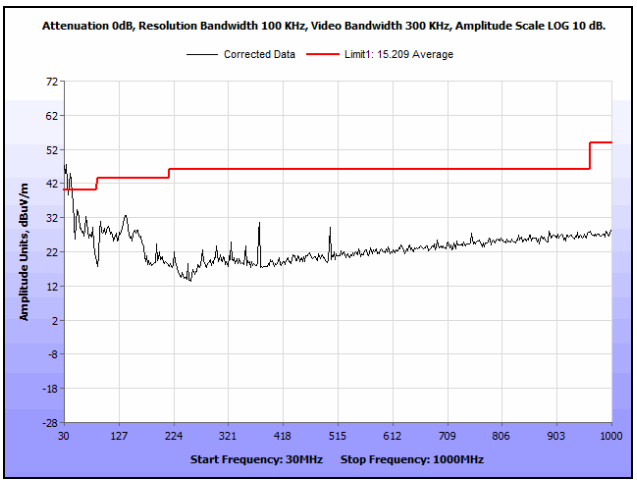
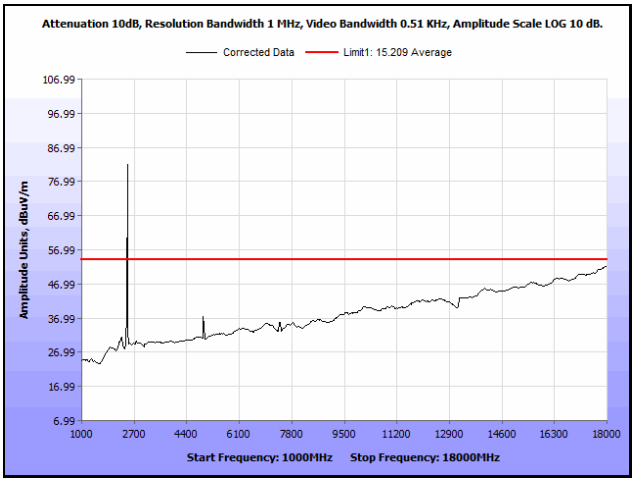
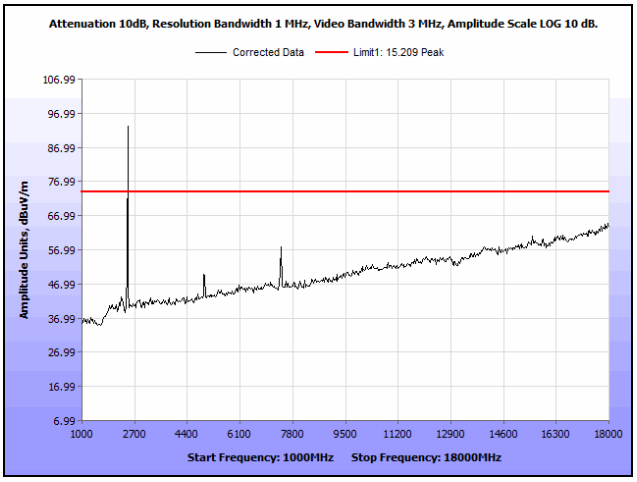


Plot 297. Radiated Spurious Emissions, High Channel, 20 MHz, 24 dBi Antenna, 30 MHz - 1 GHz

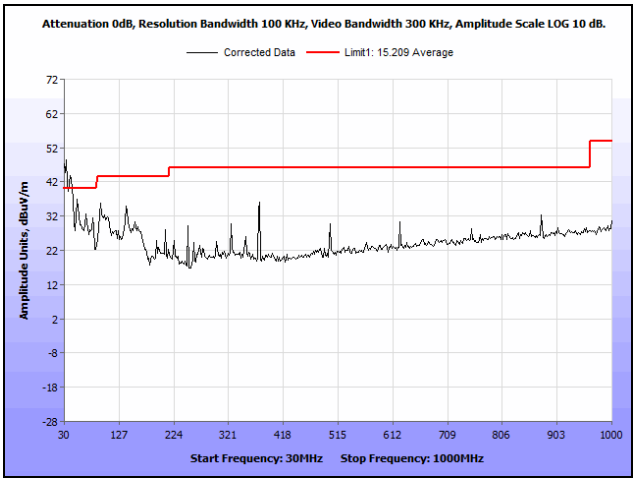


Plot 298. Radiated Spurious Emissions, High Channel, 20 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Average

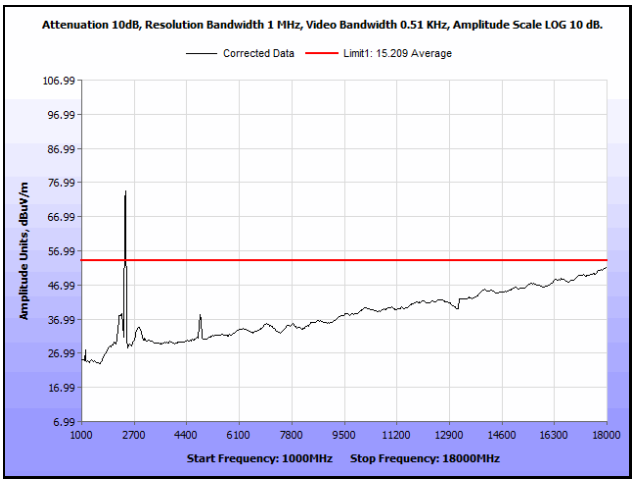


Plot 299. Radiated Spurious Emissions, High Channel, 20 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Peak

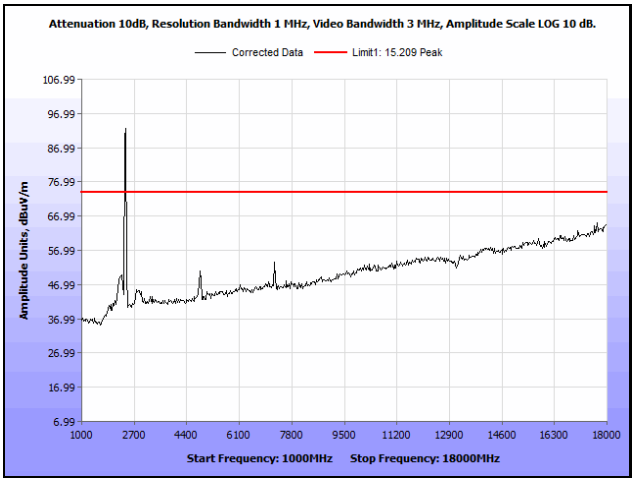
Radiated Spurious Emissions Test Results, 28 MHz, 24 dBi Antenna



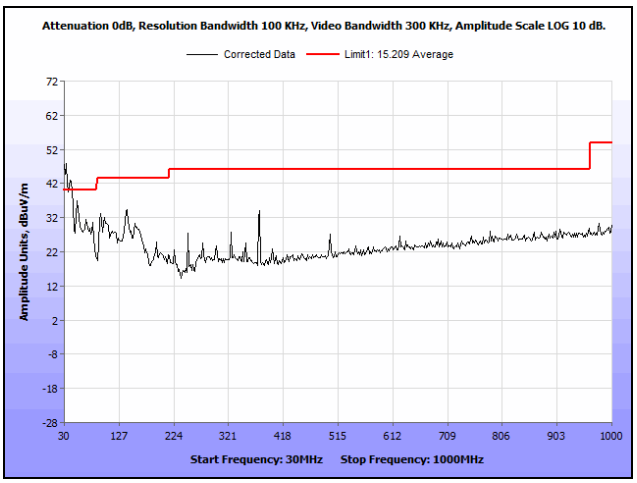
Plot 300. Radiated Spurious Emissions, Low Channel, 28 MHz, 24 dBi Antenna, 30 MHz - 1 GHz



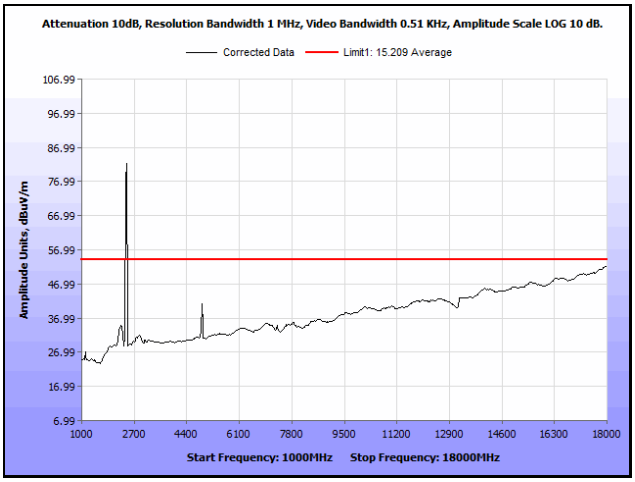
Plot 301. Radiated Spurious Emissions, Low Channel, 28 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Average



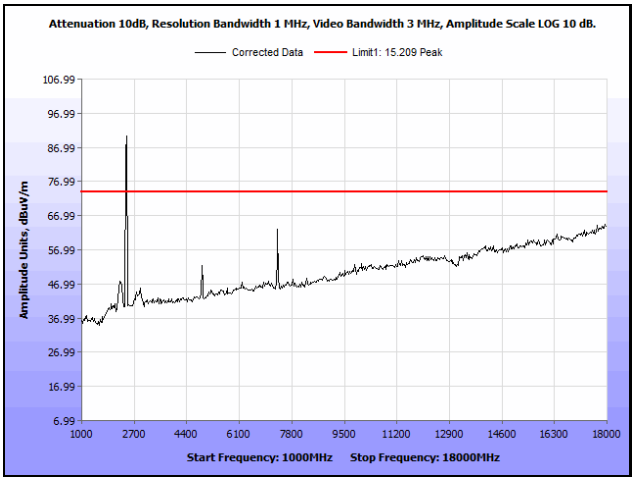
Plot 302. Radiated Spurious Emissions, Low Channel, 28 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Peak



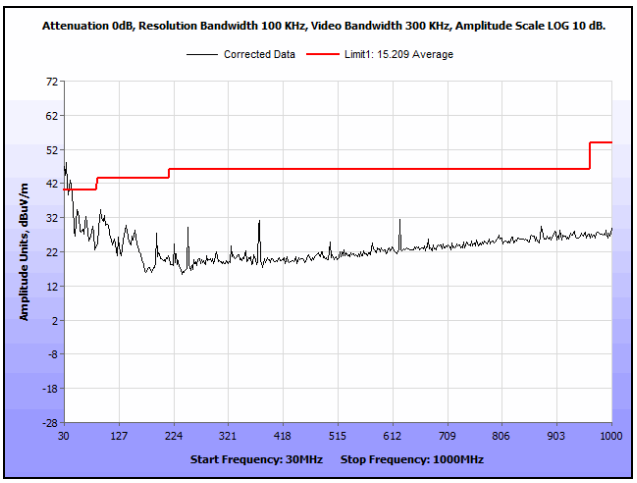
Plot 303. Radiated Spurious Emissions, Mid Channel, 28 MHz, 24 dBi Antenna, 30 MHz - 1 GHz



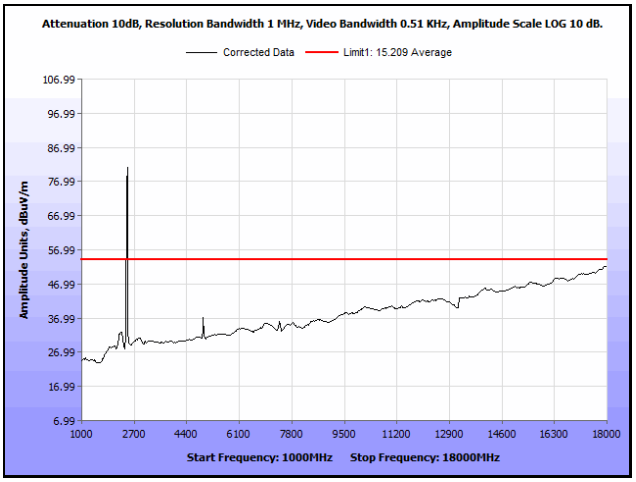
Plot 304. Radiated Spurious Emissions, Mid Channel, 28 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Average



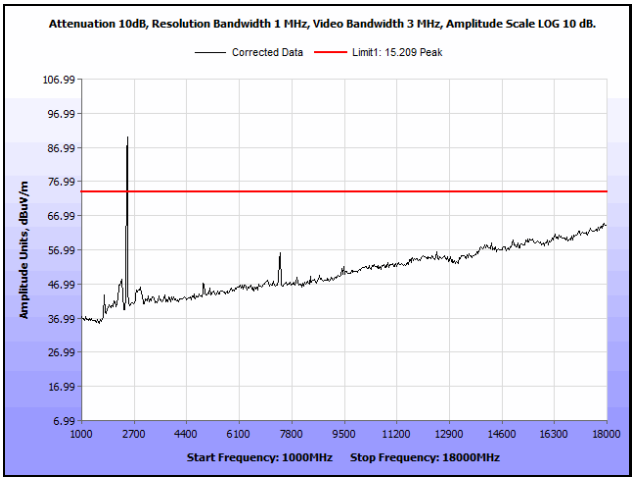
Plot 305. Radiated Spurious Emissions, Mid Channel, 28 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Peak



Plot 306. Radiated Spurious Emissions, High Channel, 28 MHz, 24 dBi Antenna, 30 MHz - 1 GHz

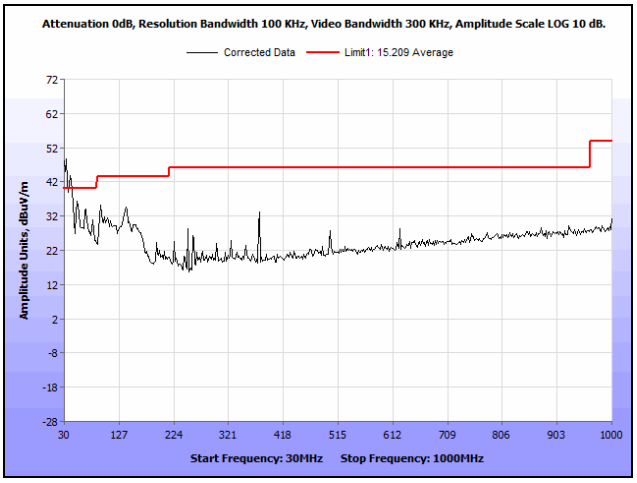


Plot 307. Radiated Spurious Emissions, High Channel, 28 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Average

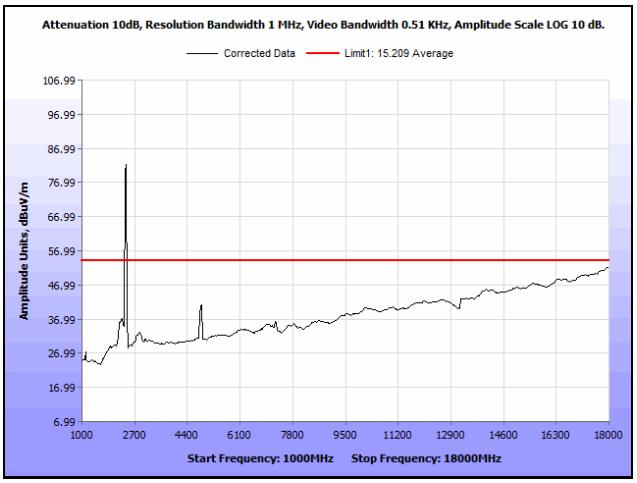


Plot 308. Radiated Spurious Emissions, High Channel, 28 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Peak

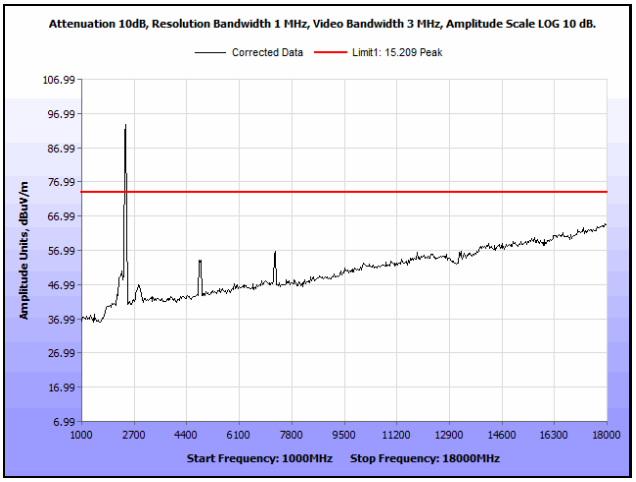
Radiated Spurious Emissions Test Results, 30 MHz, 24 dBi Antenna



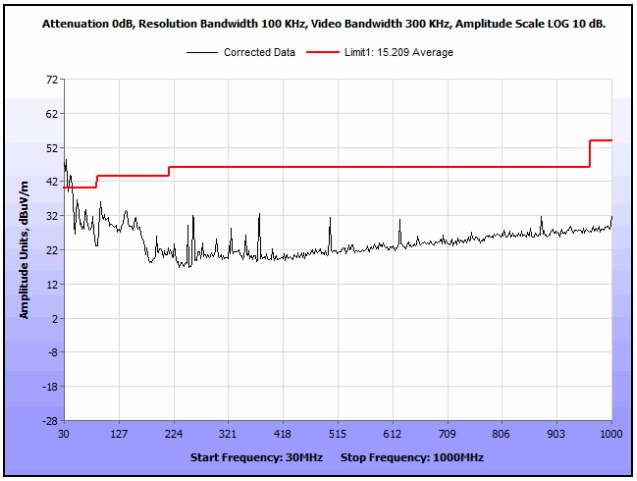
Plot 309. Radiated Spurious Emissions, Low Channel, 30 MHz, 24 dBi Antenna, 30 MHz - 1 GHz



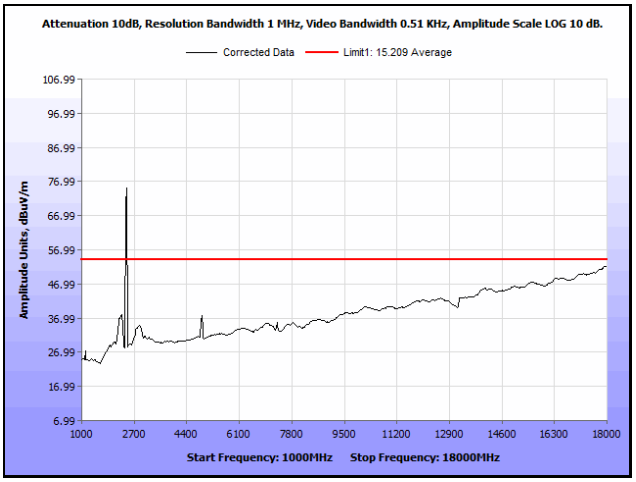
Plot 310. Radiated Spurious Emissions, Low Channel, 30 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Average



