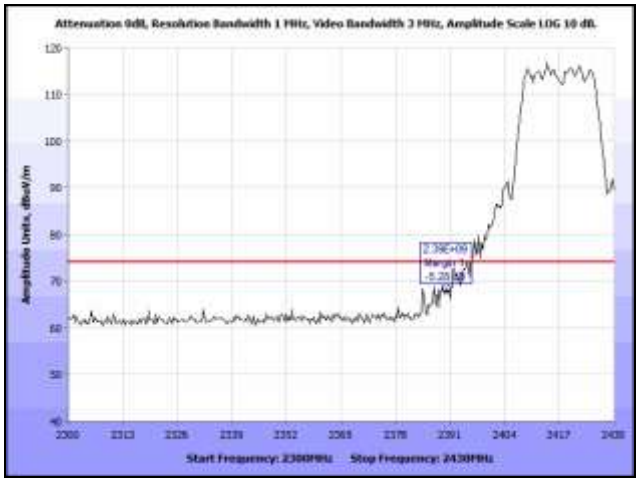
Plot 391. Radiated Band Edge, 802.11n HT20, Low Channel, 6 dBi Patch, Avg., 2.4 GHz



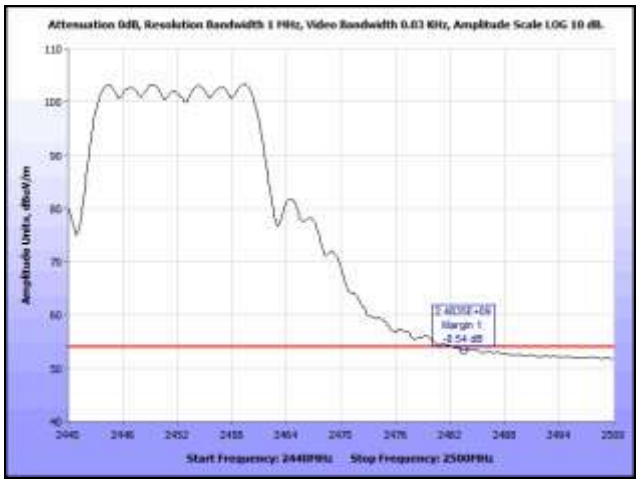
Plot 392. Radiated Band Edge, 802.11n HT20 Low Channel, 6 dBi Patch, Peak, 2.4 GHz



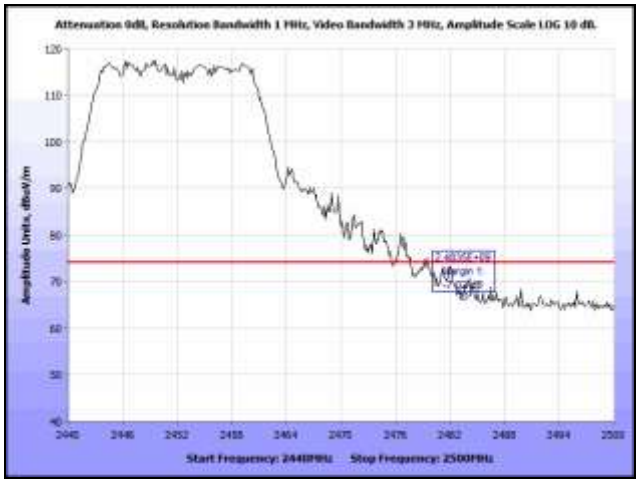
Plot 393. Radiated Band Edge, 802.11n HT20, Channel 2, 6 dBi Patch, Avg., 2.4 GHz



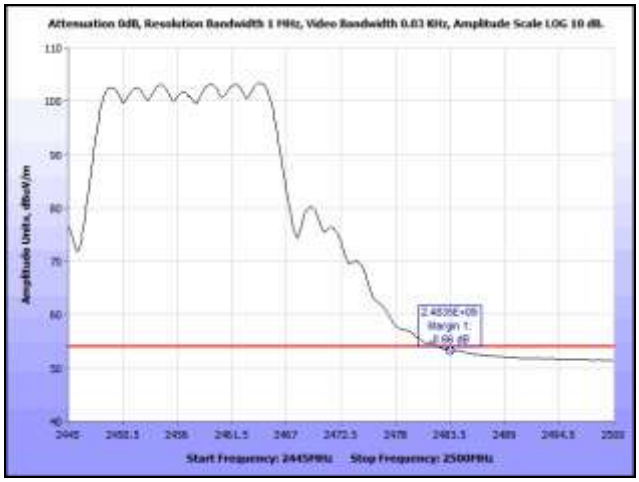
Plot 394. Radiated Band Edge, 802.11n HT20, Channel 2, 6 dBi Patch, Peak, 2.4 GHz



Plot 395. Radiated Band Edge, 802.11n HT20, Channel 9, 6 dBi Patch, Avg., 2.4 GHz

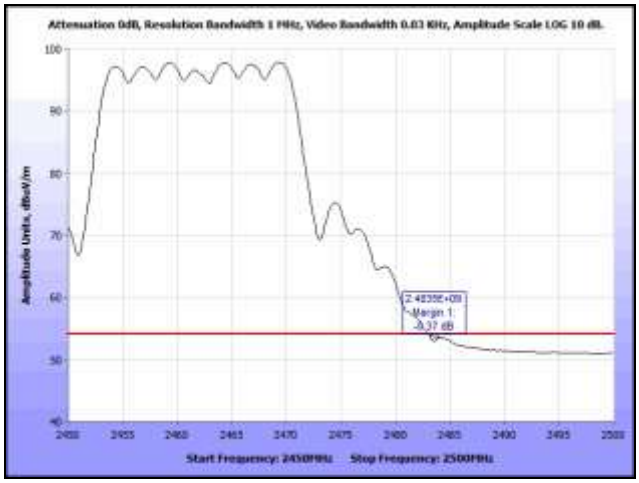


Plot 396. Radiated Band Edge, 802.11n HT20, Channel 9, 6 dBi Patch, Peak, 2.4 GHz

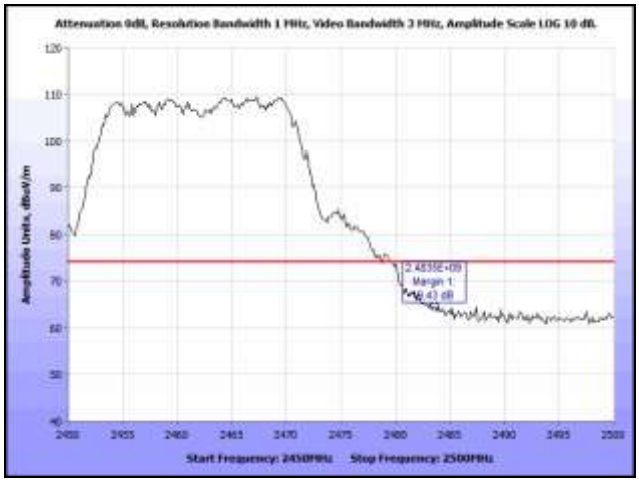


Plot 397. Radiated Band Edge, 802.11n HT20, Channel 10, 6 dBi Patch, Avg., 2.4 GHz

Plot 398. Radiated Band Edge, 802.11n HT20, Channel 10, 6 dBi Patch, Peak, 2.4 GHz

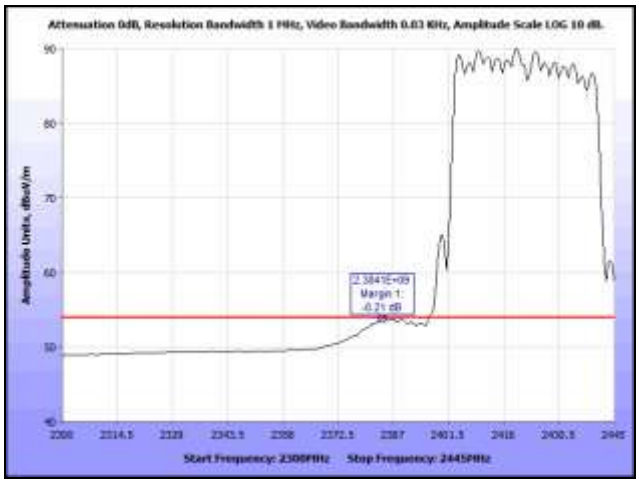


Plot 399. Radiated Band Edge, 802.11n HT20, High Channel, 6 dBi Patch, Avg., 2.4 GHz

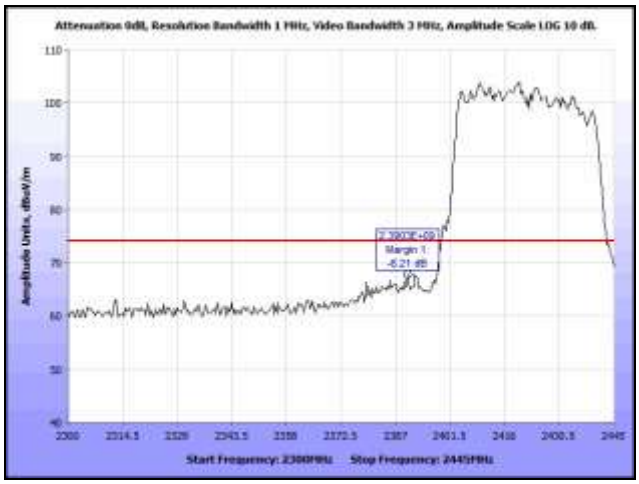


Plot 400. Radiated Band Edge, 802.11n HT20, High Channel, 6 dBi Patch, Peak, 2.4 GHz

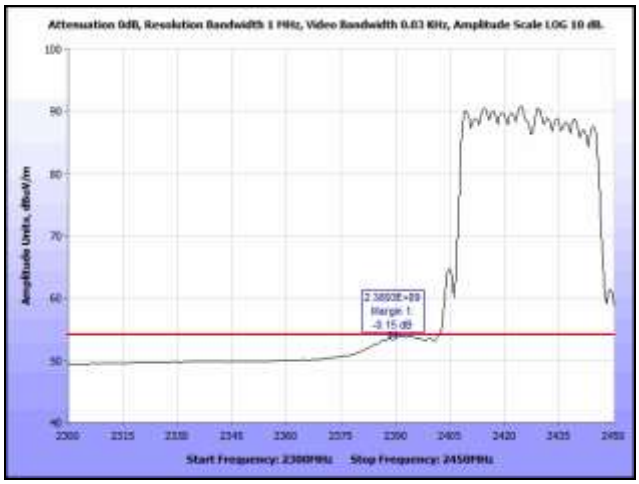
Radiated Band Edge Measurements, 802.11n HT40, 6 dBi Patch Antenna, 2.4 GHz



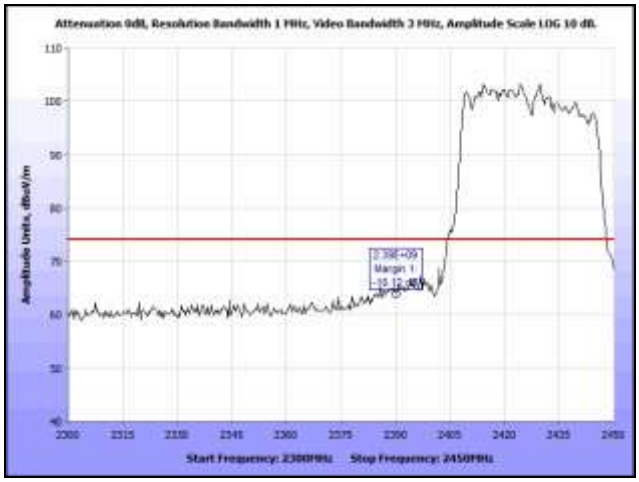
Plot 401. Radiated Band Edge, 802.11n HT40, Low Channel, 6 dBi Patch, Avg., 2.4 GHz



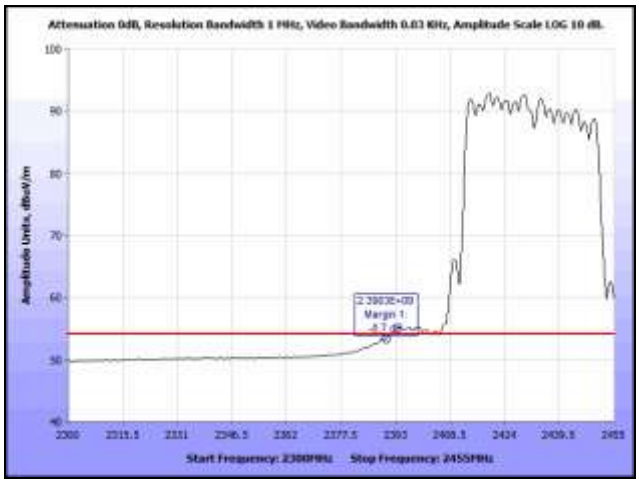
Plot 402. Radiated Band Edge, 802.11n HT40 Low Channel, 6 dBi Patch, Peak, 2.4 GHz



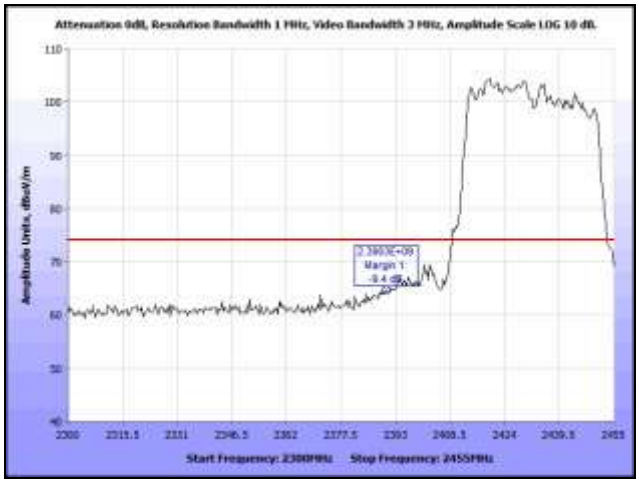
Plot 403. Radiated Band Edge, 802.11n HT40, Channel 4, 6 dBi Patch, Avg., 2.4 GHz



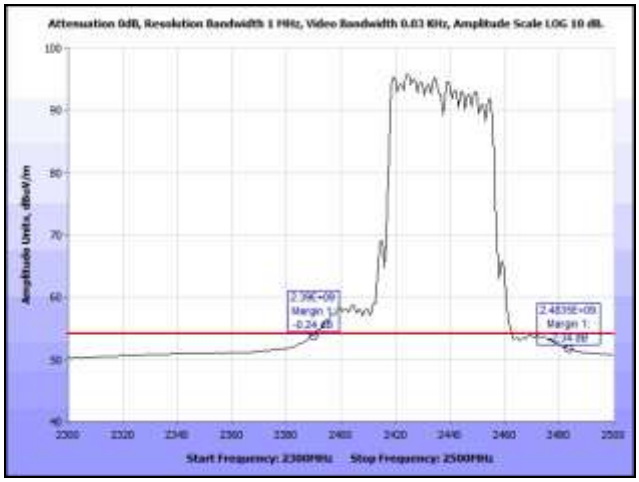
Plot 404. Radiated Band Edge, 802.11n HT40, Channel 4, 6 dBi Patch, Peak, 2.4 GHz



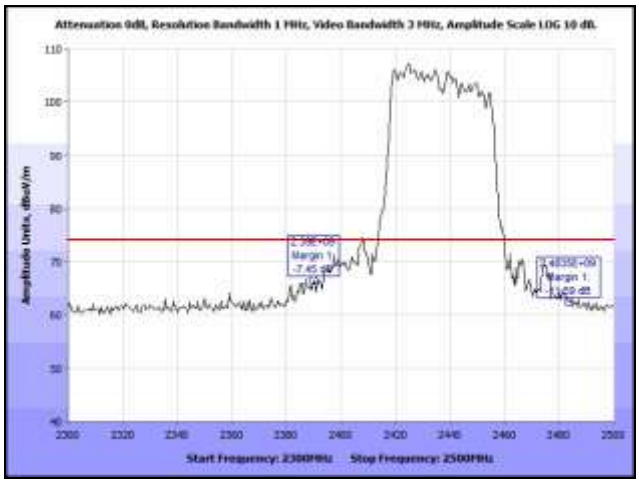
Plot 405. Radiated Band Edge, 802.11n HT40, Channel 5, 6 dBi Patch, Avg., 2.4 GHz



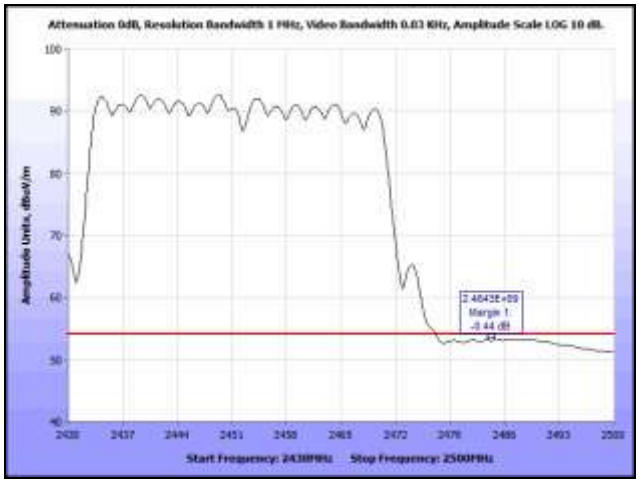
Plot 406. Radiated Band Edge, 802.11n HT40, Channel 5, 6 dBi Patch, Peak, 2.4 GHz



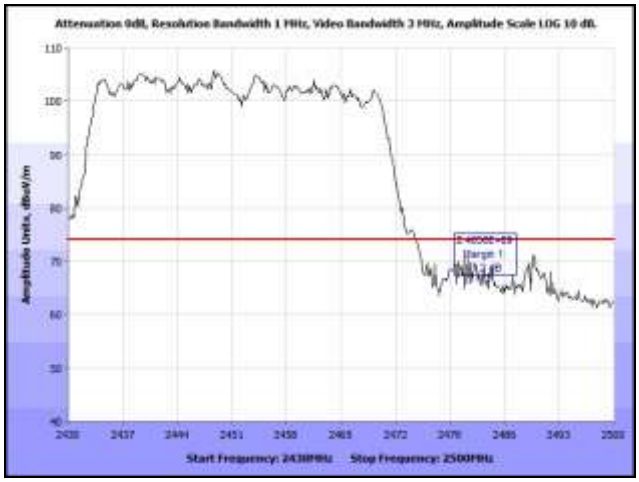
Plot 407. Radiated Band Edge, 802.11n HT40, Mid Channel, 6 dBi Patch, Avg., 2.4 GHz



Plot 408. Radiated Band Edge, 802.11n HT40, Mid Channel, 6 dBi Patch, Peak, 2.4 GHz

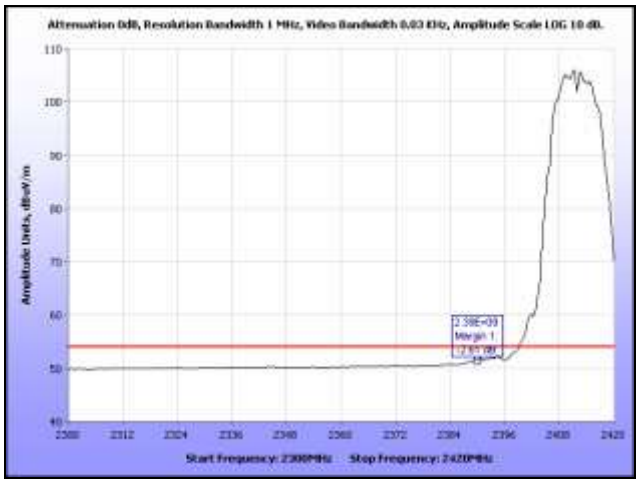


Plot 409. Radiated Band Edge, 802.11n HT40, High Channel, 6 dBi Patch, Avg., 2.4 GHz

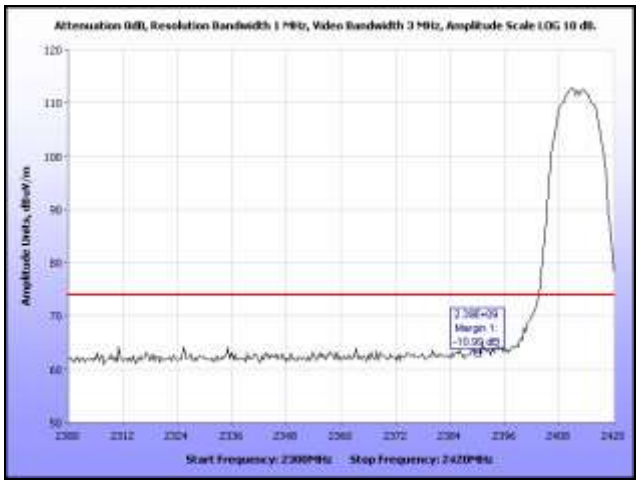


Plot 410. Radiated Band Edge, 802.11n HT40, High Channel, 6 dBi Patch, Peak, 2.4 GHz

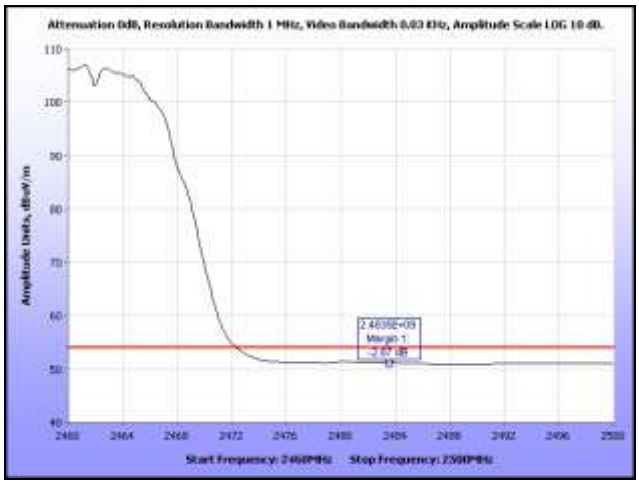
Radiated Band Edge Measurements, 802.11b, 3 dBi Ceiling Mount Omni Antenna, 2.4 GHz



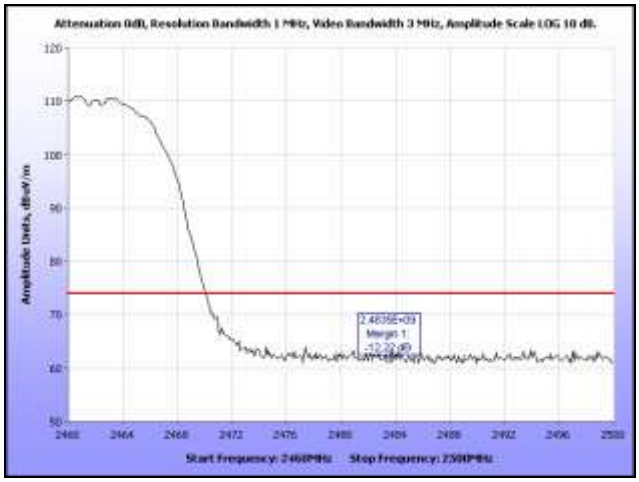
Plot 411. Radiated Band Edge, 802.11b, Low Channel, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz



Plot 412. Radiated Band Edge, 802.11b, Low Channel, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz

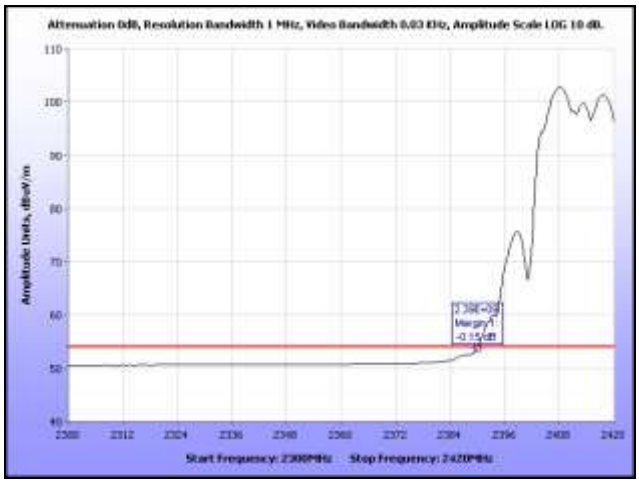


Plot 413. Radiated Band Edge, 802.11b, High Channel, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz



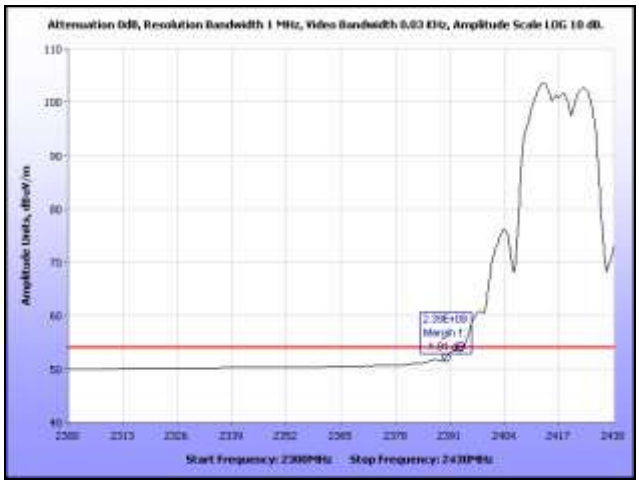
Plot 414. Radiated Band Edge, 802.11b, High Channel, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz

Radiated Band Edge Measurements, 802.11g, 3 dBi Ceiling Mount Omni Antenna, 2.4 GHz



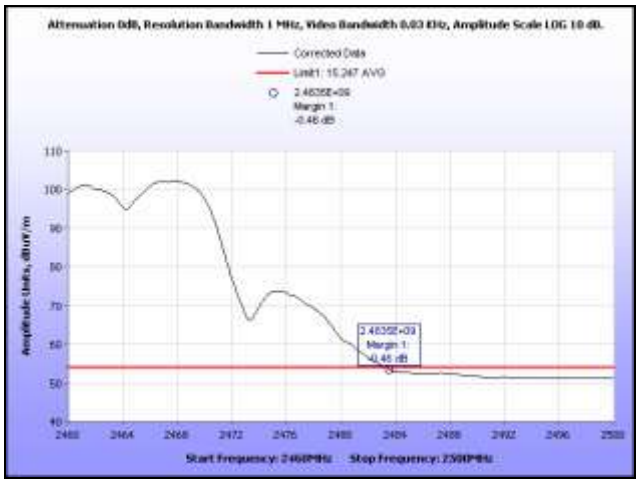
Plot 415. Radiated Band Edge, 802.11g, Low Channel, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz

Plot 416. Radiated Band Edge, 802.11g Low Channel, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz



Plot 417. Radiated Band Edge, 802.11g, Channel 2, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz

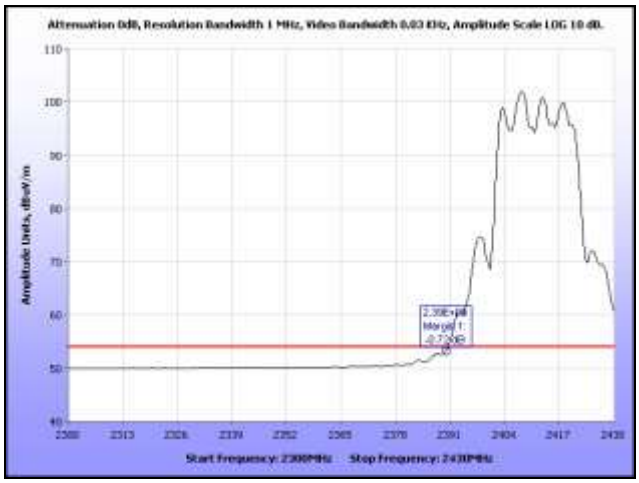
Plot 418. Radiated Band Edge, 802.11g, Channel 2, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz



Plot 419. Radiated Band Edge, 802.11g, High Channel, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz

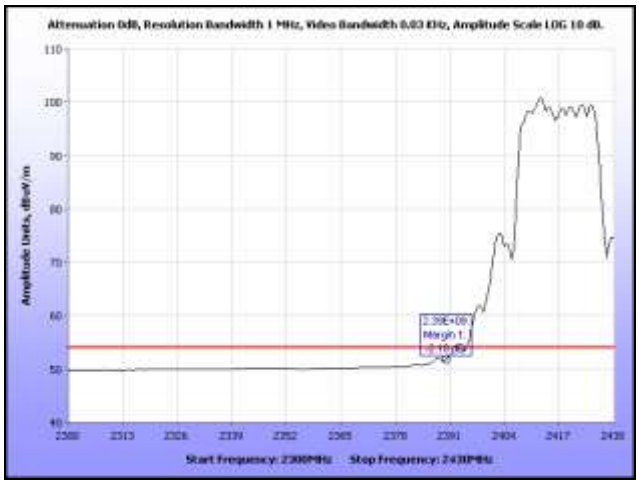
Plot 420. Radiated Band Edge, 802.11g, High Channel, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz

Radiated Band Edge Measurements, 802.11n HT20, 3 dBi Ceiling Mount Omni Antenna, 2.4 GHz



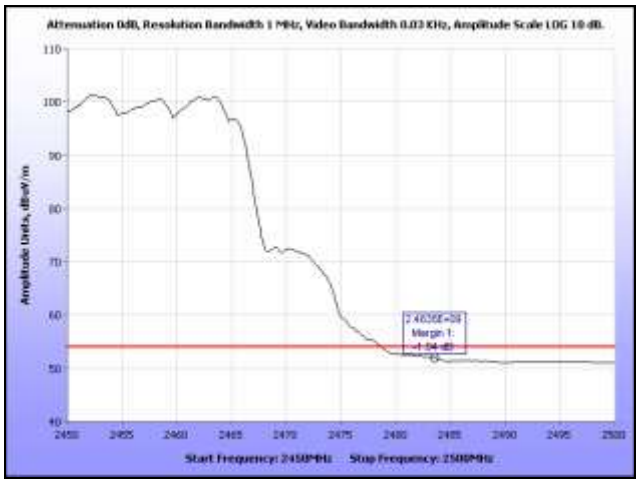
Plot 421. Radiated Band Edge, 802.11n HT20, Low Channel, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz

Plot 422. Radiated Band Edge, 802.11n HT20 Low Channel, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz



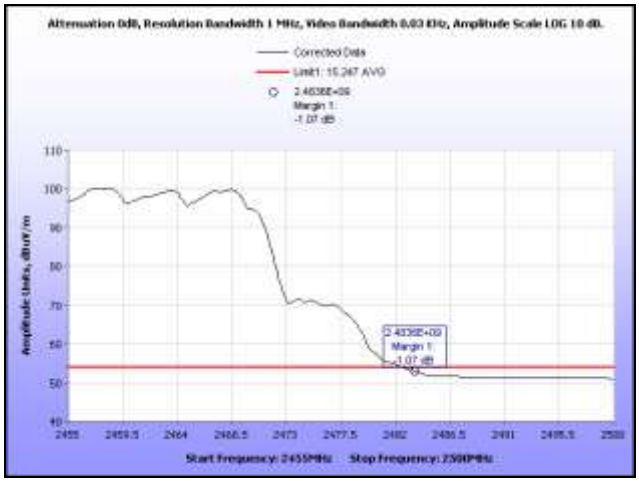
Plot 423. Radiated Band Edge, 802.11n HT20, Channel 2, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz

Plot 424. Radiated Band Edge, 802.11n HT20, Channel 2, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz

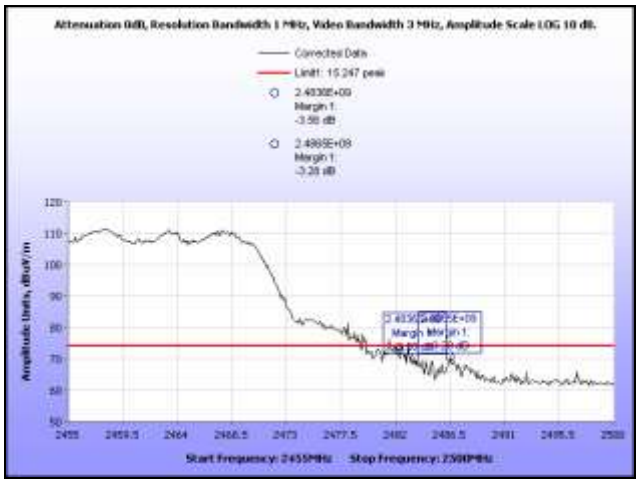


Plot 425. Radiated Band Edge, 802.11n HT20, Channel 10, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz

Plot 426. Radiated Band Edge, 802.11n HT20, Channel 10, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz



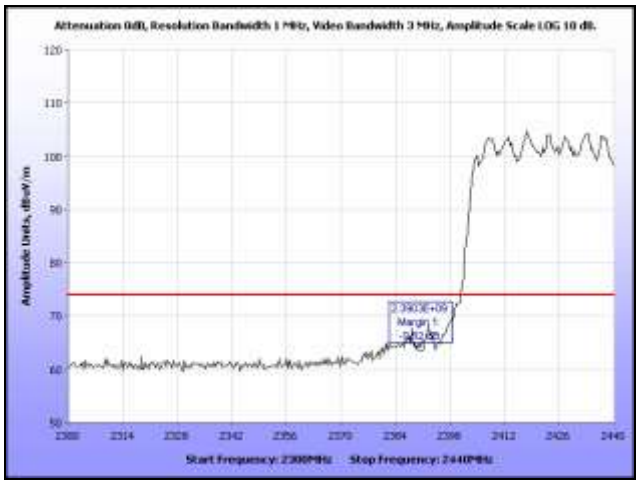
Plot 427. Radiated Band Edge, 802.11n HT20, High Channel, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz



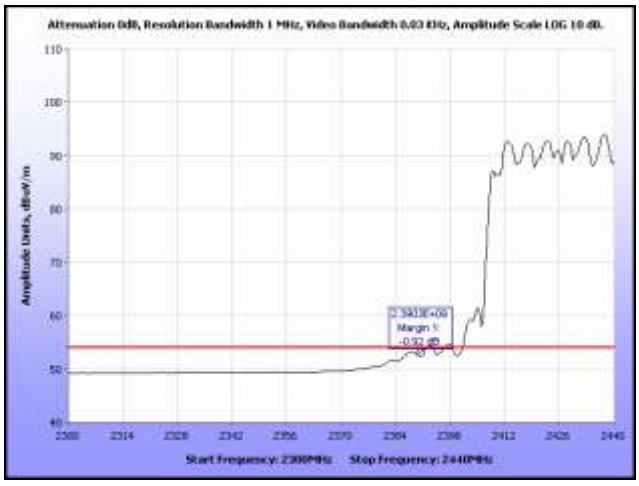
Plot 428. Radiated Band Edge, 802.11n HT20, High Channel, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz