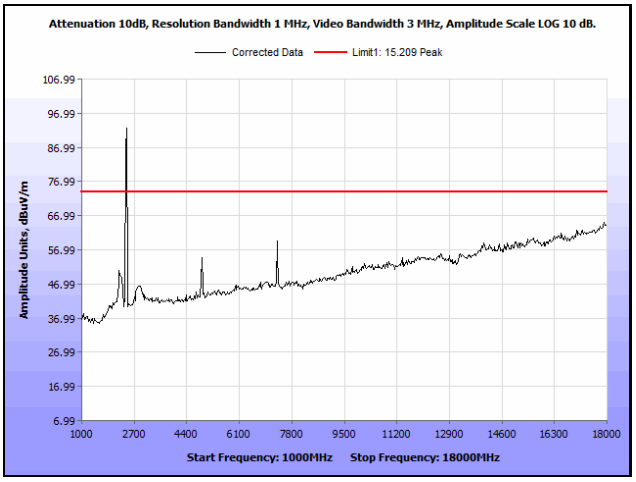
Plot 311. Radiated Spurious Emissions, Low Channel, 30 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Peak



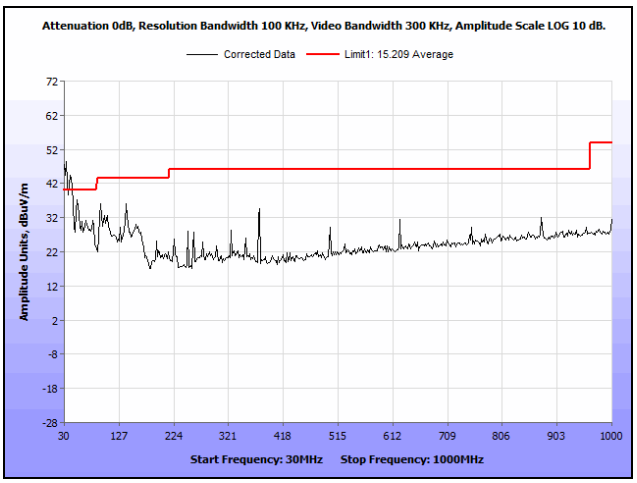
Plot 312. Radiated Spurious Emissions, Mid Channel, 30 MHz, 24 dBi Antenna, 30 MHz - 1 GHz



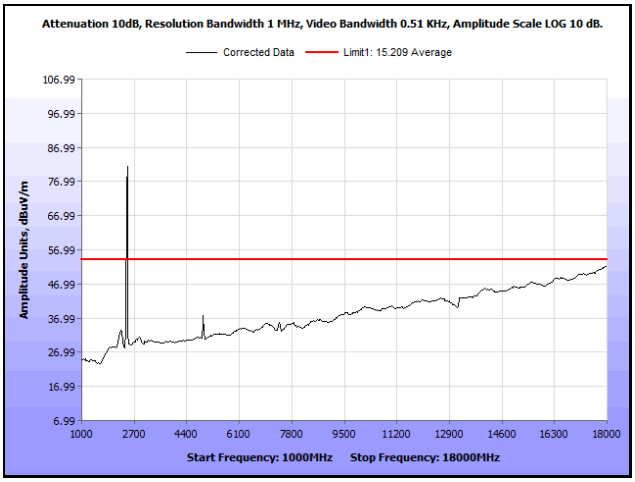
Plot 313. Radiated Spurious Emissions, Mid Channel, 30 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Average



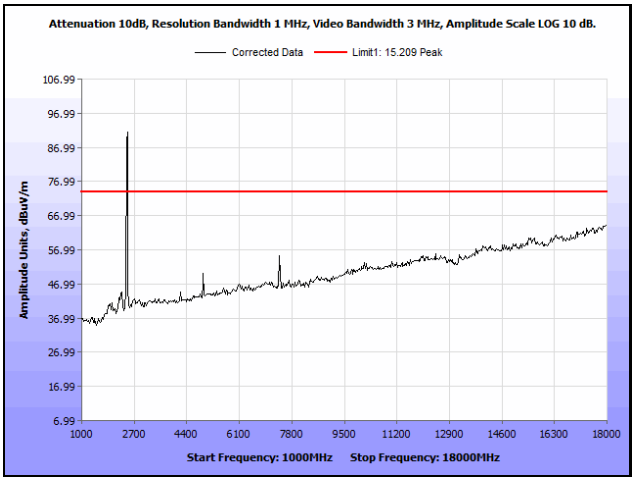
Plot 314. Radiated Spurious Emissions, Mid Channel, 30 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Peak



Plot 315. Radiated Spurious Emissions, High Channel, 30 MHz, 24 dBi Antenna, 30 MHz - 1 GHz

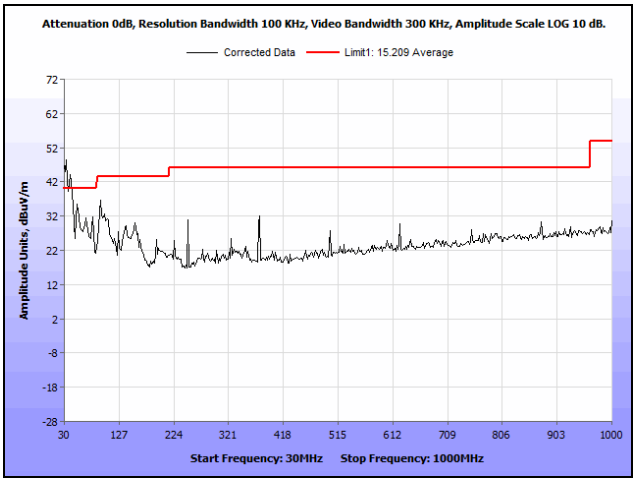


Plot 316. Radiated Spurious Emissions, High Channel, 30 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Average

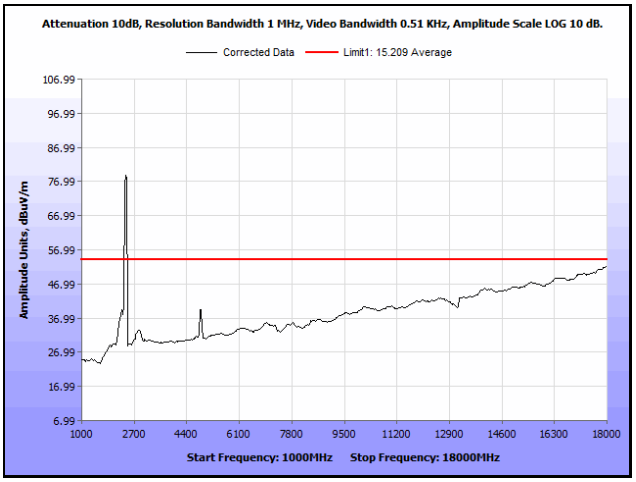


Plot 317. Radiated Spurious Emissions, High Channel, 30 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Peak

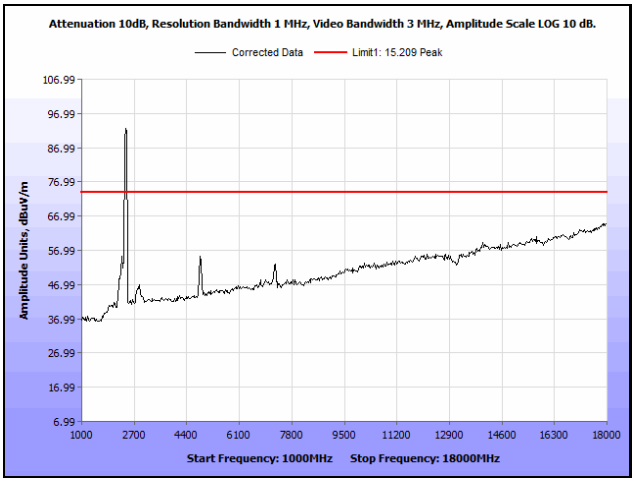
Radiated Spurious Emissions Test Results, 40 MHz, 24 dBi Antenna



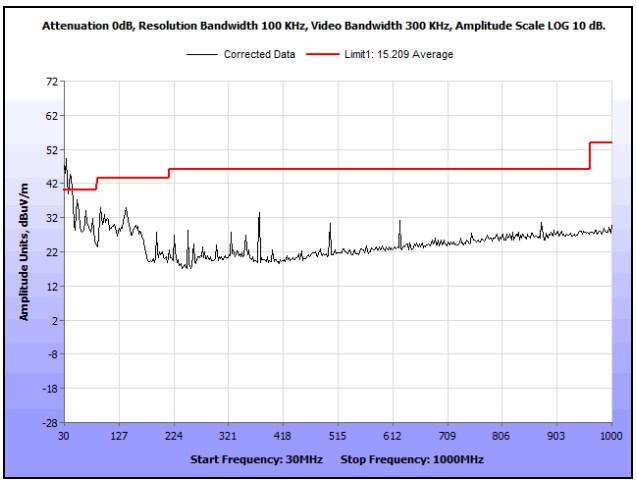
Plot 318. Radiated Spurious Emissions, Low Channel, 40 MHz, 24 dBi Antenna, 30 MHz - 1 GHz



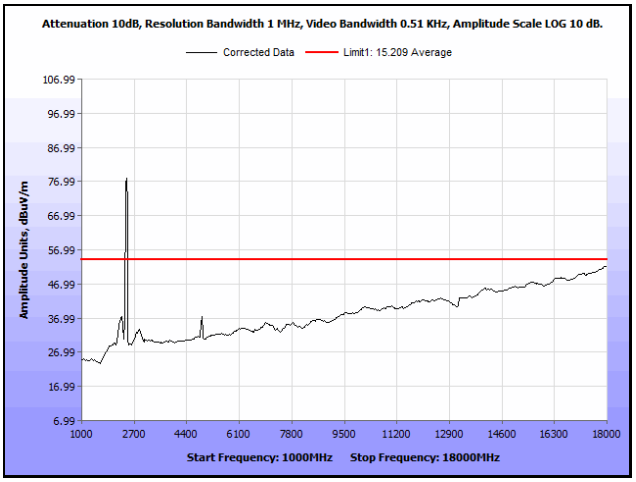
Plot 319. Radiated Spurious Emissions, Low Channel, 40 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Average



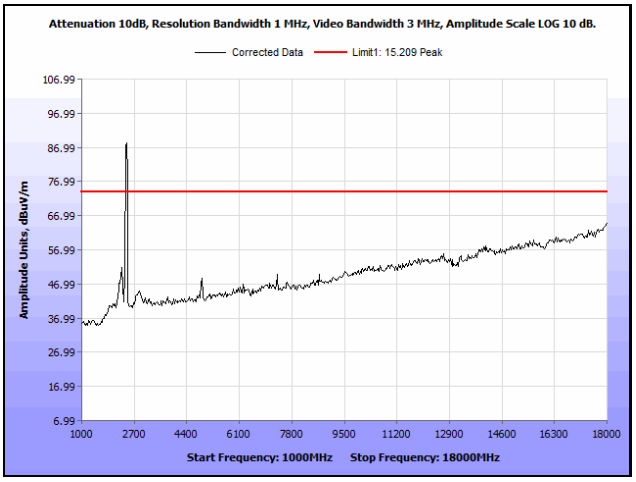
Plot 320. Radiated Spurious Emissions, Low Channel, 40 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Peak



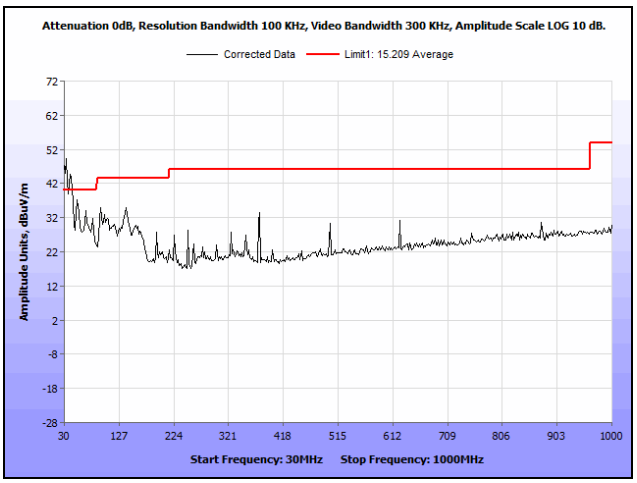
Plot 321. Radiated Spurious Emissions, Mid Channel, 40 MHz, 24 dBi Antenna, 30 MHz - 1 GHz



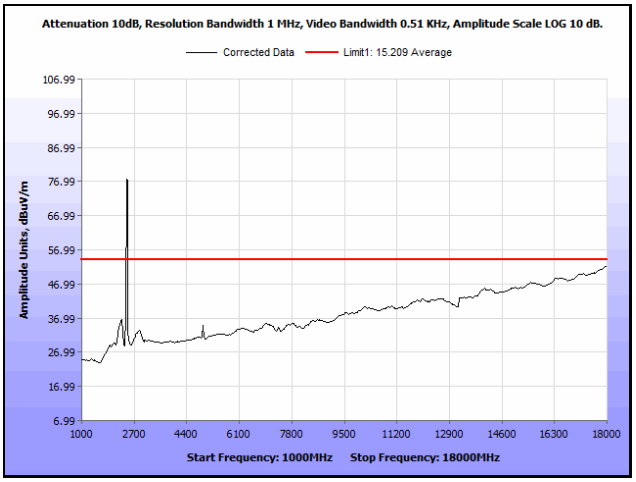
Plot 322. Radiated Spurious Emissions, Mid Channel, 40 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Average



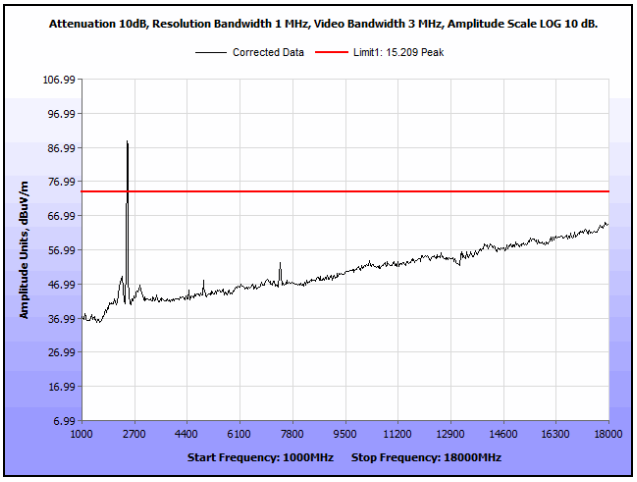
Plot 323. Radiated Spurious Emissions, Mid Channel, 40 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Peak



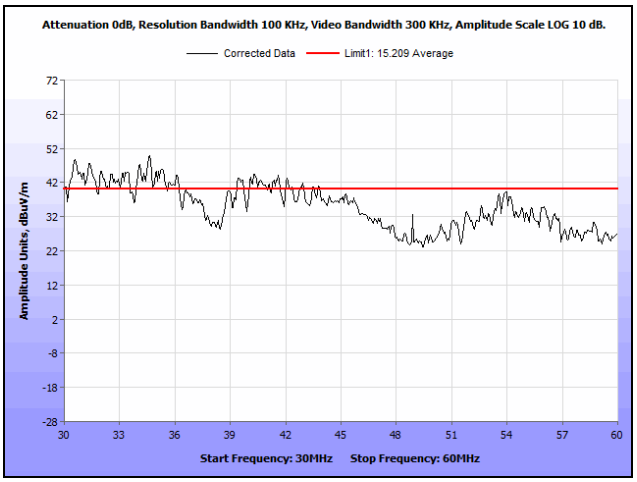
Plot 324. Radiated Spurious Emissions, High Channel, 40 MHz, 24 dBi Antenna, 30 MHz - 1 GHz



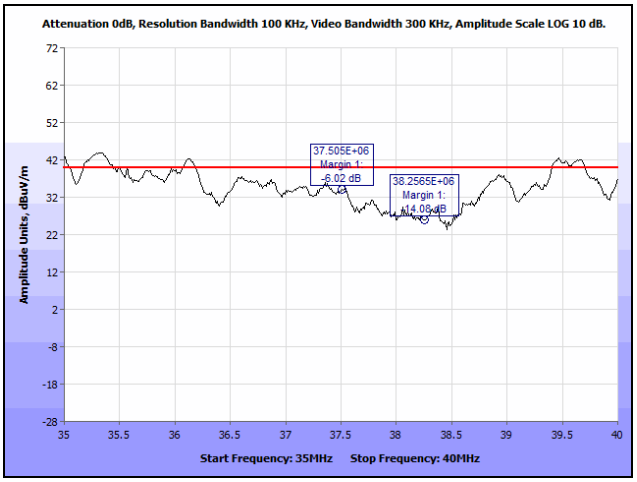
Plot 325. Radiated Spurious Emissions, High Channel, 40 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Average



Plot 326. Radiated Spurious Emissions, High Channel, 40 MHz, 24 dBi Antenna, 1 GHz - 18 GHz, Peak



Plot 327. Radiated Spurious Emissions, 30 MHz – 60 MHz, Zoomed In

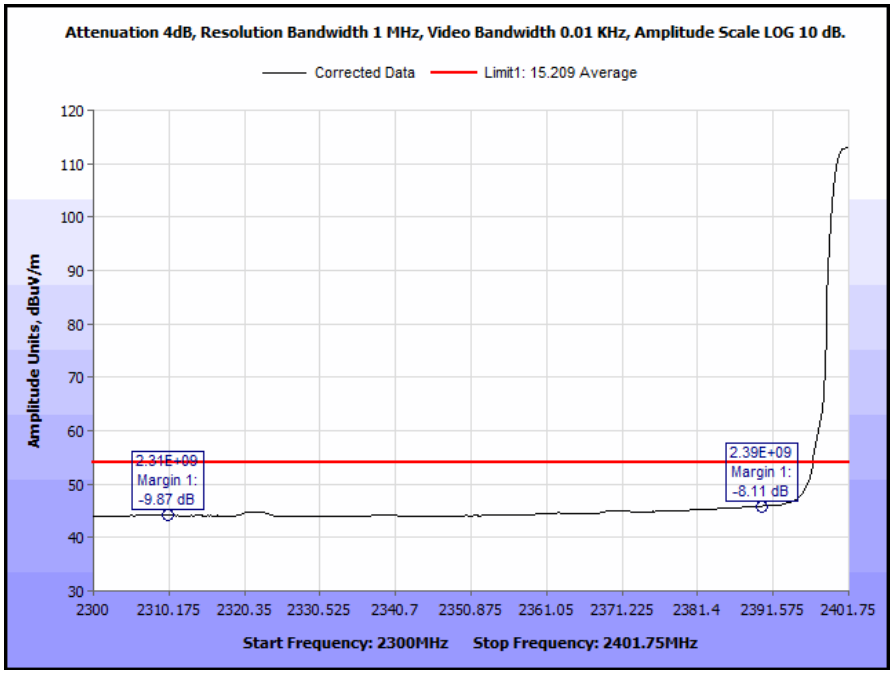


Plot 328. Radiated Spurious Emissions, Below 1 GHz, Restricted Band Investigation

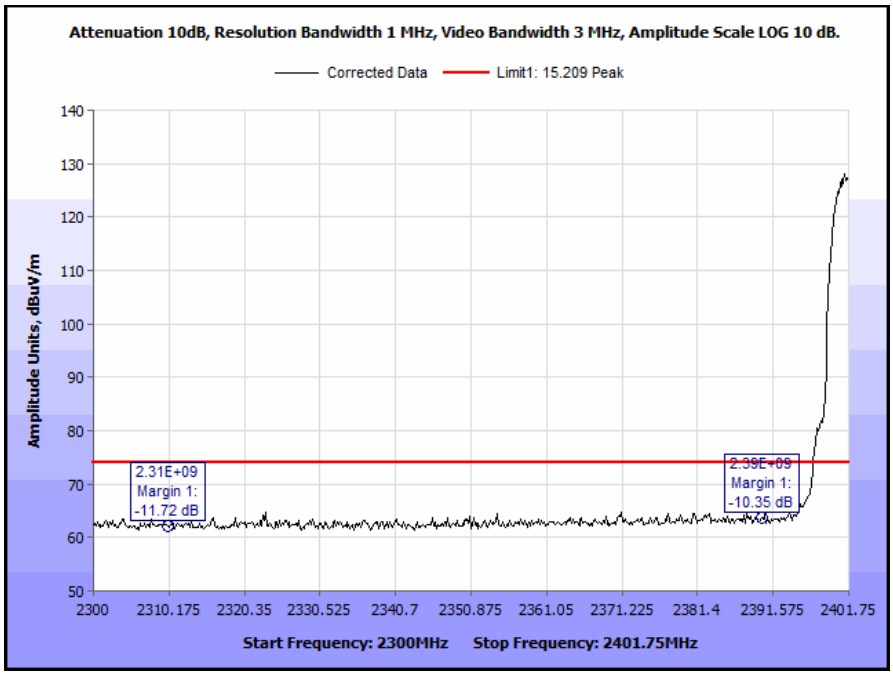
Radiated Band Edge Measurements

Test Procedures: The transmitter was turned on. Measurements were performed of the low 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.