Radiated Band Edge Measurements, 802.11n HT40, 3 dBi Ceiling Mount Omni Antenna, 2.4 GHz

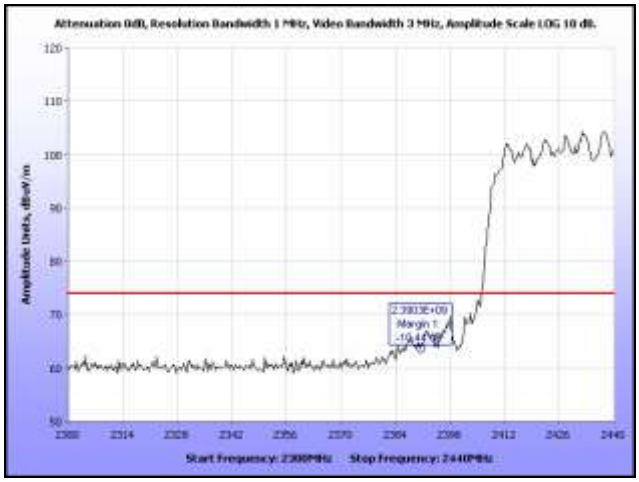
Plot 429. Radiated Band Edge, 802.11n HT40, Low Channel, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz



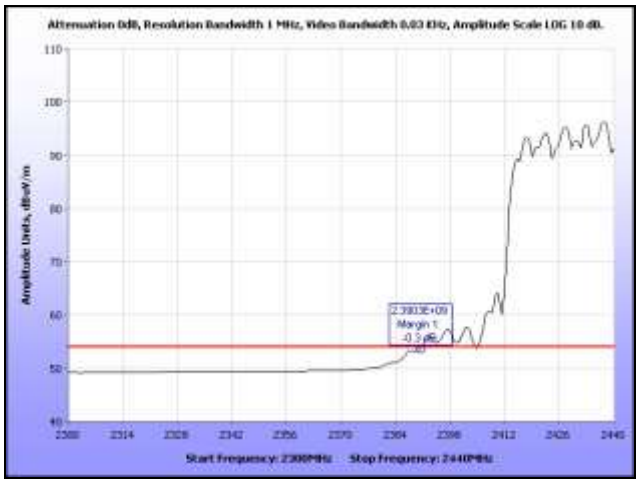
Plot 430. Radiated Band Edge, 802.11n HT40 Low Channel, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz



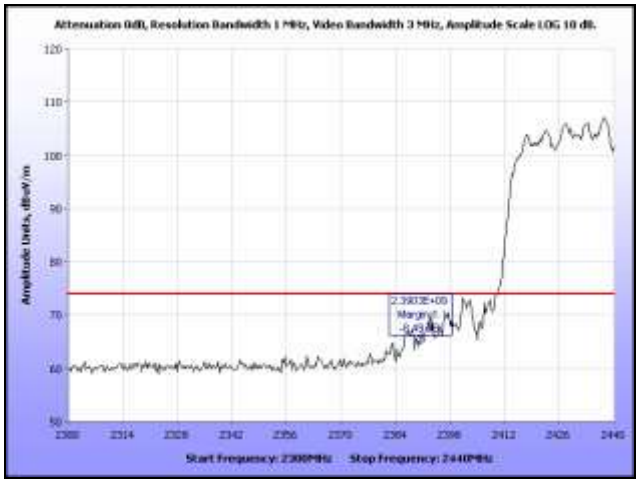
Plot 431. Radiated Band Edge, 802.11n HT40, Channel 4, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz



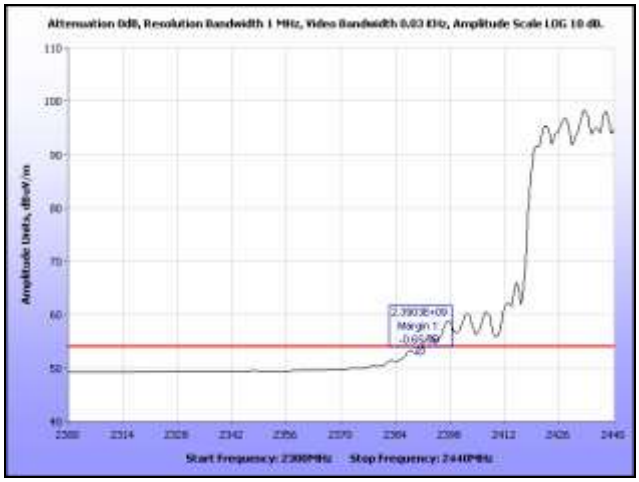
Plot 432. Radiated Band Edge, 802.11n HT40, Channel 4, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz



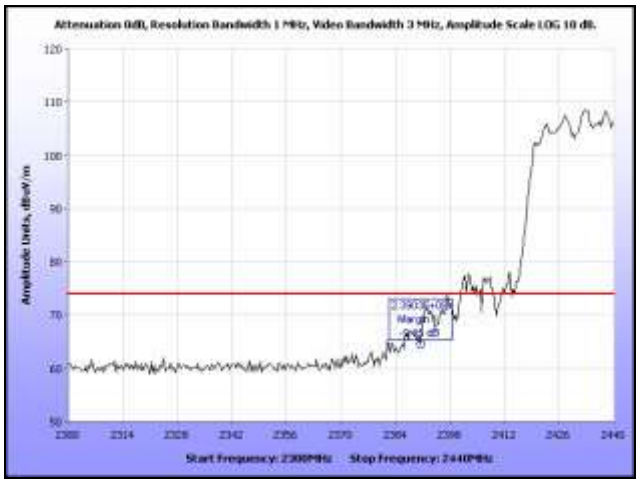
Plot 433. Radiated Band Edge, 802.11n HT40, Channel 5, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz



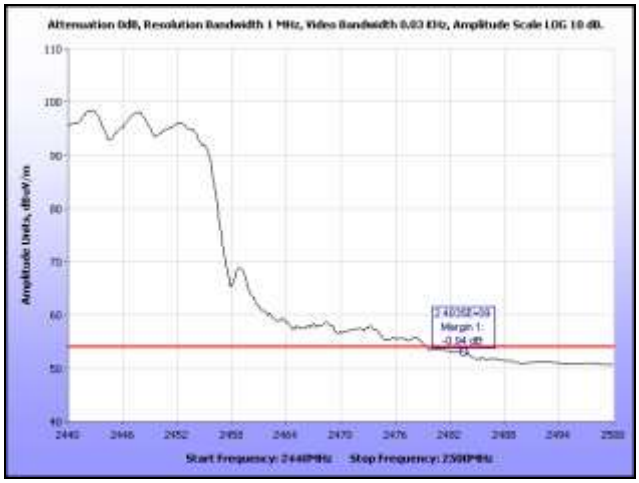
Plot 434. Radiated Band Edge, 802.11n HT40, Channel 5, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz



Plot 435. Radiated Band Edge, 802.11n HT40, Channel 6, Low Band, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz

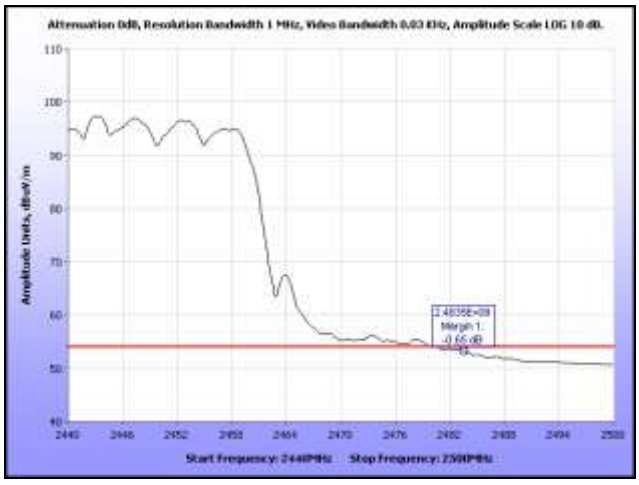


Plot 436. Radiated Band Edge, 802.11n HT40, Channel 6, Low Band, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz



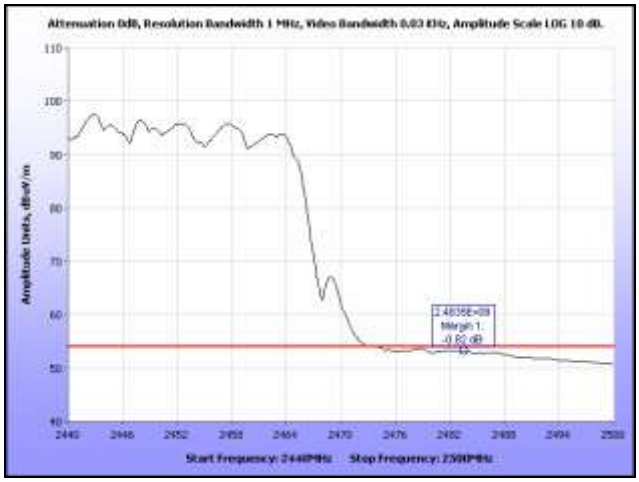
Plot 437. Radiated Band Edge, 802.11n HT40, Channel 6, High Band, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz

Plot 438. Radiated Band Edge, 802.11n HT40, Channel 6, High Band, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz

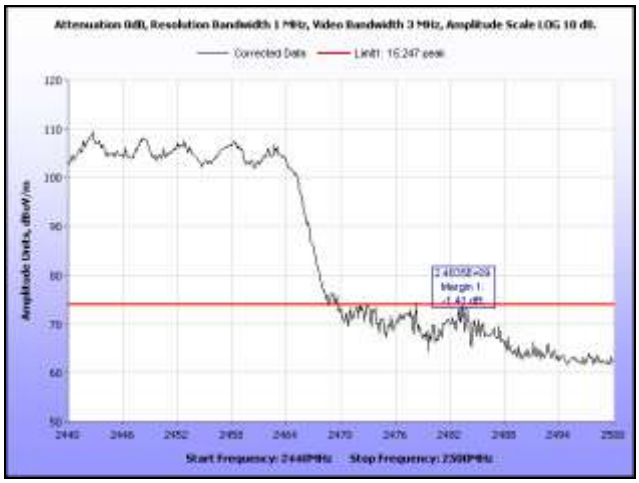


Plot 439. Radiated Band Edge, 802.11n HT40, Channel 7, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz

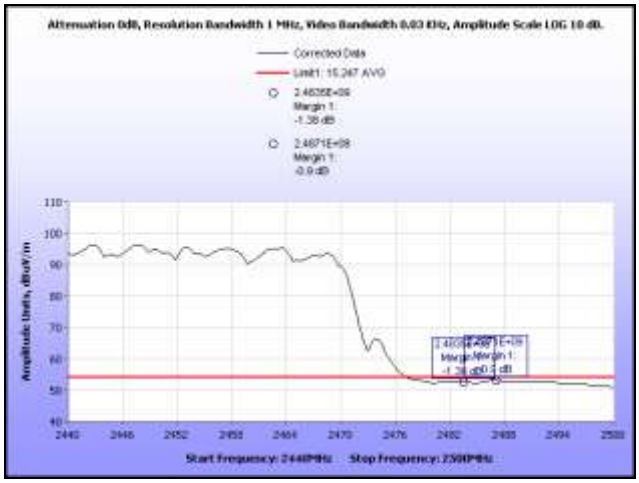
Plot 440. Radiated Band Edge, 802.11n HT40, Channel 7, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz



Plot 441. Radiated Band Edge, 802.11n HT40, Channel 8, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz



Plot 442. Radiated Band Edge, 802.11n HT40, Channel 8, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz



Plot 443. Radiated Band Edge, 802.11n HT40, High Channel, 3 dBi Ceiling Mount Omni, Avg., 2.4 GHz

Plot 444. Radiated Band Edge, 802.11n HT40, High Channel, 3 dBi Ceiling Mount Omni, Peak, 2.4 GHz

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.

Since the EUT had an integral antenna, conducted measurements could not be performed. Measurements needed to be taken radiated. An antenna was located 3 m away from the EUT and plots were taken. The EUT was rotated through all three orthogonal axes. The plots were corrected for both antenna correction factor and cable lost.

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): Lionel Gabrillo

Test Date(s): 04/20/12 & 04/24/12

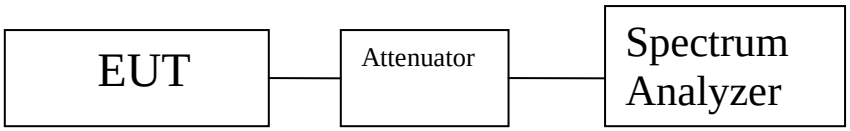
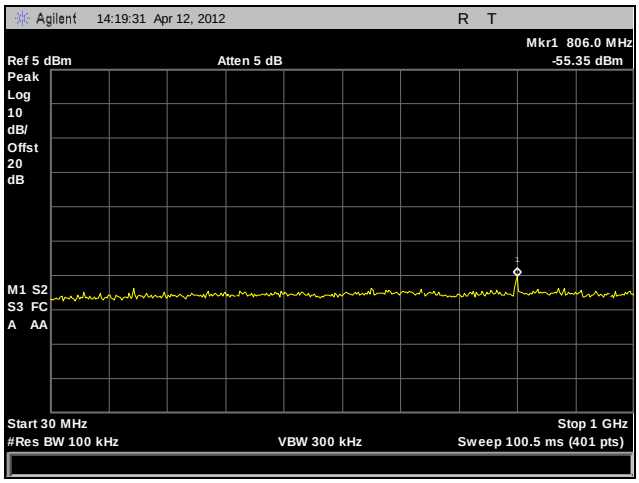
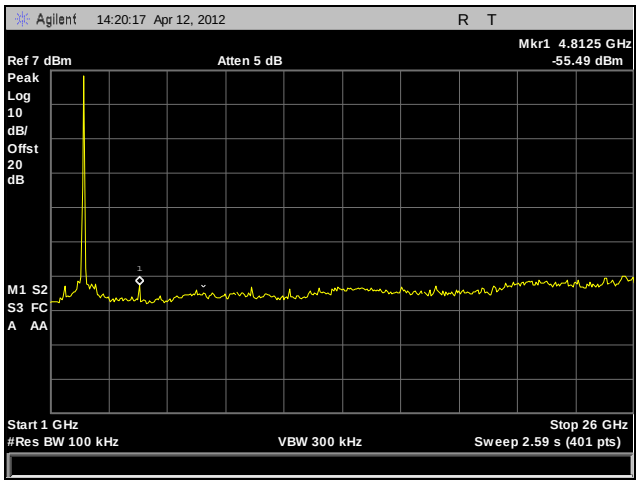


Figure 4. Block Diagram, Conducted Spurious Emissions Test Setup

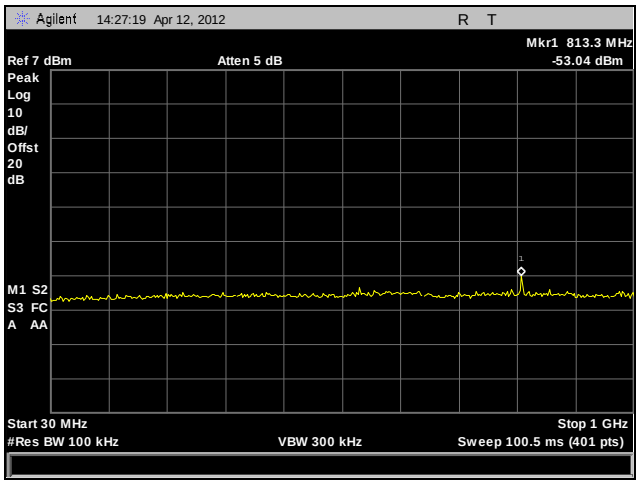
Conducted Spurious Emissions Test Results, 802.11b, 2.4 GHz



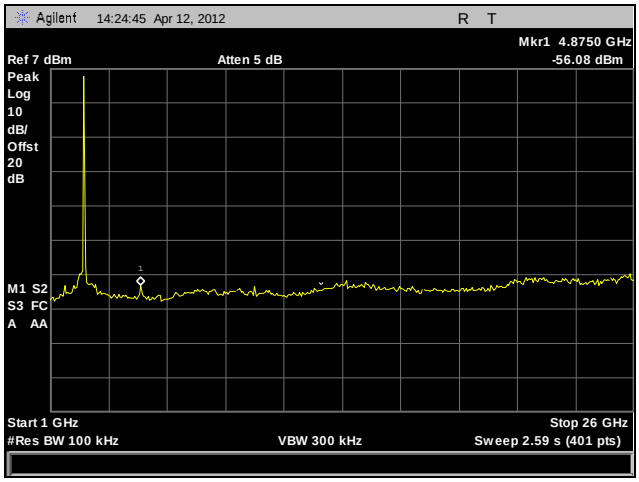
Plot 445. Conducted Spurious Emissions, Low Channel, 30 MHz – 1 GHz, 802.11b, 2.4 GHz



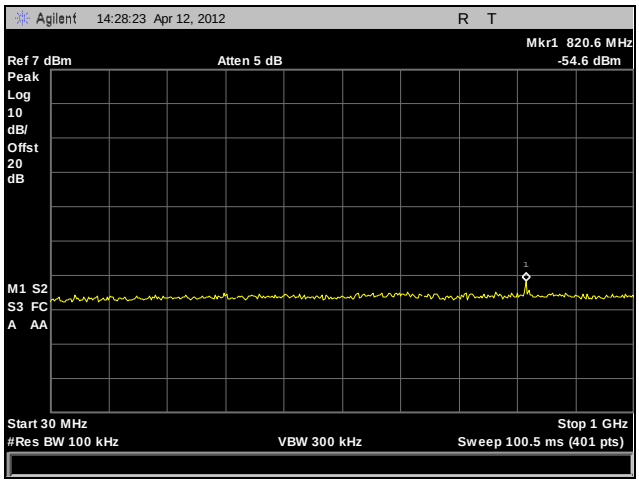
Plot 446. Conducted Spurious Emissions, Low Channel, 1 GHz – 26 GHz, 802.11b, 2.4 GHz



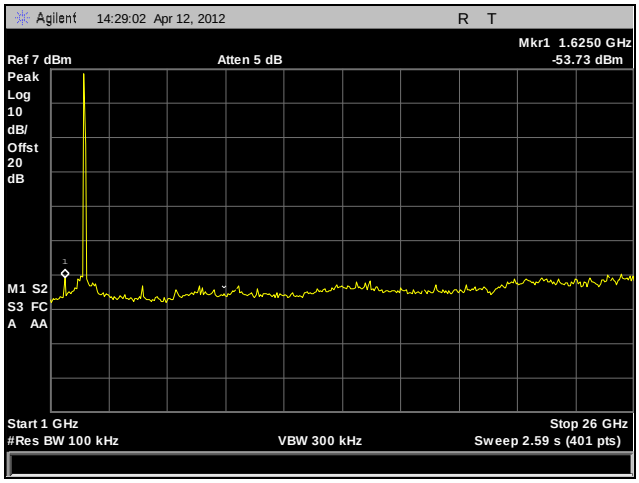
Plot 447. Conducted Spurious Emissions, Mid Channel, 30 MHz – 1 GHz, 802.11b, 2.4 GHz



Plot 448. Conducted Spurious Emissions, Mid Channel, 1 GHz – 26 GHz, 802.11b, 2.4 GHz

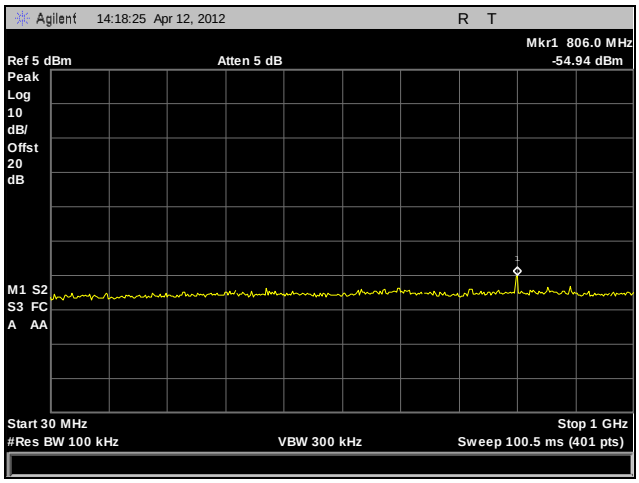


Plot 449. Conducted Spurious Emissions, High Channel, 30 MHz – 1 GHz, 802.11b, 2.4 GHz

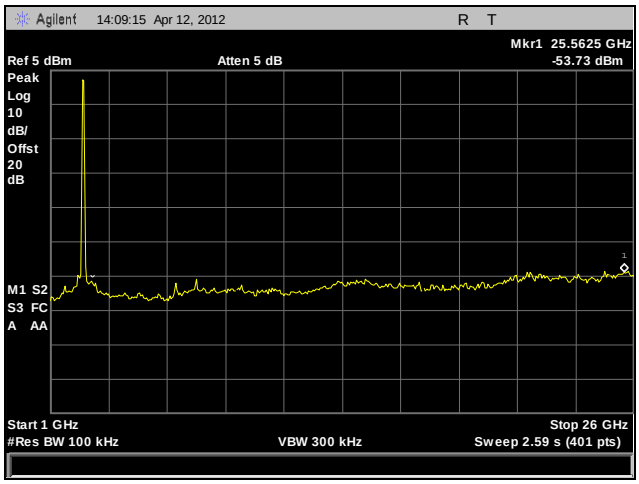


Plot 450. Conducted Spurious Emissions, High Channel, 1 GHz – 26 GHz, 802.11b, 2.4 GHz

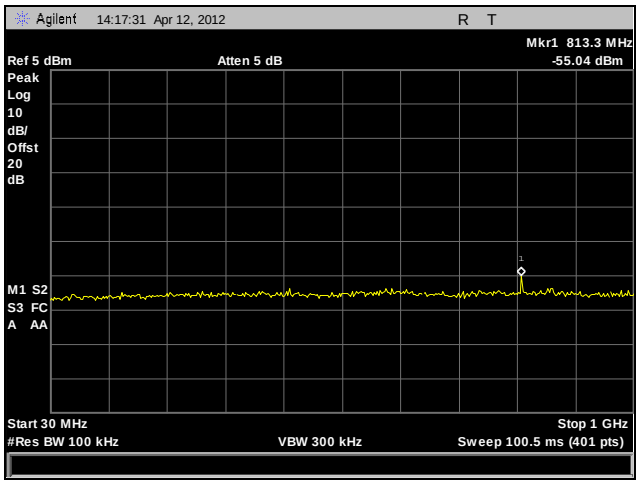
Conducted Spurious Emissions Test Results, 802.11g, 2.4 GHz



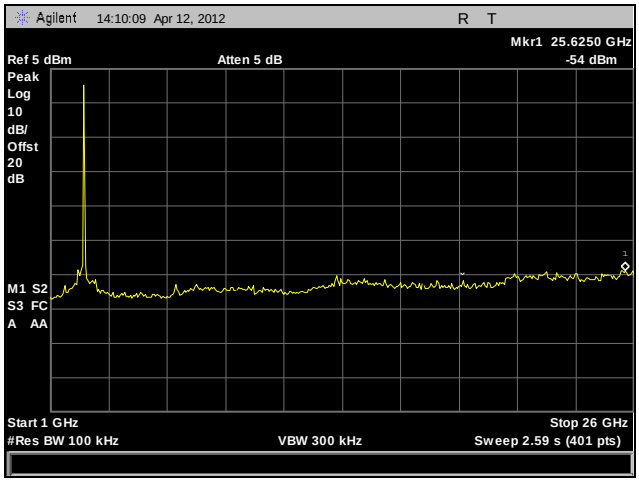
Plot 451. Conducted Spurious Emissions, Low Channel, 30 MHz – 1 GHz, 802.11g, 2.4 GHz



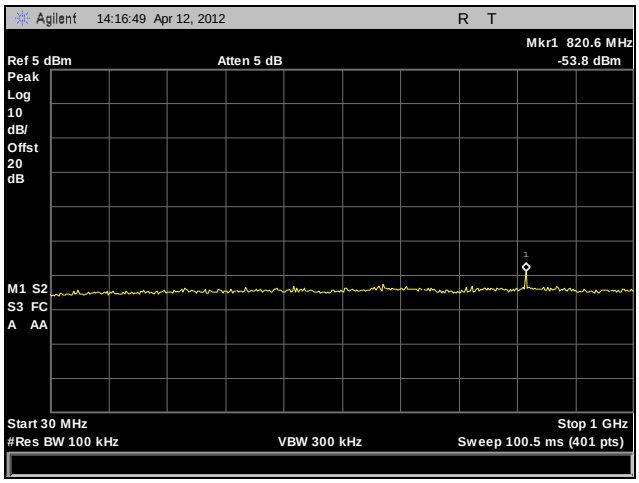
Plot 452. Conducted Spurious Emissions, Low Channel, 1 GHz – 26 GHz, 802.11g, 2.4 GHz



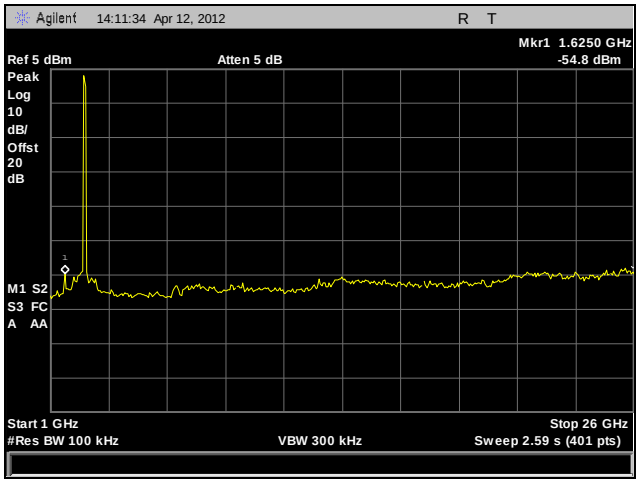
Plot 453. Conducted Spurious Emissions, Mid Channel, 30 MHz – 1 GHz, 802.11g, 2.4 GHz



Plot 454. Conducted Spurious Emissions, Mid Channel, 1 GHz – 26 GHz, 802.11g, 2.4 GHz

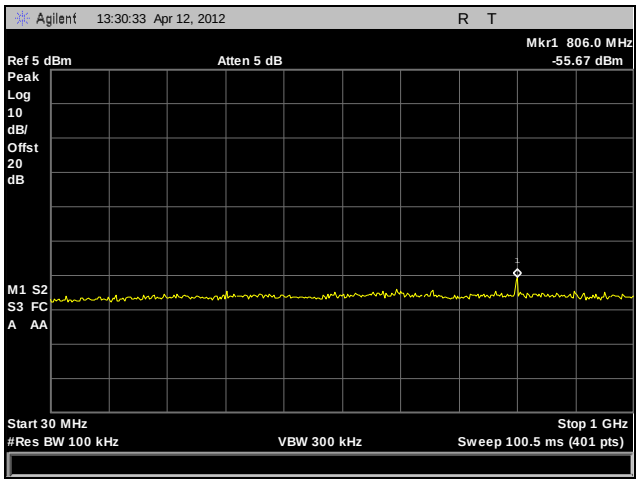


Plot 455. Conducted Spurious Emissions, High Channel, 30 MHz – 1 GHz, 802.11g, 2.4 GHz

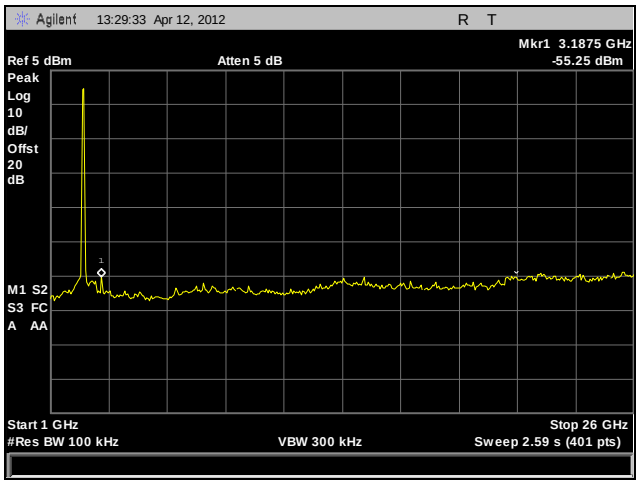


Plot 456. Conducted Spurious Emissions, High Channel, 1 GHz – 26 GHz, 802.11g, 2.4 GHz

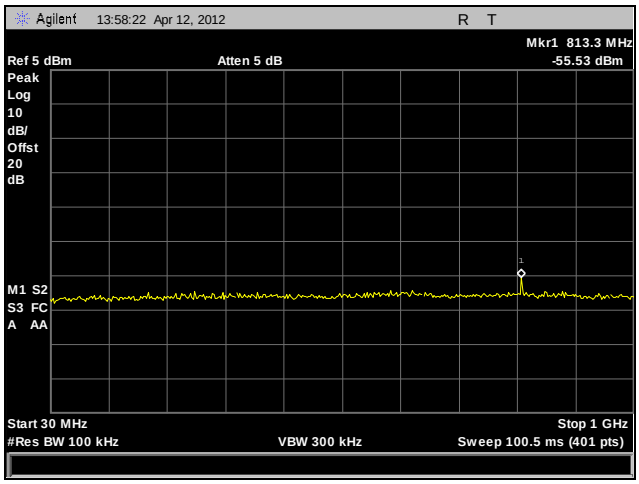
Conducted Spurious Emissions Test Results, 802.11n HT20, Port 1, 2.4 GHz



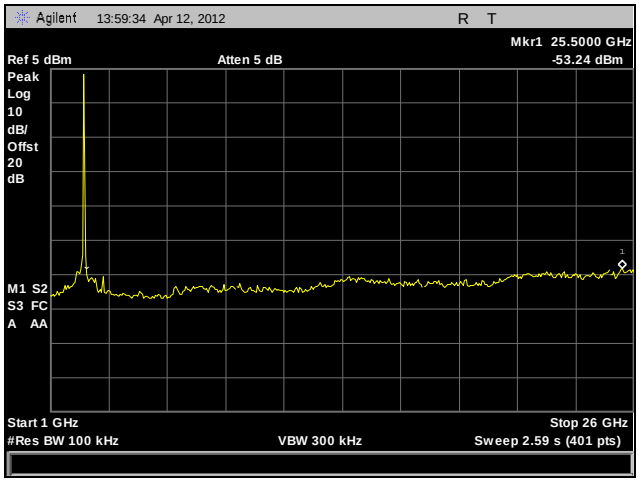
Plot 457. Conducted Spurious Emissions, Low Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 1, 2.4 GHz



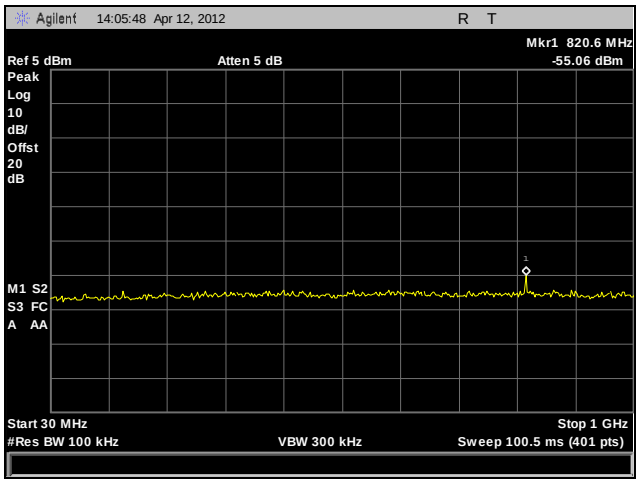
Plot 458. Conducted Spurious Emissions, Low Channel, 1 GHz – 26 GHz, 802.11n HT20, Port 1, 2.4 GHz



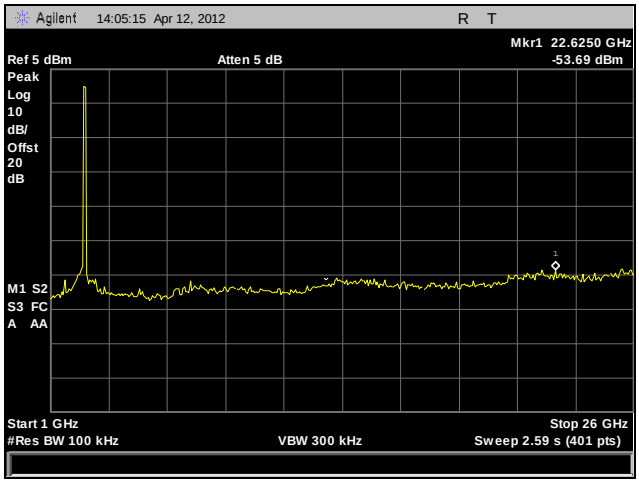
Plot 459. Conducted Spurious Emissions, Mid Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 1, 2.4 GHz



Plot 460. Conducted Spurious Emissions, Mid Channel, 1 GHz – 26 GHz, 802.11n HT20, Port 1, 2.4 GHz

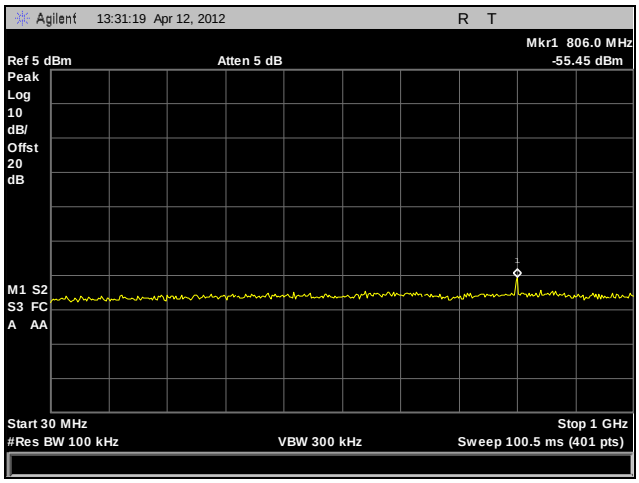


Plot 461. Conducted Spurious Emissions, High Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 1, 2.4 GHz

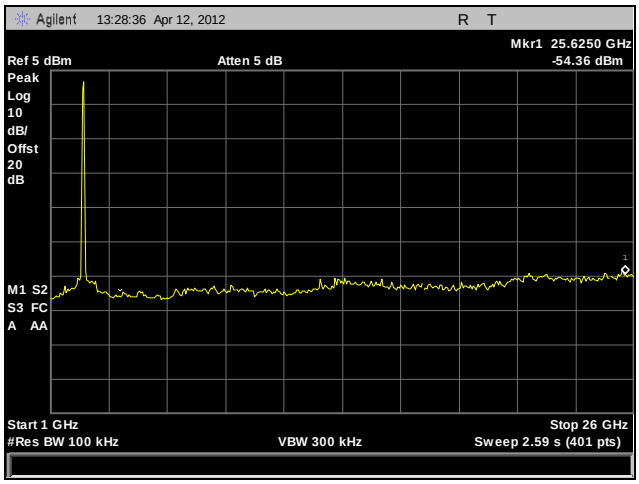


Plot 462. Conducted Spurious Emissions, High Channel, 1 GHz – 26 GHz, 802.11n HT20, Port 1, 2.4 GHz

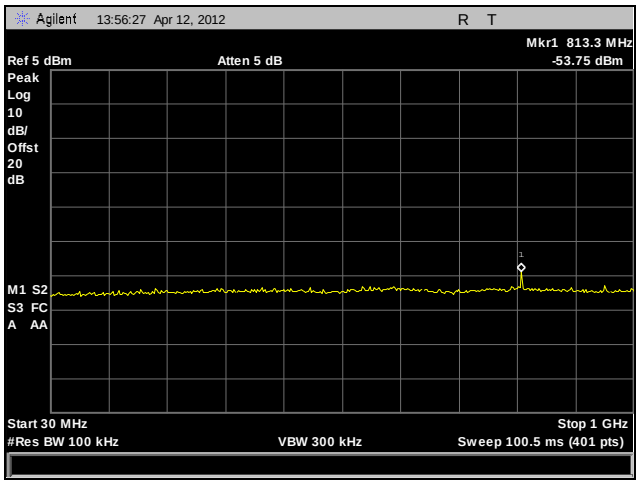
Conducted Spurious Emissions Test Results, 802.11n HT20, Port 2, 2.4 GHz



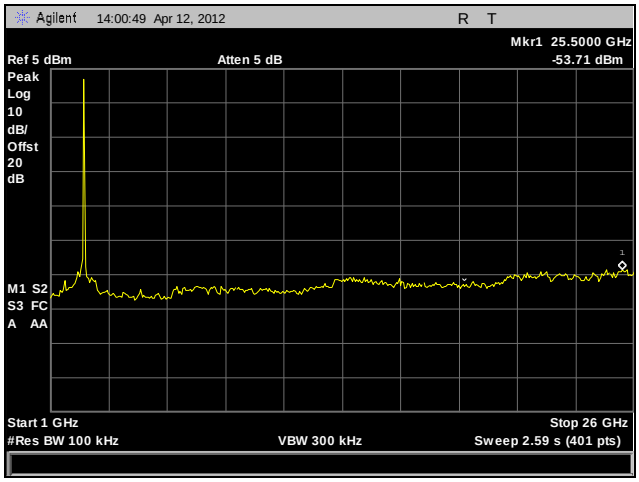
Plot 463. Conducted Spurious Emissions, Low Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 2, 2.4 GHz



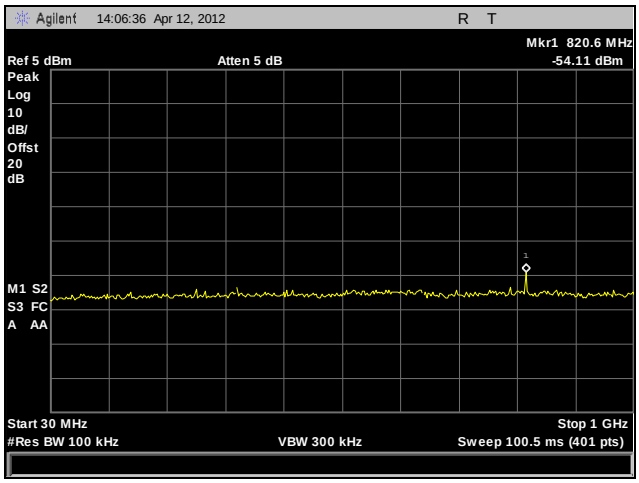
Plot 464. Conducted Spurious Emissions, Low Channel, 1 GHz – 26 GHz, 802.11n HT20, Port 2, 2.4 GHz



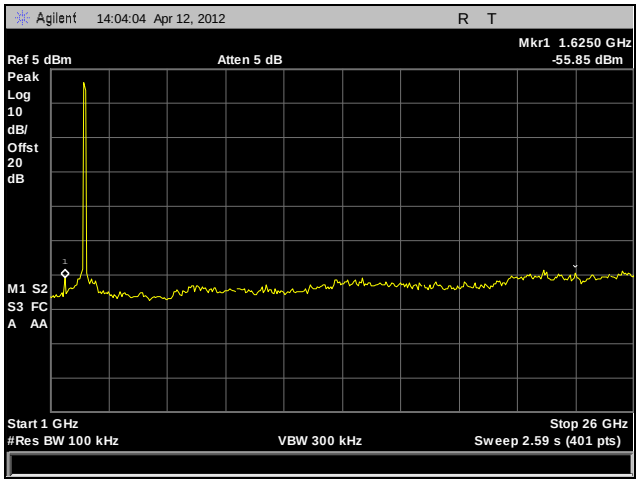
Plot 465. Conducted Spurious Emissions, Mid Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 2, 2.4 GHz



Plot 466. Conducted Spurious Emissions, Mid Channel, 1 GHz – 26 GHz, 802.11n HT20, Port 2, 2.4 GHz

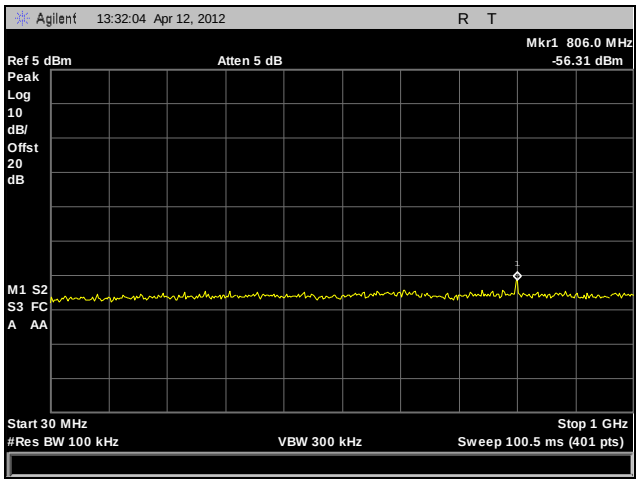


Plot 467. Conducted Spurious Emissions, High Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 2, 2.4 GHz

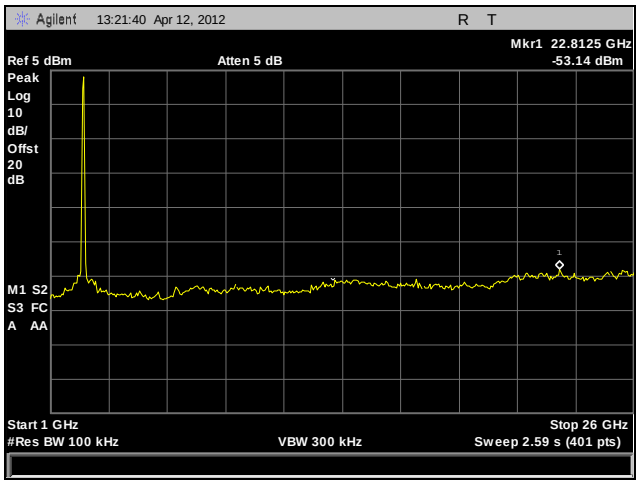


Plot 468. Conducted Spurious Emissions, High Channel, 1 GHz – 26 GHz, 802.11n HT20, Port 2, 2.4 GHz

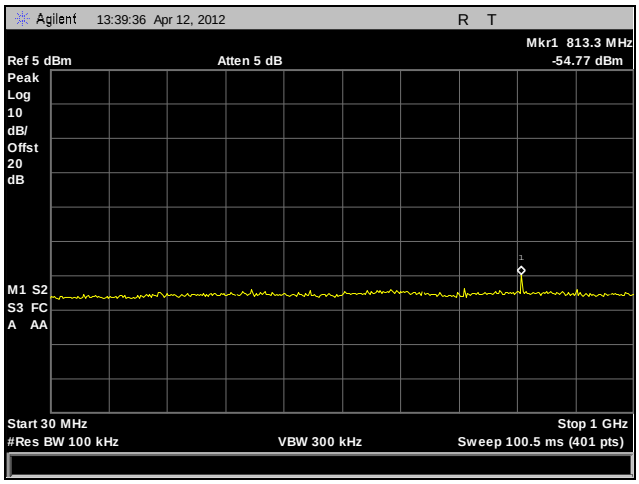
Conducted Spurious Emissions Test Results, 802.11n HT20, Port 3, 2.4 GHz



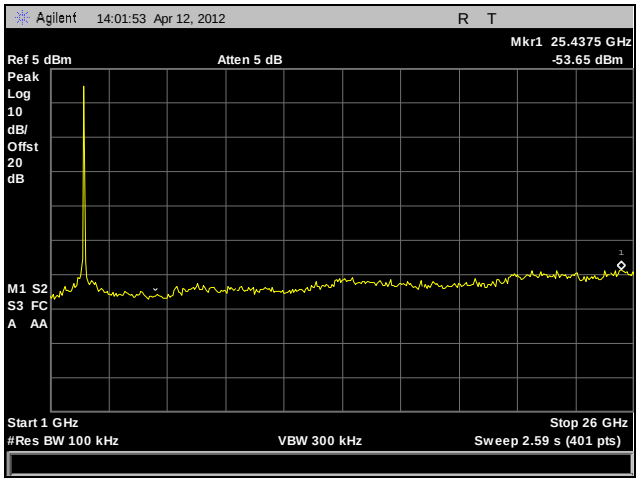
Plot 469. Conducted Spurious Emissions, Low Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 3, 2.4 GHz



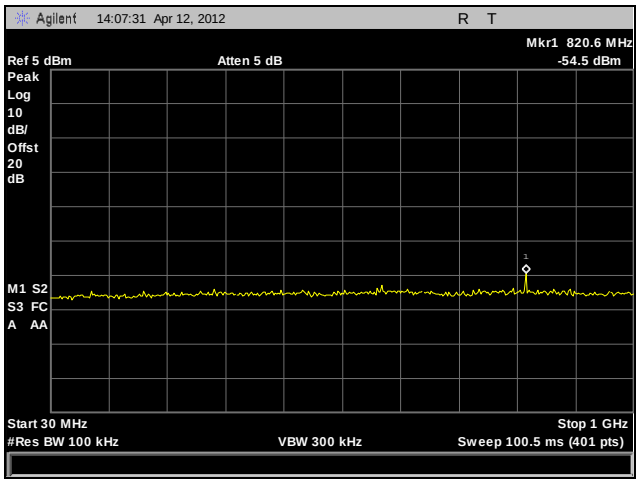
Plot 470. Conducted Spurious Emissions, Low Channel, 1 GHz – 26 GHz, 802.11n HT20, Port 3, 2.4 GHz



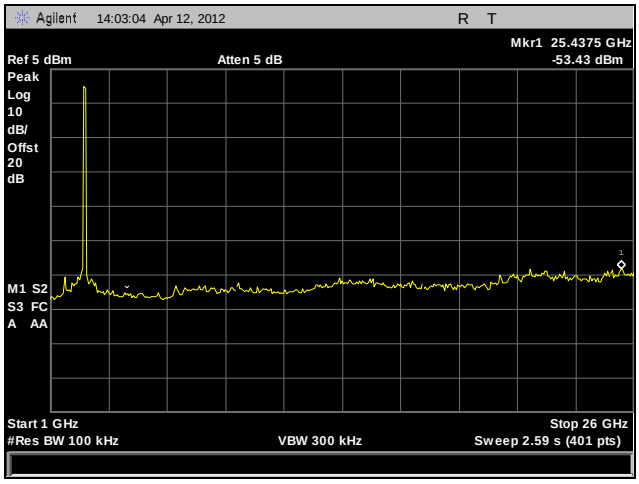
Plot 471. Conducted Spurious Emissions, Mid Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 3, 2.4 GHz



Plot 472. Conducted Spurious Emissions, Mid Channel, 1 GHz – 26 GHz, 802.11n HT20, Port 3, 2.4 GHz

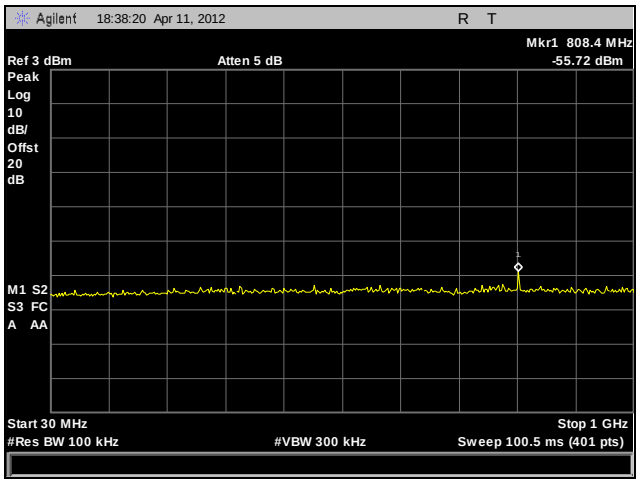


Plot 473. Conducted Spurious Emissions, High Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 3, 2.4 GHz

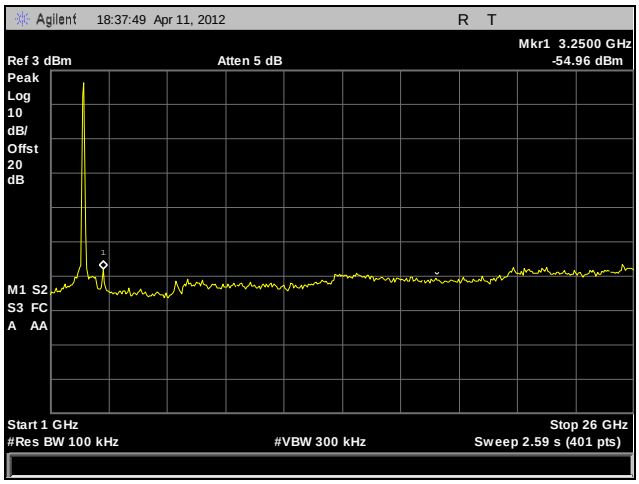


Plot 474. Conducted Spurious Emissions, High Channel, 1 GHz – 26 GHz, 802.11n HT20, Port 3, 2.4 GHz

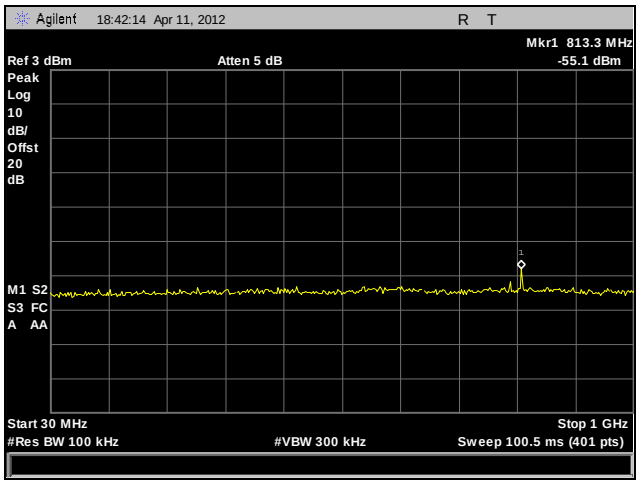
Conducted Spurious Emissions Test Results, 802.11n HT40, Port 1, 2.4 GHz



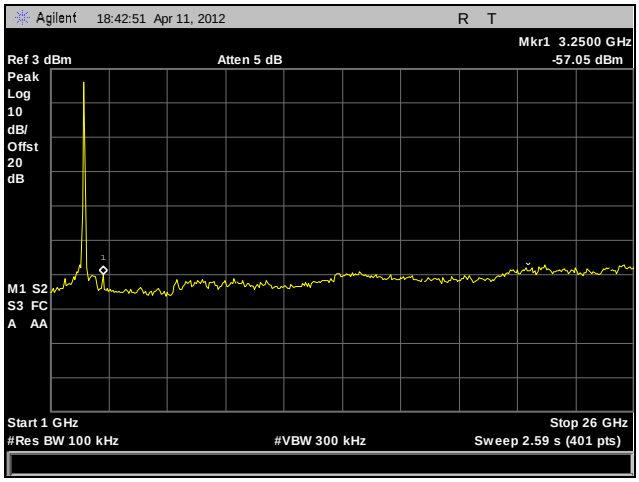
Plot 475. Conducted Spurious Emissions, Low Channel, 30 MHz – 1 GHz, 802.11n HT40, Port 1, 2.4 GHz



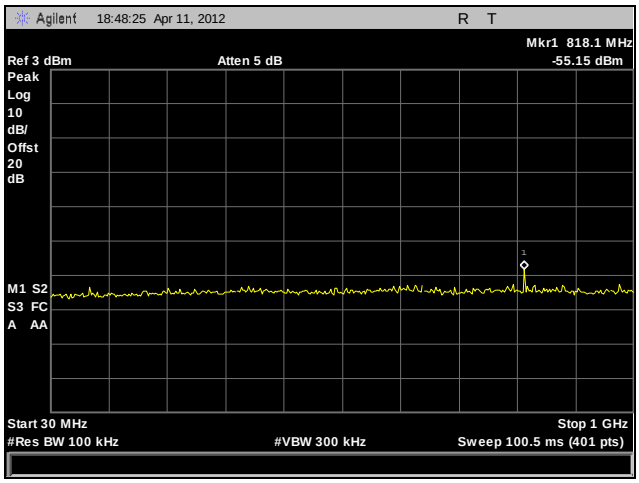
Plot 476. Conducted Spurious Emissions, Low Channel, 1 GHz – 26 GHz, 802.11n HT40, Port 1, 2.4 GHz



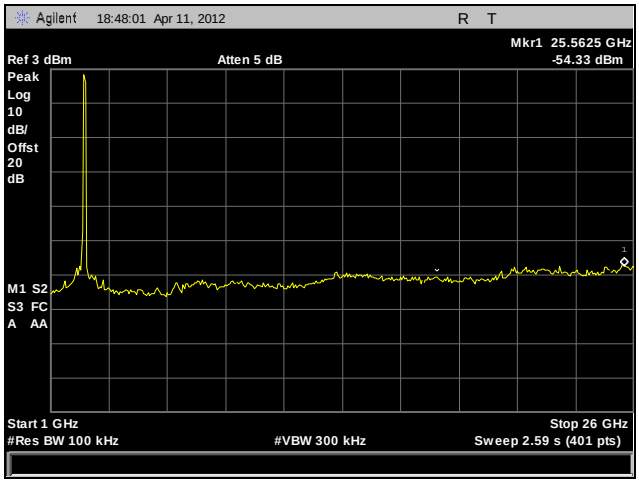
Plot 477. Conducted Spurious Emissions, Mid Channel, 30 MHz – 1 GHz, 802.11n HT40, Port 1, 2.4 GHz



Plot 478. Conducted Spurious Emissions, Mid Channel, 1 GHz – 26 GHz, 802.11n HT40, Port 1, 2.4 GHz

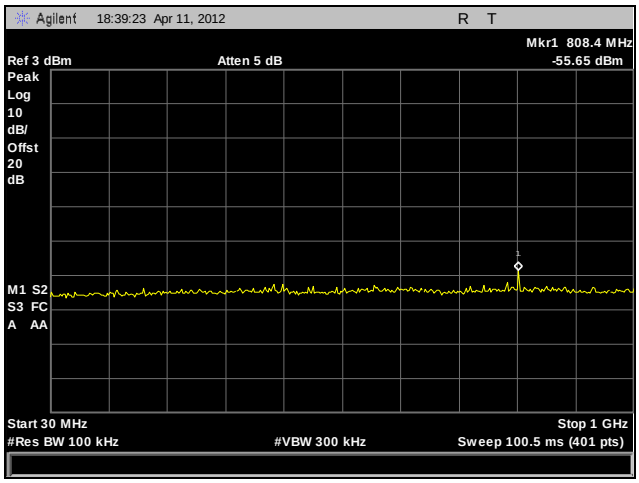


Plot 479. Conducted Spurious Emissions, High Channel, 30 MHz – 1 GHz, 802.11n HT40, Port 1, 2.4 GHz

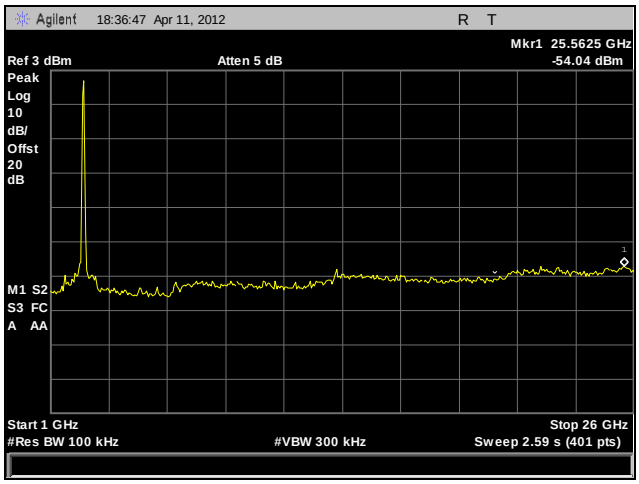


Plot 480. Conducted Spurious Emissions, High Channel, 1 GHz – 26 GHz, 802.11n HT40, Port 1, 2.4 GHz

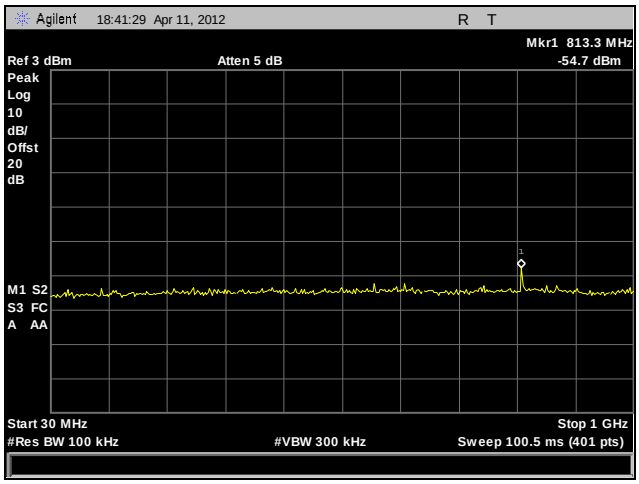
Conducted Spurious Emissions Test Results, 802.11n HT40, Port 2, 2.4 GHz



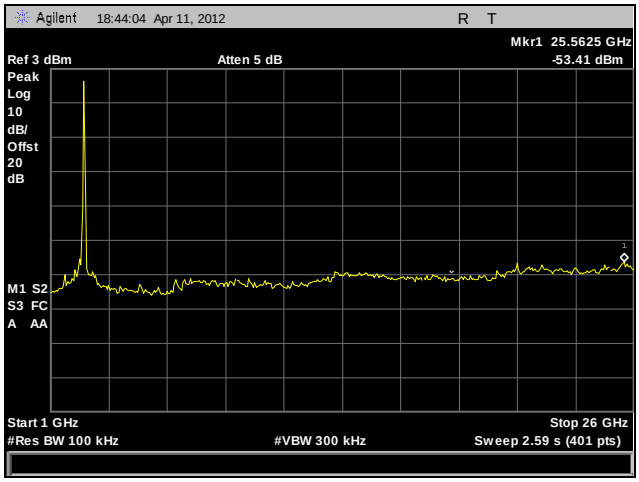
Plot 481. Conducted Spurious Emissions, Low Channel, 30 MHz – 1 GHz, 802.11n HT40, Port 2, 2.4 GHz



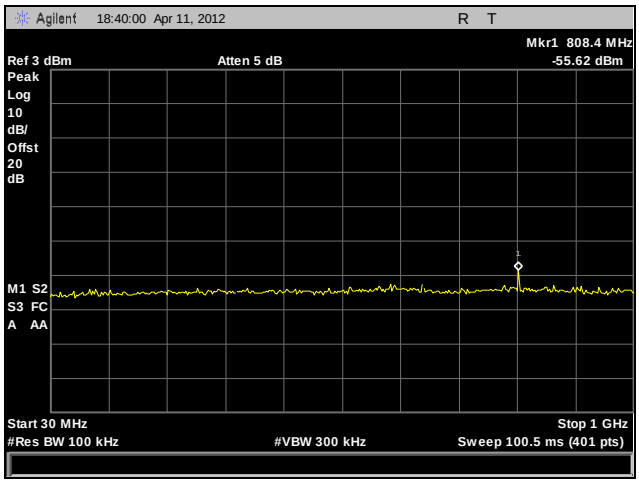
Plot 482. Conducted Spurious Emissions, Low Channel, 1 GHz – 26 GHz, 802.11n HT40, Port 2, 2.4 GHz



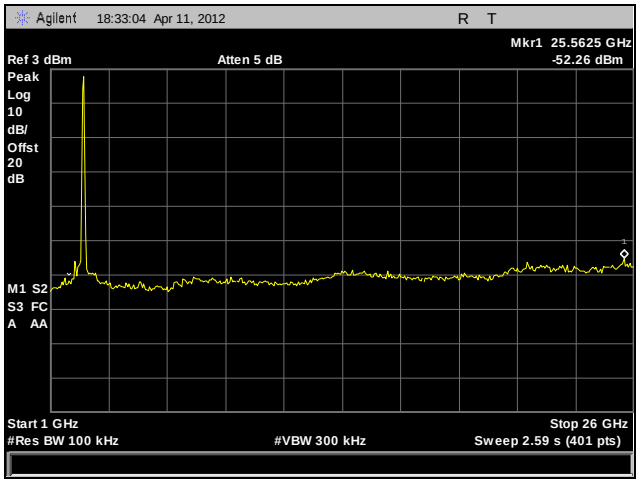
Plot 483. Conducted Spurious Emissions, Mid Channel, 30 MHz – 1 GHz, 802.11n HT40, Port 2, 2.4 GHz



Plot 484. Conducted Spurious Emissions, Mid Channel, 1 GHz – 26 GHz, 802.11n HT40, Port 2, 2.4 GHz

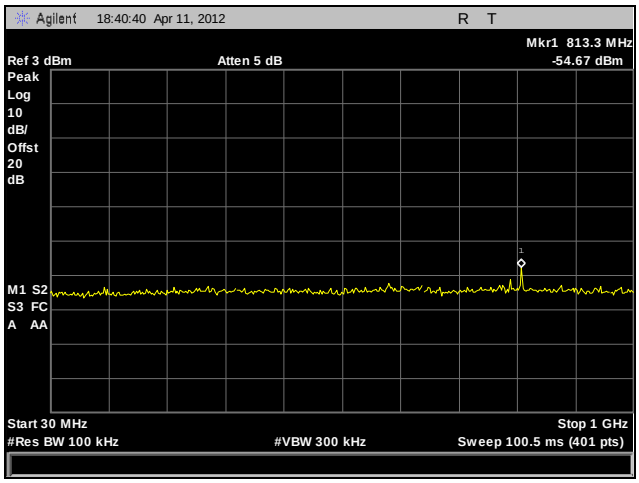


Plot 485. Conducted Spurious Emissions, High Channel, 30 MHz – 1 GHz, 802.11n HT40, Port 2, 2.4 GHz

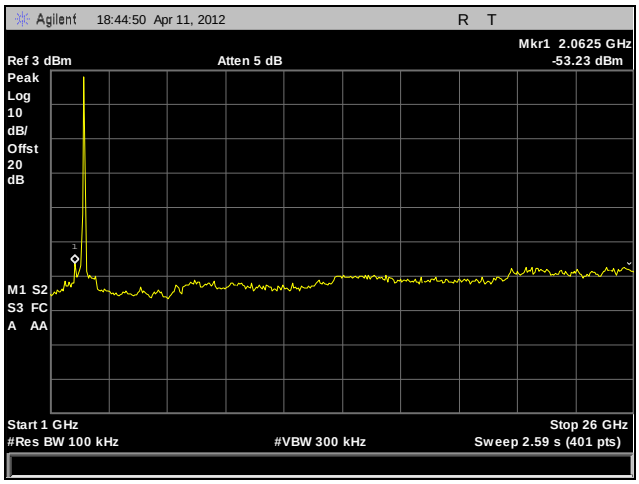


Plot 486. Conducted Spurious Emissions, High Channel, 1 GHz – 26 GHz, 802.11n HT40, Port 2, 2.4 GHz

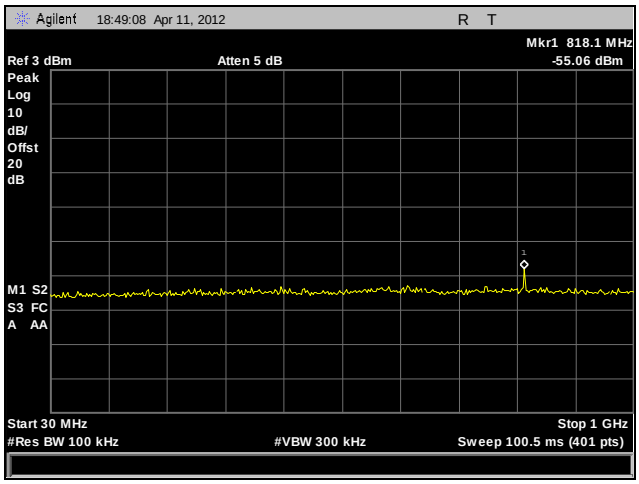
Conducted Spurious Emissions Test Results, 802.11n HT40, Port 3, 2.4 GHz



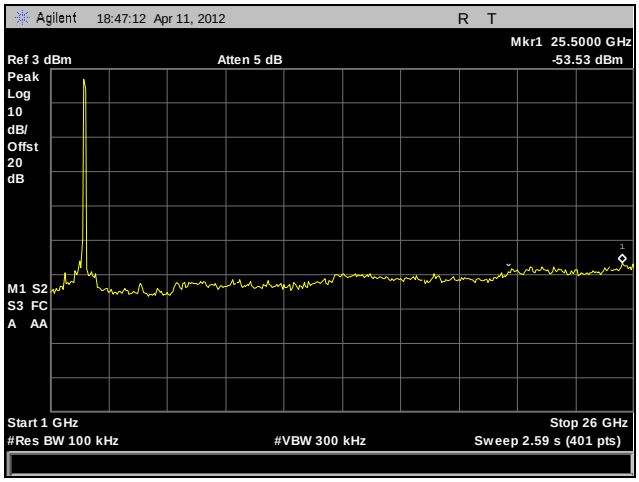
Plot 487. Conducted Spurious Emissions, Low Channel, 30 MHz – 1 GHz, 802.11n HT40, Port 3, 2.4 GHz



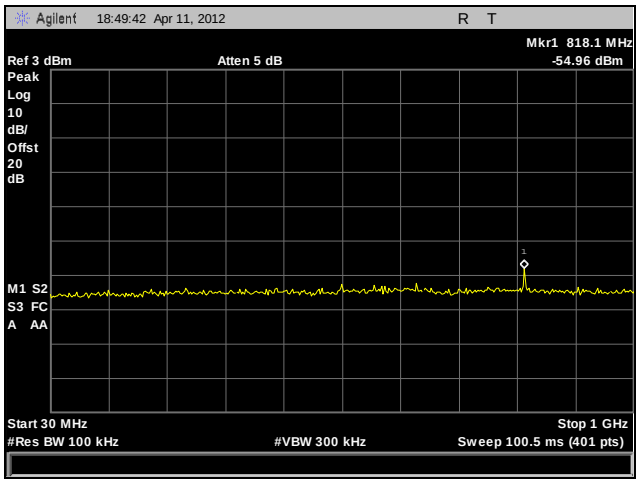
Plot 488. Conducted Spurious Emissions, Low Channel, 1 GHz – 26 GHz, 802.11n HT40, Port 3, 2.4 GHz



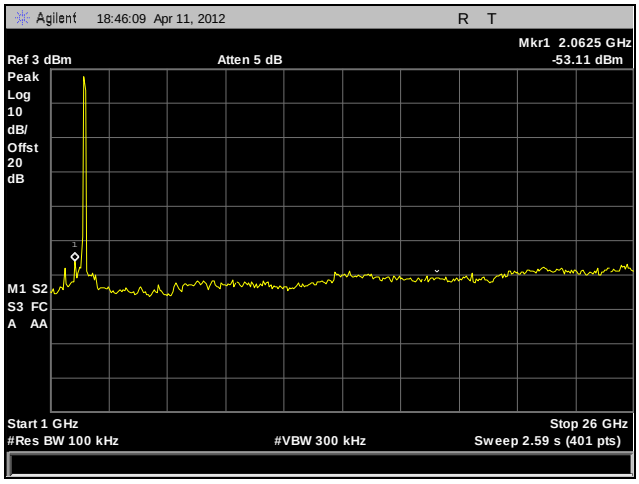
Plot 489. Conducted Spurious Emissions, Mid Channel, 30 MHz – 1 GHz, 802.11n HT40, Port 3, 2.4 GHz



Plot 490. Conducted Spurious Emissions, Mid Channel, 1 GHz – 26 GHz, 802.11n HT40, Port 3, 2.4 GHz