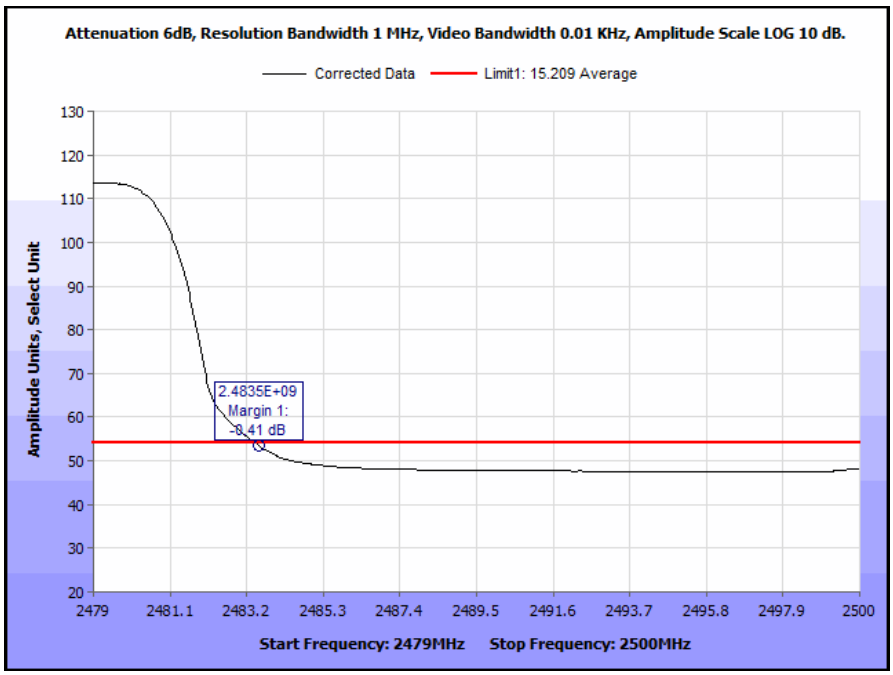
Radiated Band Edge Measurements, 3.5 MHz, 6 dBi Antenna



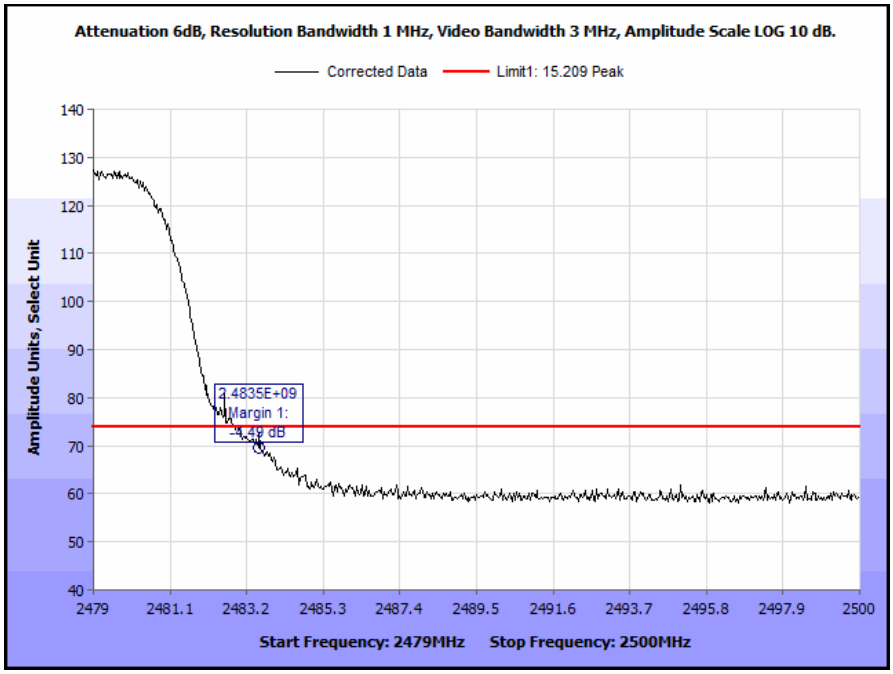
Plot 329. Radiated Restricted Band Edge, Low Channel, 3.5 MHz, 6 dBi Antenna, Average



Plot 330. Radiated Restricted Band Edge, Low Channel, 3.5 MHz, 6 dBi Antenna, Peak

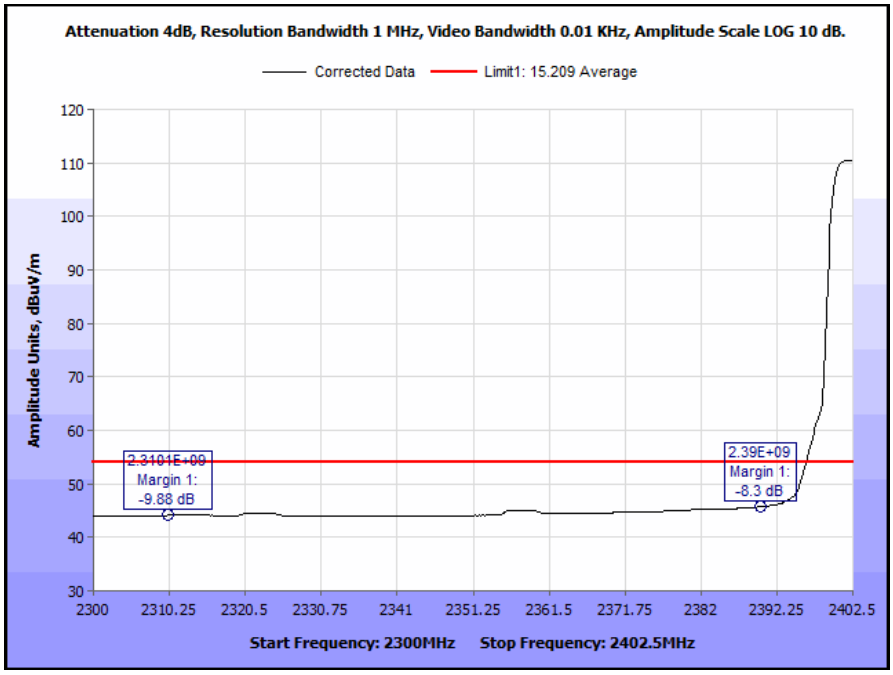


Plot 331. Radiated Restricted Band Edge, High Channel, 3.5 MHz, 6 dBi Antenna, Average

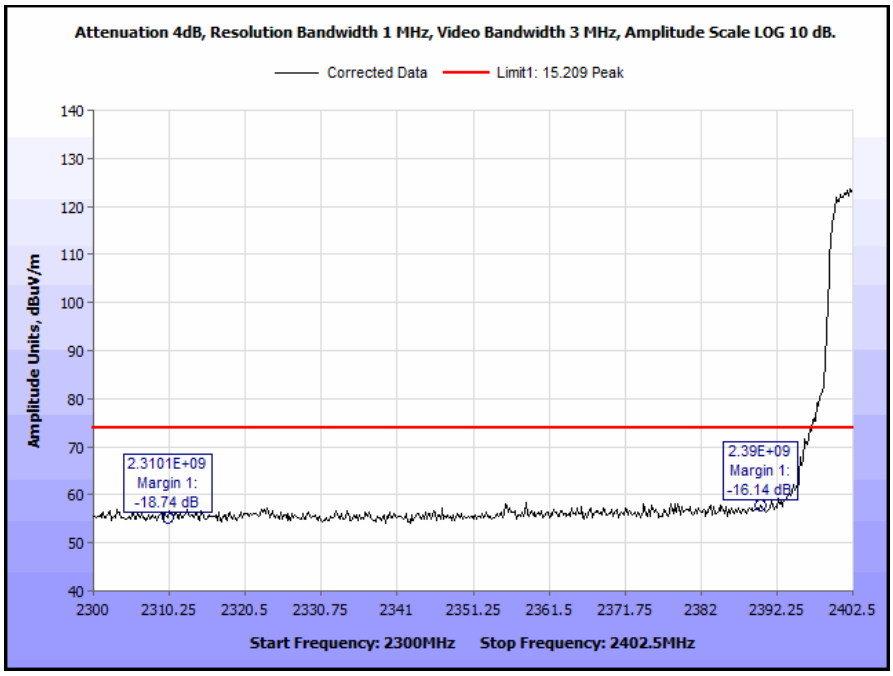


Plot 332. Radiated Restricted Band Edge, High Channel, 3.5 MHz, 6 dBi Antenna, Peak

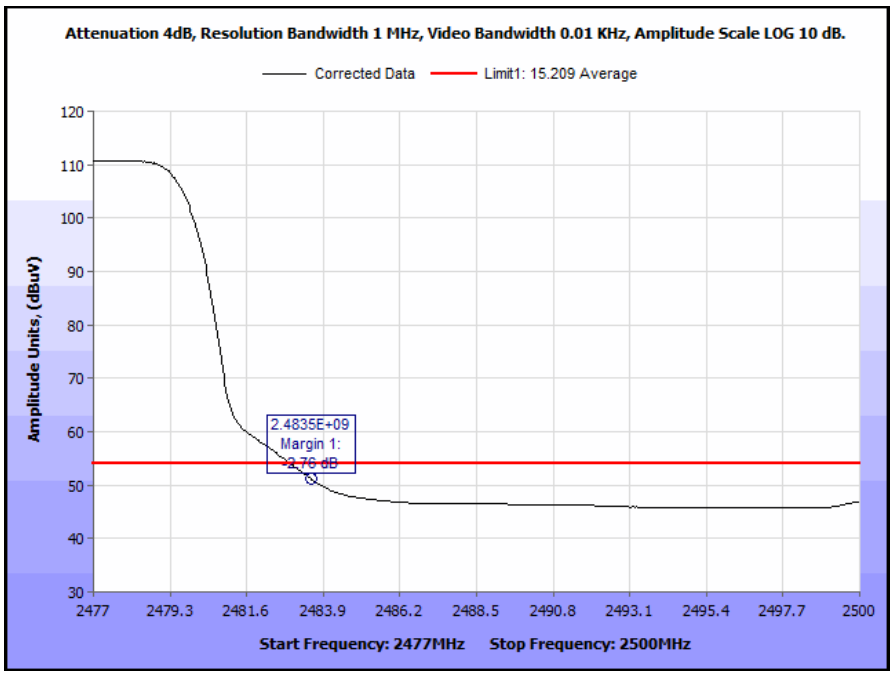
Radiated Band Edge Measurements, 5 MHz, 6 dBi Antenna



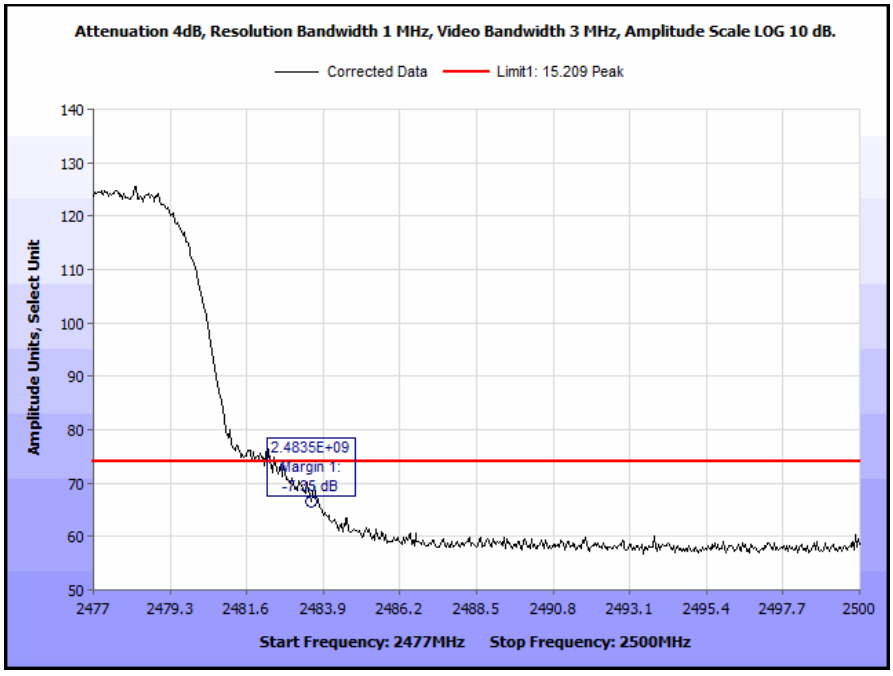
Plot 333. Radiated Restricted Band Edge, Low Channel, 5 MHz, 6 dBi Antenna, Average



Plot 334. Radiated Restricted Band Edge, Low Channel, 5 MHz, 6 dBi Antenna, Peak

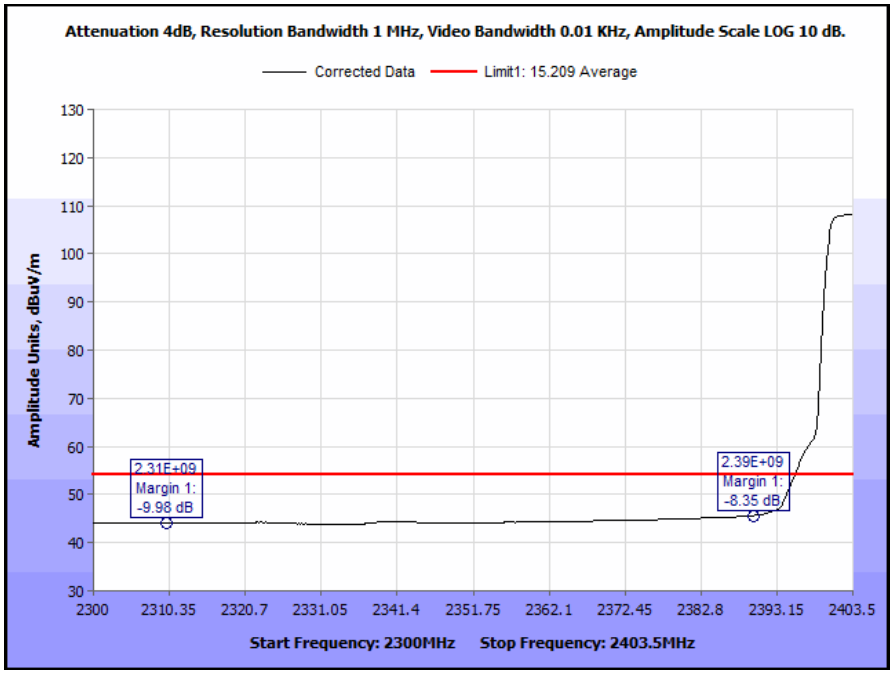


Plot 335. Radiated Restricted Band Edge, High Channel, 5 MHz, 6 dBi Antenna, Average

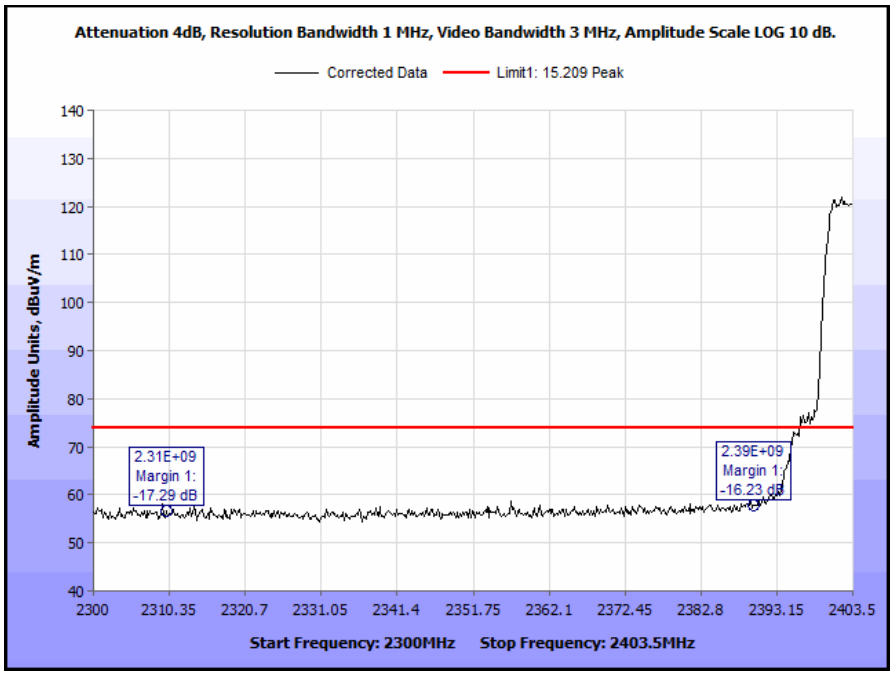


Plot 336. Radiated Restricted Band Edge, High Channel, 5 MHz, 6 dBi Antenna, Peak

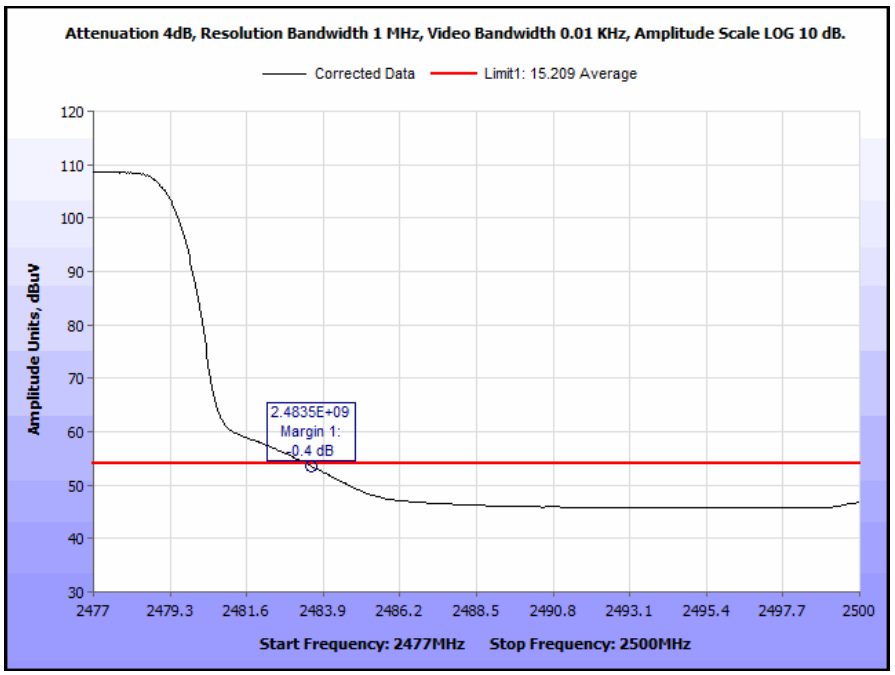
Radiated Band Edge Measurements, 7 MHz, 6 dBi Antenna