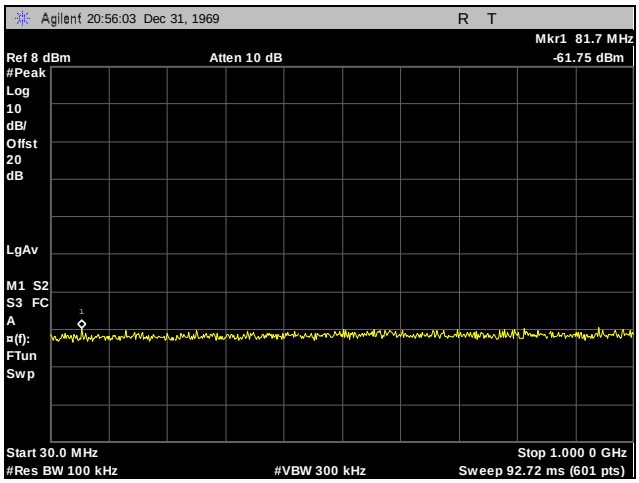


Plot 491. Conducted Spurious Emissions, High Channel, 30 MHz – 1 GHz, 802.11n HT40, Port 3, 2.4 GHz

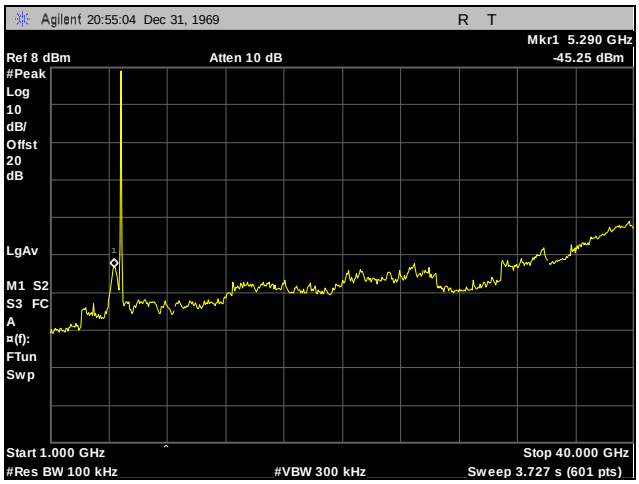


Plot 492. Conducted Spurious Emissions, High Channel, 1 GHz – 26 GHz, 802.11n HT40, Port 3, 2.4 GHz

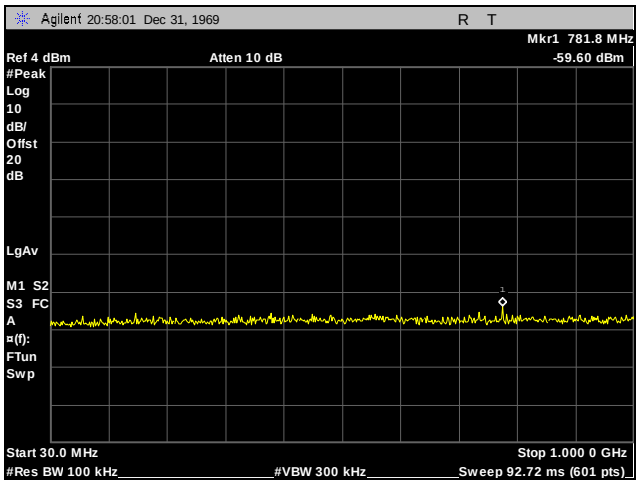
Conducted Spurious Emissions Test Results, 802.11a, 5 GHz



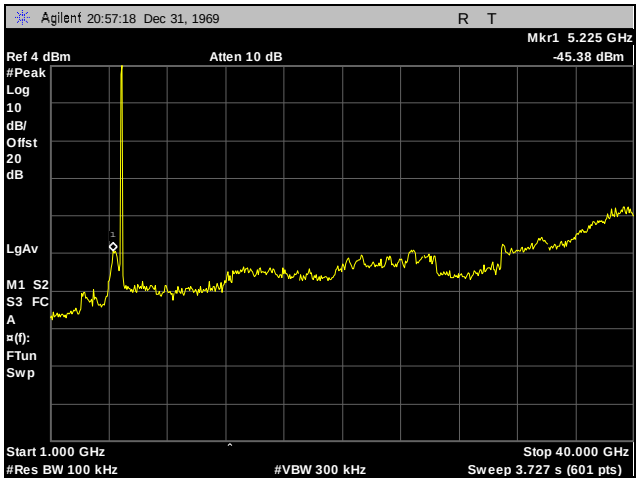
Plot 493. Conducted Spurious Emissions, Low Channel, 30 MHz – 1 GHz, 802.11a, 5 GHz



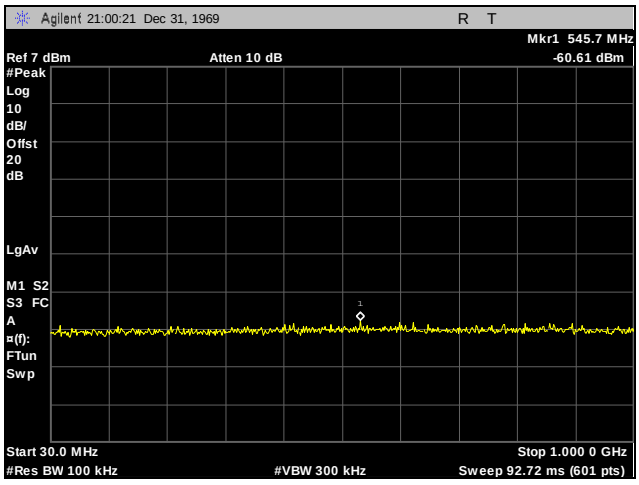
Plot 494. Conducted Spurious Emissions, Low Channel, 1 GHz – 40 GHz, 802.11a, 5 GHz



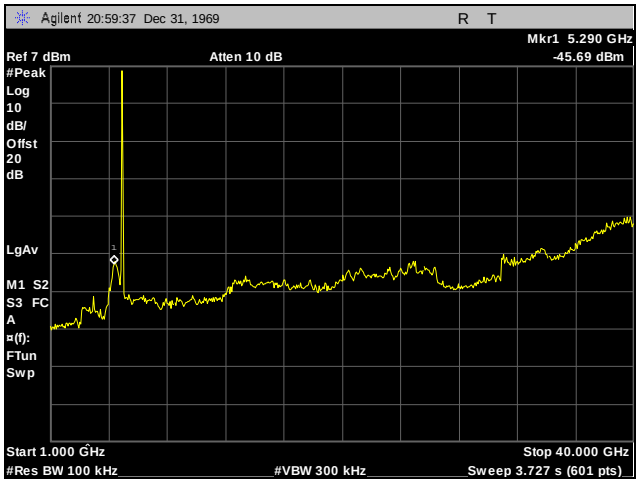
Plot 495. Conducted Spurious Emissions, Mid Channel, 30 MHz – 1 GHz, 802.11a, 5 GHz



Plot 496. Conducted Spurious Emissions, Mid Channel, 1 GHz – 40 GHz, 802.11a, 5 GHz

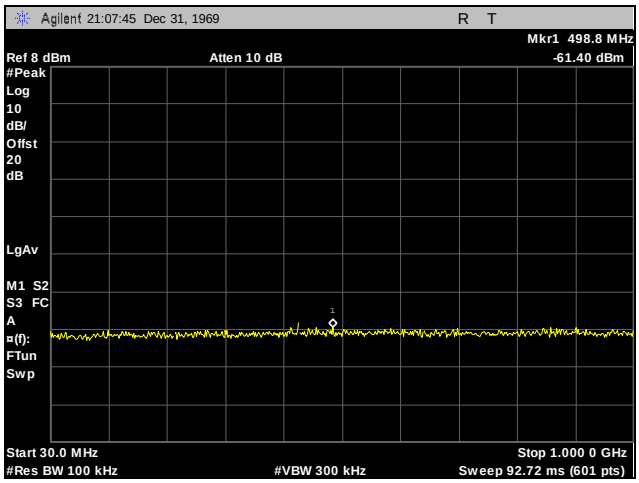


Plot 497. Conducted Spurious Emissions, High Channel, 30 MHz – 1 GHz, 802.11a, 5 GHz

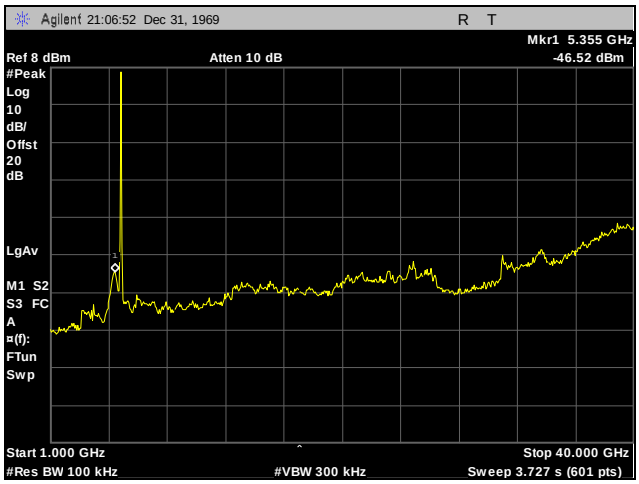


Plot 498. Conducted Spurious Emissions, High Channel, 1 GHz – 40 GHz, 802.11a, 5 GHz

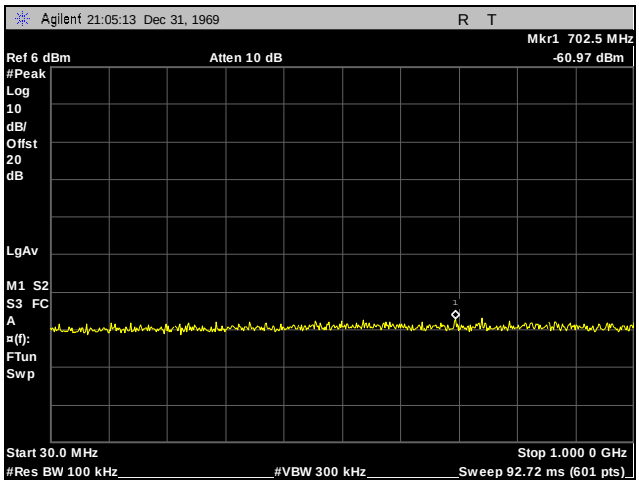
Conducted Spurious Emissions Test Results, 802.11n HT20, Port 1, 5 GHz



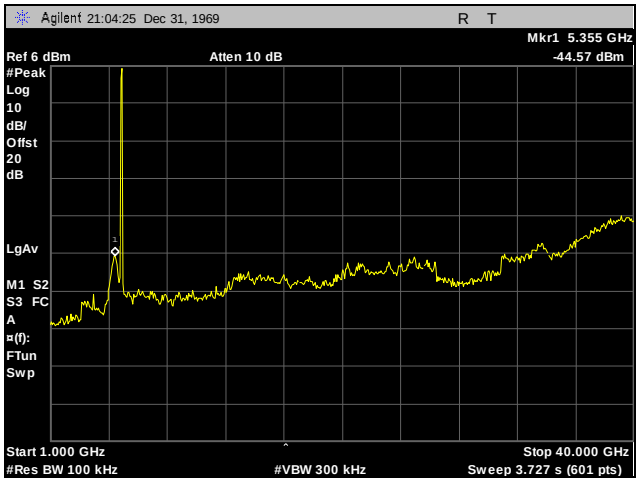
Plot 499. Conducted Spurious Emissions, Low Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 1, 5 GHz



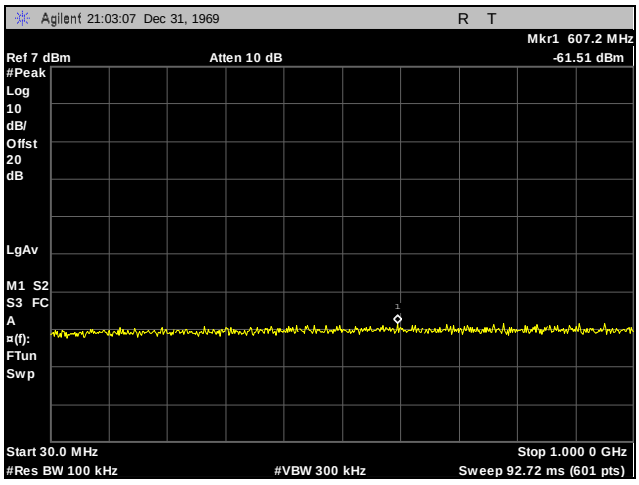
Plot 500. Conducted Spurious Emissions, Low Channel, 1 GHz – 40 GHz, 802.11n HT20, Port 1, 5 GHz



Plot 501. Conducted Spurious Emissions, Mid Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 1, 5 GHz



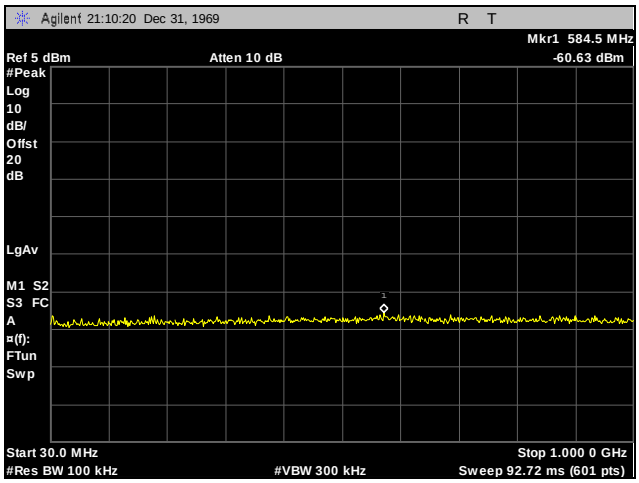
Plot 502. Conducted Spurious Emissions, Mid Channel, 1 GHz – 40 GHz, 802.11n HT20, Port 1, 5 GHz



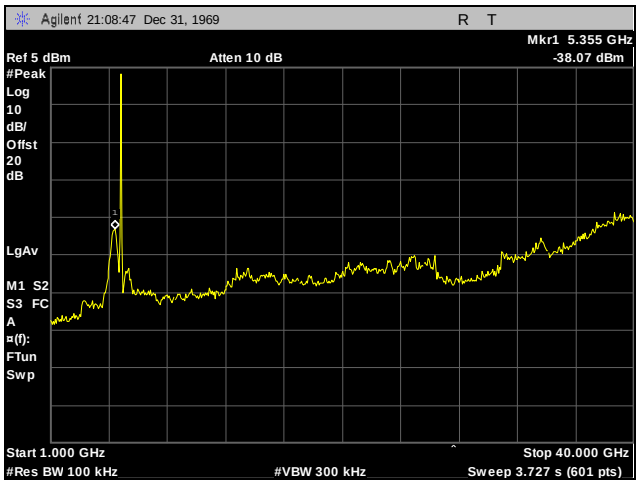
Plot 503. Conducted Spurious Emissions, High Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 1, 5 GHz

Plot 504. Conducted Spurious Emissions, High Channel, 1 GHz – 40 GHz, 802.11n HT20, Port 1, 5 GHz

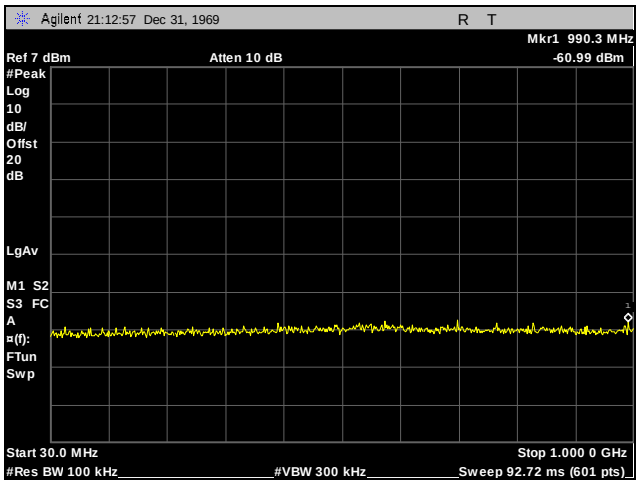
Conducted Spurious Emissions Test Results, 802.11n HT20, Port 2, 5 GHz



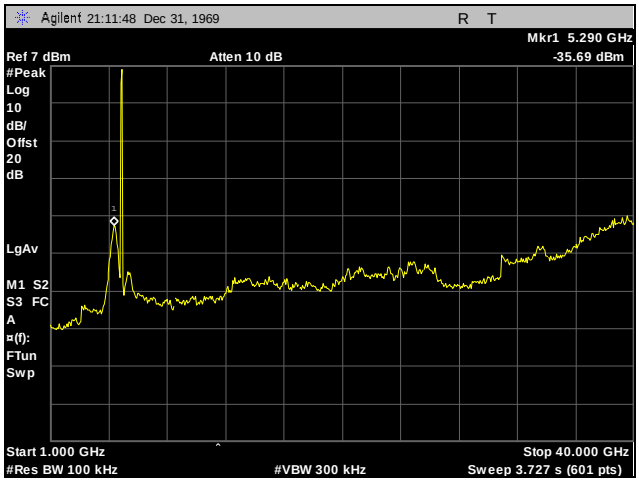
Plot 505. Conducted Spurious Emissions, Low Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 2, 5 GHz



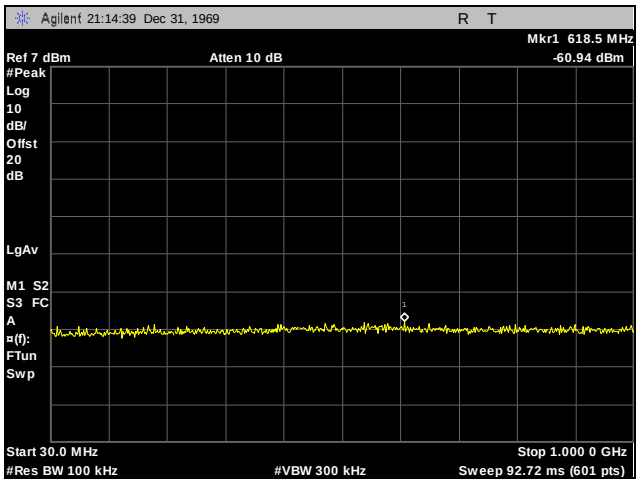
Plot 506. Conducted Spurious Emissions, Low Channel, 1 GHz – 40 GHz, 802.11n HT20, Port 2, 5 GHz



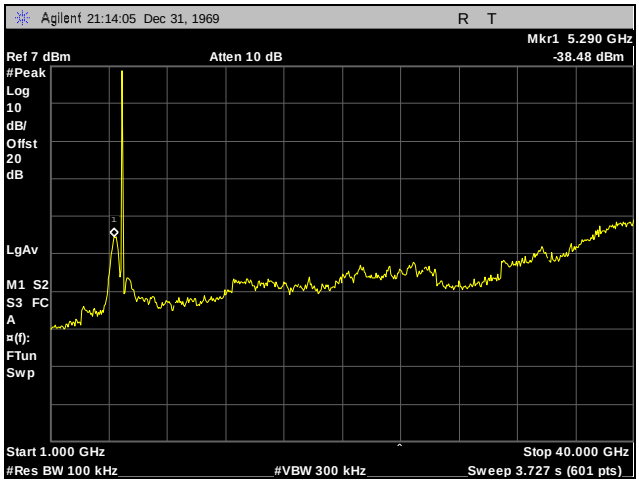
Plot 507. Conducted Spurious Emissions, Mid Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 2, 5 GHz



Plot 508. Conducted Spurious Emissions, Mid Channel, 1 GHz – 40 GHz, 802.11n HT20, Port 2, 5 GHz

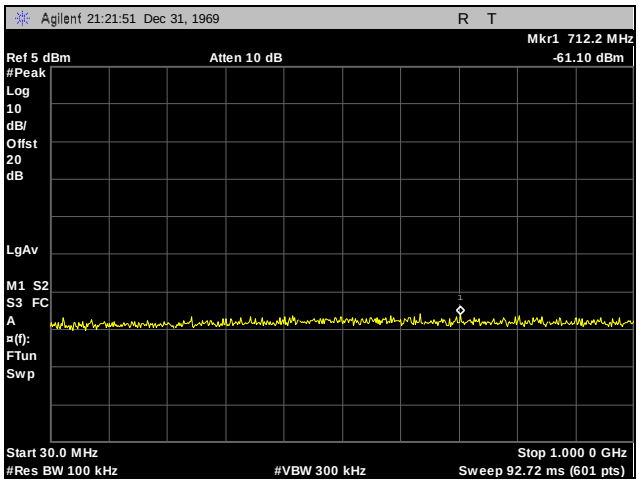


Plot 509. Conducted Spurious Emissions, High Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 2, 5 GHz

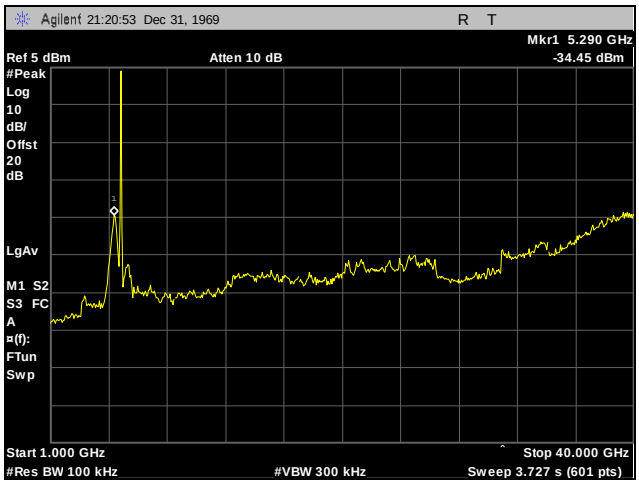


Plot 510. Conducted Spurious Emissions, High Channel, 1 GHz – 40 GHz, 802.11n HT20, Port 2, 5 GHz

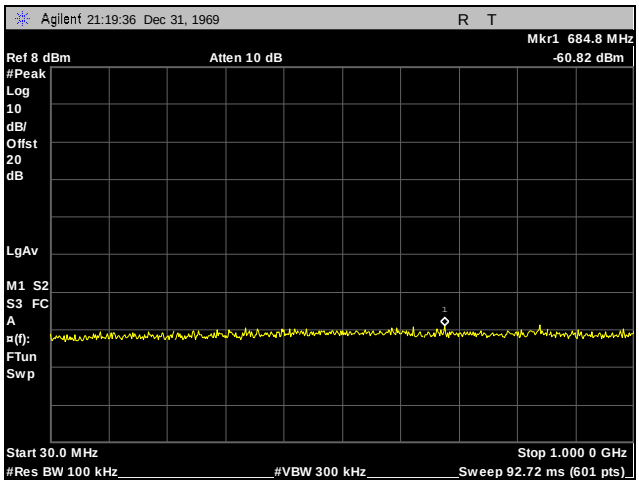
Conducted Spurious Emissions Test Results, 802.11n HT20, Port 3, 5 GHz



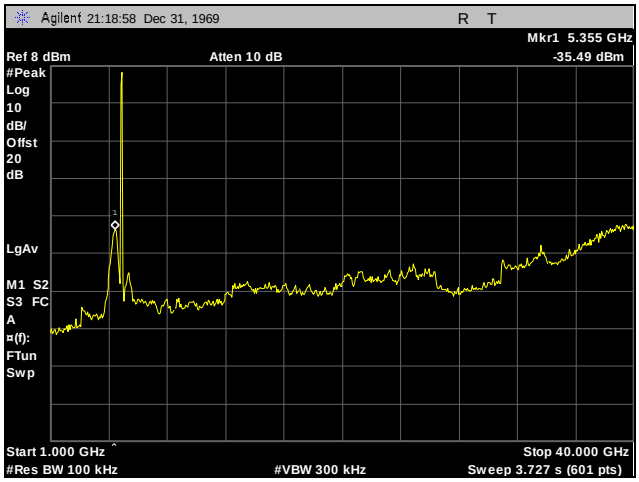
Plot 511. Conducted Spurious Emissions, Low Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 3, 5 GHz



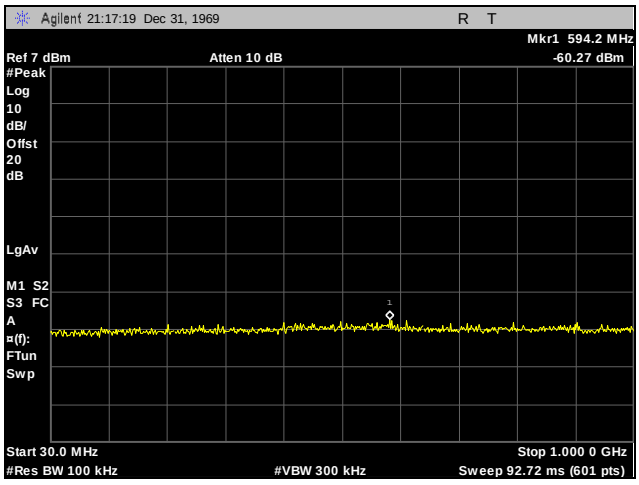
Plot 512. Conducted Spurious Emissions, Low Channel, 1 GHz – 40 GHz, 802.11n HT20, Port 3, 5 GHz



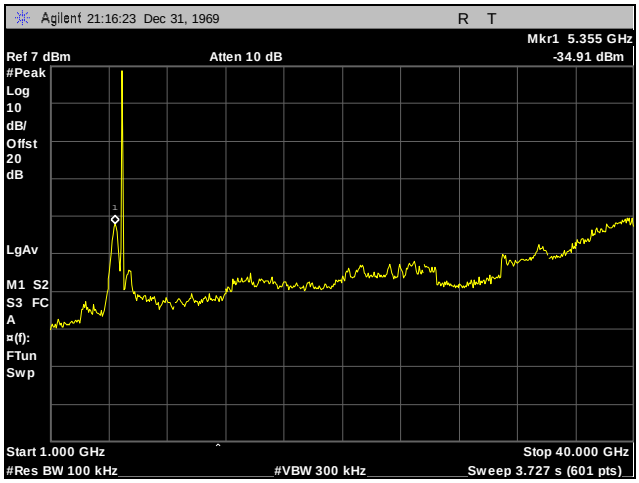
Plot 513. Conducted Spurious Emissions, Mid Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 3, 5 GHz



Plot 514. Conducted Spurious Emissions, Mid Channel, 1 GHz – 40 GHz, 802.11n HT20, Port 3, 5 GHz

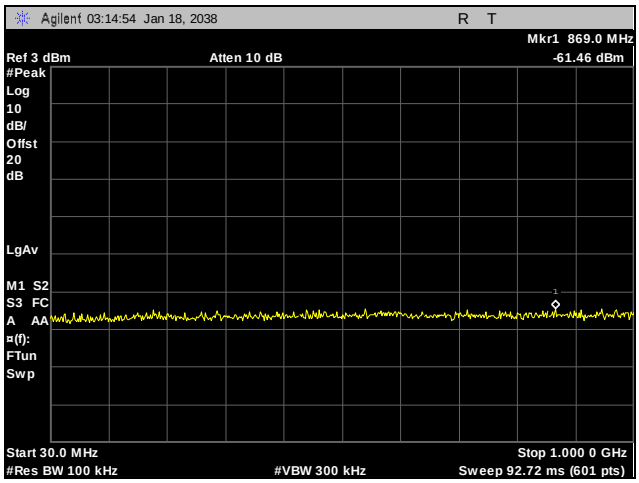


Plot 515. Conducted Spurious Emissions, High Channel, 30 MHz – 1 GHz, 802.11n HT20, Port 3, 5 GHz

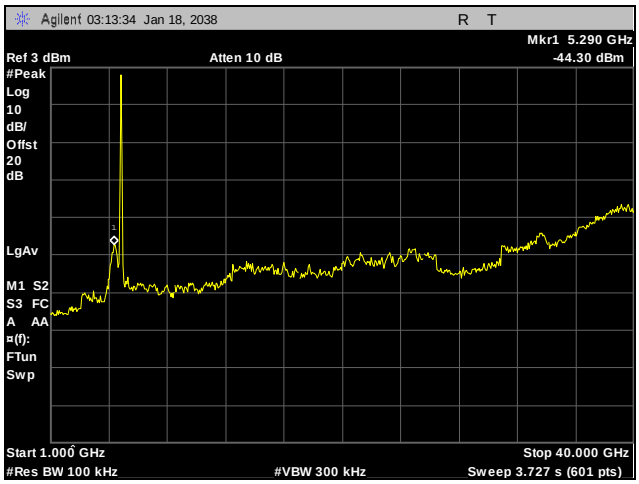


Plot 516. Conducted Spurious Emissions, High Channel, 1 GHz – 40 GHz, 802.11n HT20, Port 3, 5 GHz

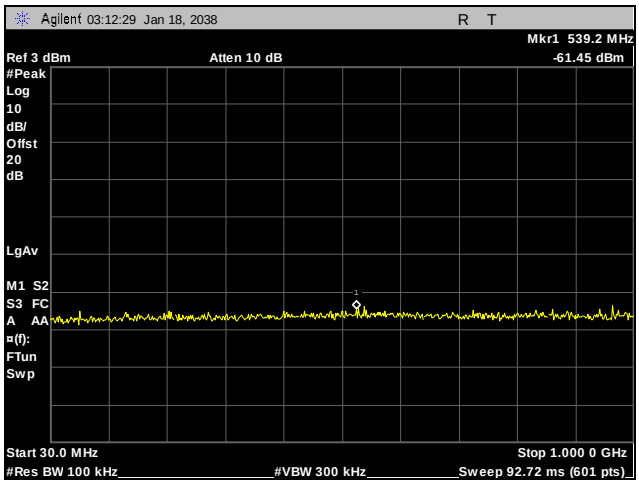
Conducted Spurious Emissions Test Results, 802.11n HT40, Port 1, 5 GHz



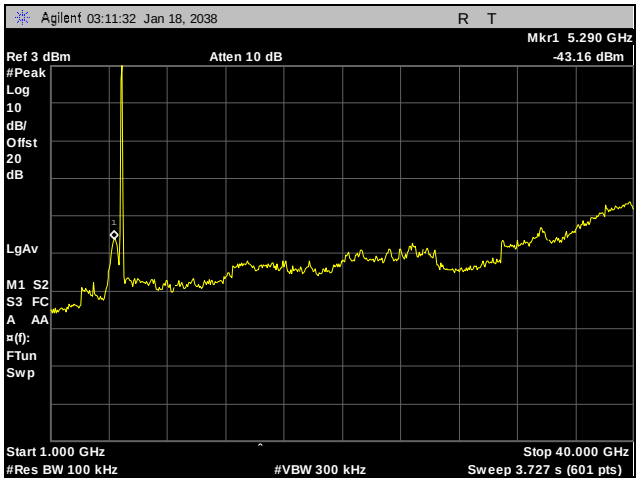
Plot 517. Conducted Spurious Emissions, Low Channel, 30 MHz – 1 GHz, 802.11n HT40, Port 1, 5 GHz



Plot 518. Conducted Spurious Emissions, Low Channel, 1 GHz – 40 GHz, 802.11n HT40, Port 1, 5 GHz

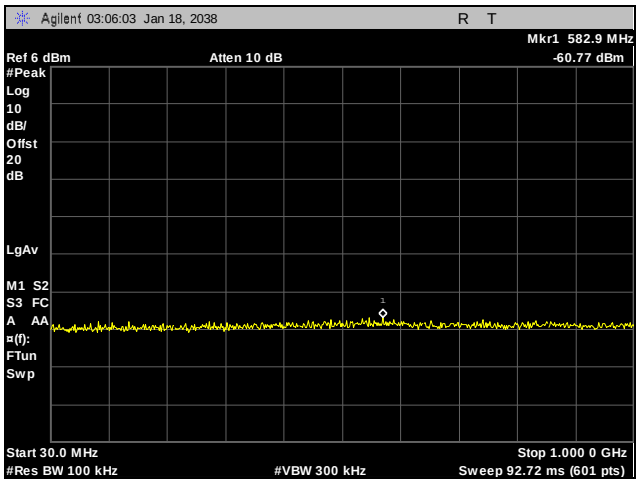


Plot 519. Conducted Spurious Emissions, High Channel, 30 MHz – 1 GHz, 802.11n HT40, Port 1, 5 GHz

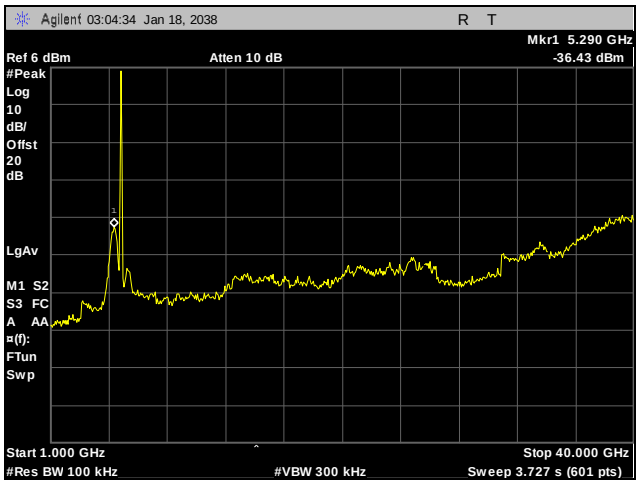


Plot 520. Conducted Spurious Emissions, High Channel, 1 GHz – 40 GHz, 802.11n HT40, Port 1, 5 GHz

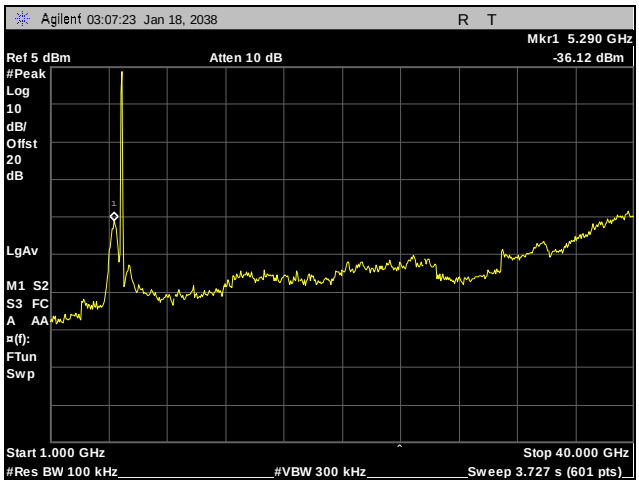
Conducted Spurious Emissions Test Results, 802.11n HT40, Port 2, 5 GHz



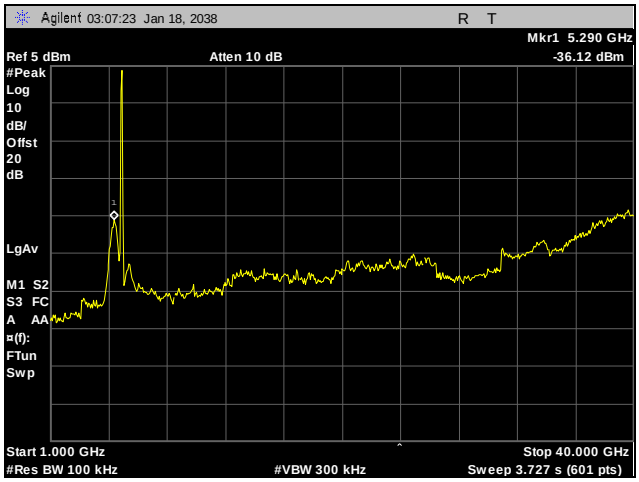
Plot 521. Conducted Spurious Emissions, Low Channel, 30 MHz – 1 GHz, 802.11n HT40, Port 2, 5 GHz



Plot 522. Conducted Spurious Emissions, Low Channel, 1 GHz – 40 GHz, 802.11n HT40, Port 2, 5 GHz

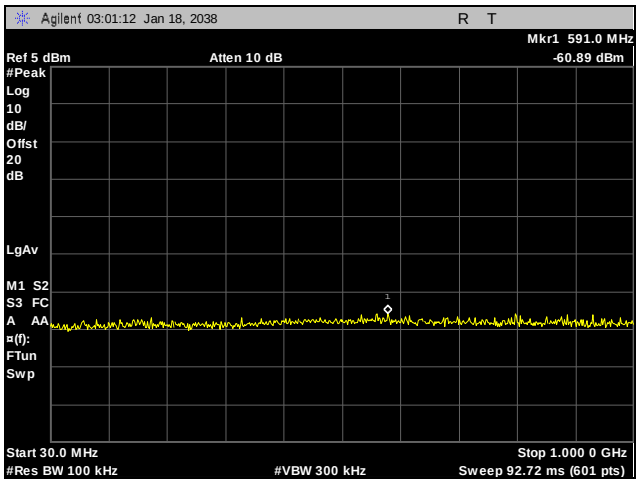


Plot 523. Conducted Spurious Emissions, High Channel, 30 MHz – 1 GHz, 802.11n HT40, Port 2, 5 GHz

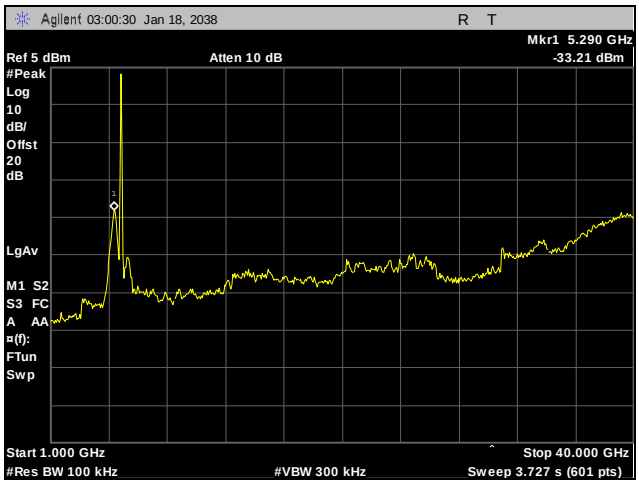


Plot 524. Conducted Spurious Emissions, High Channel, 1 GHz – 40 GHz, 802.11n HT40, Port 2, 5 GHz

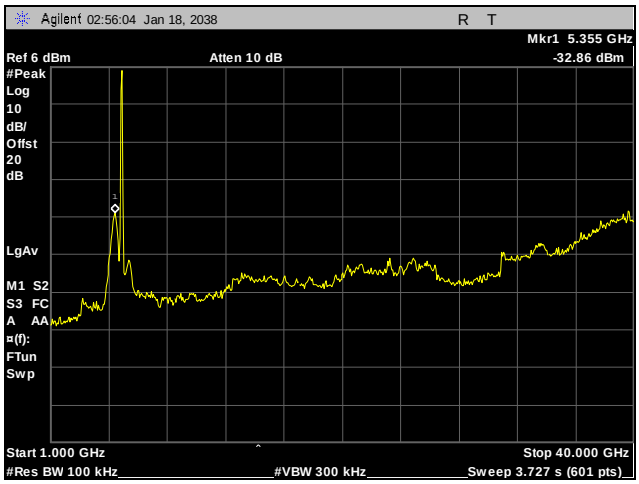
Conducted Spurious Emissions Test Results, 802.11n HT40, Port 3, 5 GHz



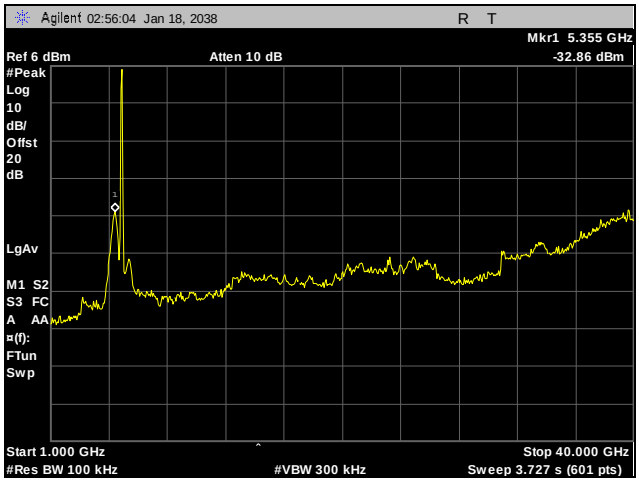
Plot 525. Conducted Spurious Emissions, Low Channel, 30 MHz – 1 GHz, 802.11n HT40, Port 3, 5 GHz



Plot 526. Conducted Spurious Emissions, Low Channel, 1 GHz – 40 GHz, 802.11n HT40, Port 3, 5 GHz

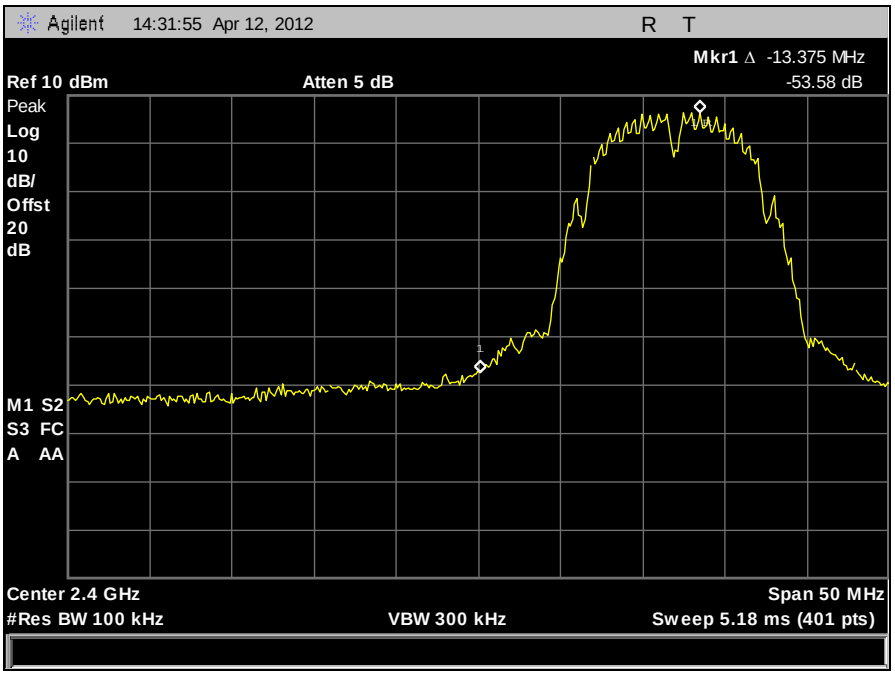


Plot 527. Conducted Spurious Emissions, High Channel, 30 MHz – 1 GHz, 802.11n HT40, Port 3, 5 GHz

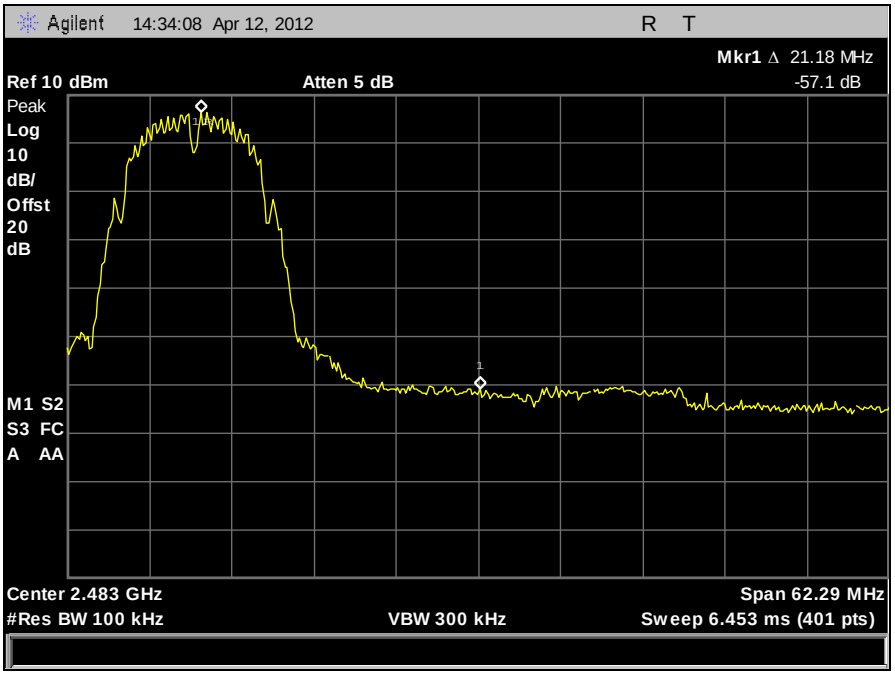


Plot 528. Conducted Spurious Emissions, High Channel, 1 GHz – 40 GHz, 802.11n HT40, Port 3, 5 GHz