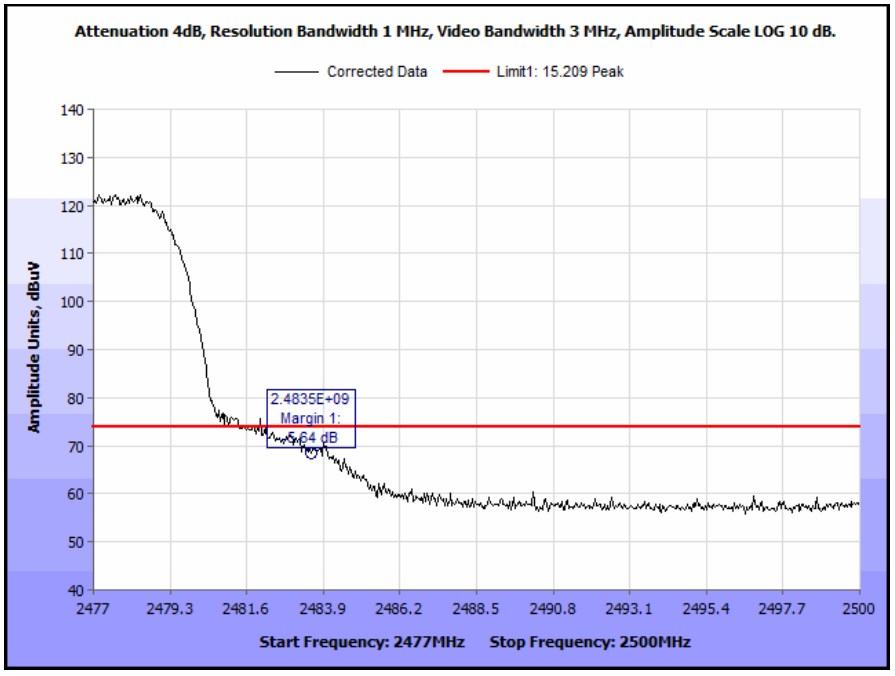
Plot 337. Radiated Restricted Band Edge, Low Channel, 7 MHz, 6 dBi Antenna, Average



Plot 338. Radiated Restricted Band Edge, Low Channel, 7 MHz, 6 dBi Antenna, Peak

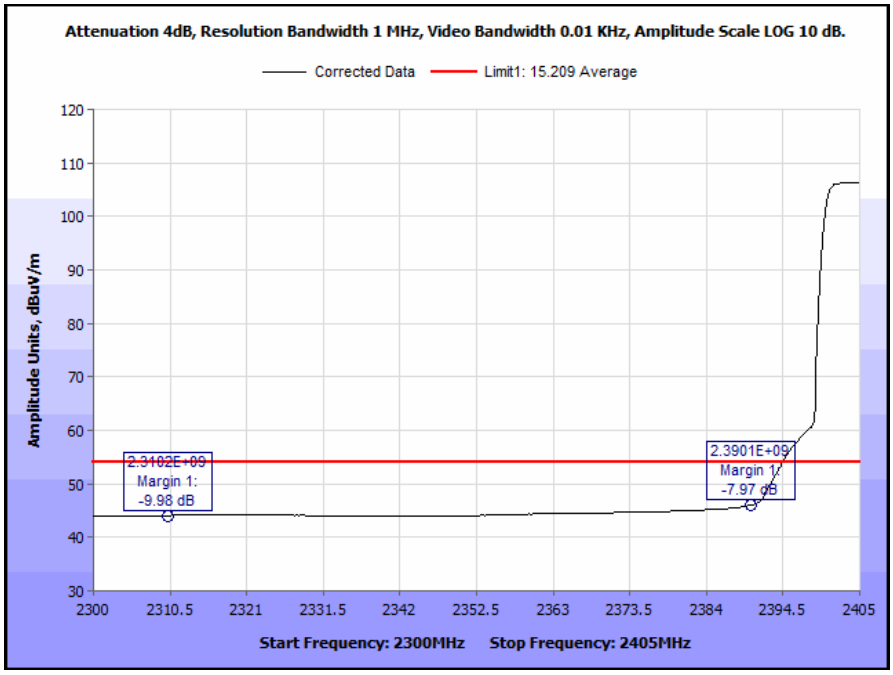


Plot 339. Radiated Restricted Band Edge, High Channel, 7 MHz, 6 dBi Antenna, Average

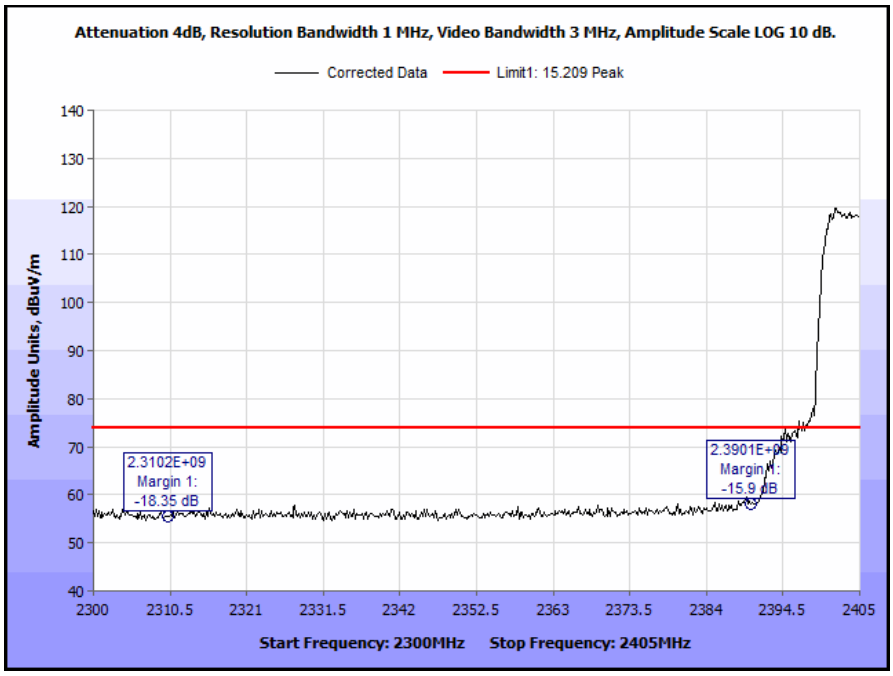


Plot 340. Radiated Restricted Band Edge, High Channel, 7 MHz, 6 dBi Antenna, Peak

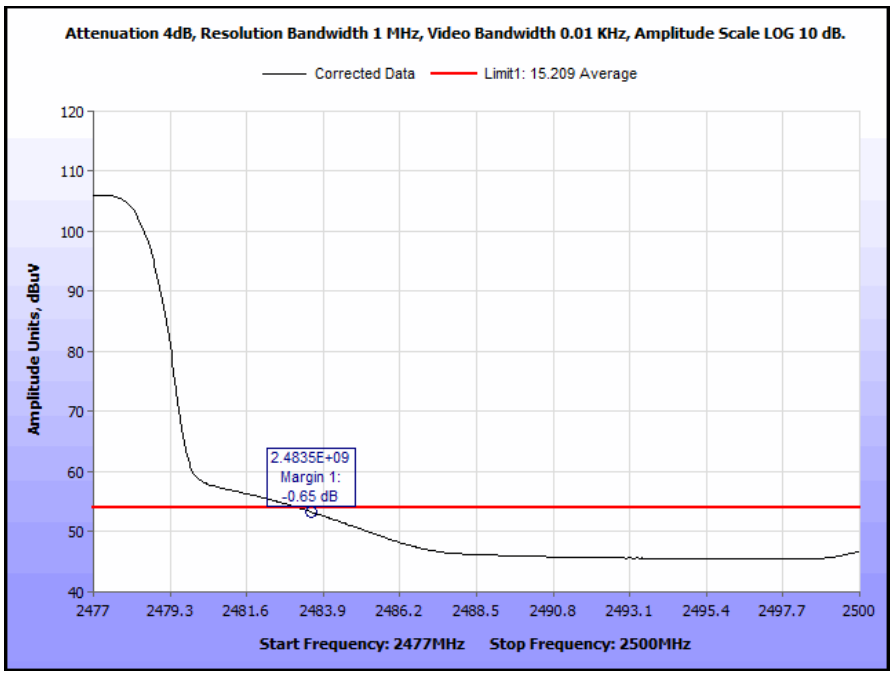
Radiated Band Edge Measurements, 10 MHz, 6 dBi Antenna



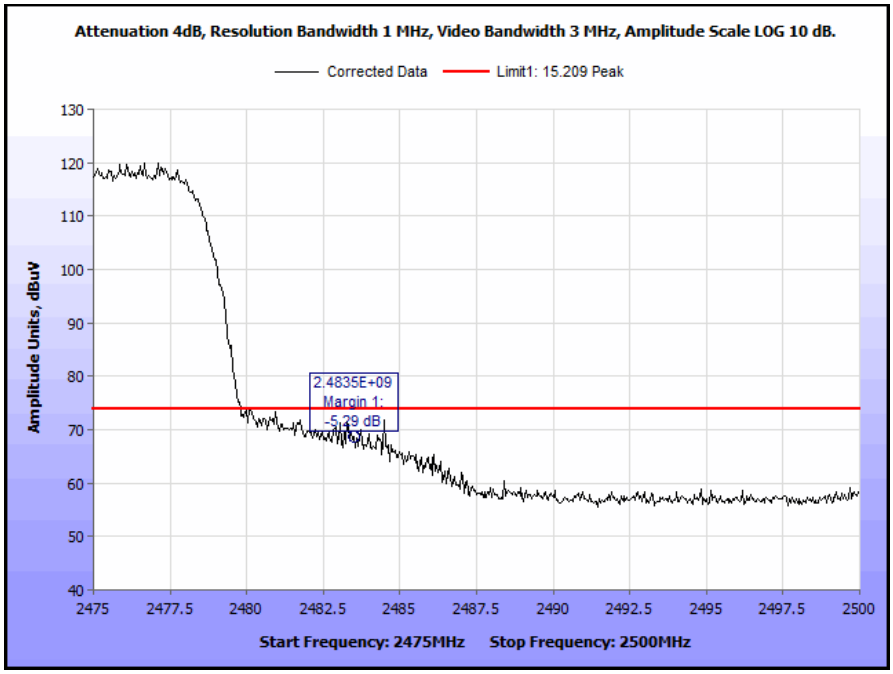
Plot 341. Radiated Restricted Band Edge, Low Channel, 10 MHz, 6 dBi Antenna, Average



Plot 342. Radiated Restricted Band Edge, Low Channel, 10 MHz, 6 dBi Antenna, Peak

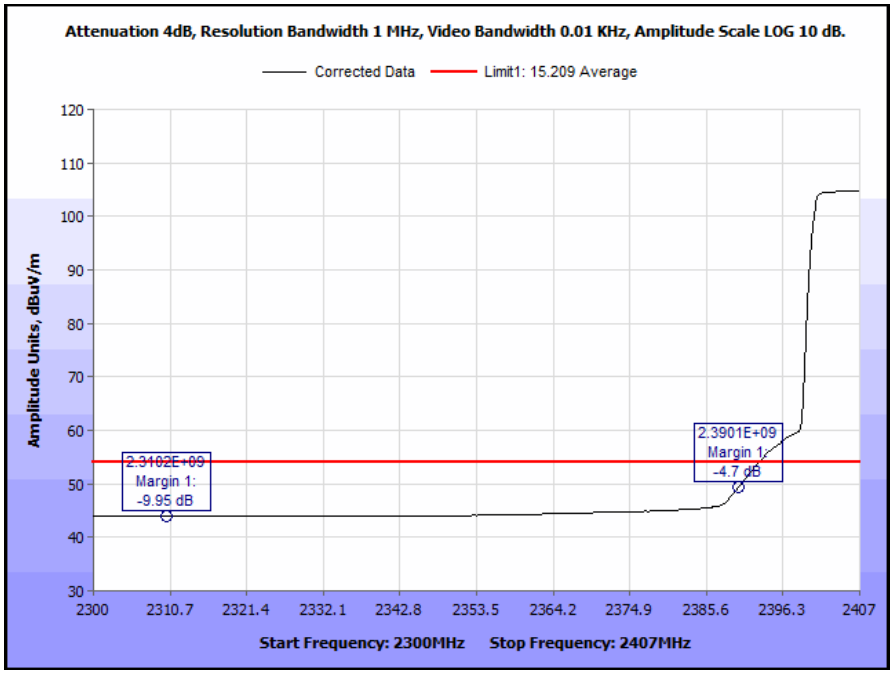


Plot 343. Radiated Restricted Band Edge, High Channel, 10 MHz, 6 dBi Antenna, Average

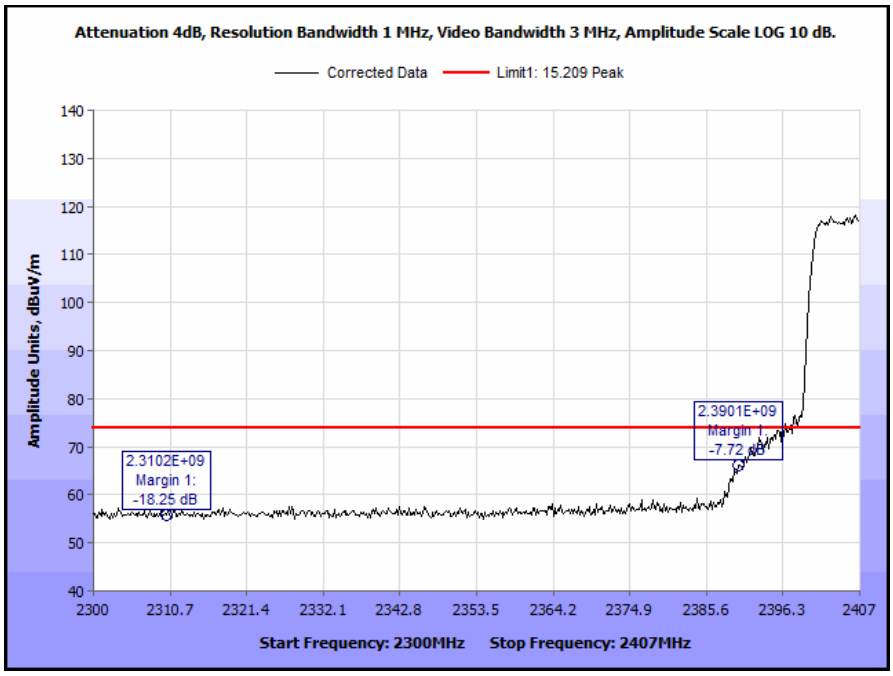


Plot 344. Radiated Restricted Band Edge, High Channel, 10 MHz, 6 dBi Antenna, Peak

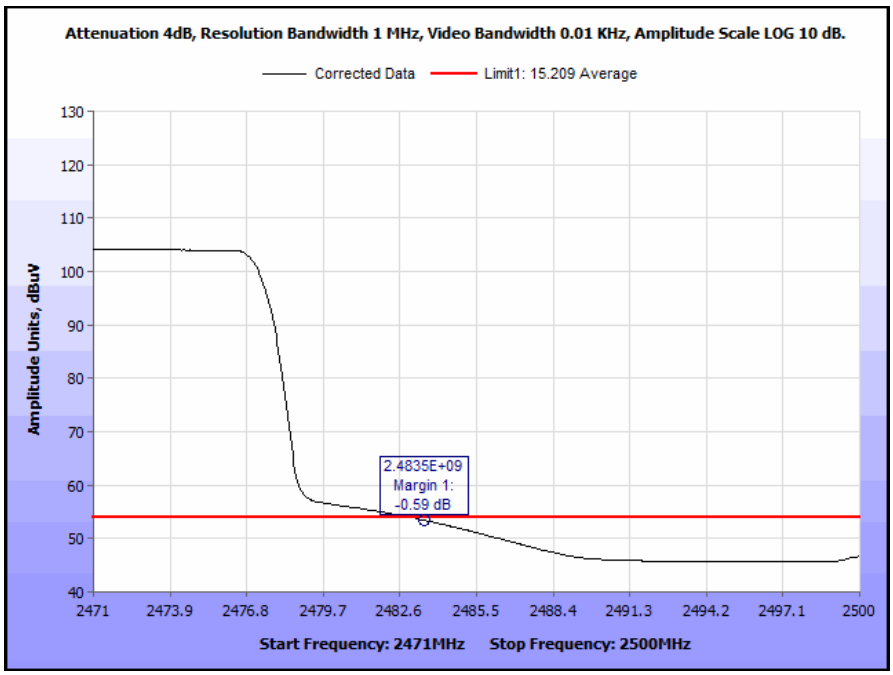
Radiated Band Edge Measurements, 14 MHz, 6 dBi Antenna



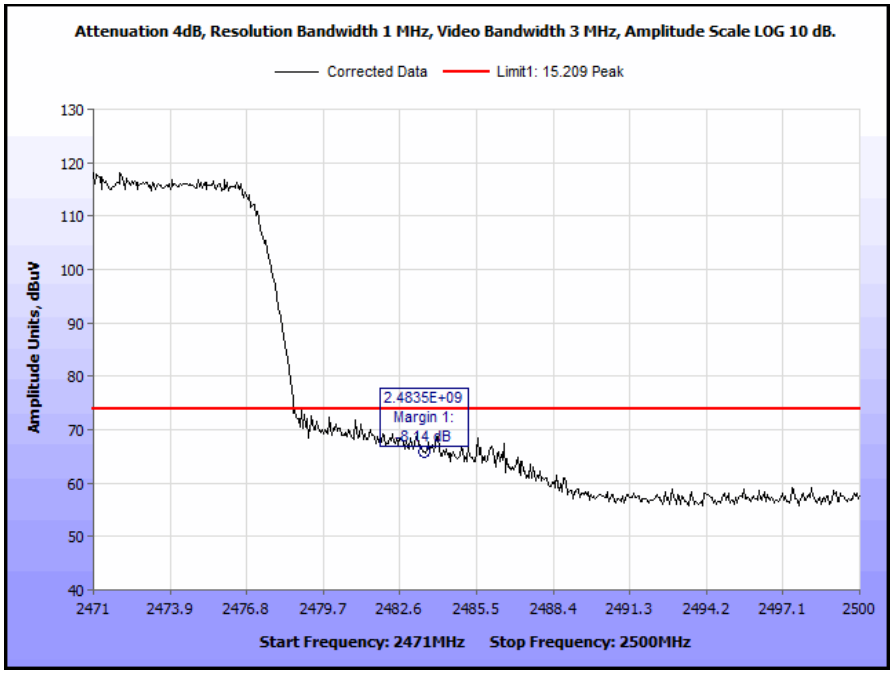
Plot 345. Radiated Restricted Band Edge, Low Channel, 14 MHz, 6 dBi Antenna, Average