Conducted Band Edge Test Results, 802.11b, 2.4 GHz

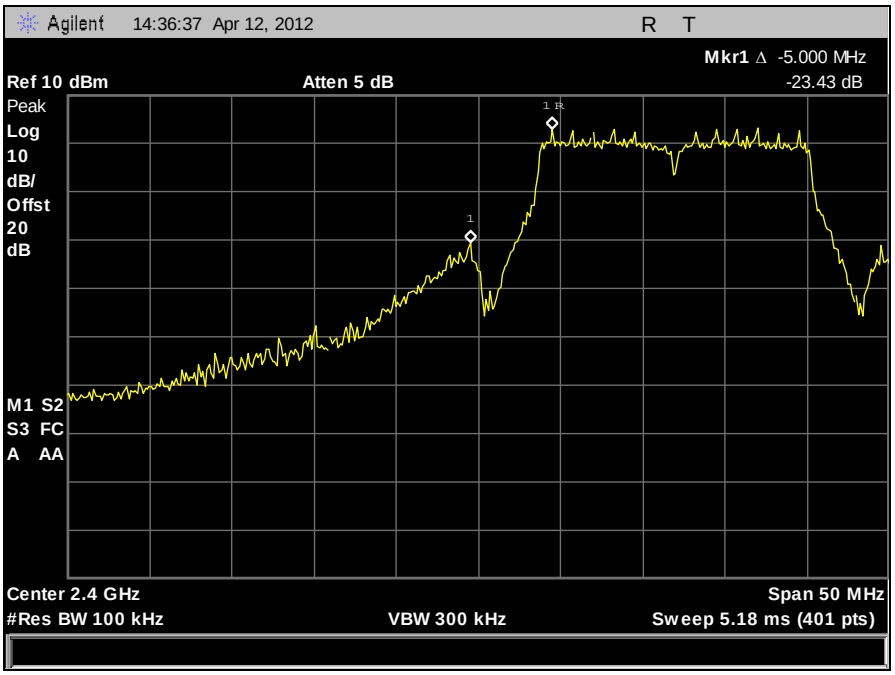


Plot 529. Conducted Band Edge, Low Channel, 802.11b, 2.4 GHz

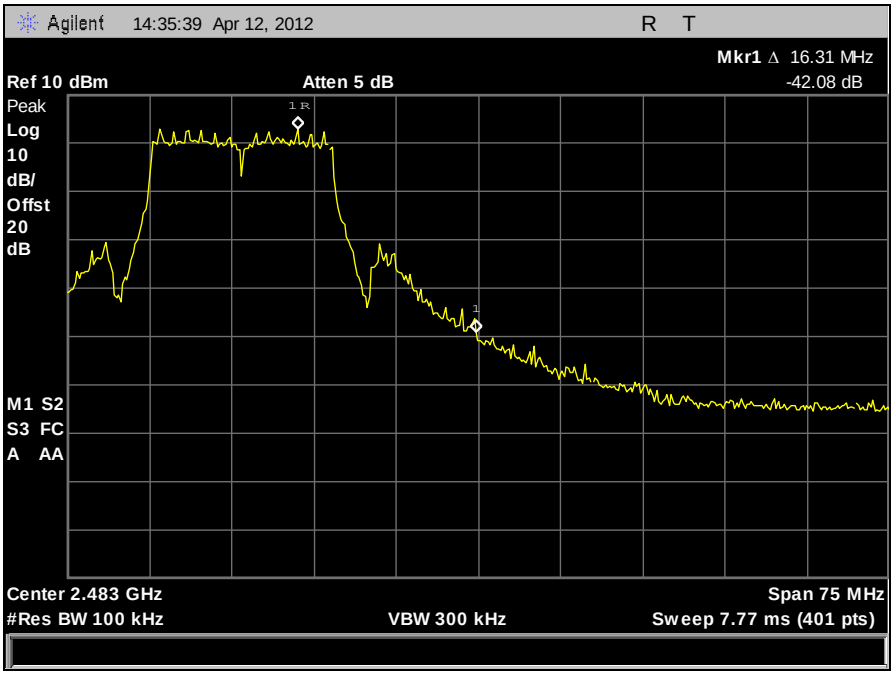


Plot 530. Conducted Band Edge, High Channel, 802.11b, 2.4 GHz

Conducted Band Edge Test Results, 802.11g, 2.4 GHz

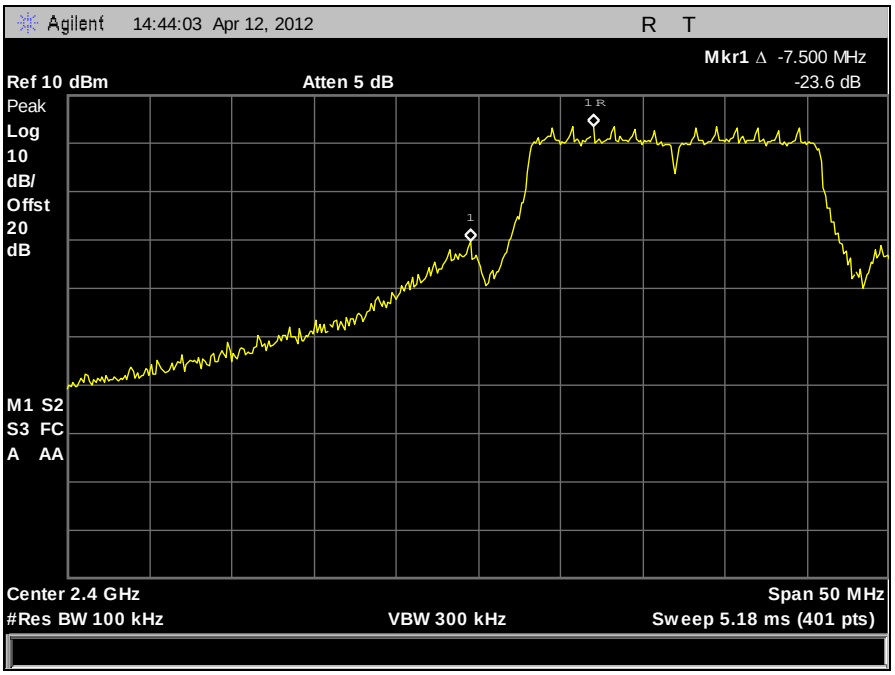


Plot 531. Conducted Band Edge, Low Channel, 802.11g, 2.4 GHz

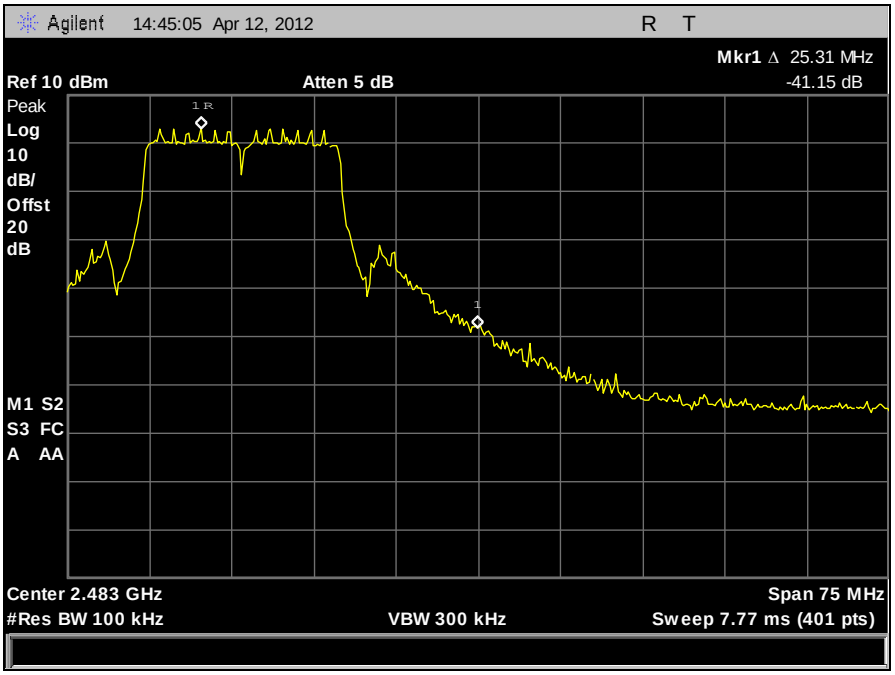


Plot 532. Conducted Band Edge, High Channel, 802.11g, 2.4 GHz

Conducted Band Edge Test Results, 802.11n HT20, Port 1, 2.4 GHz

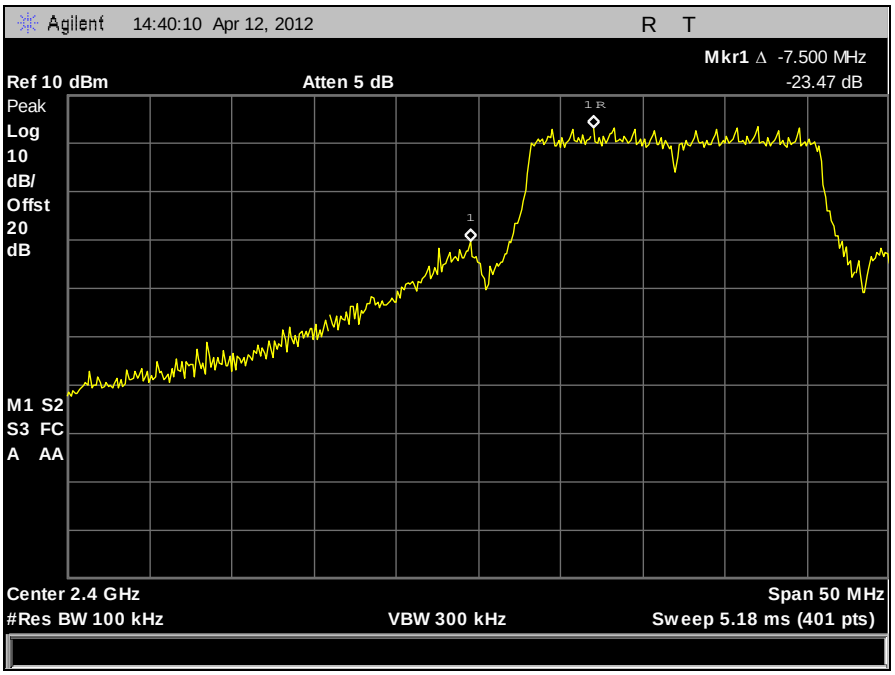


Plot 533. Conducted Band Edge, Low Channel, 802.11n HT20, Port 1, 2.4 GHz

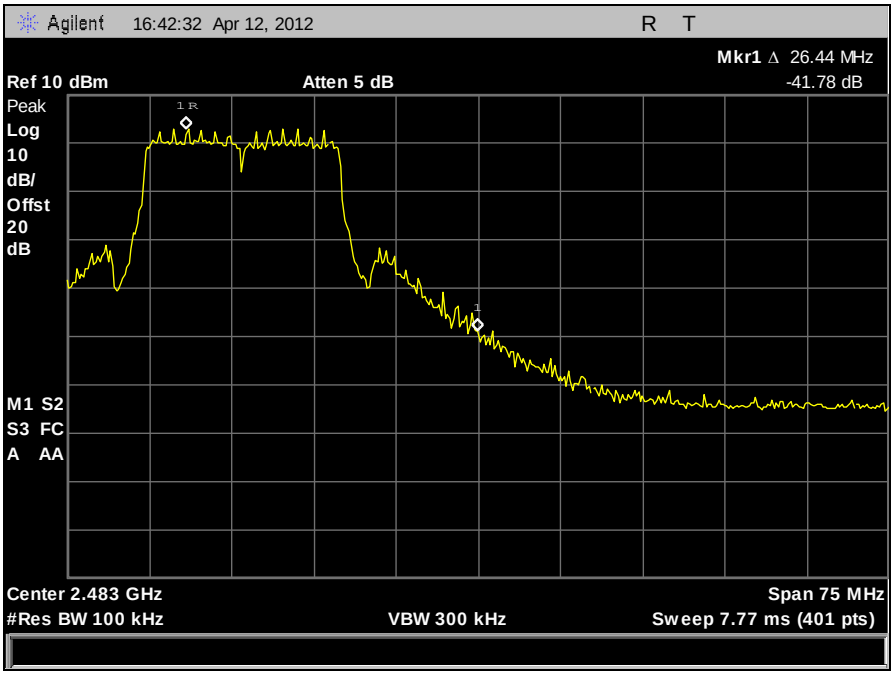


Plot 534. Conducted Band Edge, High Channel, 802.11n HT20, Port 1, 2.4 GHz

Conducted Band Edge Test Results, 802.11n HT20, Port 2, 2.4 GHz

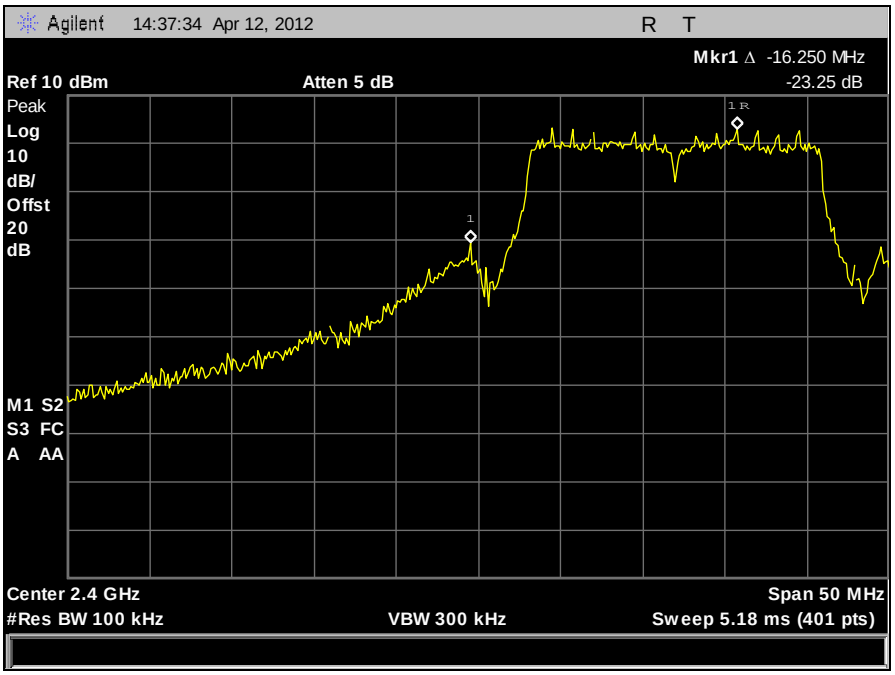


Plot 535. Conducted Band Edge, Low Channel, 802.11n HT20, Port 2, 2.4 GHz

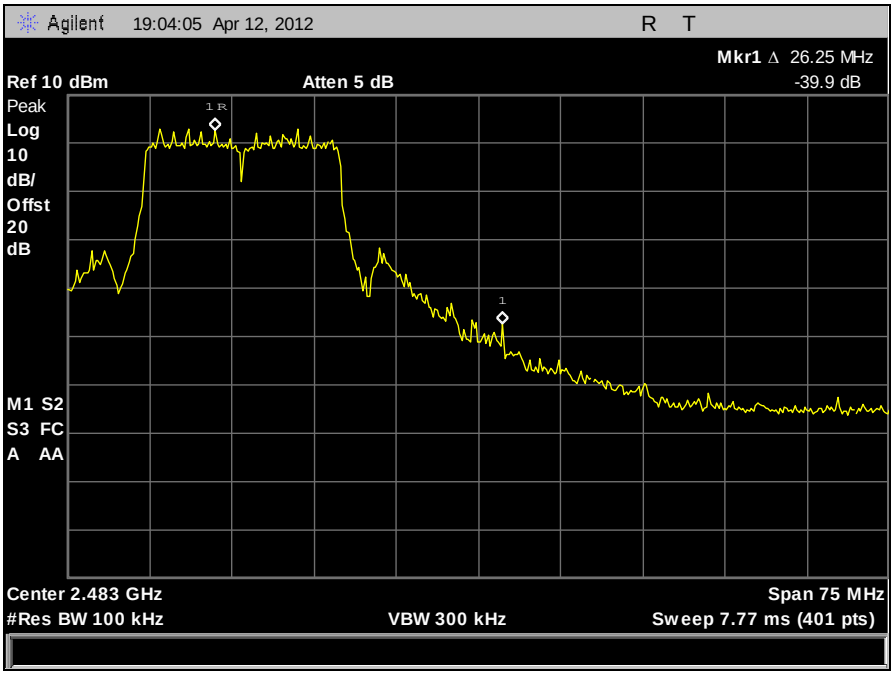


Plot 536. Conducted Band Edge, High Channel, 802.11n HT20, Port 2, 2.4 GHz

Conducted Band Edge Test Results, 802.11n HT20, Port 3, 2.4 GHz

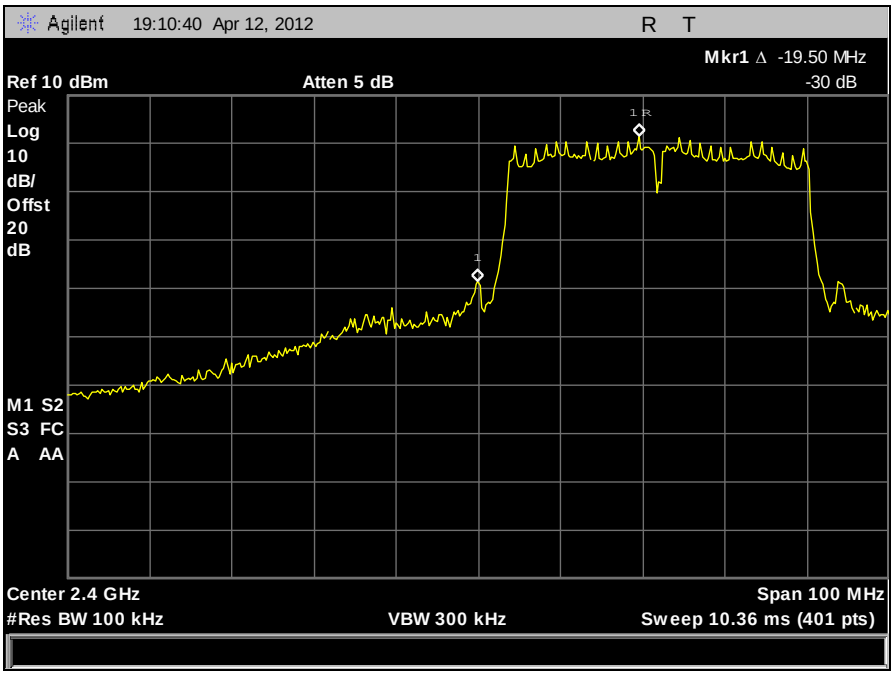


Plot 537. Conducted Band Edge, Low Channel, 802.11n HT20, Port 3, 2.4 GHz

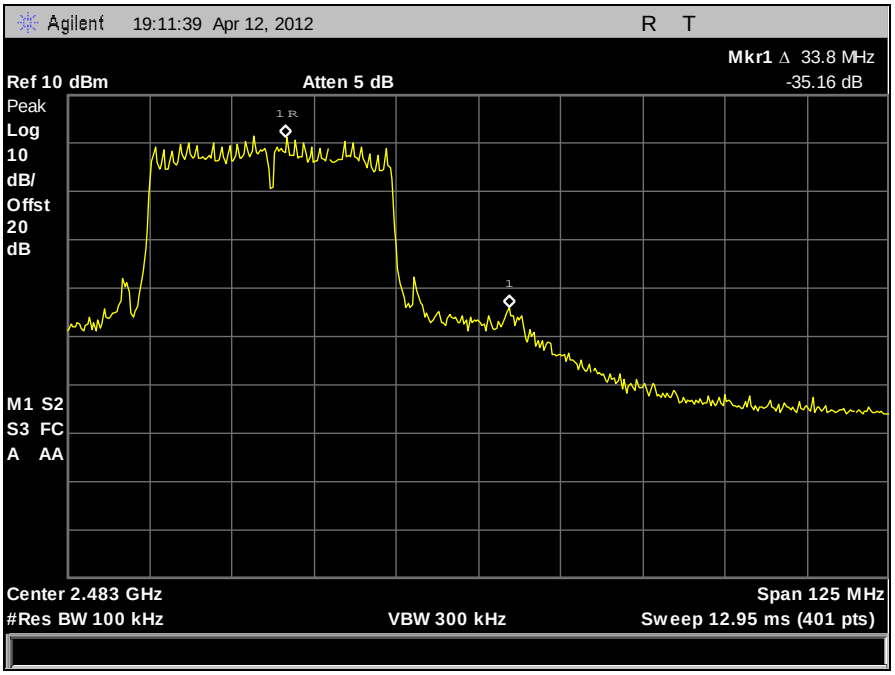


Plot 538. Conducted Band Edge, High Channel, 802.11n HT20, Port 3, 2.4 GHz

Conducted Band Edge Test Results, 802.11n HT40, Port 1, 2.4 GHz

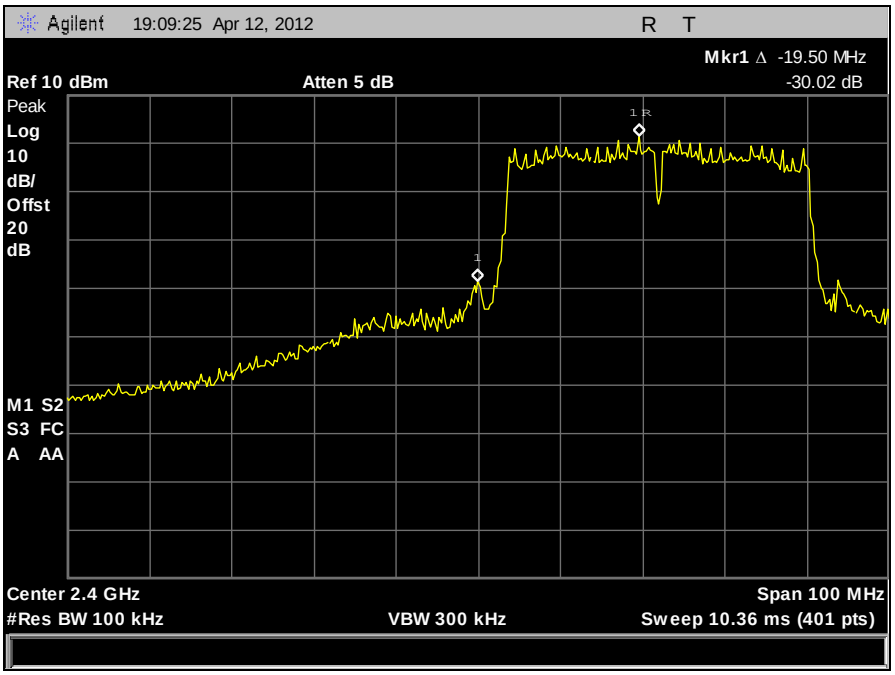


Plot 539. Conducted Band Edge, Low Channel, 802.11n HT40, Port 1, 2.4 GHz

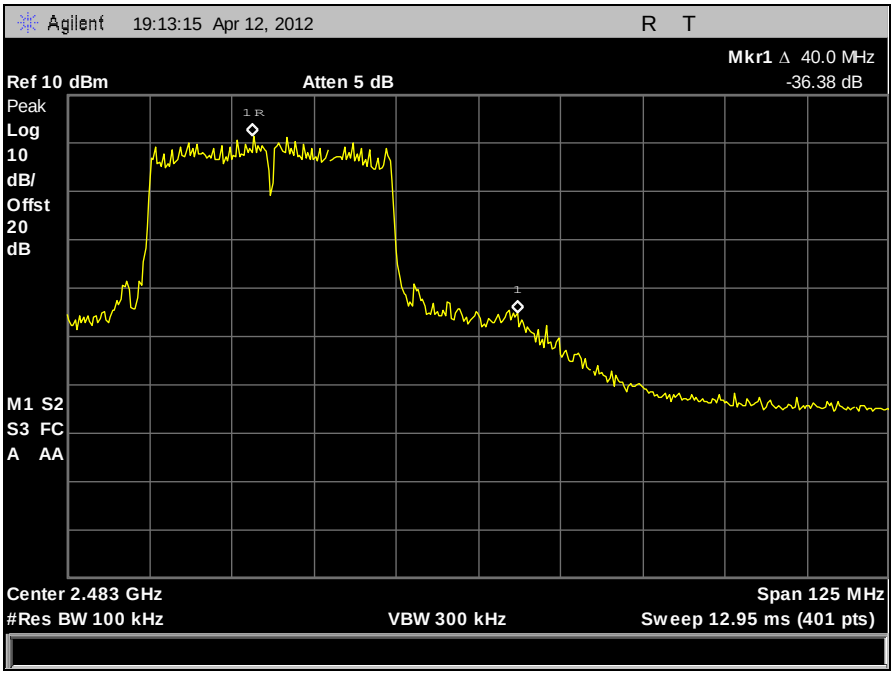


Plot 540. Conducted Band Edge, High Channel, 802.11n HT40, Port 1, 2.4 GHz

Conducted Band Edge Test Results, 802.11n HT40, Port 2, 2.4 GHz

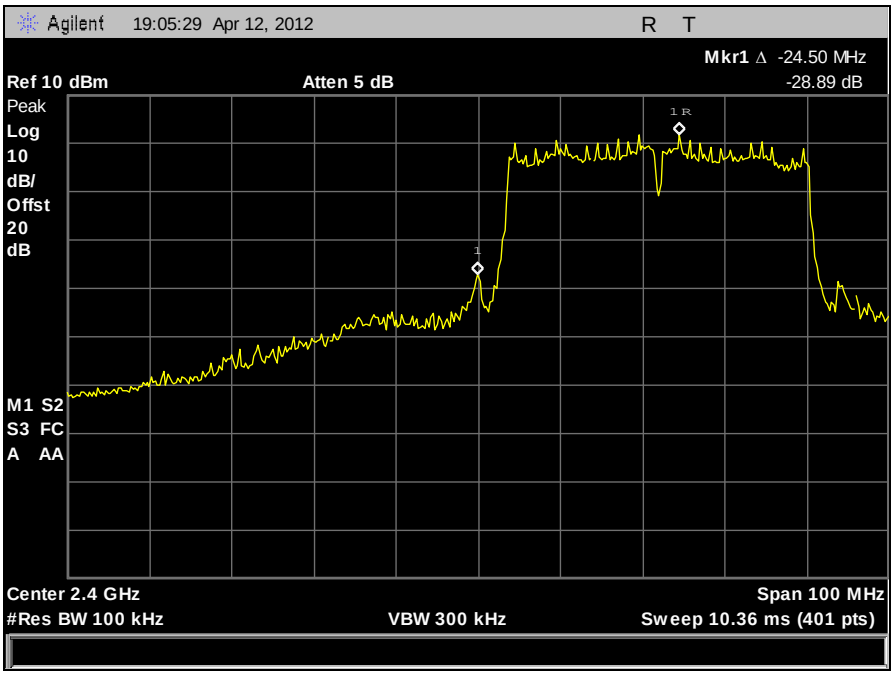


Plot 541. Conducted Band Edge, Low Channel, 802.11n HT40, Port 2, 2.4 GHz

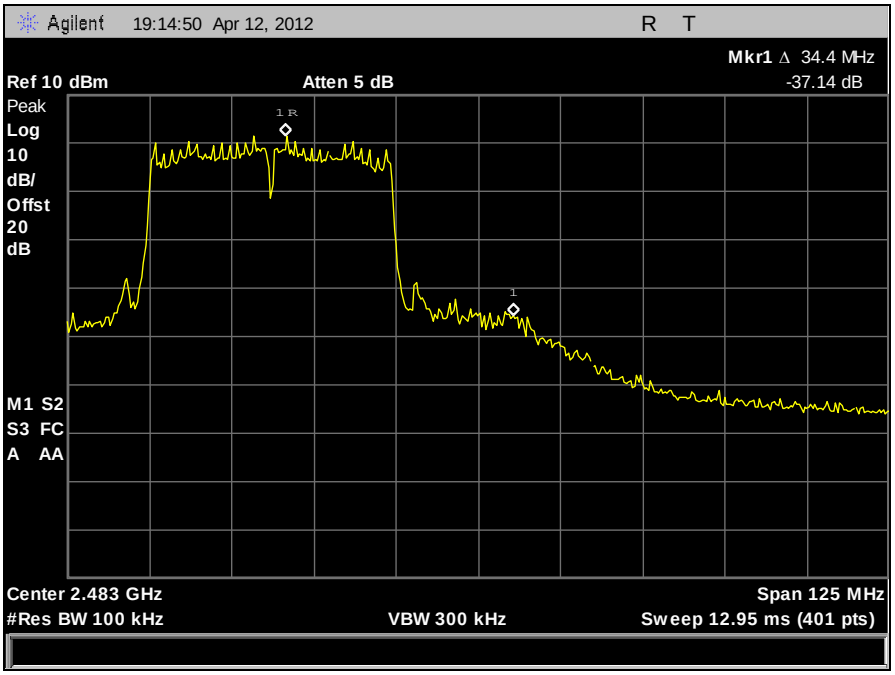


Plot 542. Conducted Band Edge, High Channel, 802.11n HT40, Port 2, 2.4 GHz

Conducted Band Edge Test Results, 802.11n HT40, Port 3, 2.4 GHz

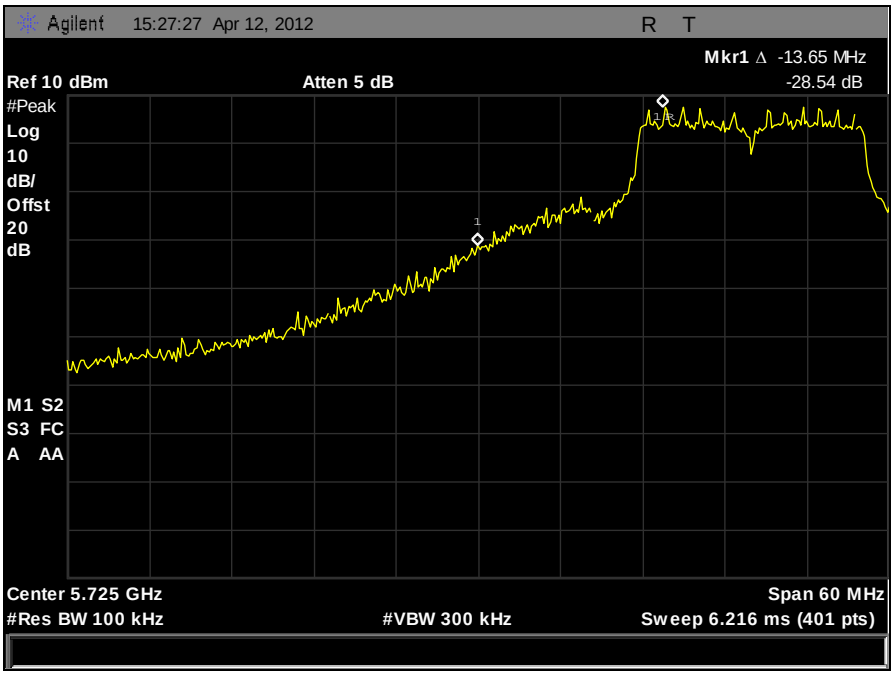


Plot 543. Conducted Band Edge, Low Channel, 802.11n HT40, Port 3, 2.4 GHz

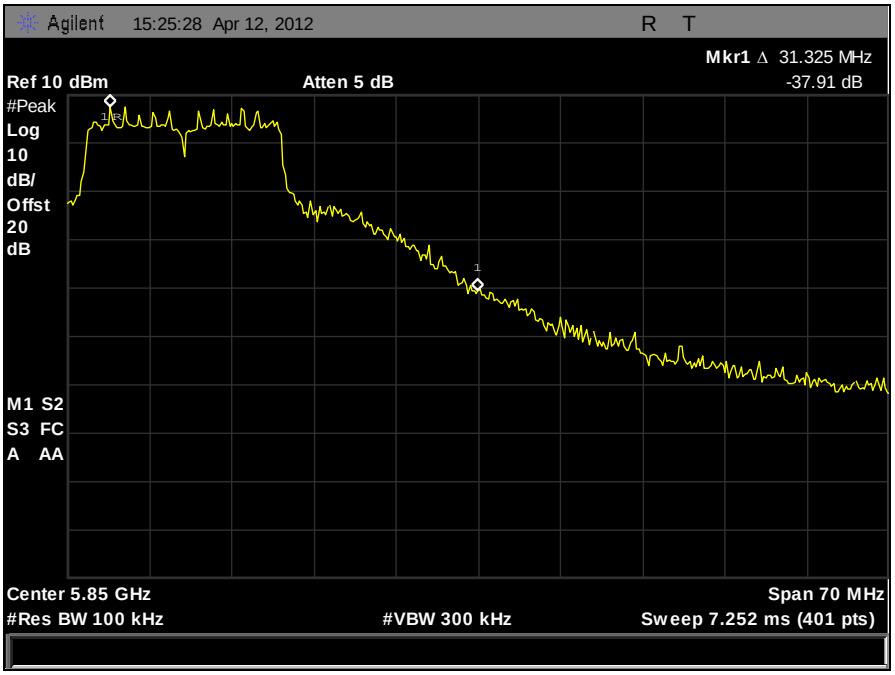


Plot 544. Conducted Band Edge, High Channel, 802.11n HT40, Port 3, 2.4 GHz

Conducted Band Edge Test Results, 802.11a, 5 GHz

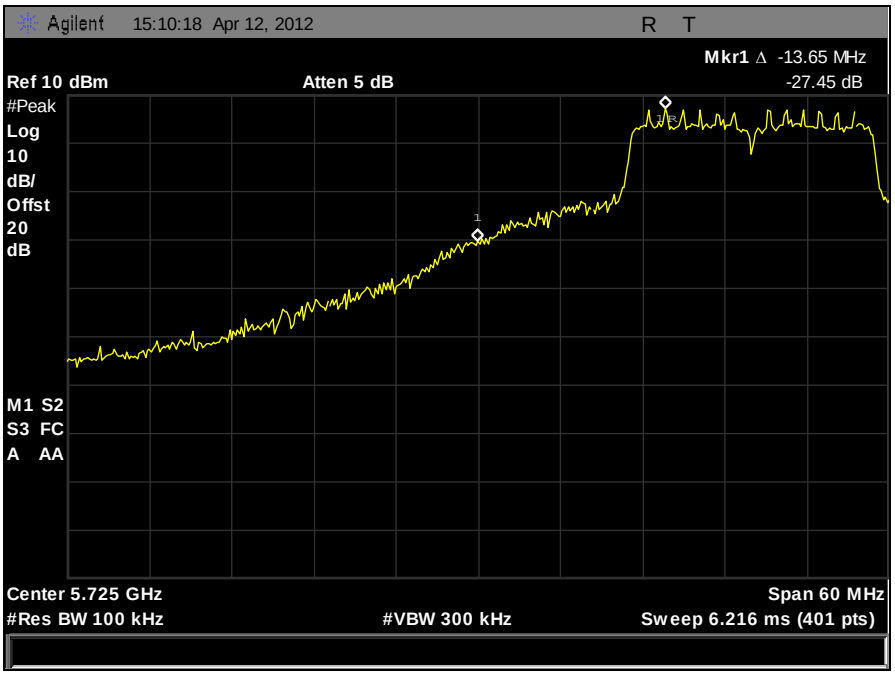


Plot 545. Conducted Band Edge, Low Channel, 802.11a, 5 GHz

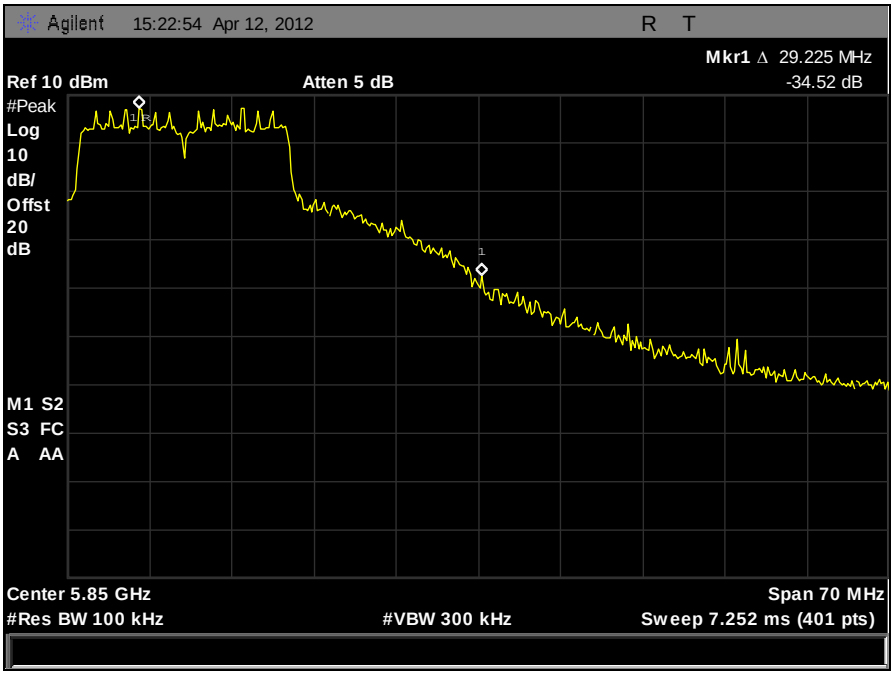


Plot 546. Conducted Band Edge, High Channel, 802.11a, 5 GHz

Conducted Band Edge Test Results, 802.11n HT20, Port 1, 5 GHz

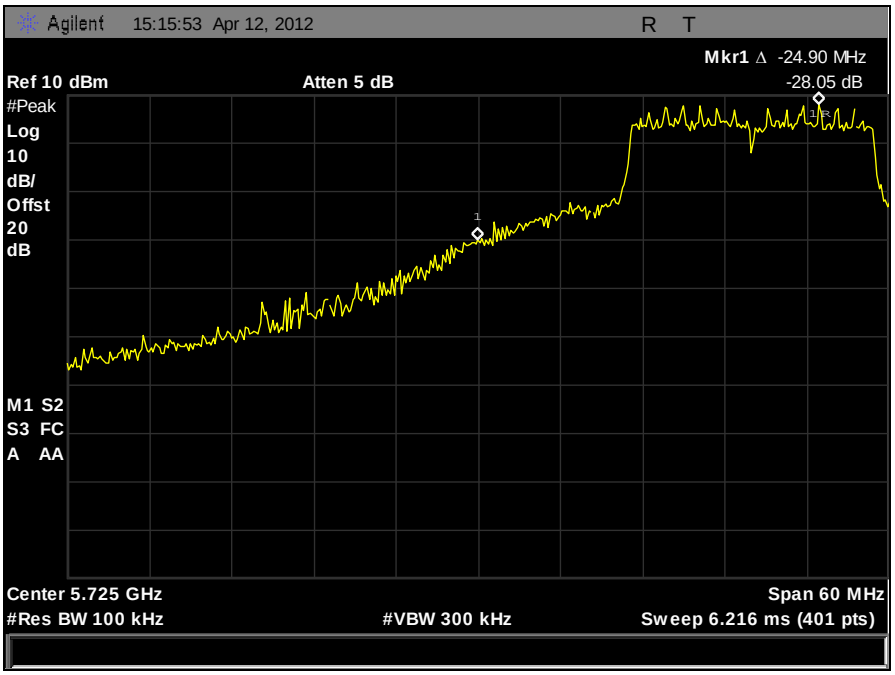


Plot 547. Conducted Band Edge, Low Channel, 802.11n HT20, Port 1, 5 GHz

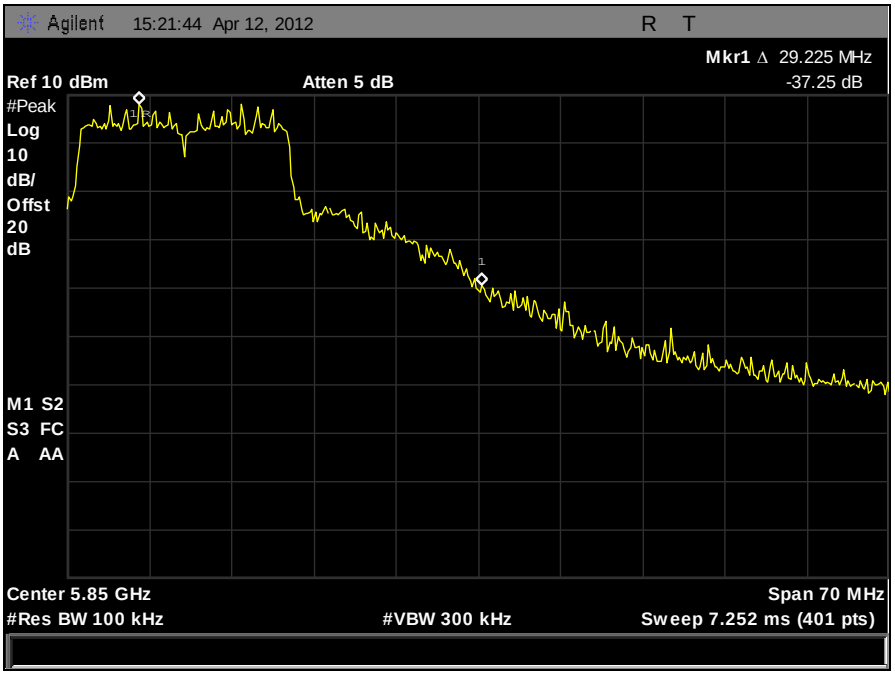


Plot 548. Conducted Band Edge, High Channel, 802.11n HT20, Port 1, 5 GHz

Conducted Band Edge Test Results, 802.11n HT20, Port 2, 5 GHz

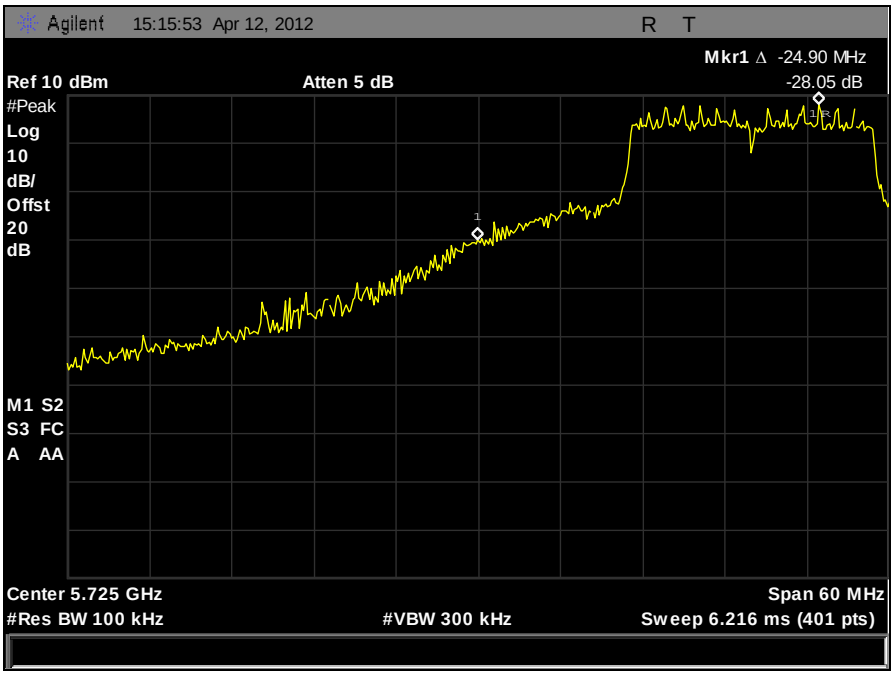


Plot 549. Conducted Band Edge, Low Channel, 802.11n HT20, Port 2, 5 GHz

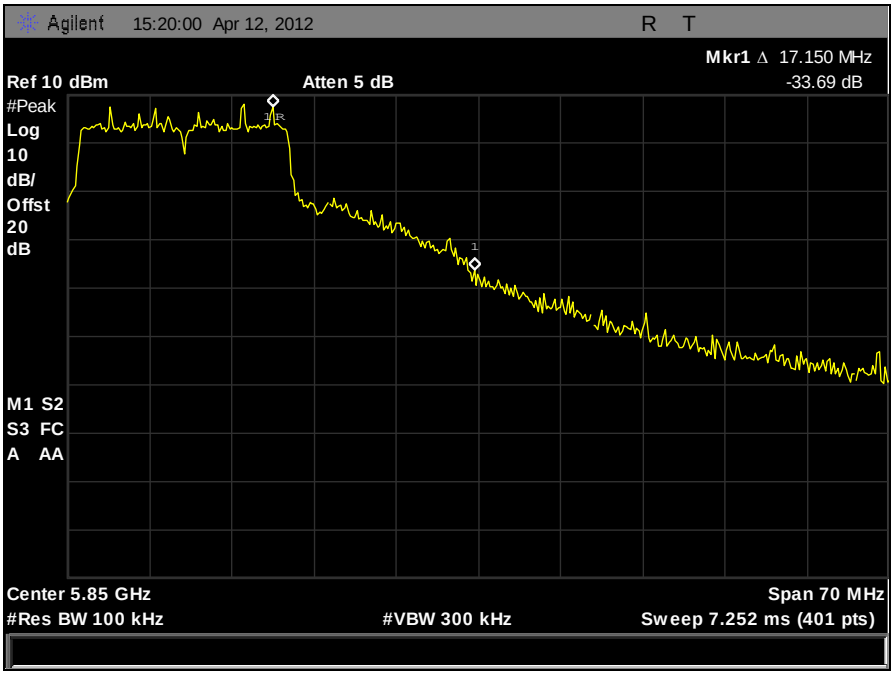


Plot 550. Conducted Band Edge, High Channel, 802.11n HT20, Port 2, 5 GHz

Conducted Band Edge Test Results, 802.11n HT20, Port 3, 5 GHz

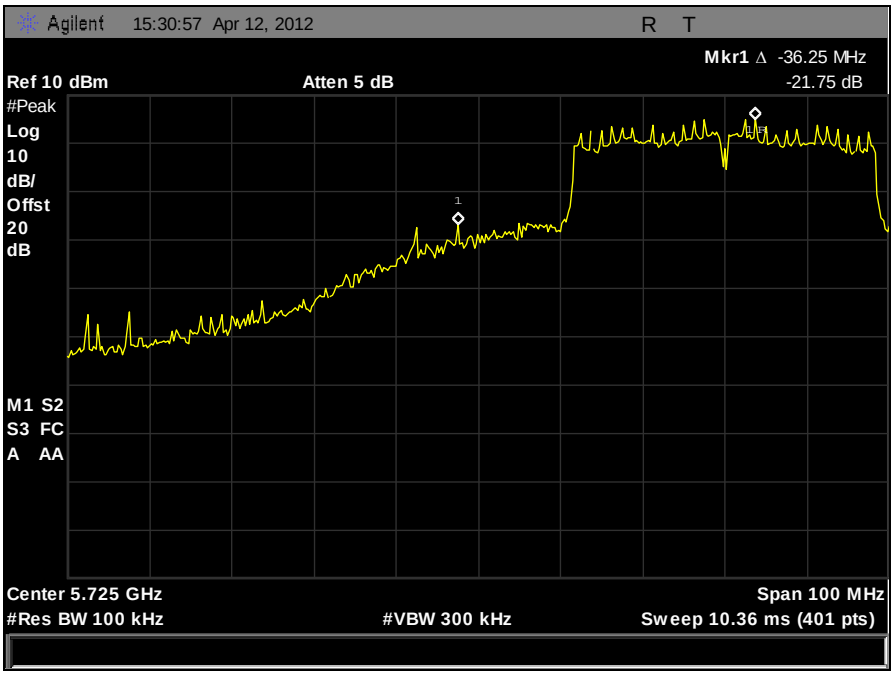


Plot 551. Conducted Band Edge, Low Channel, 802.11n HT20, Port 3, 5 GHz

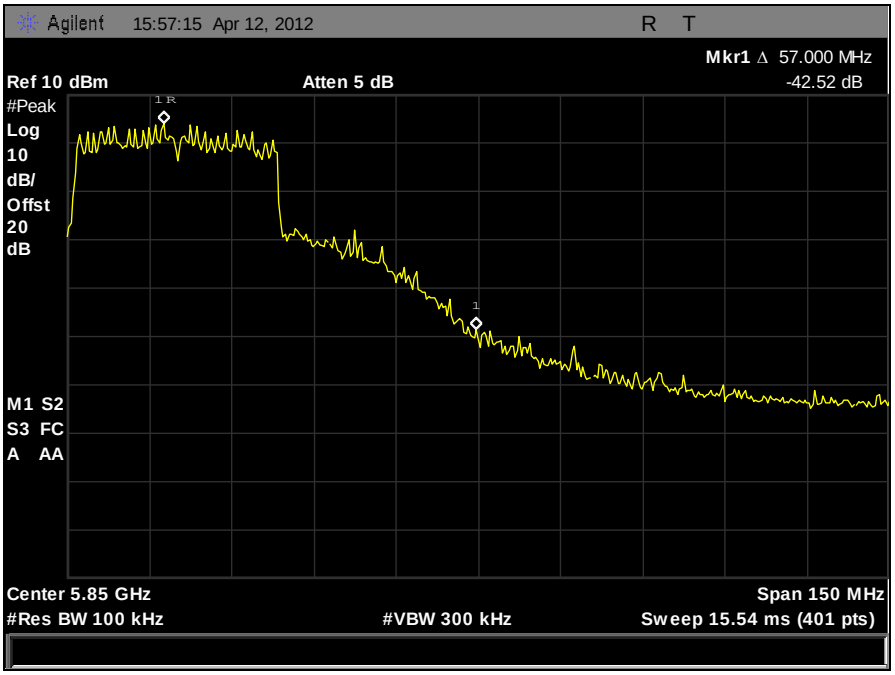


Plot 552. Conducted Band Edge, High Channel, 802.11n HT20, Port 3, 5 GHz

Conducted Band Edge Test Results, 802.11n HT40, Port 1, 5 GHz

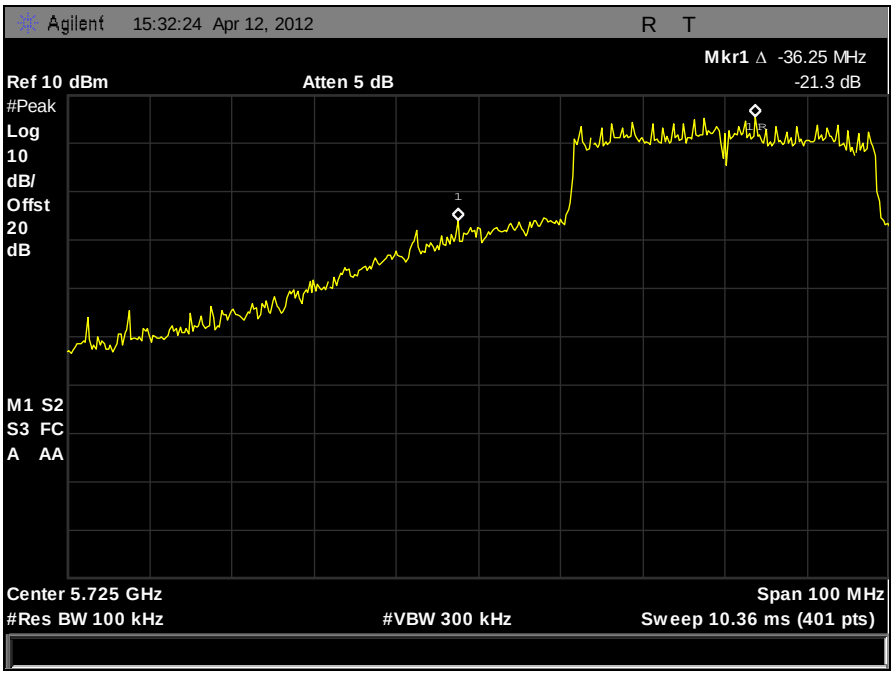


Plot 553. Conducted Band Edge, Low Channel, 802.11n HT40, Port 1, 5 GHz

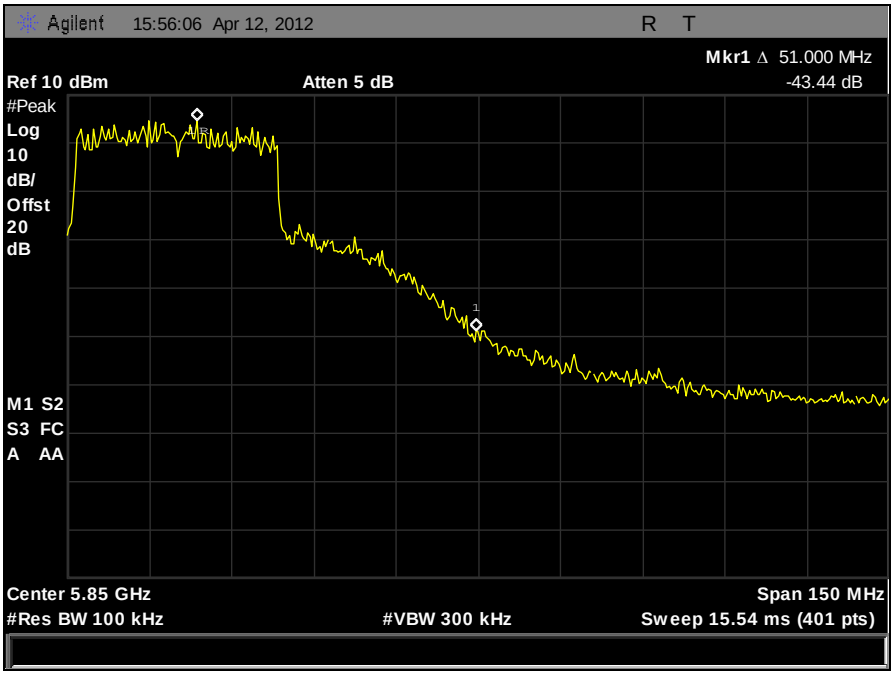


Plot 554. Conducted Band Edge, High Channel, 802.11n HT40, Port 1, 5 GHz

Conducted Band Edge Test Results, 802.11n HT40, Port 2, 5 GHz

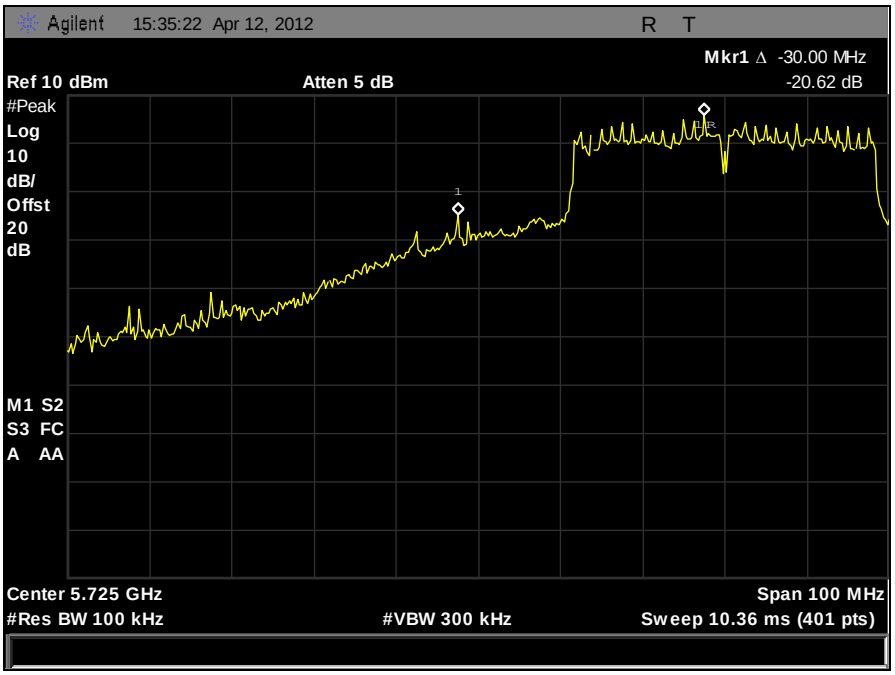


Plot 555. Conducted Band Edge, Low Channel, 802.11n HT40, Port 2, 5 GHz

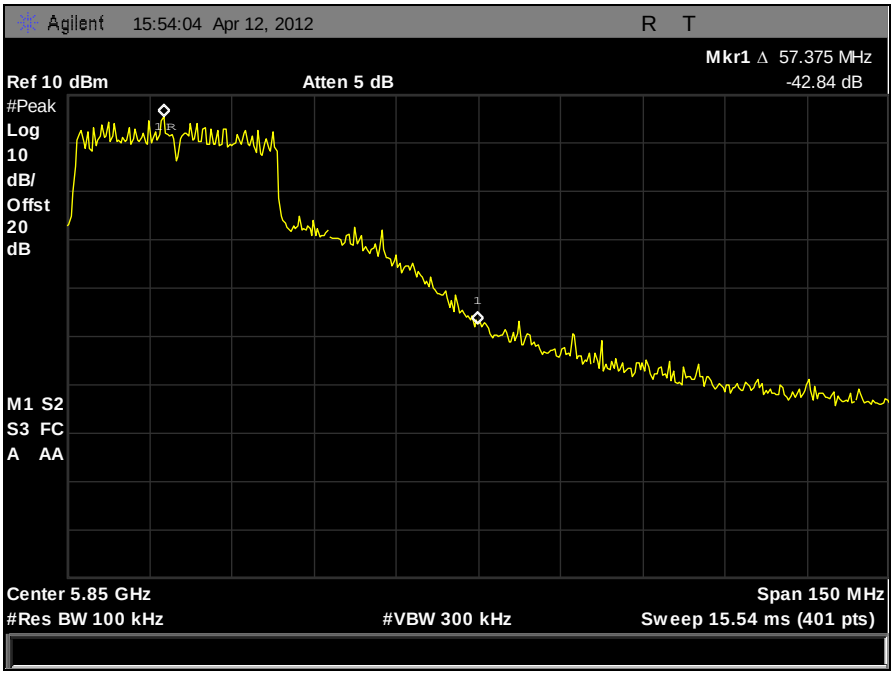


Plot 556. Conducted Band Edge, High Channel, 802.11n HT40, Port 2, 5 GHz

Conducted Band Edge Test Results, 802.11n HT40, Port 3, 5 GHz



Plot 557. Conducted Band Edge, Low Channel, 802.11n HT40, Port 3, 5 GHz



Plot 558. Conducted Band Edge, High Channel, 802.11n HT40, Port 3, 5 GHz

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 1 MHz and VBW of 3 MHz were used to determine the peak emissions within the band. The Spectrum analyzer was then set to a RBW of 3 kHz and VBW was set to 10 kHz. The SPAN of the analyzer was set to 1 MHz with a 333.3 second sweep. 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: Anderson Soungpanya