Plot 346. Radiated Restricted Band Edge, Low Channel, 14 MHz, 6 dBi Antenna, Peak

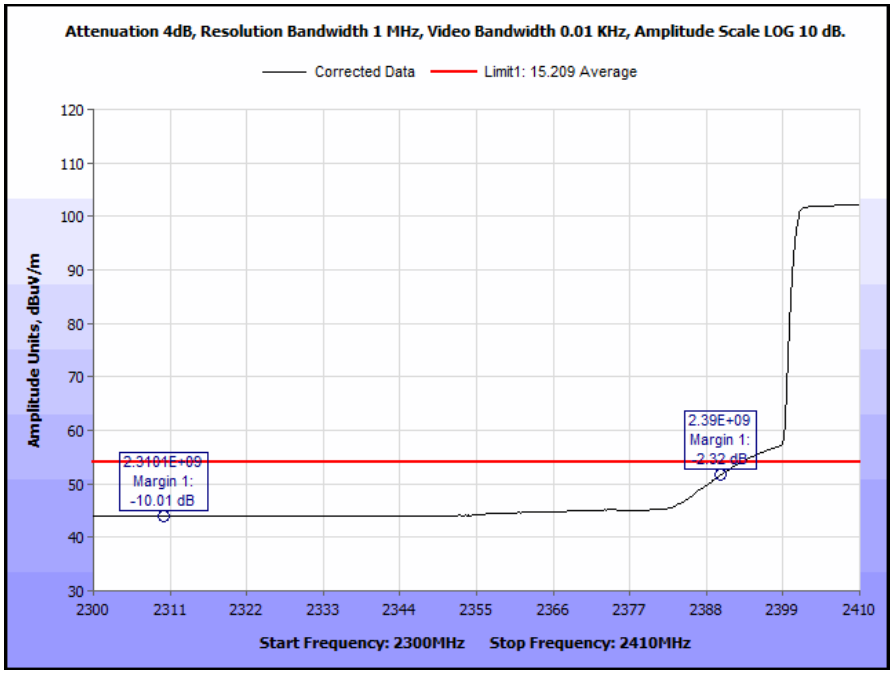


Plot 347. Radiated Restricted Band Edge, High Channel, 14 MHz, 6 dBi Antenna, Average

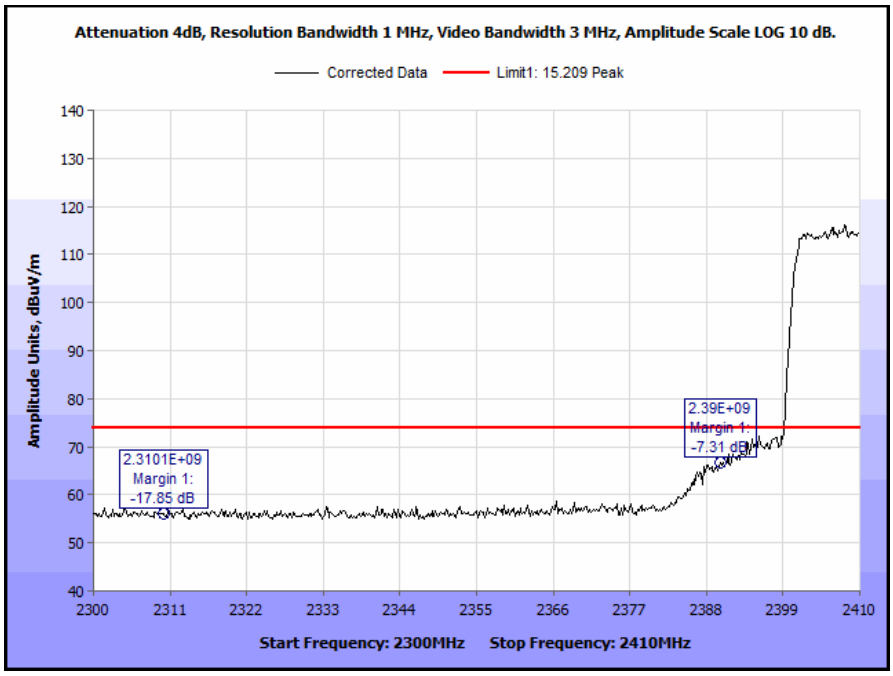


Plot 348. Radiated Restricted Band Edge, High Channel, 14 MHz, 6 dBi Antenna, Peak

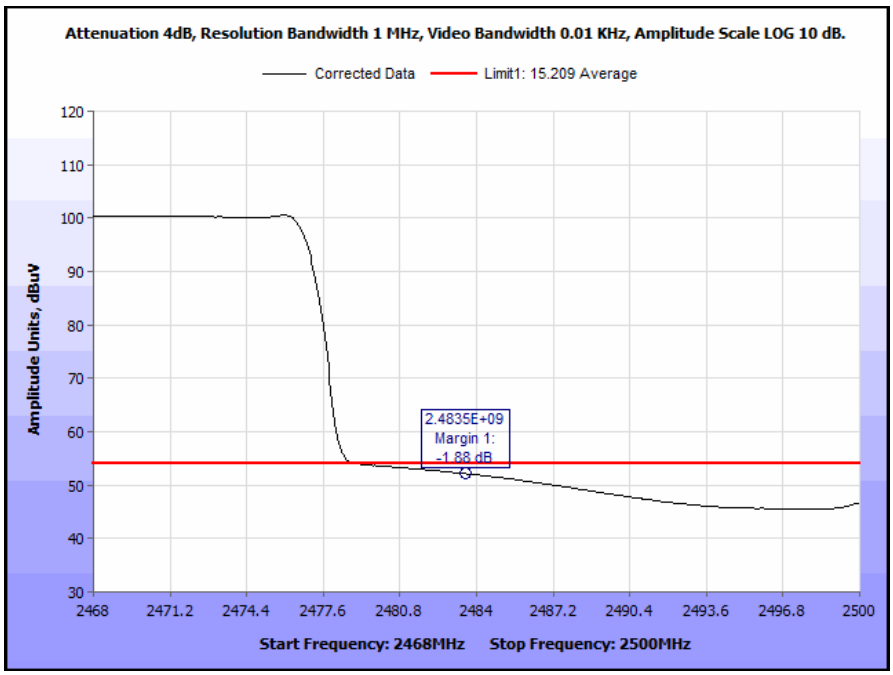
Radiated Band Edge Measurements, 20 MHz, 6 dBi Antenna



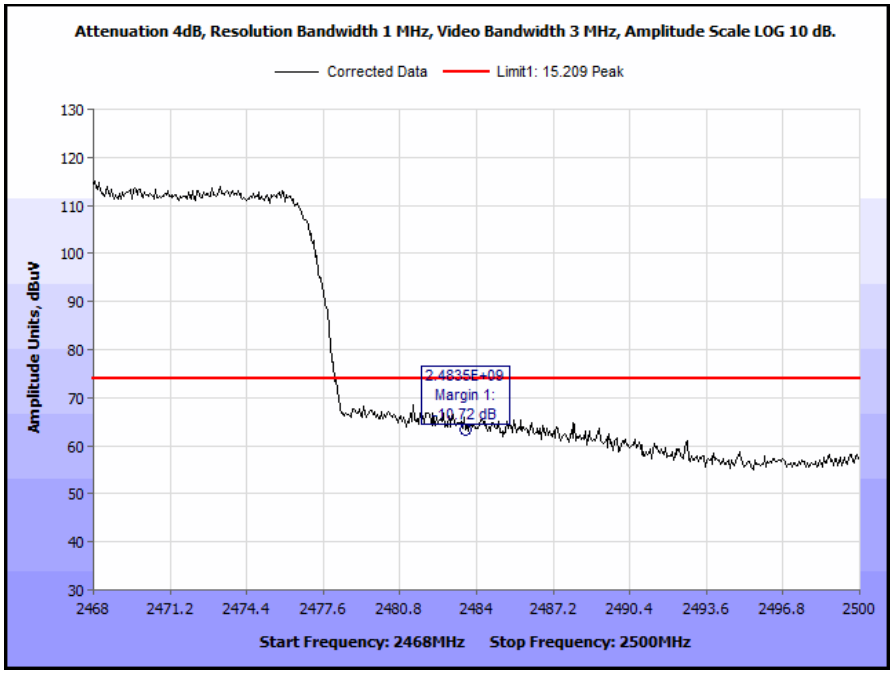
Plot 349. Radiated Restricted Band Edge, Low Channel, 20 MHz, 6 dBi Antenna, Average



Plot 350. Radiated Restricted Band Edge, Low Channel, 20 MHz, 6 dBi Antenna, Peak

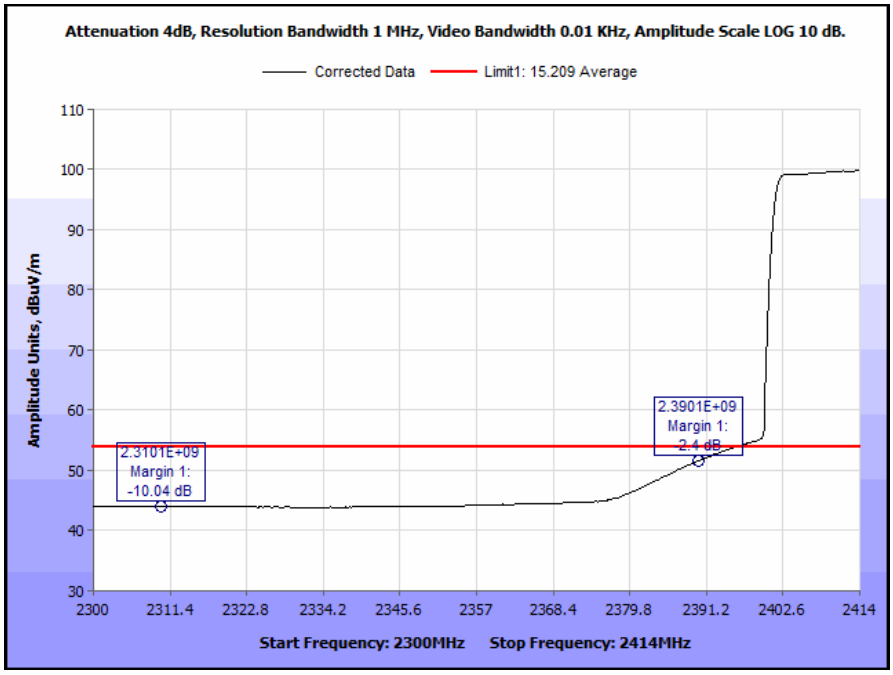


Plot 351. Radiated Restricted Band Edge, High Channel, 20 MHz, 6 dBi Antenna, Average

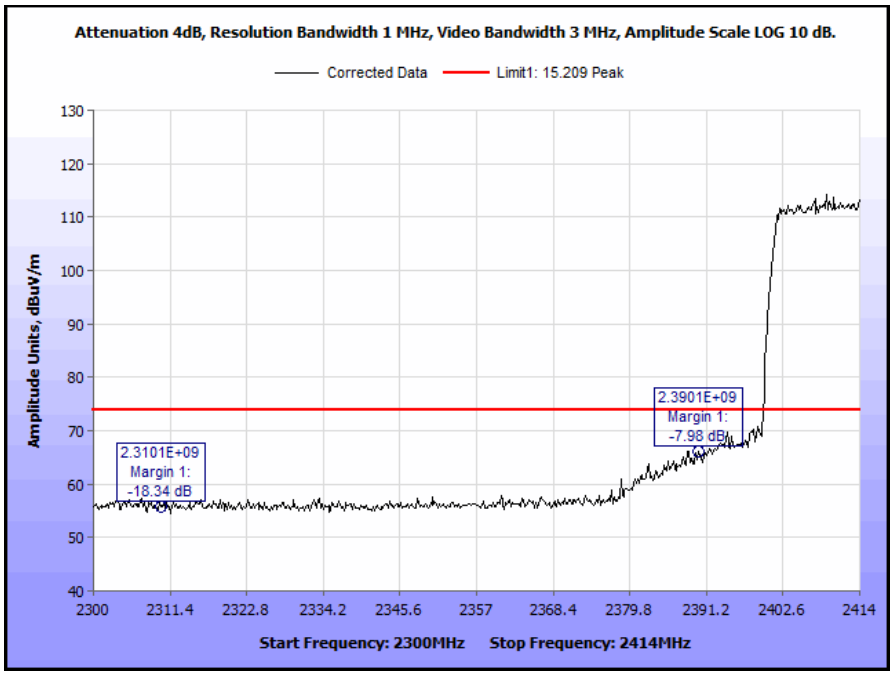


Plot 352. Radiated Restricted Band Edge, High Channel, 20 MHz, 6 dBi Antenna, Peak

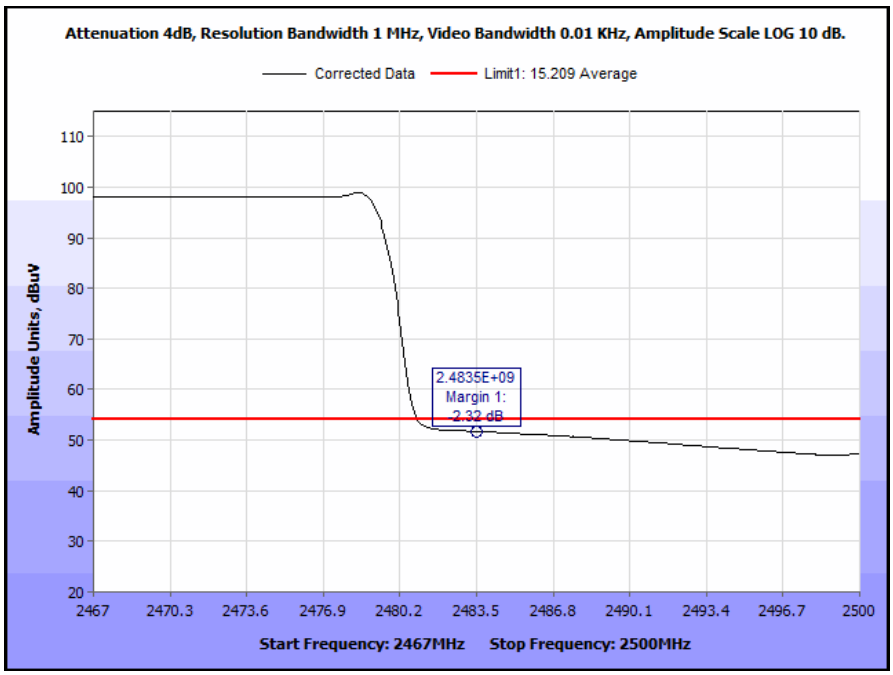
Radiated Band Edge Measurements, 28 MHz, 6 dBi Antenna



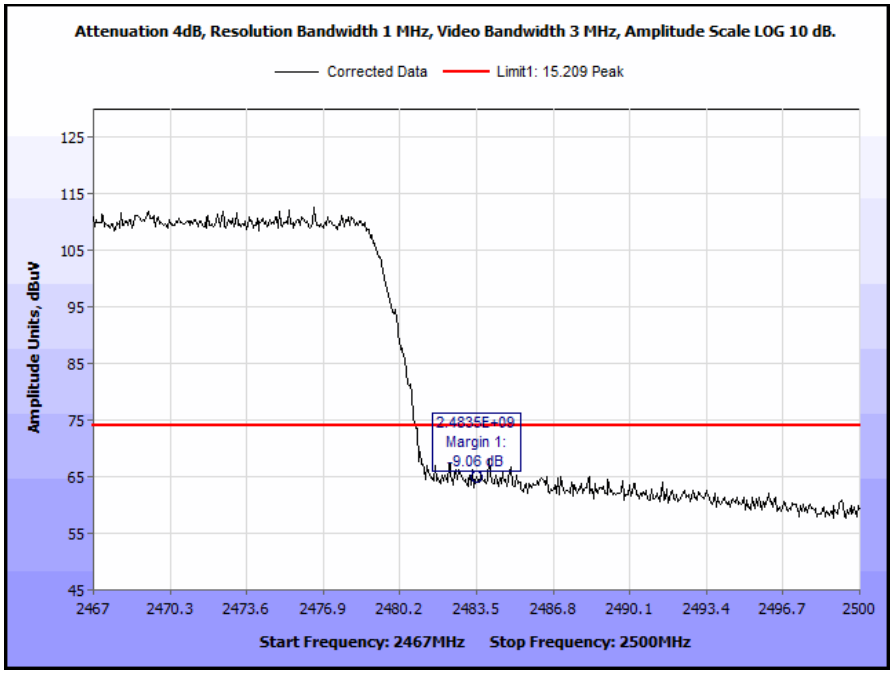
Plot 353. Radiated Restricted Band Edge, Low Channel, 28 MHz, 6 dBi Antenna, Average



Plot 354. Radiated Restricted Band Edge, Low Channel, 28 MHz, 6 dBi Antenna, Peak

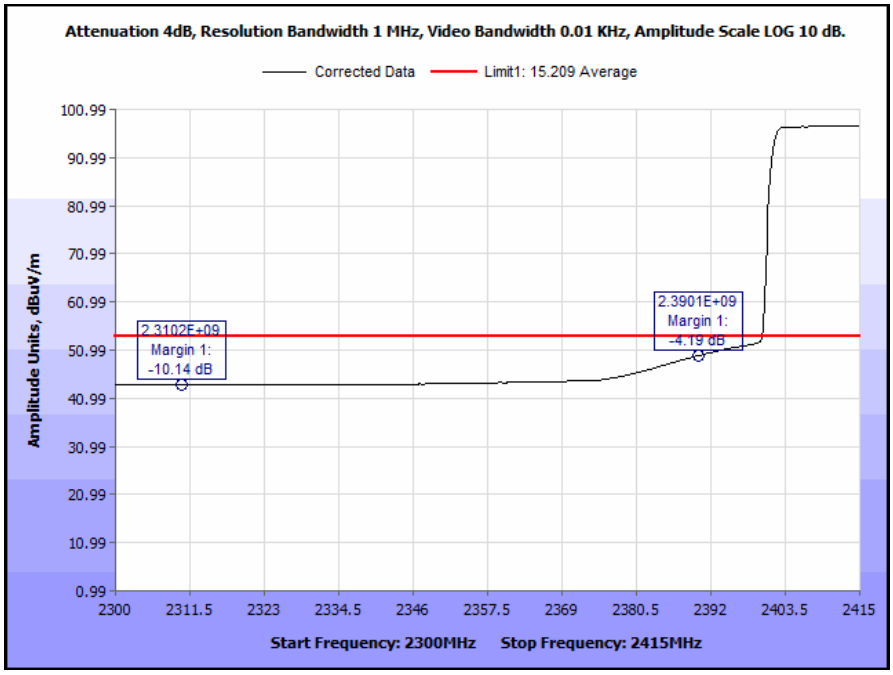


Plot 355. Radiated Restricted Band Edge, High Channel, 28 MHz, 6 dBi Antenna, Average