Test Date: 05/03/12 & 05/04/12

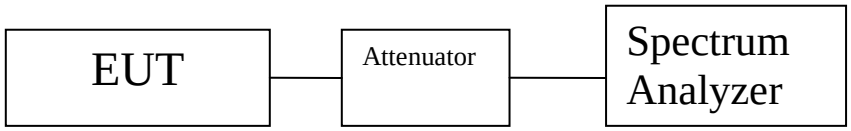


Figure 5. Block Diagram, Peak Power Spectral Density Test Setup

Peak Power Spectral Density Test Results, 2.4 GHz

Peak Power Spectral Density					
Mode	**Carrier**	**Frequency**	**Measured PPSD**	**Limit**	**Margin**
	Channel	**(MHz)**	**(dBm)**	**(dBm)**	**(dB)**
802.11b	Low	2412	-5.709	3.23	-8.939
	Mid	2437	-6.06	3.23	-9.29
	High	2462	-5.885	3.23	-9.115
802.11g	Low	2412	-10.16	3.23	-13.39
	Mid	2437	-10.36	3.23	-13.59
	High	2462	-10.49	3.23	-13.72
802.11n 20 MHz Port 1	Low	2412	-8.646	3.23	-11.876
	Mid	2437	-9.912	3.23	-13.142
	High	2462	-10.38	3.23	-13.61
802.11n 20 MHz Port 2	Low	2412	-9.156	3.23	-12.386
	Mid	2437	-9.163	3.23	-12.393
	High	2462	-10.07	3.23	-13.3
802.11n 20 MHz Port 3	Low	2412	-9.905	3.23	-13.135
	Mid	2437	-10.17	3.23	-13.4
	High	2462	-9.15	3.23	-12.38
802.11n 20 MHz Sum Port 1-3	Low	2412	-4.43	3.23	-7.66
	Mid	2437	-4.96	3.23	-8.19
	High	2462	-5.06	3.23	-8.29
802.11n 40 MHz Port 1	Low	2422	-12.17	3.23	-15.4
	Mid	2437	-10	3.23	-13.23
	High	2452	-12.05	3.23	-15.28
802.11n 40 MHz Port 2	Low	2422	-10.44	3.23	-13.67
	Mid	2437	-12.03	3.23	-15.26
	High	2452	-12.07	3.23	-15.3
802.11n 40 MHz Port 3	Low	2422	-11.02	3.23	-14.25
	Mid	2437	-12.13	3.23	-15.36
	High	2452	-9.83	3.23	-13.06
802.11n 40 MHz Sum Port 1-3	Low	2412	-6.38	3.23	-9.61
	Mid	2437	-6.50	3.23	-9.73
	High	2462	-6.41	3.23	-9.64

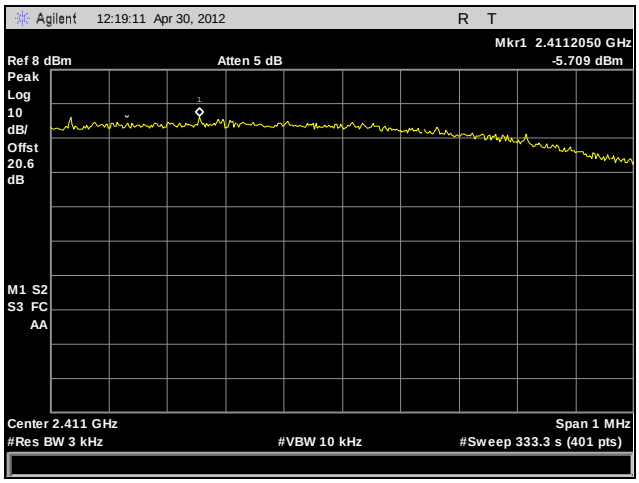
Table 31. Peak Power Spectral Density, Test Results, 2.4 GHz

Peak Power Spectral Density Test Results, 5 GHz

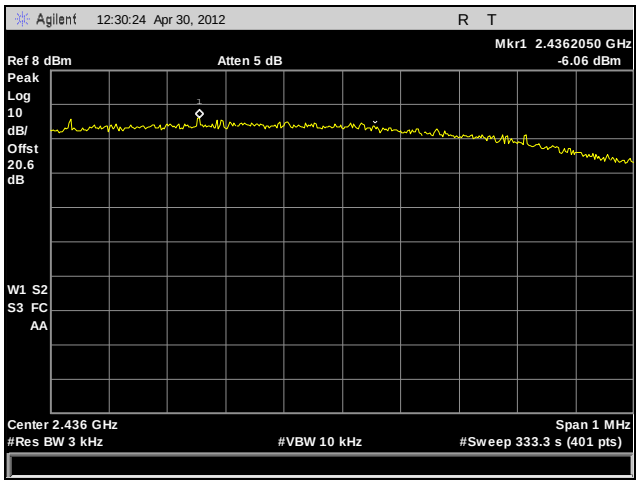
Peak Power Spectral Density					
Mode	**Carrier**	**Frequency**	**Measured PPSD**	**Limit**	**Margin**
	Channel	**(MHz)**	**(dBm)**	**(dBm)**	**(dB)**
802.11a	Low	5745	-9.098	6.23	-15.328
	Mid	5785	-9.417	6.23	-15.647
	High	5825	-9.003	6.23	-15.233
802.11n 20 MHz Port 1	Low	5745	-8.703	6.23	-14.933
	Mid	5785	-10.33	6.23	-16.56
	High	5825	-9.07	6.23	-15.3
802.11n 20 MHz Port 2	Low	5745	-8.394	6.23	-14.624
	Mid	5785	-9.495	6.23	-15.725
	High	5825	-9.103	6.23	-15.333
802.11n 20 MHz Port 3	Low	5745	-9.004	6.23	-15.234
	Mid	5785	-9.702	6.23	-15.932
	High	5825	-8.788	6.23	-15.018
802.11n 20 MHz Sum Port 1-3	Low	5745	-3.92	6.23	-10.15
	Mid	5785	-5.06	6.23	-11.29
	High	5825	-4.21	6.23	-10.44
802.11n 40 MHz Port 1	Low	5755	-11.16	6.23	-17.39
	High	5795	-12.19	6.23	-18.42
802.11n 40 MHz Port 2	Low	5755	-10.84	6.23	-17.07
	High	5795	-11.22	6.23	-17.45
802.11n 40 MHz Port 3	Low	5755	-8.746	6.23	-14.976
	High	5795	-11.47	6.23	-17.7
802.11n 40 MHz Sum Port 1-3	Low	5755	-5.34	6.23	-11.57
	High	5795	-6.84	6.23	-13.07

Table 32. Peak Power Spectral Density, Test Results, 5 GHz

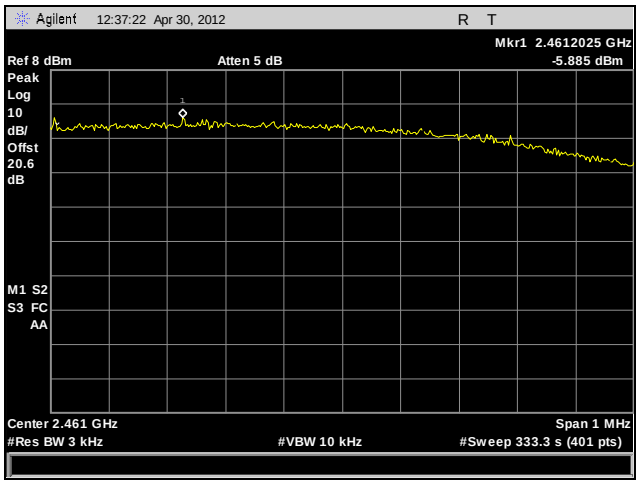
Peak Power Spectral Density, 802.11b, 2.4 GHz



Plot 559. Peak Power Spectral Density, Low Channel, 802.11b, 2.4 GHz

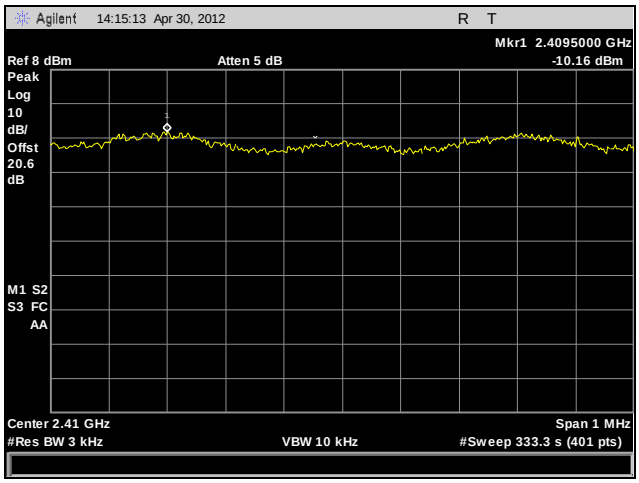


Plot 560. Peak Power Spectral Density, Mid Channel, 802.11b, 2.4 GHz

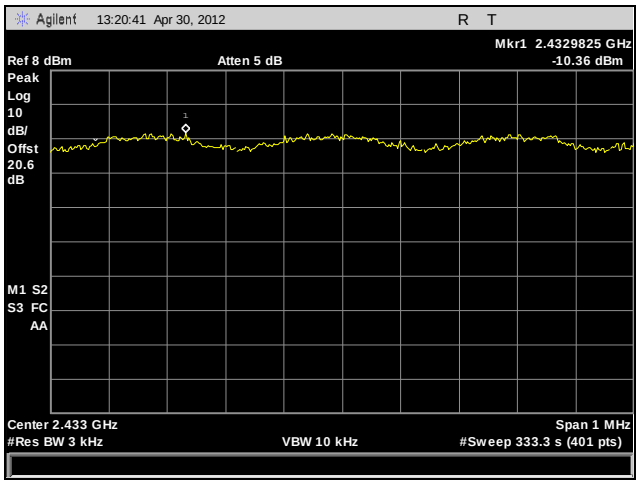


Plot 561. Peak Power Spectral Density, High Channel, 802.11b, 2.4 GHz

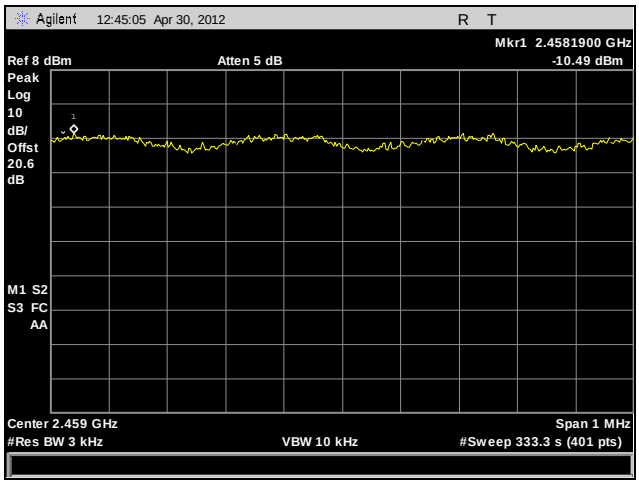
Peak Power Spectral Density, 802.11g, 2.4 GHz



Plot 562. Peak Power Spectral Density, Low Channel, 802.11g, 2.4 GHz

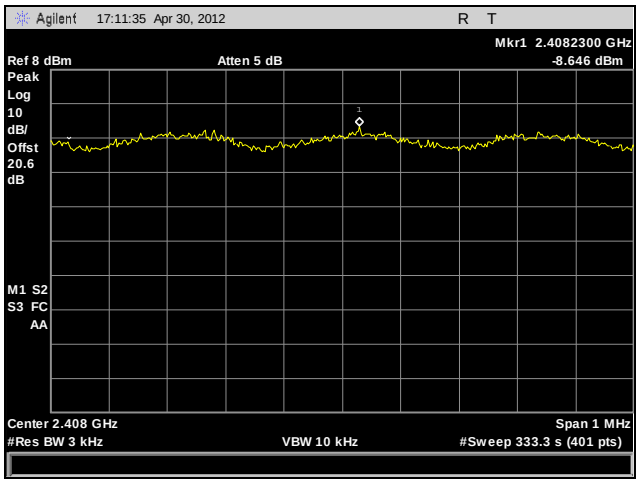


Plot 563. Peak Power Spectral Density, Mid Channel, 802.11g, 2.4 GHz

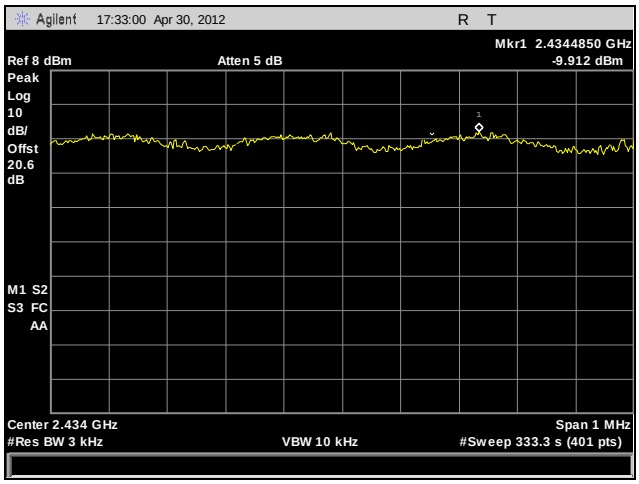


Plot 564. Peak Power Spectral Density, High Channel, 802.11g, 2.4 GHz

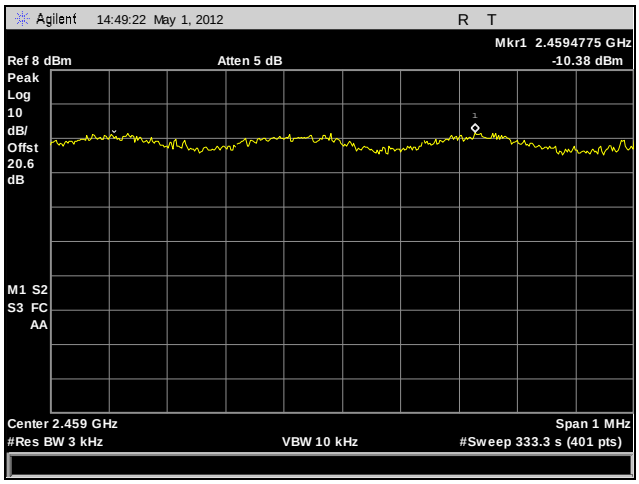
Peak Power Spectral Density, 802.11n HT20, Port 1, 2.4 GHz



Plot 565. Peak Power Spectral Density, Low Channel, 802.11n HT20, Port 1, 2.4 GHz

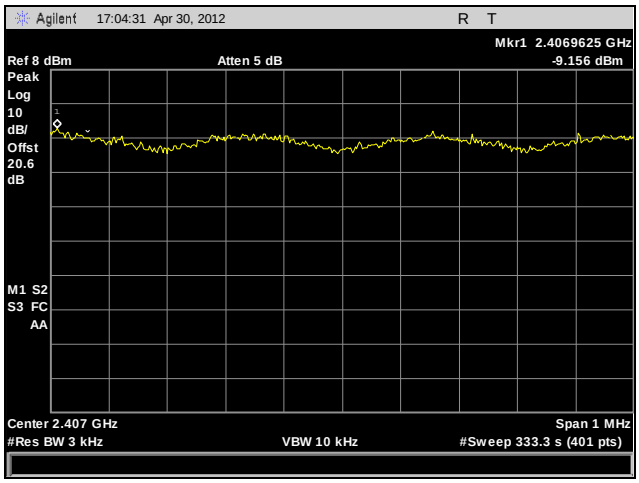


Plot 566. Peak Power Spectral Density, Mid Channel, 802.11n HT20, Port 1, 2.4 GHz

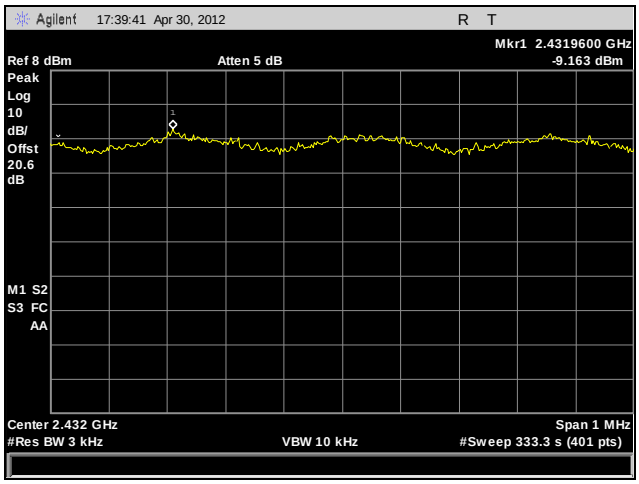


Plot 567. Peak Power Spectral Density, High Channel, 802.11n HT20, Port 1, 2.4 GHz

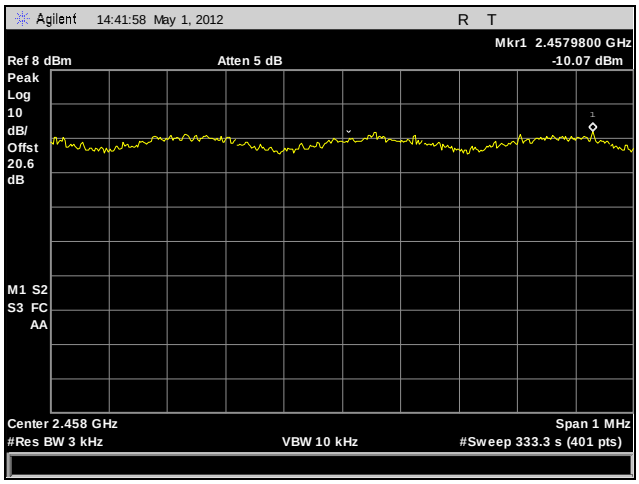
Peak Power Spectral Density, 802.11n HT20, Port 2, 2.4 GHz



Plot 568. Peak Power Spectral Density, Low Channel, 802.11n HT20, Port 2, 2.4 GHz

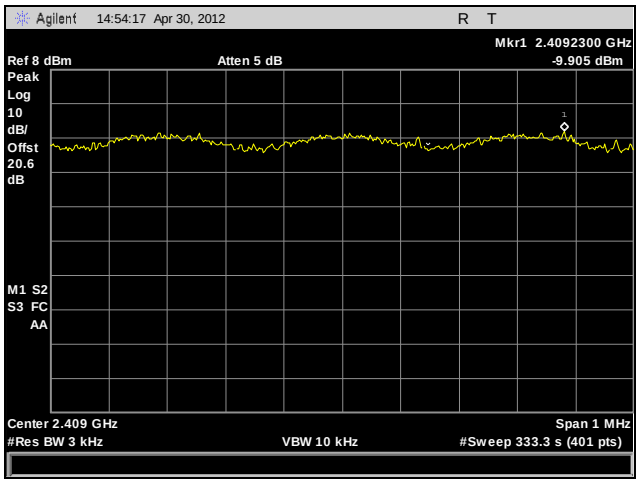


Plot 569. Peak Power Spectral Density, Mid Channel, 802.11n HT20, Port 2, 2.4 GHz

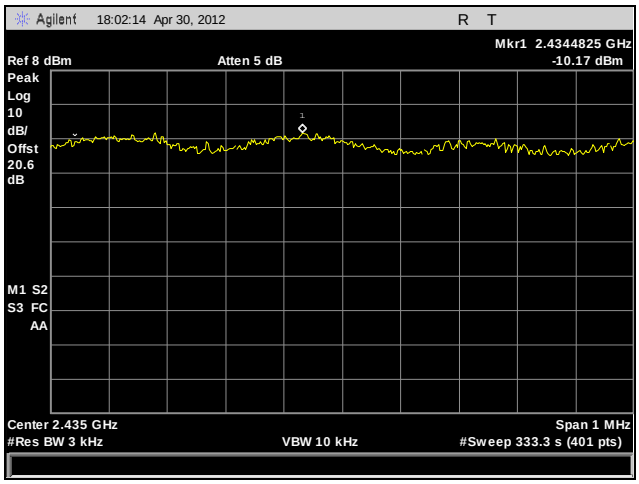


Plot 570. Peak Power Spectral Density, High Channel, 802.11n HT20, Port 2, 2.4 GHz

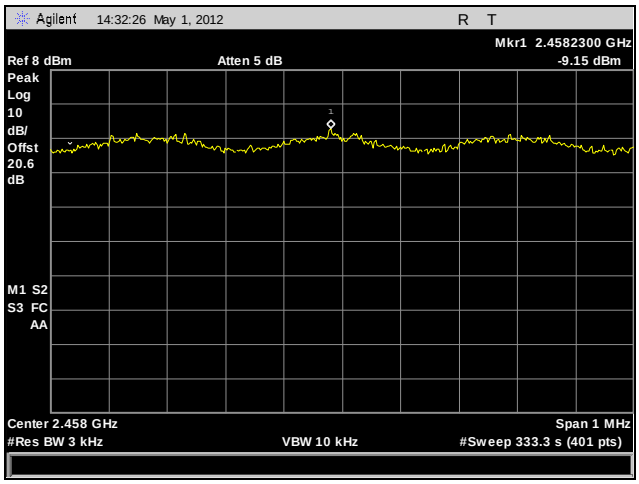
Peak Power Spectral Density, 802.11n HT20, Port 3, 2.4 GHz



Plot 571. Peak Power Spectral Density, Low Channel, 802.11n HT20, Port 3, 2.4 GHz

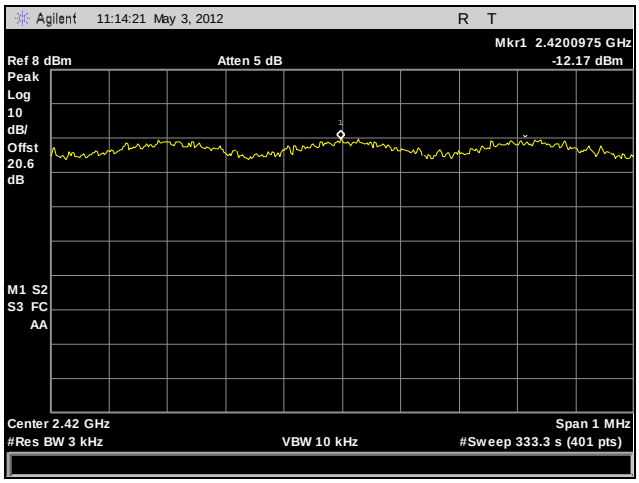


Plot 572. Peak Power Spectral Density, Mid Channel, 802.11n HT20, Port 3, 2.4 GHz

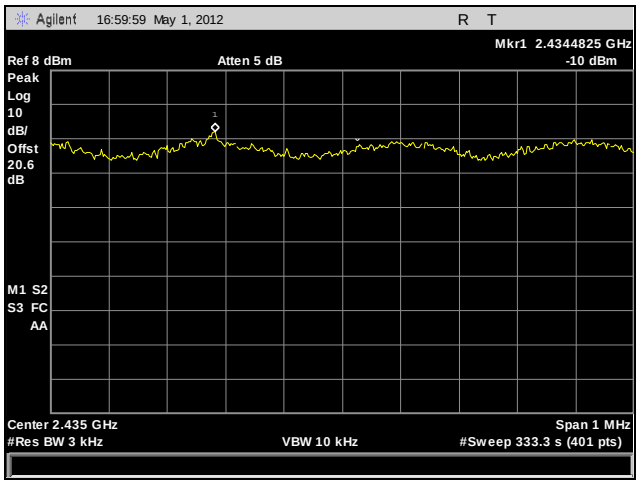


Plot 573. Peak Power Spectral Density, High Channel, 802.11n HT20, Port 3, 2.4 GHz

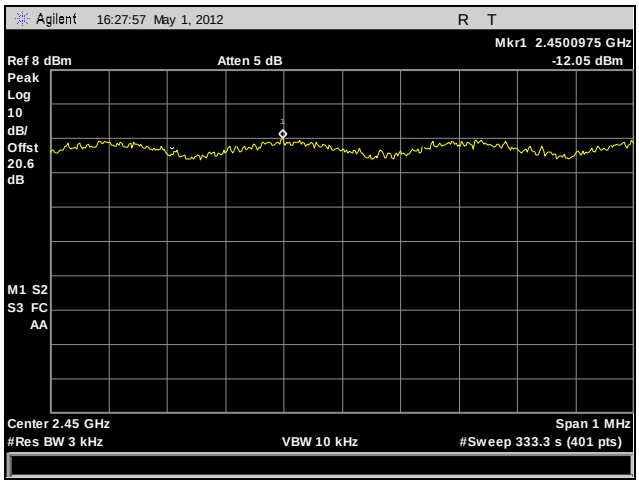
Peak Power Spectral Density, 802.11n HT40, Port 1, 2.4 GHz



Plot 574. Peak Power Spectral Density, Low Channel, 802.11n HT40, Port 1, 2.4 GHz

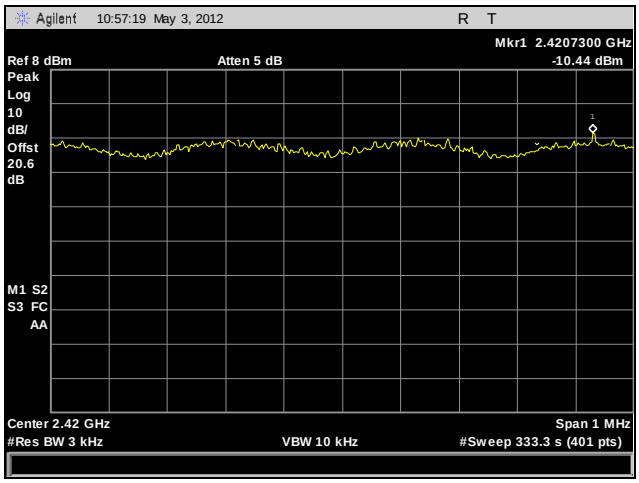


Plot 575. Peak Power Spectral Density, Mid Channel, 802.11n HT40, Port 1, 2.4 GHz

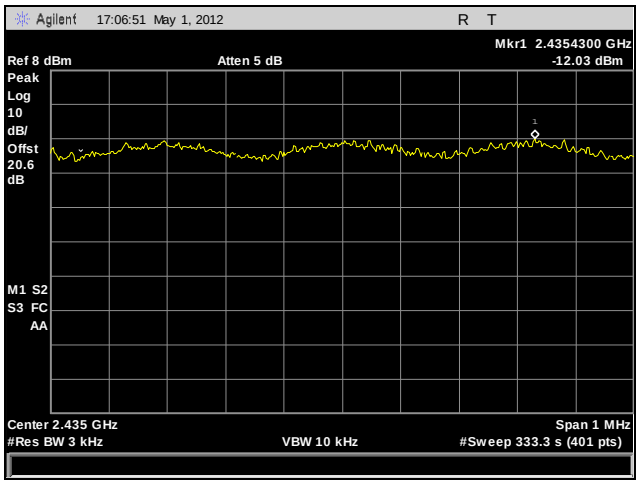


Plot 576. Peak Power Spectral Density, High Channel, 802.11n HT40, Port 1, 2.4 GHz

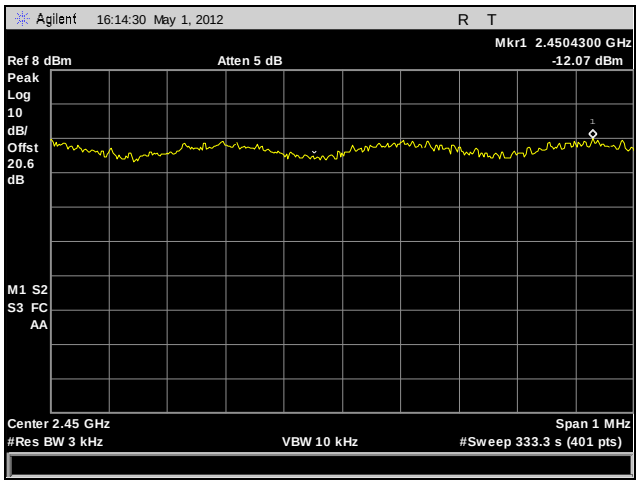
Peak Power Spectral Density, 802.11n HT40, Port 2, 2.4 GHz



Plot 577. Peak Power Spectral Density, Low Channel, 802.11n HT40, Port 2, 2.4 GHz

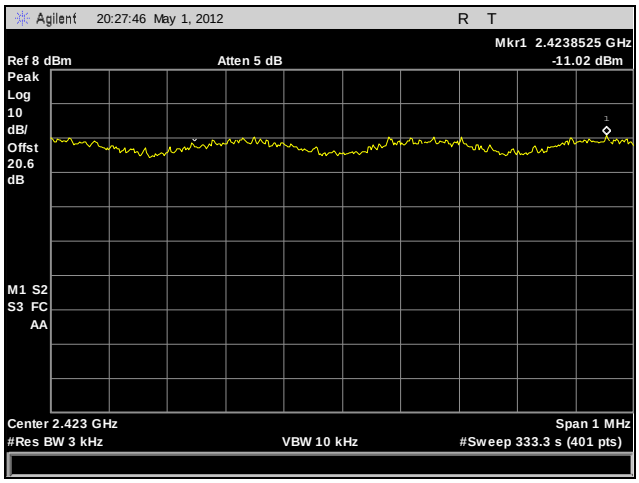


Plot 578. Peak Power Spectral Density, Mid Channel, 802.11n HT40, Port 2, 2.4 GHz

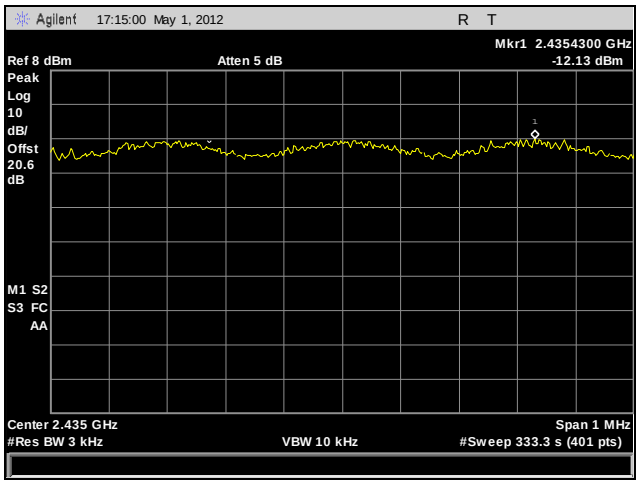


Plot 579. Peak Power Spectral Density, High Channel, 802.11n HT40, Port 2, 2.4 GHz

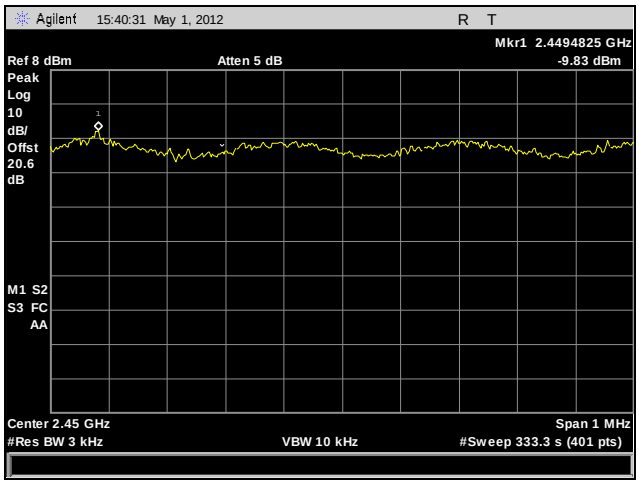
Peak Power Spectral Density, 802.11n HT40, Port 3, 2.4 GHz



Plot 580. Peak Power Spectral Density, Low Channel, 802.11n HT40, Port 3, 2.4 GHz

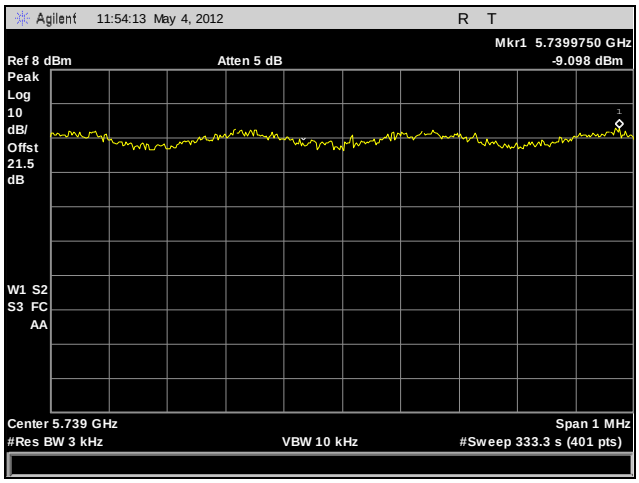


Plot 581. Peak Power Spectral Density, Mid Channel, 802.11n HT40, Port 3, 2.4 GHz

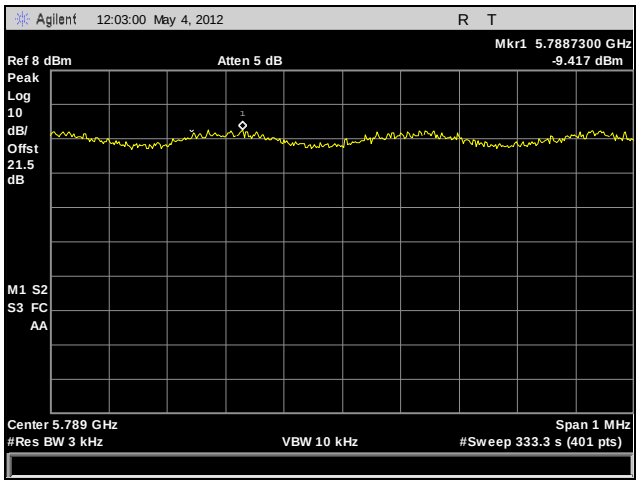


Plot 582. Peak Power Spectral Density, High Channel, 802.11n HT40, Port 3, 2.4 GHz

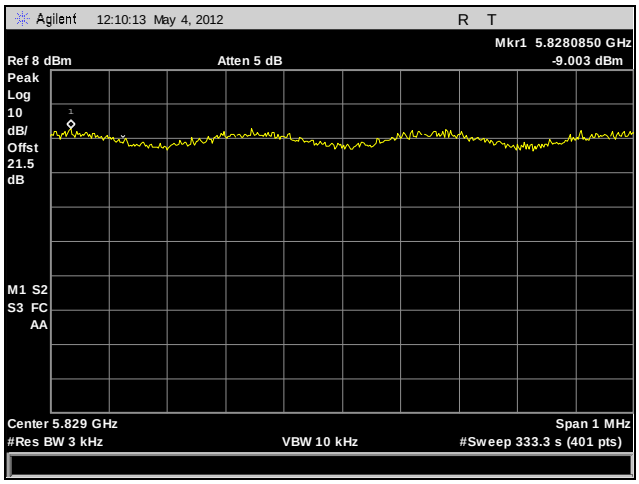
Peak Power Spectral Density, 802.11a, 5 GHz



Plot 583. Peak Power Spectral Density, Low Channel, 802.11a, 5 GHz

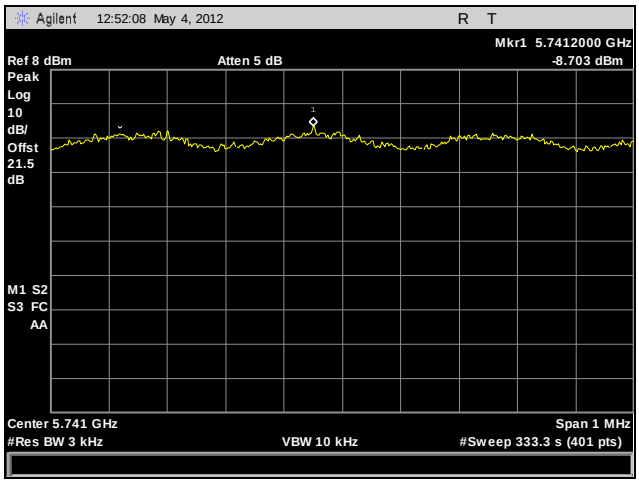


Plot 584. Peak Power Spectral Density, Mid Channel, 802.11a, 5 GHz

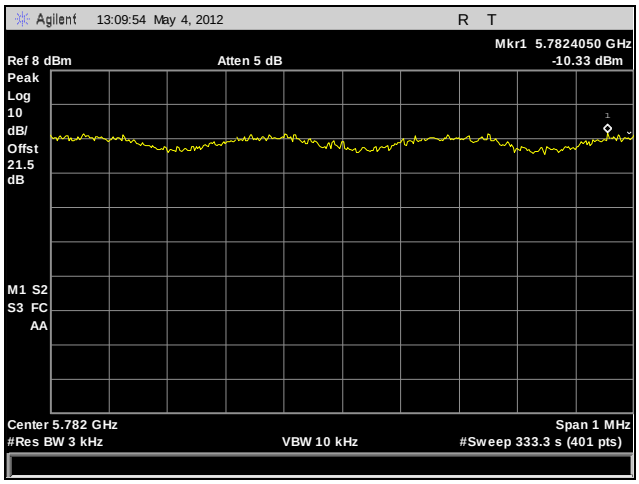


Plot 585. Peak Power Spectral Density, High Channel, 802.11a, 5 GHz

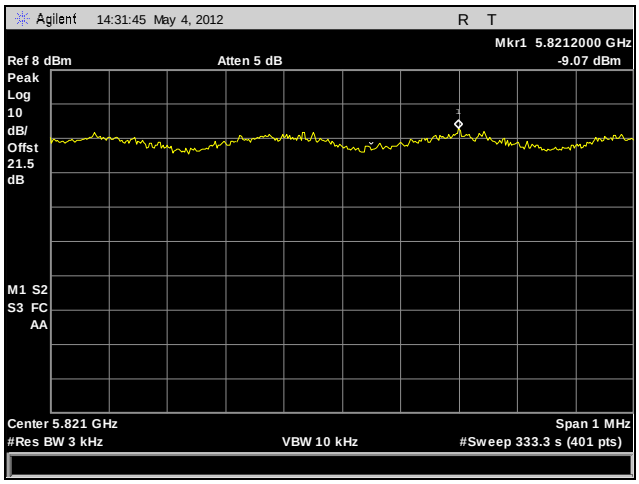
Peak Power Spectral Density, 802.11n HT20, Port 1, 5 GHz



Plot 586. Peak Power Spectral Density, Low Channel, 802.11n HT20, Port 1, 5 GHz

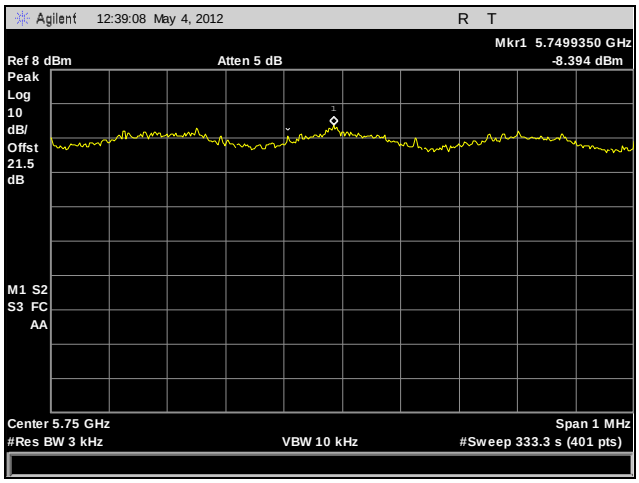


Plot 587. Peak Power Spectral Density, Mid Channel, 802.11n HT20, Port 1, 5 GHz

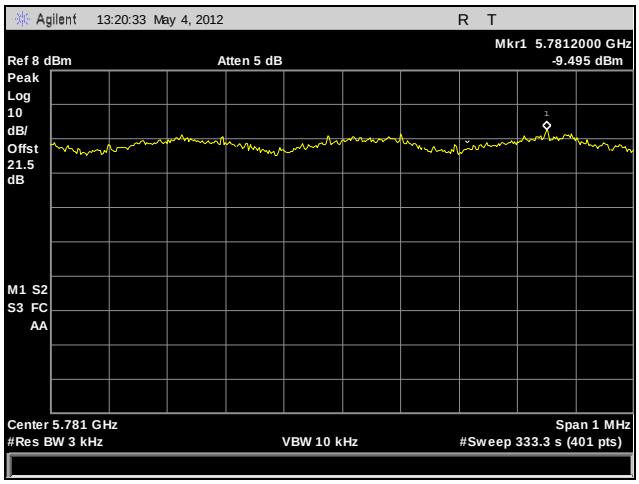


Plot 588. Peak Power Spectral Density, High Channel, 802.11n HT20, Port 1, 5 GHz

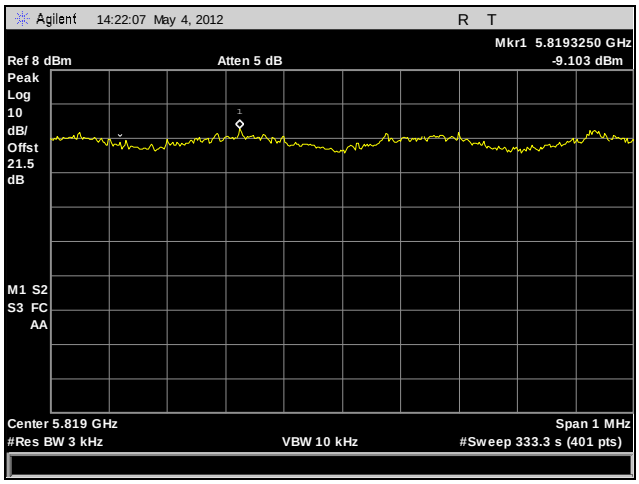
Peak Power Spectral Density, 802.11n HT20, Port 2, 5 GHz



Plot 589. Peak Power Spectral Density, Low Channel, 802.11n HT20, Port 2, 5 GHz

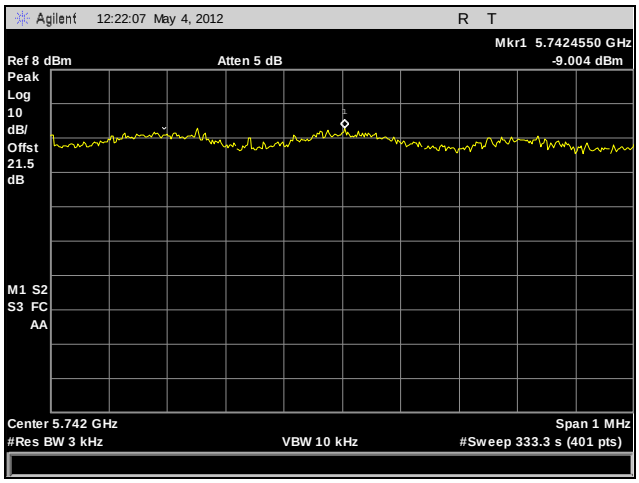


Plot 590. Peak Power Spectral Density, Mid Channel, 802.11n HT20, Port 2, 5 GHz

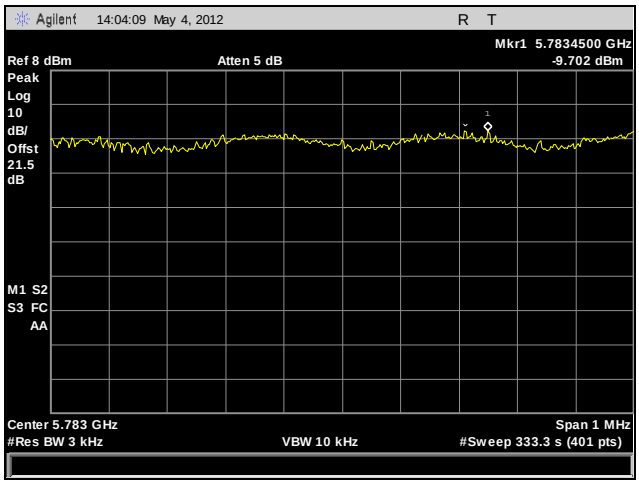


Plot 591. Peak Power Spectral Density, High Channel, 802.11n HT20, Port 2, 5 GHz

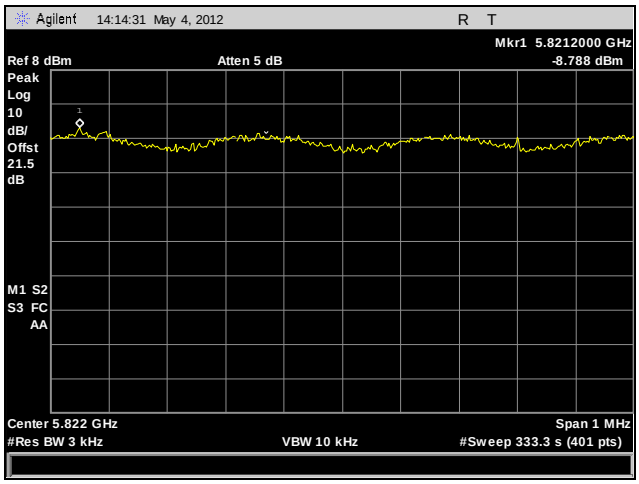
Peak Power Spectral Density, 802.11n HT20, Port 3, 5 GHz



Plot 592. Peak Power Spectral Density, Low Channel, 802.11n HT20, Port 3, 5 GHz

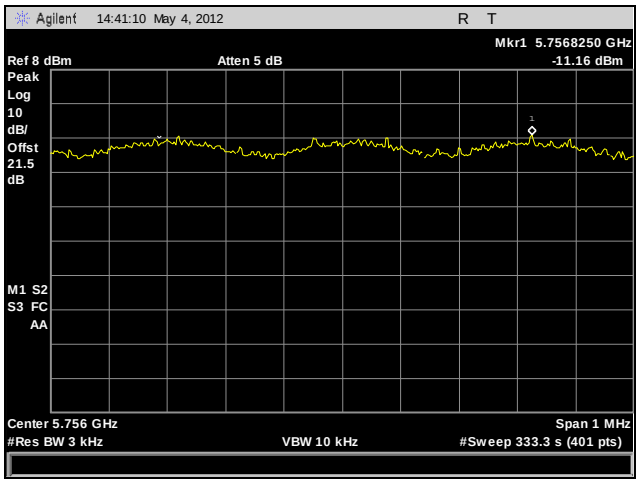


Plot 593. Peak Power Spectral Density, Mid Channel, 802.11n HT20, Port 3, 5 GHz

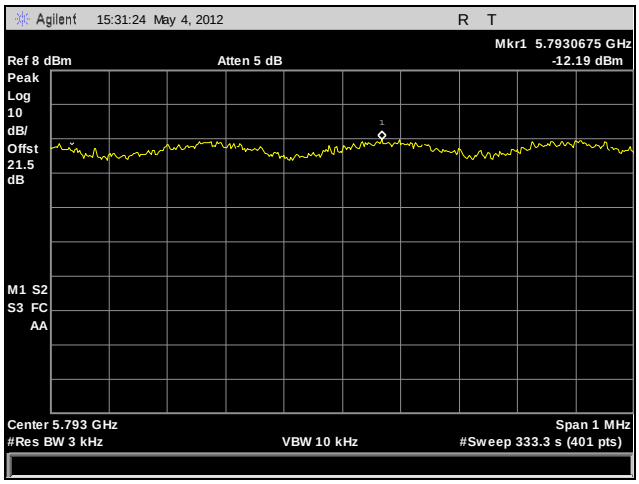


Plot 594. Peak Power Spectral Density, High Channel, 802.11n HT20, Port 3, 5 GHz

Peak Power Spectral Density, 802.11n HT40, Port 1, 5 GHz

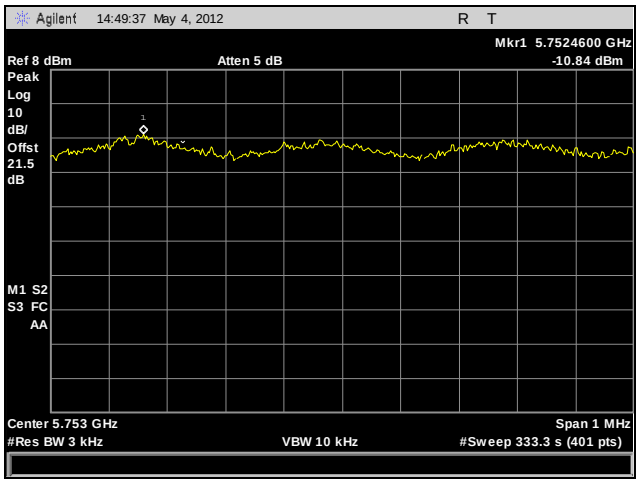


Plot 595. Peak Power Spectral Density, Low Channel, 802.11n HT40, Port 1, 5 GHz

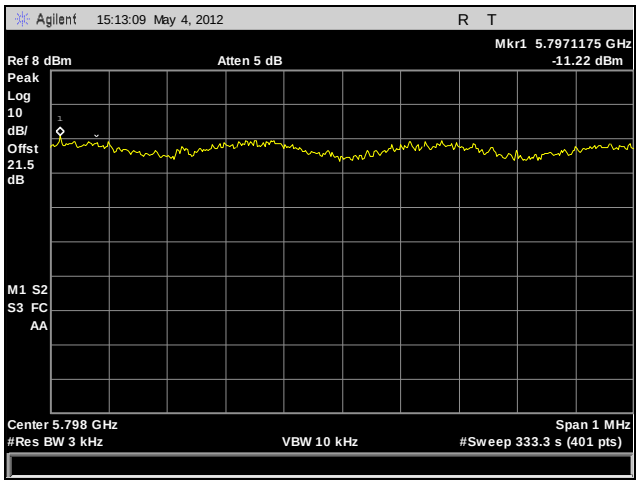


Plot 596. Peak Power Spectral Density, High Channel, 802.11n HT40, Port 1, 5 GHz

Peak Power Spectral Density, 802.11n HT40, Port 2, 5 GHz

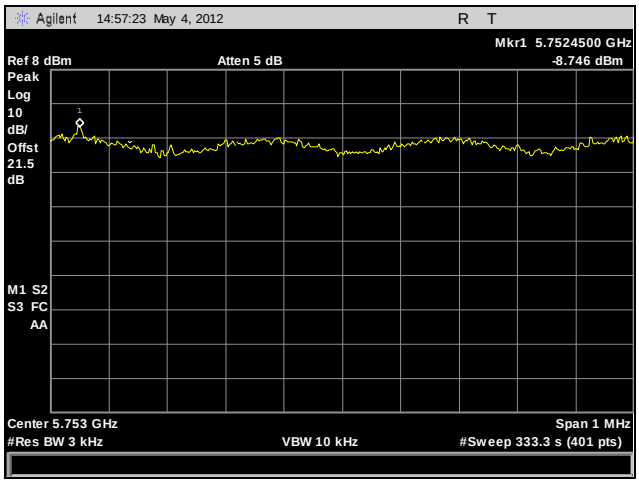


Plot 597. Peak Power Spectral Density, Low Channel, 802.11n HT40, Port 2, 5 GHz

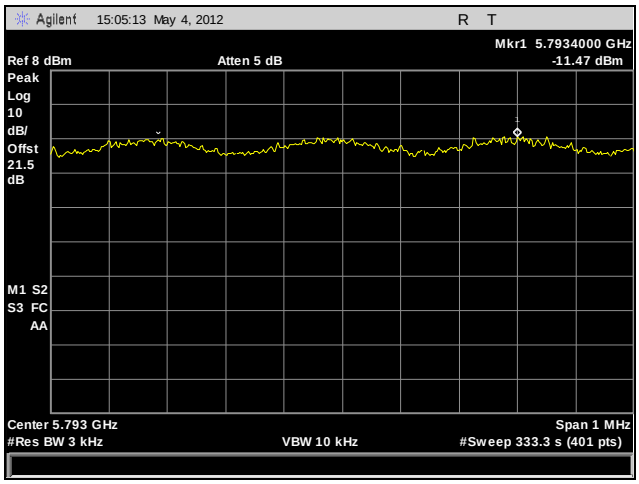


Plot 598. Peak Power Spectral Density, High Channel, 802.11n HT40, Port 2, 5 GHz

Peak Power Spectral Density, 802.11n HT40, Port 3, 5 GHz



Plot 599. Peak Power Spectral Density, Low Channel, 802.11n HT40, Port 3, 5 GHz



Plot 600. Peak Power Spectral Density, High Channel, 802.11n HT40, Port 3, 5 GHz

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; highest conducted power = *25.17dBm* (peak) therefore, **Limit for Uncontrolled exposure: 1 mW/cm^2 or 10 W/m^2**

EUT maximum antenna gain = *3 x 6 dBi per element. Total Gain = 10.77dBi*

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

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

where, S = Power Density (1 mW/cm^2)
P = Power Input to antenna (328.85mW)
G = Antenna Gain (11.94 numeric)

$S = (328.85*11.94 / 4*3.14*20^{2)} = (3926.47 / 5024) = 0.782$ mW/cm^2

MPE Limit Calculation: EUT's operating frequencies @ 5725-5850 MHz; highest conducted power = *21.17dBm* (peak) therefore, **Limit for Uncontrolled exposure: 1 mW/cm^2 or 10 W/m^2**

EUT maximum antenna gain = *3 x 7 dBi per element. Total Gain = 11.77dBi*

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

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

where, S = Power Density (1 mW/cm^2)
P = Power Input to antenna (130.92mW)
G = Antenna Gain (15.03 numeric)

$S = (130.02*15.03 / 4*3.14*20^{2)} = (1967.89 / 5024) = 0.392$ mW/cm^2

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 33.

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

Table 33. 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. 100 kHz resolution bandwidth was used from 30 MHz - 1 GHz and 300 kHz 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): Lionel Gabrillo

Test Date(s): 04/27/12

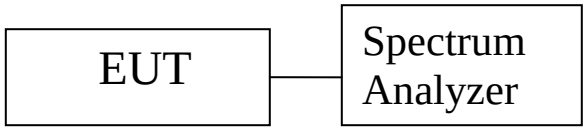
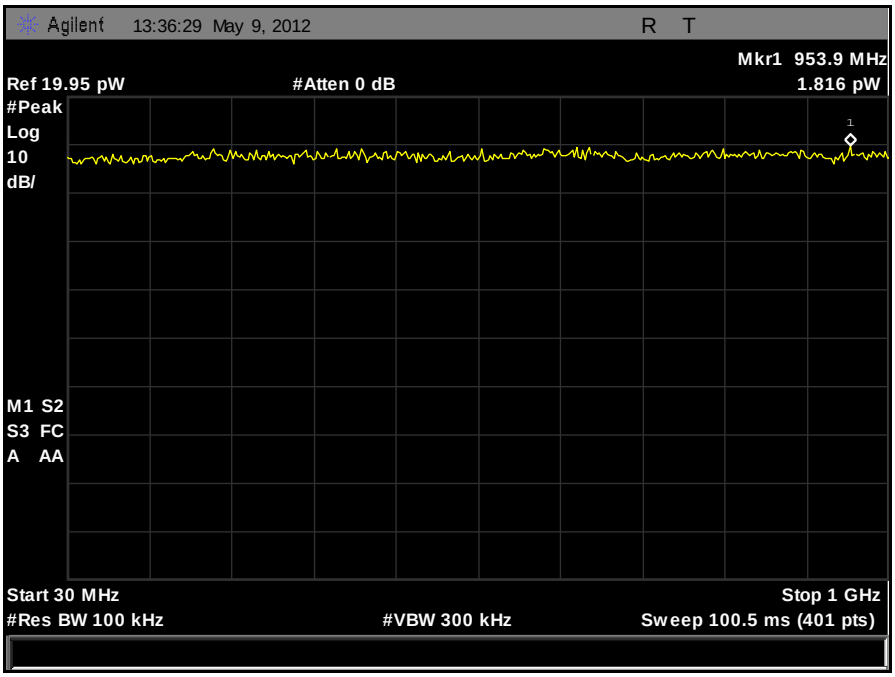
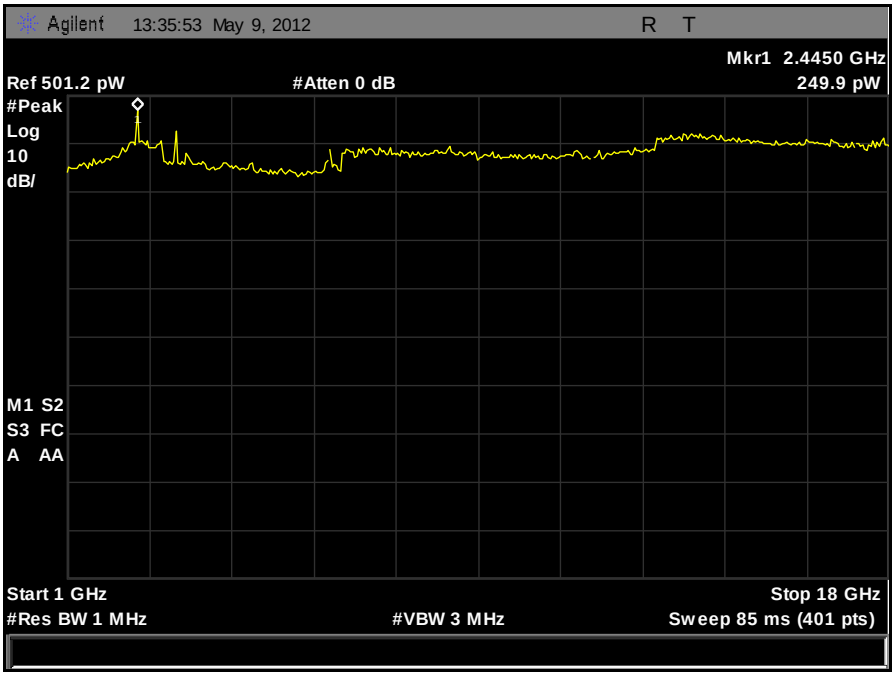


Figure 6. Block Diagram, Conducted Receiver Spurious Emissions Test Setup

Conducted Receiver Spurious Emissions, Port 1

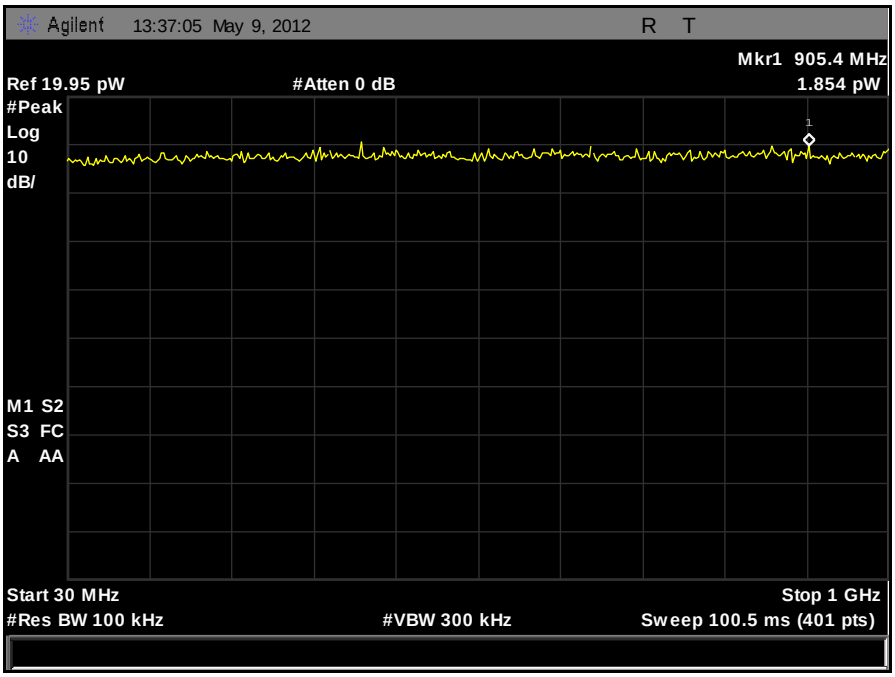


Plot 601. Receiver Spurious Emission, 30 MHz – 1 GHz, Port 1

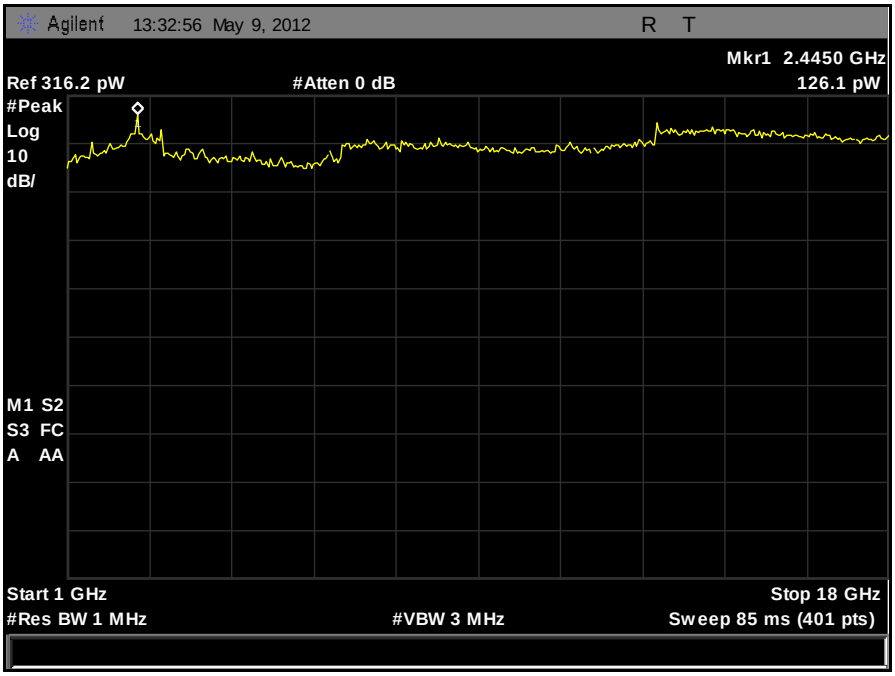


Plot 602. Receiver Spurious Emission, 1 – 18 GHz, Port 1

Conducted Receiver Spurious Emissions, Port 2

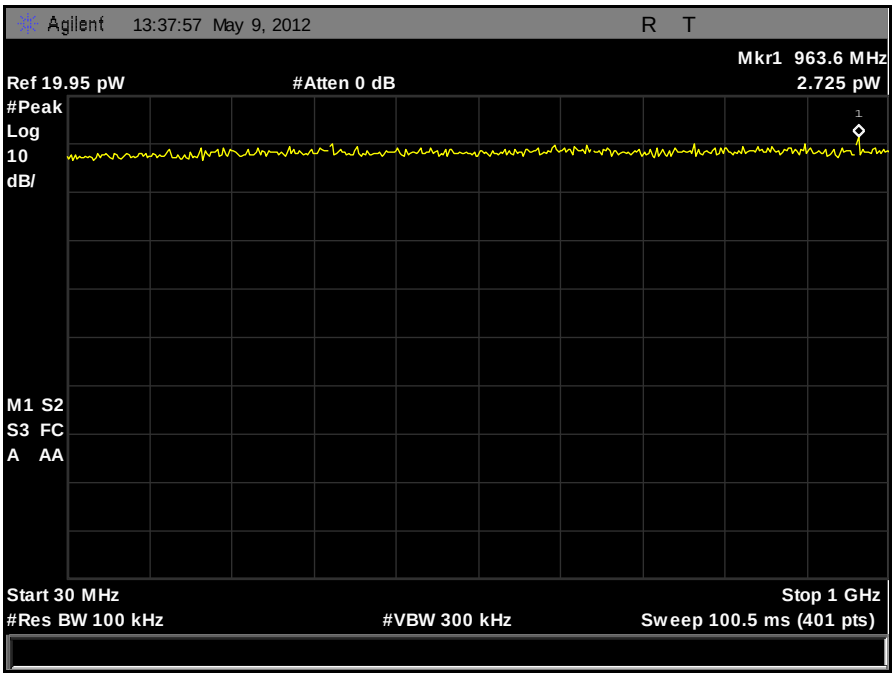


Plot 603. Receiver Spurious Emission, 30 MHz – 1 GHz, Port 2

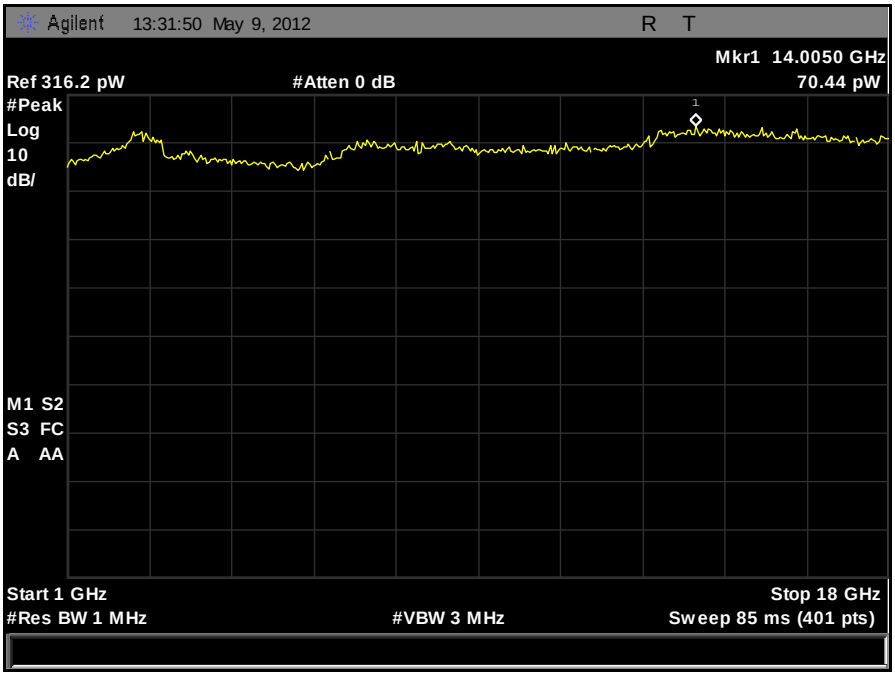


Plot 604. Receiver Spurious Emission, 1 – 18 GHz, Port 2

Conducted Receiver Spurious Emissions, Port 3



Plot 605. Receiver Spurious Emission, 30 MHz – 1 GHz, Port 3



Plot 606. Receiver Spurious Emission, 1 – 18 GHz, Port 3

IV. Test Equipment

Test Equipment

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

MET Asset #	Equipment	Manufacturer	Model	Last Cal Date	Cal Due Date
1S2603	HORN ANTENNA	ETS-LINDGREN	3117	05/09/2011	05/09/2012
1S2202	HORN ANTENNA	EMCO	3116	04/23/2010	04/23/2013
1S2460	ANALYZER, SPECTRUM	AGILENT	E4407B	07/12/2011	07/12/2012
1S2482	CHAMBER, 5 METER	PANASHIELD	641431	11/22/2011	11/22/2012
1S2583	SPECTRUM ANALYZER	AGILENT/HP	E4447A	3/27/2012	9/27/2013
1S2198	HORN ANTENNA	EMCO	3115	9/29/2011	9/29/2012
1S2485	BILOG ANTENNA	TESEQ	CBL6112D	5/17/2011	5/17/2012

Table 34. Test Equipment List

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

V. Certification & User's Manual Information

Certification & User's Manual Information

A. Certification Information

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

§ 2.801 Radio-frequency device defined.

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

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

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

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

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

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

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

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

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

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

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

(i) Compliance testing;

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

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

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

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

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

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

Certification & User's Manual Information

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

§ 2.901 Basis and Purpose

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

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

§ 2.907 Certification.

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

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

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

Certification & User's Manual Information

§ 2.948 Description of measurement facilities.

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

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

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

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

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

Certification & User's Manual Information

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

Verification & User's Manual Information

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

§ 15.105 Information to the user.

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

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

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

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

– Reorient or relocate the receiving antenna.

– Increase the separation between the equipment and receiver.

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

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

ICES-003 Procedural & Labeling Requirements

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

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

Procedural Requirements:

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

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

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

Labeling Requirements:

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

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

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

End of Report