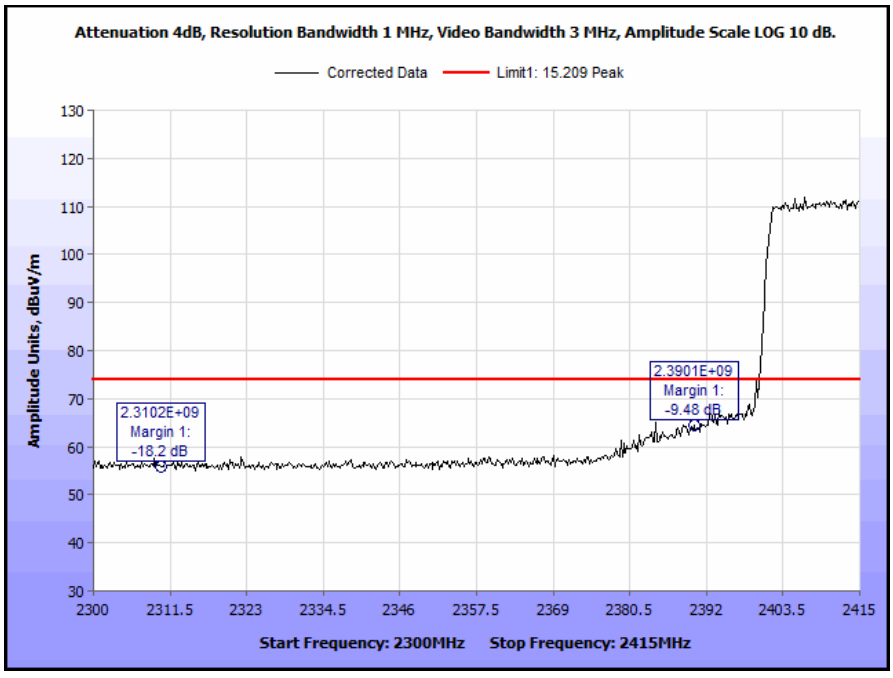


Plot 356. Radiated Restricted Band Edge, High Channel, 28 MHz, 6 dBi Antenna, Peak

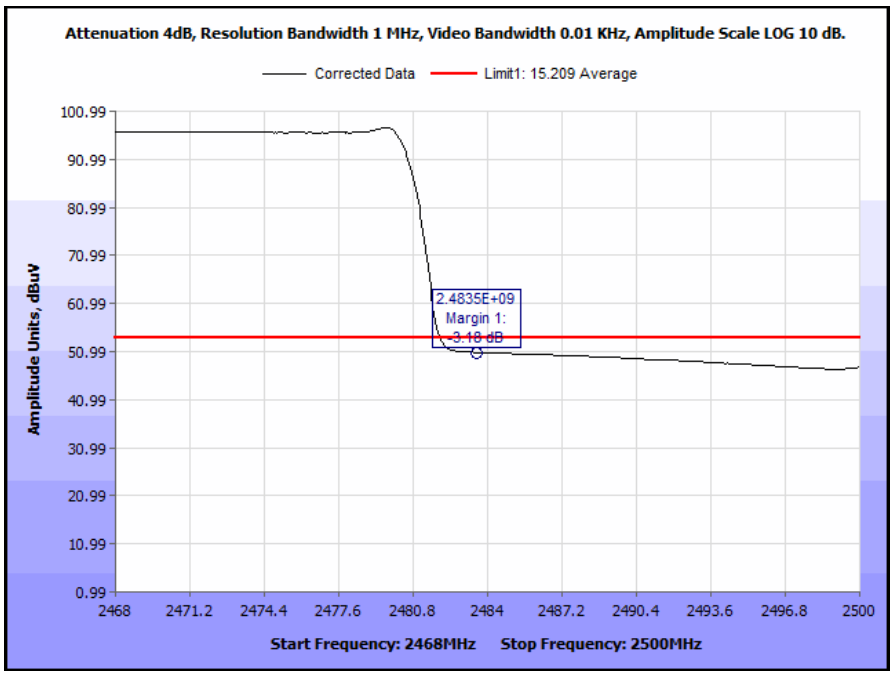
Radiated Band Edge Measurements, 30 MHz, 6 dBi Antenna



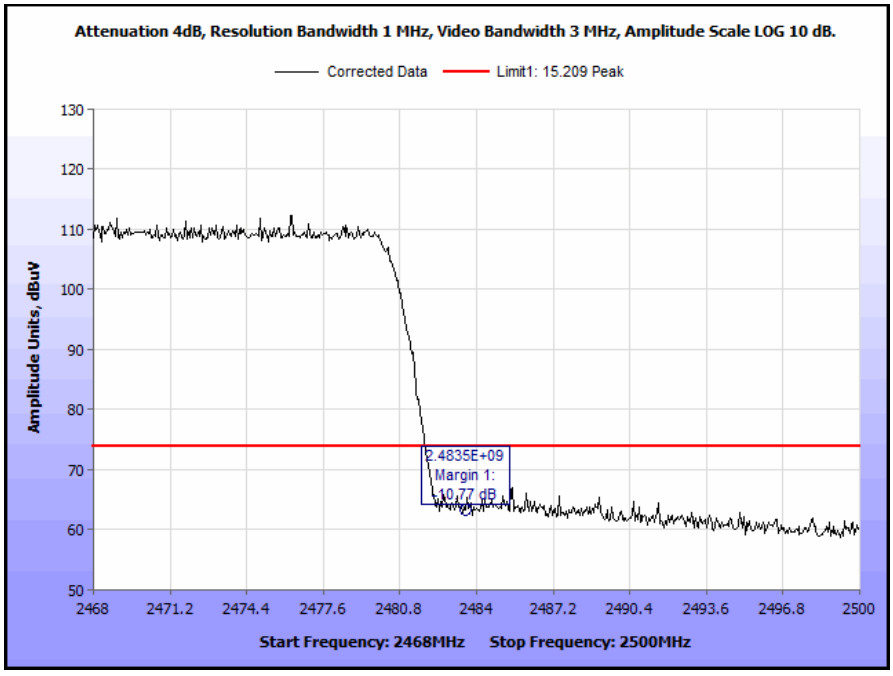
Plot 357. Radiated Restricted Band Edge, Low Channel, 30 MHz, 6 dBi Antenna, Average



Plot 358. Radiated Restricted Band Edge, Low Channel, 30 MHz, 6 dBi Antenna, Peak

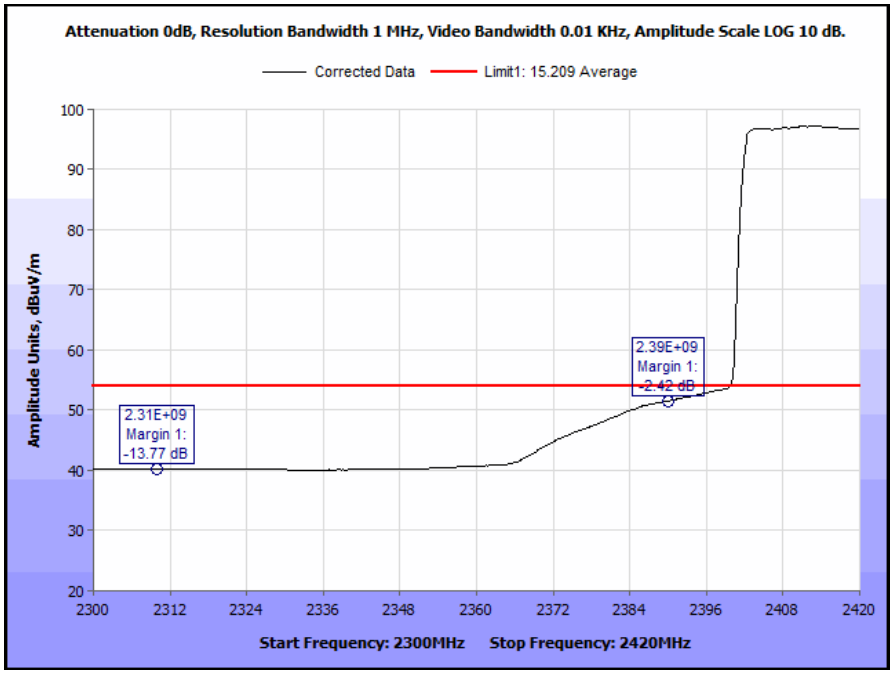


Plot 359. Radiated Restricted Band Edge, High Channel, 30 MHz, 6 dBi Antenna, Average

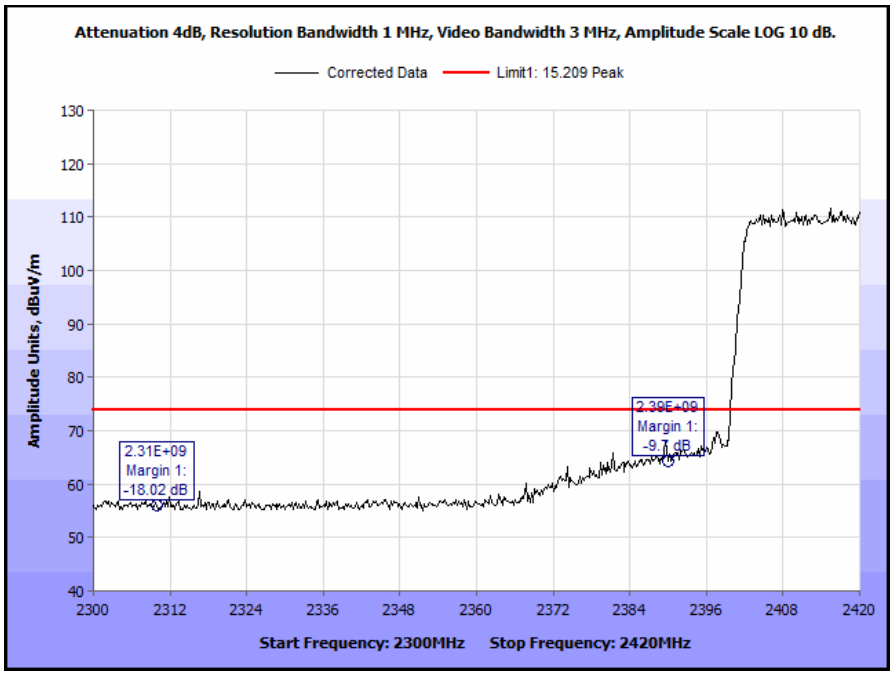


Plot 360. Radiated Restricted Band Edge, High Channel, 30 MHz, 6 dBi Antenna, Peak

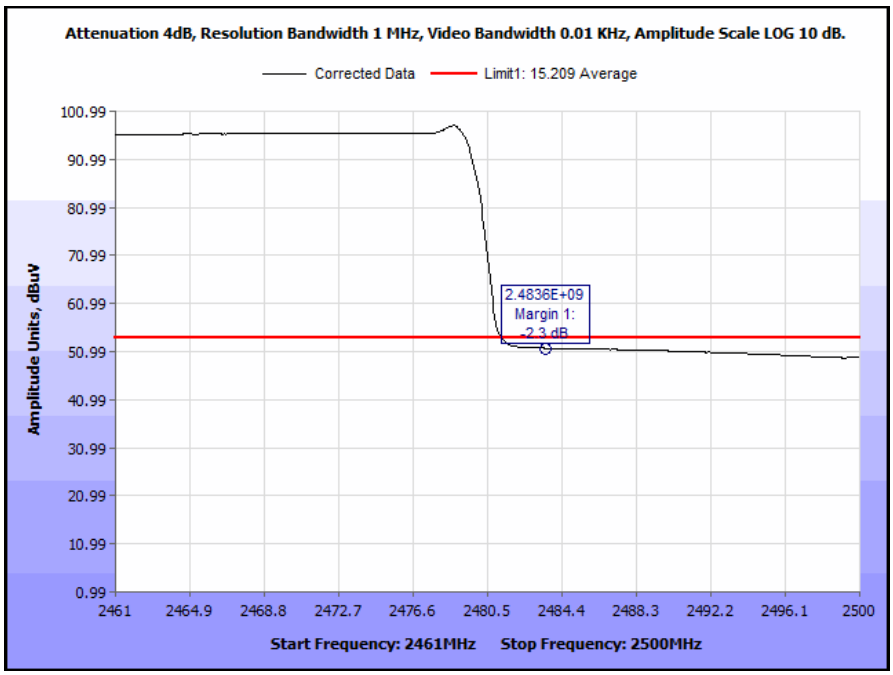
Radiated Band Edge Measurements, 40 MHz, 6 dBi Antenna



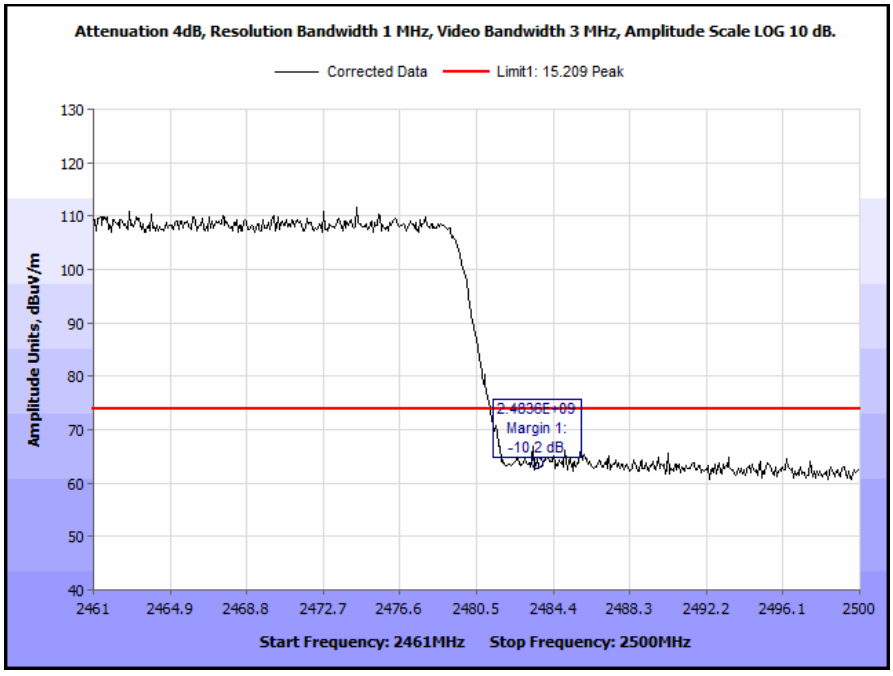
Plot 361. Radiated Restricted Band Edge, Low Channel, 40 MHz, 6 dBi Antenna, Average



Plot 362. Radiated Restricted Band Edge, Low Channel, 40 MHz, 6 dBi Antenna, Peak

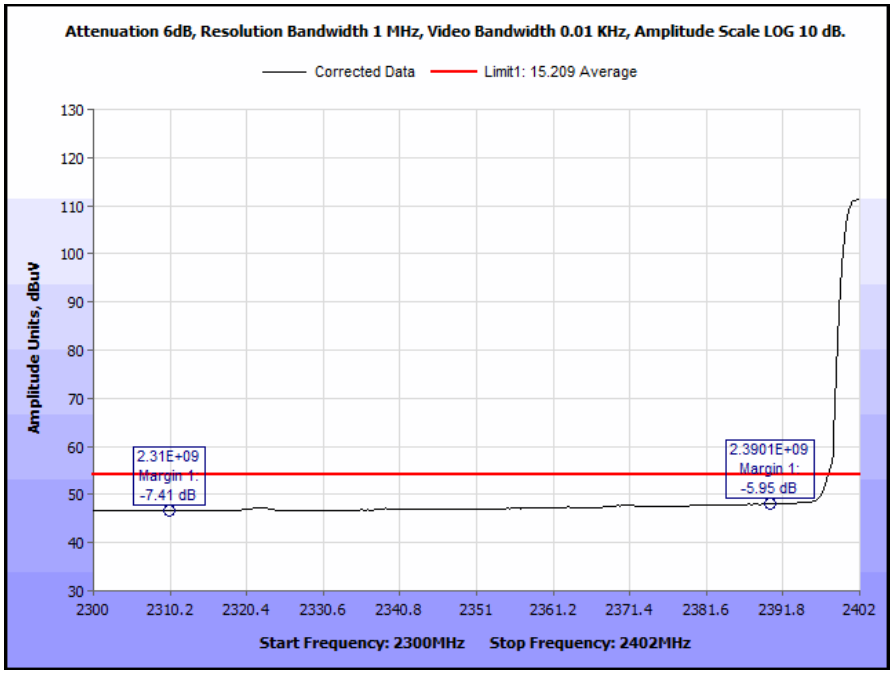


Plot 363. Radiated Restricted Band Edge, High Channel, 40 MHz, 6 dBi Antenna, Average

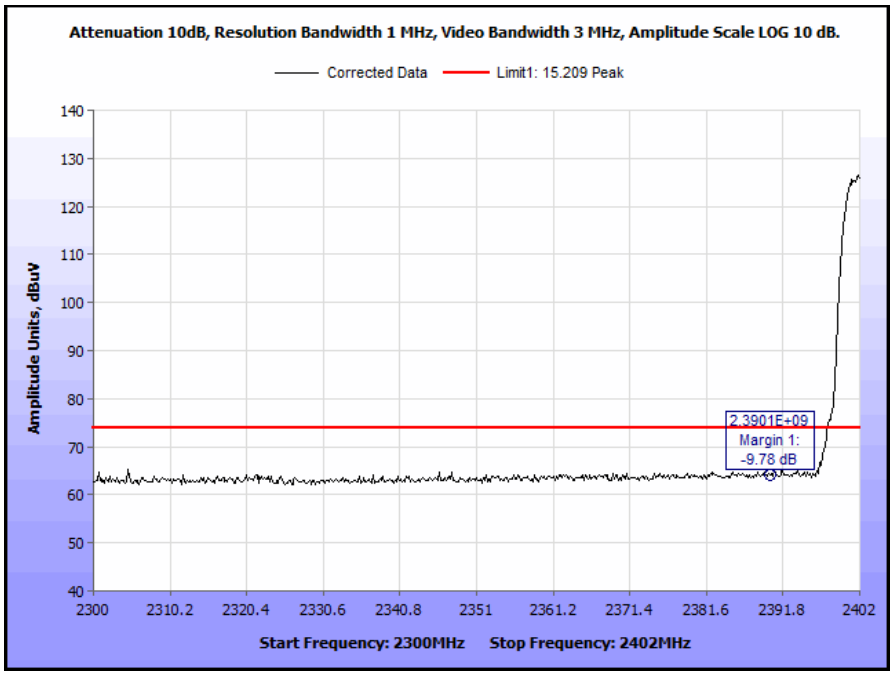


Plot 364. Radiated Restricted Band Edge, High Channel, 40 MHz, 6 dBi Antenna, Peak

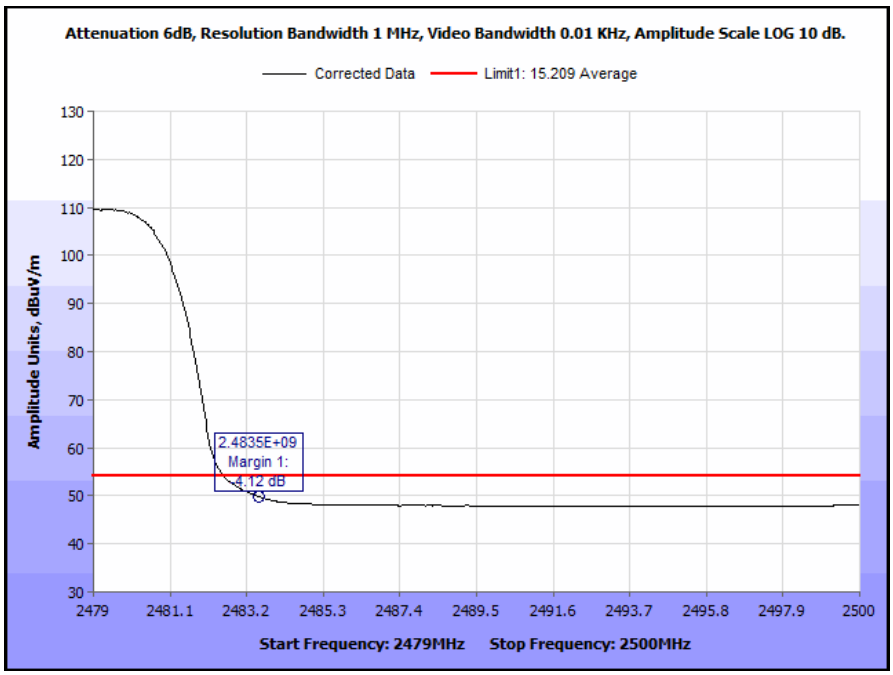
Radiated Band Edge Measurements, 3.5 MHz, 24 dBi Antenna



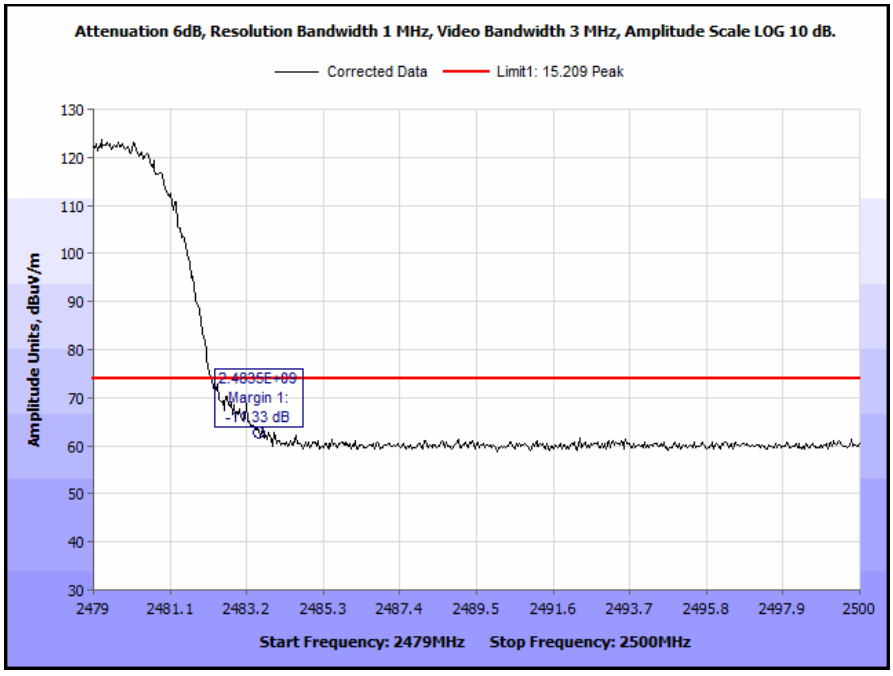
Plot 365. Radiated Restricted Band Edge, Low Channel, 3.5 MHz, 24 dBi Antenna, Average



Plot 366. Radiated Restricted Band Edge, Low Channel, 3.5 MHz, 24 dBi Antenna, Peak

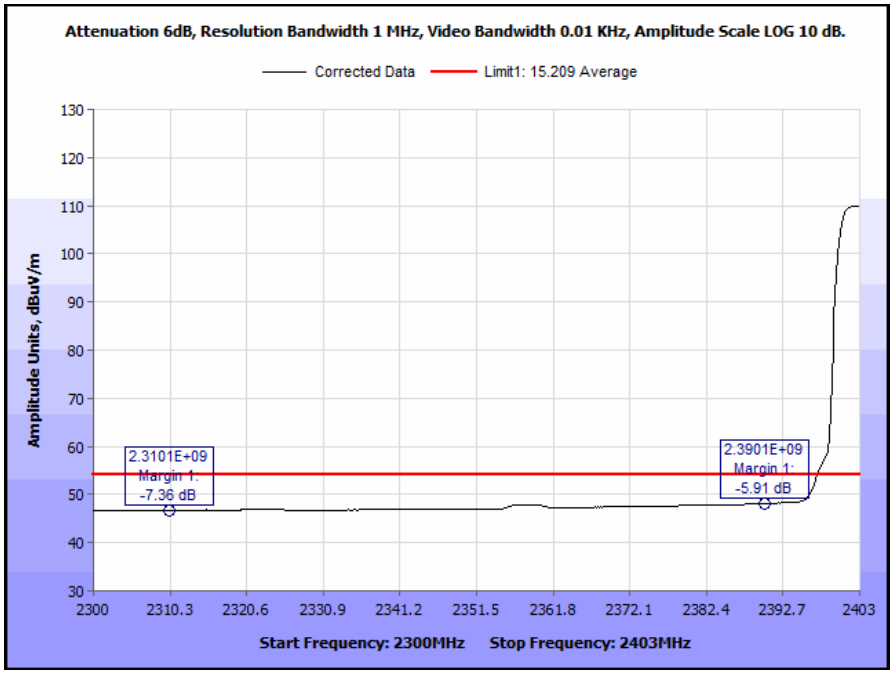


Plot 367. Radiated Restricted Band Edge, High Channel, 3.5 MHz, 24 dBi Antenna, Average

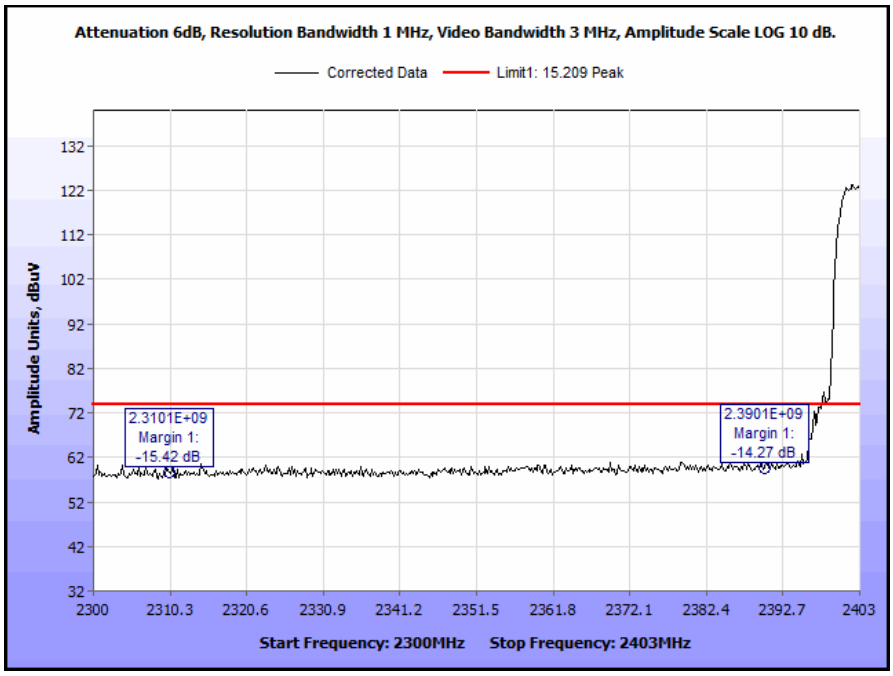


Plot 368. Radiated Restricted Band Edge, High Channel, 3.5 MHz, 24 dBi Antenna, Peak

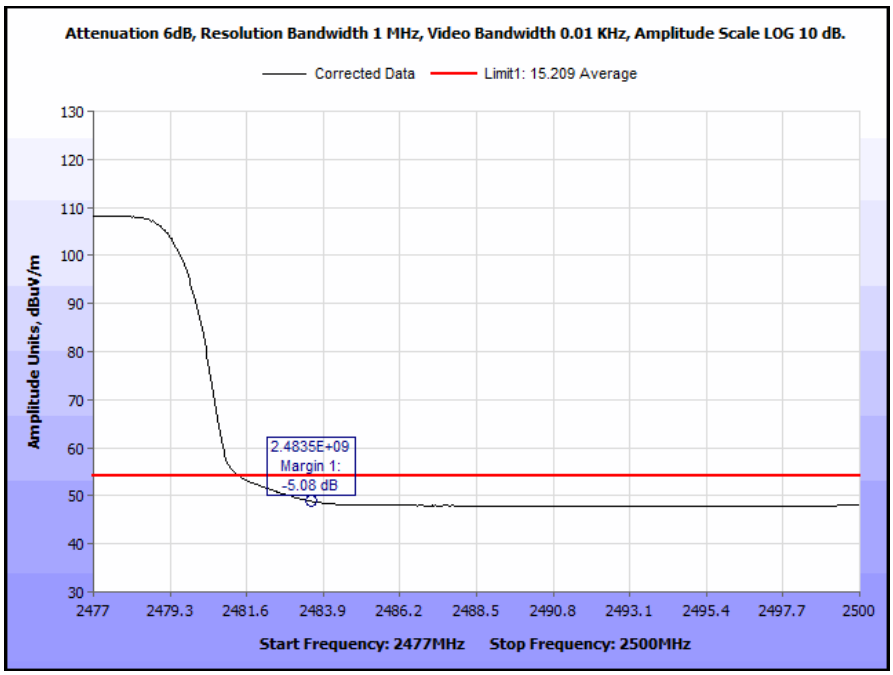
Radiated Band Edge Measurements, 5 MHz, 24 dBi Antenna



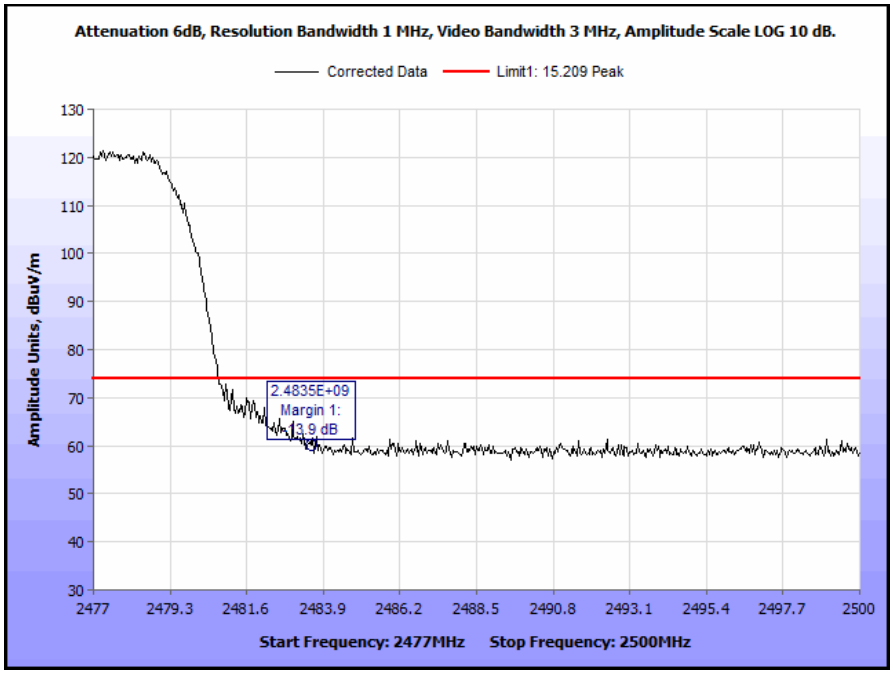
Plot 369. Radiated Restricted Band Edge, Low Channel, 5 MHz, 24 dBi Antenna, Average



Plot 370. Radiated Restricted Band Edge, Low Channel, 5 MHz, 24 dBi Antenna, Peak

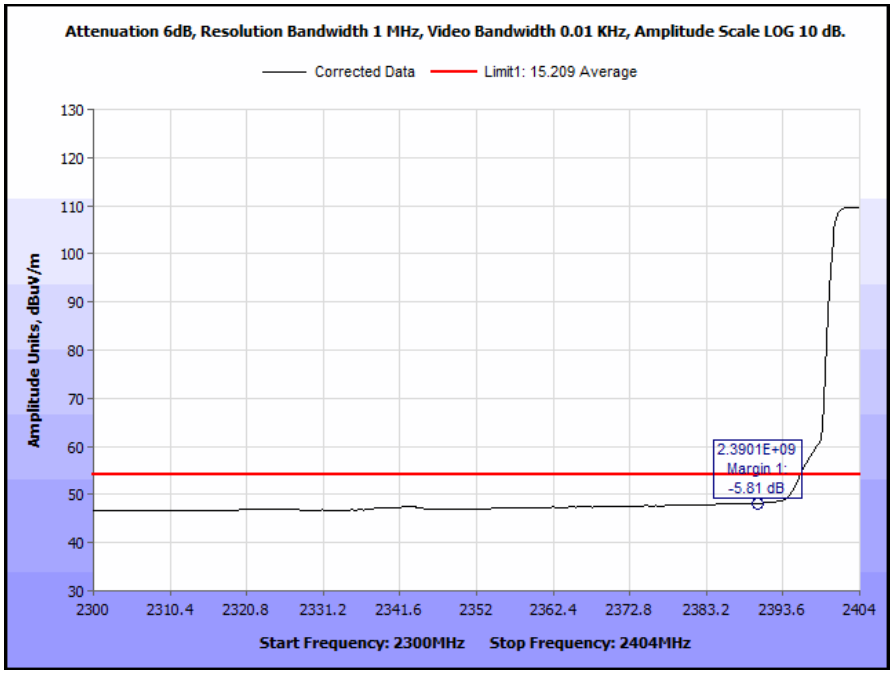


Plot 371. Radiated Restricted Band Edge, High Channel, 5 MHz, 24 dBi Antenna, Average

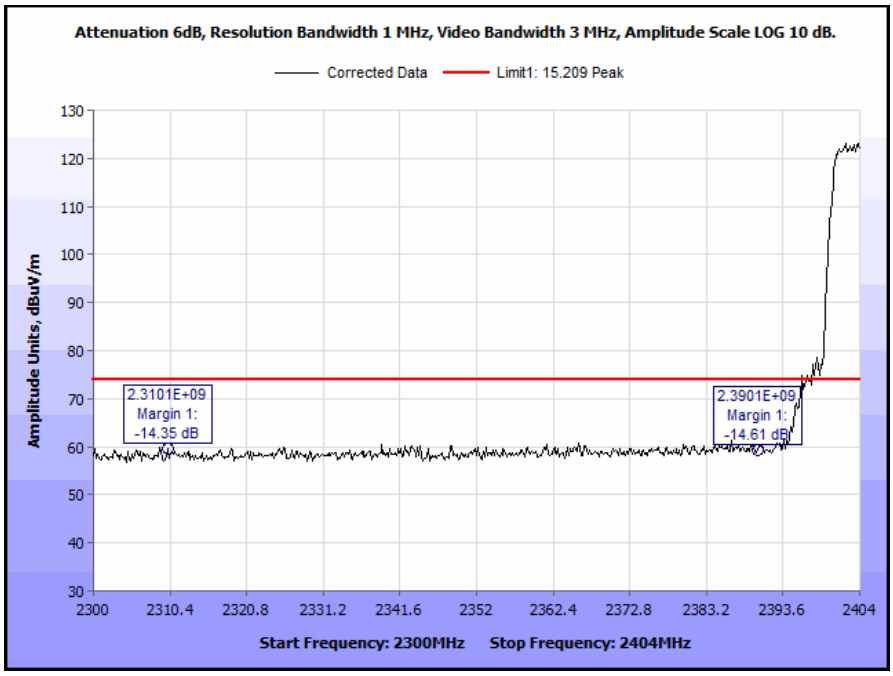


Plot 372. Radiated Restricted Band Edge, High Channel, 5 MHz, 24 dBi Antenna, Peak

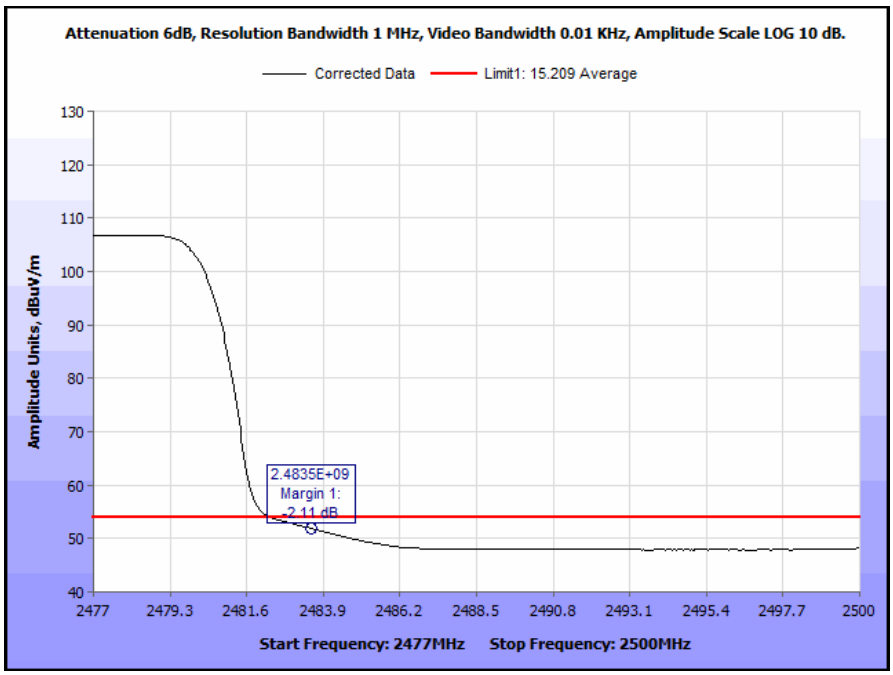
Radiated Band Edge Measurements, 7 MHz, 24 dBi Antenna



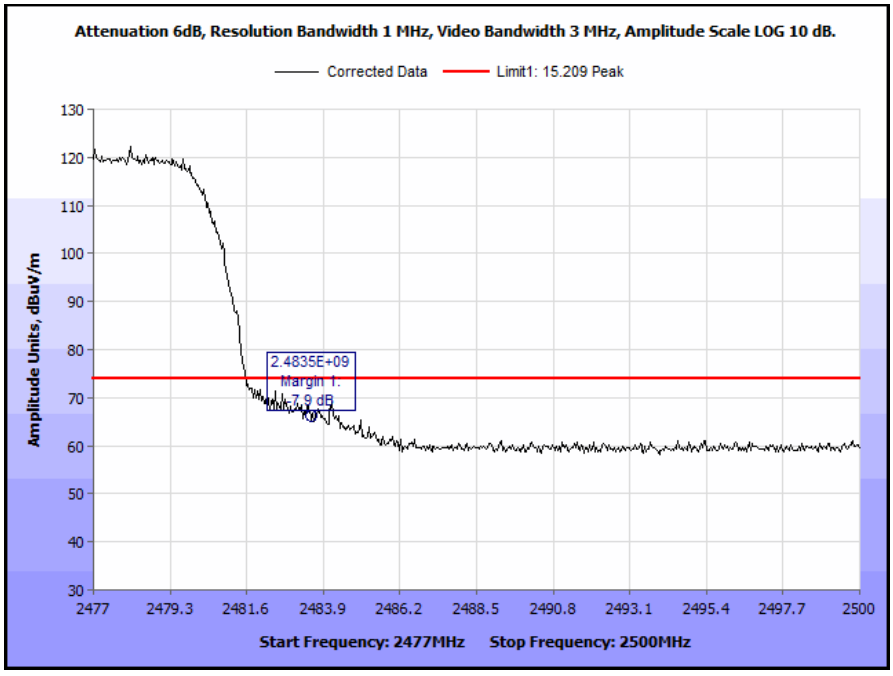
Plot 373. Radiated Restricted Band Edge, Low Channel, 7 MHz, 24 dBi Antenna, Average



Plot 374. Radiated Restricted Band Edge, Low Channel, 7 MHz, 24 dBi Antenna, Peak

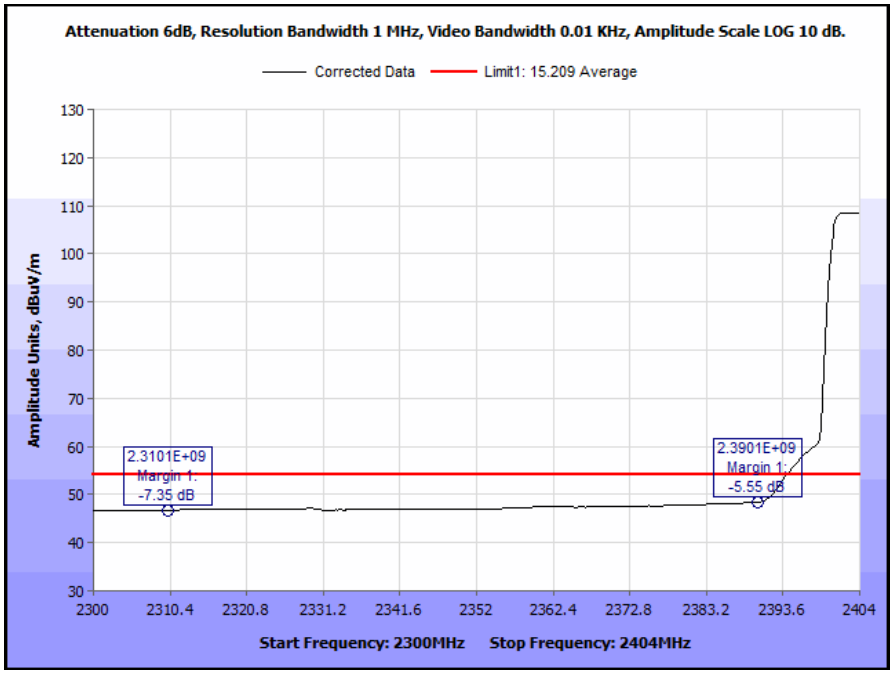


Plot 375. Radiated Restricted Band Edge, High Channel, 7 MHz, 24 dBi Antenna, Average

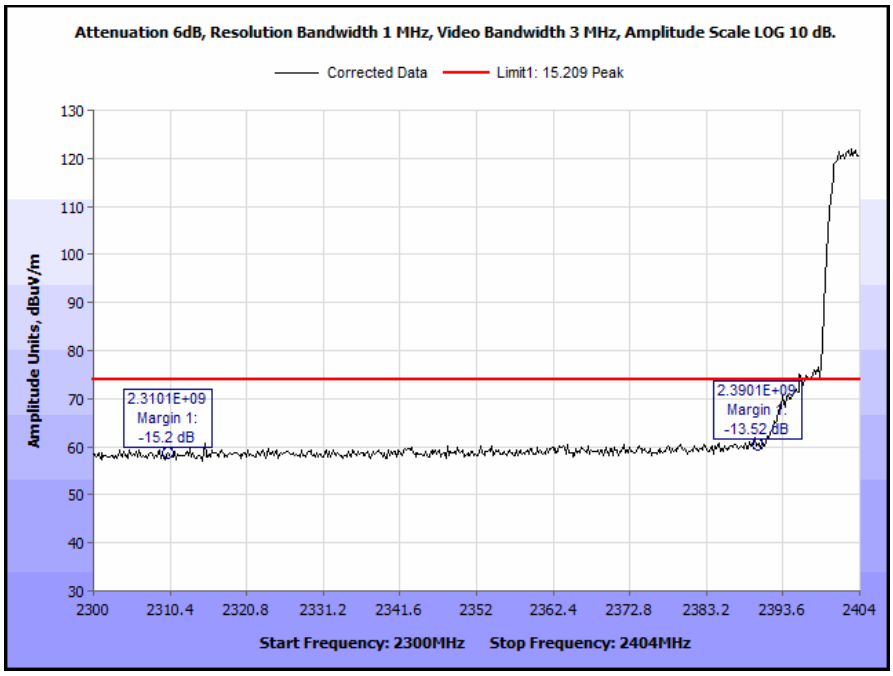


Plot 376. Radiated Restricted Band Edge, High Channel, 7 MHz, 24 dBi Antenna, Peak

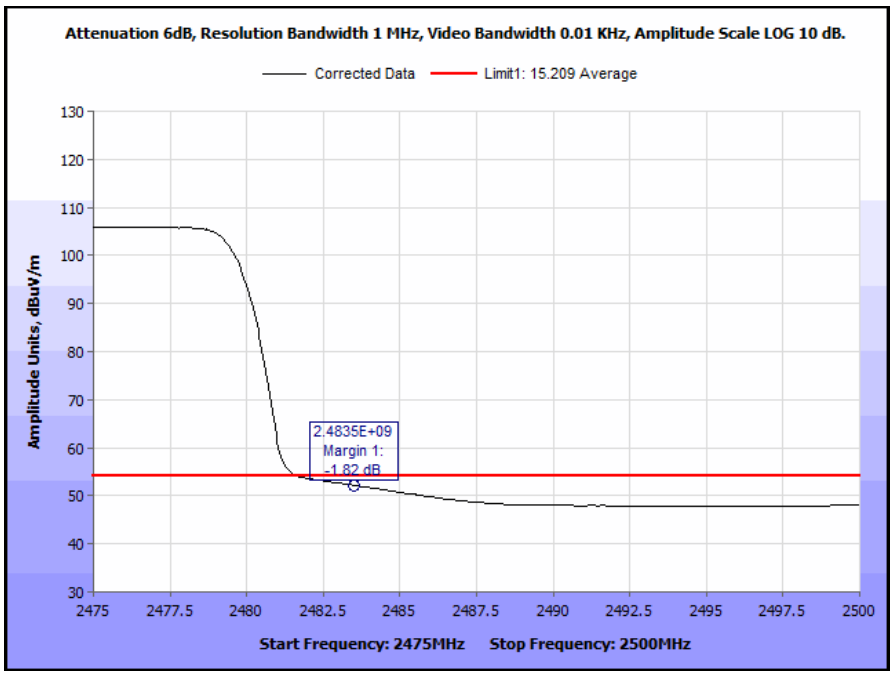
Radiated Band Edge Measurements, 10 MHz, 24 dBi Antenna



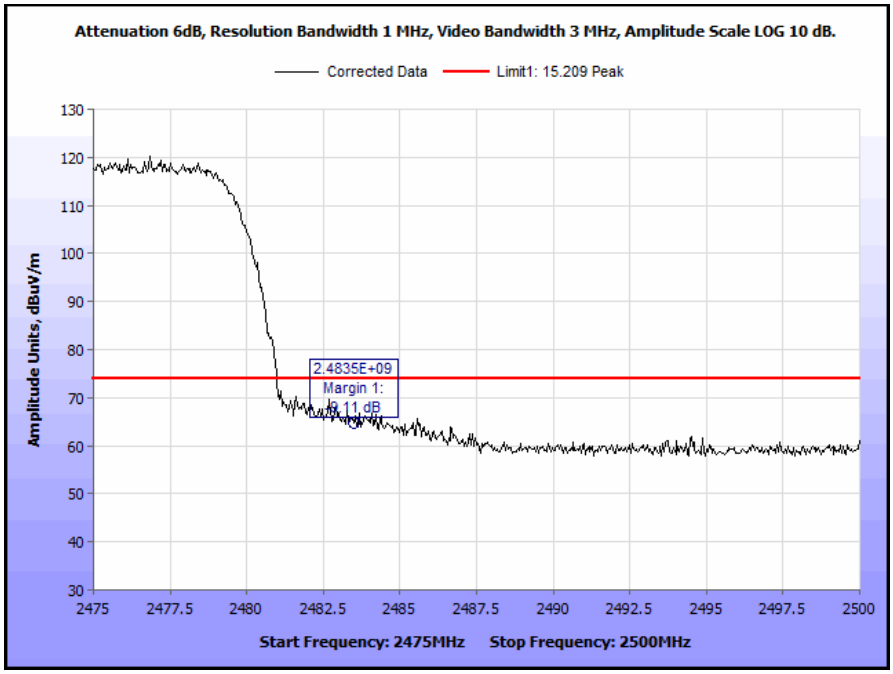
Plot 377. Radiated Restricted Band Edge, Low Channel, 10 MHz, 24 dBi Antenna, Average



Plot 378. Radiated Restricted Band Edge, Low Channel, 10 MHz, 24 dBi Antenna, Peak

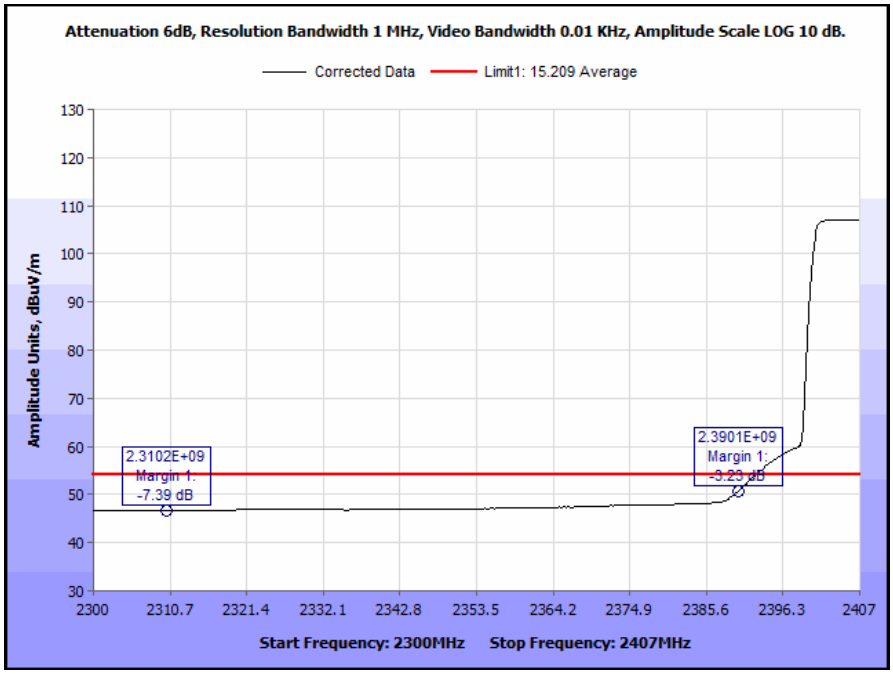


Plot 379. Radiated Restricted Band Edge, High Channel, 10 MHz, 24 dBi Antenna, Average

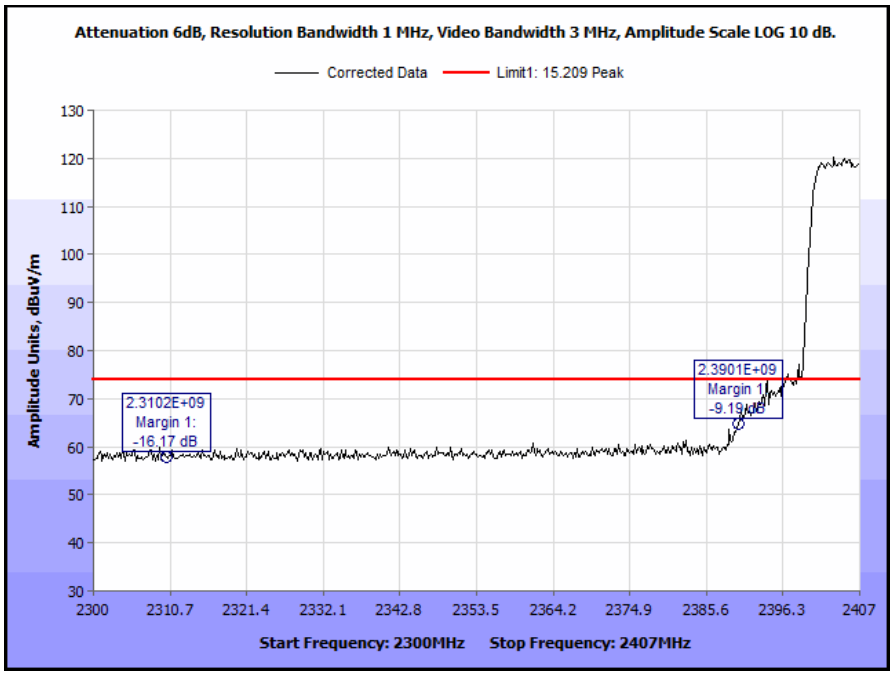


Plot 380. Radiated Restricted Band Edge, High Channel, 10 MHz, 24 dBi Antenna, Peak

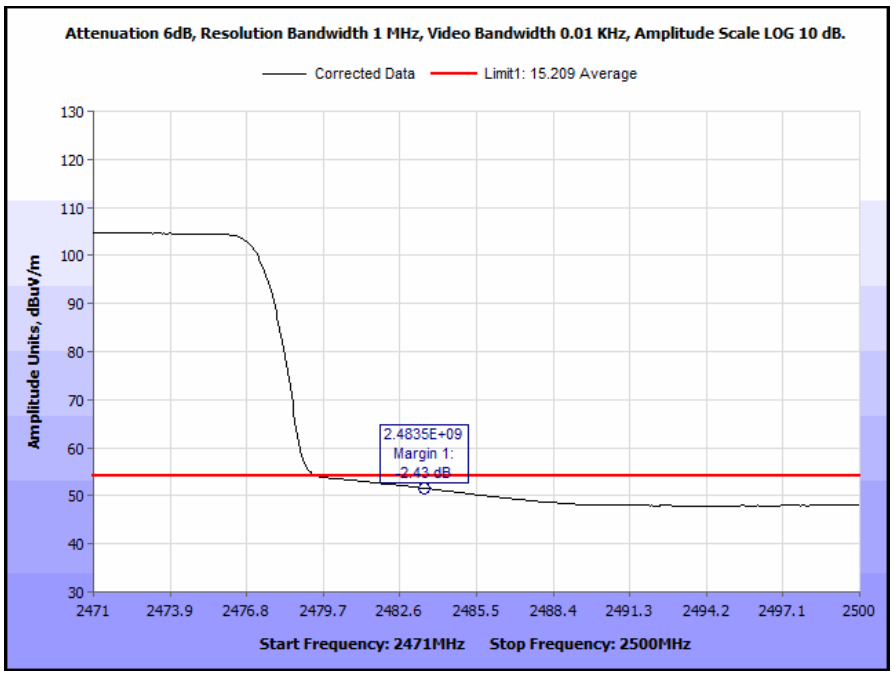
Radiated Band Edge Measurements, 14 MHz, 24 dBi Antenna



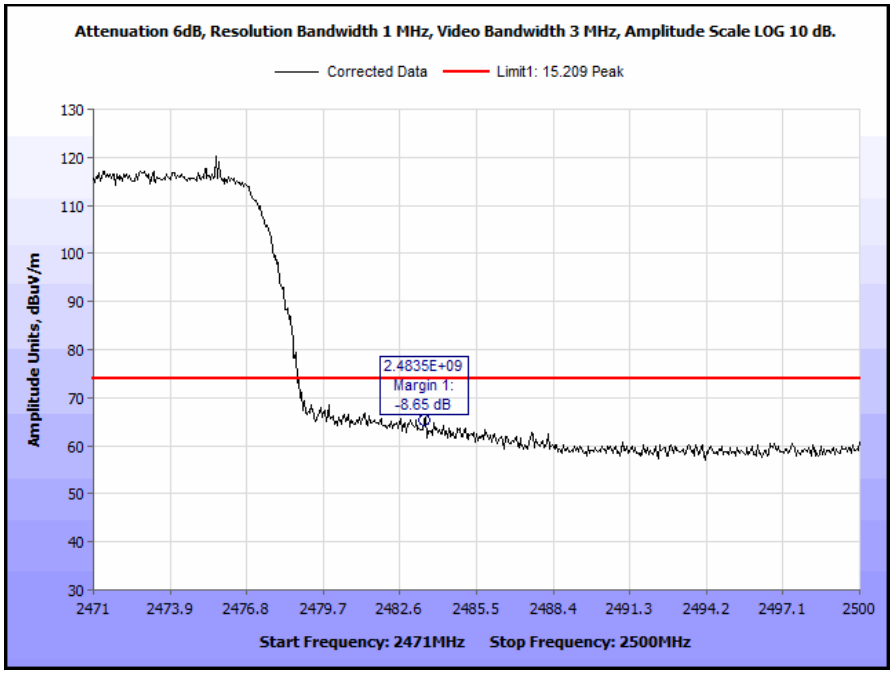
Plot 381. Radiated Restricted Band Edge, Low Channel, 14 MHz, 24 dBi Antenna, Average



Plot 382. Radiated Restricted Band Edge, Low Channel, 14 MHz, 24 dBi Antenna, Peak

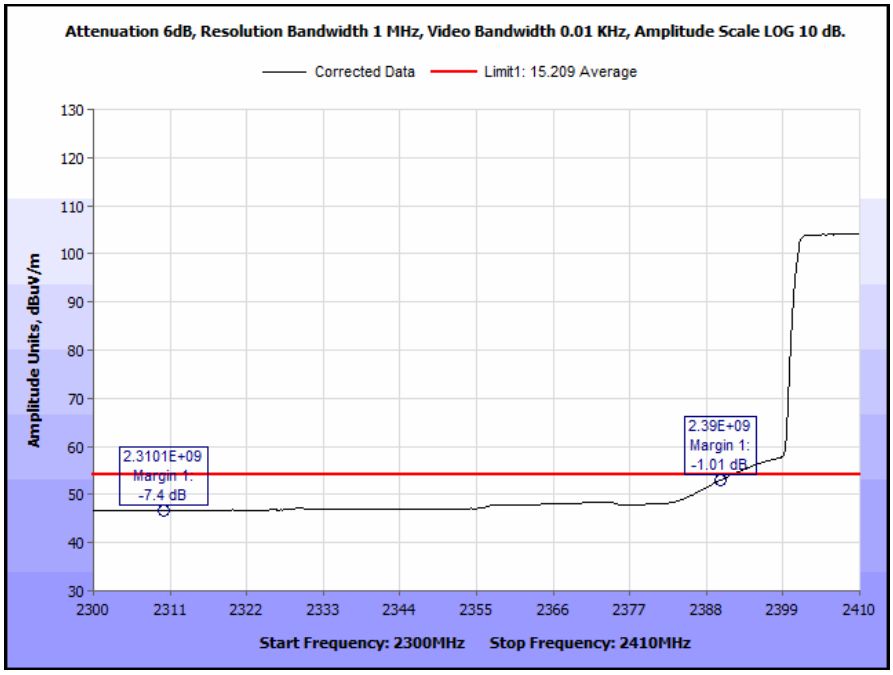


Plot 383. Radiated Restricted Band Edge, High Channel, 14 MHz, 24 dBi Antenna, Average

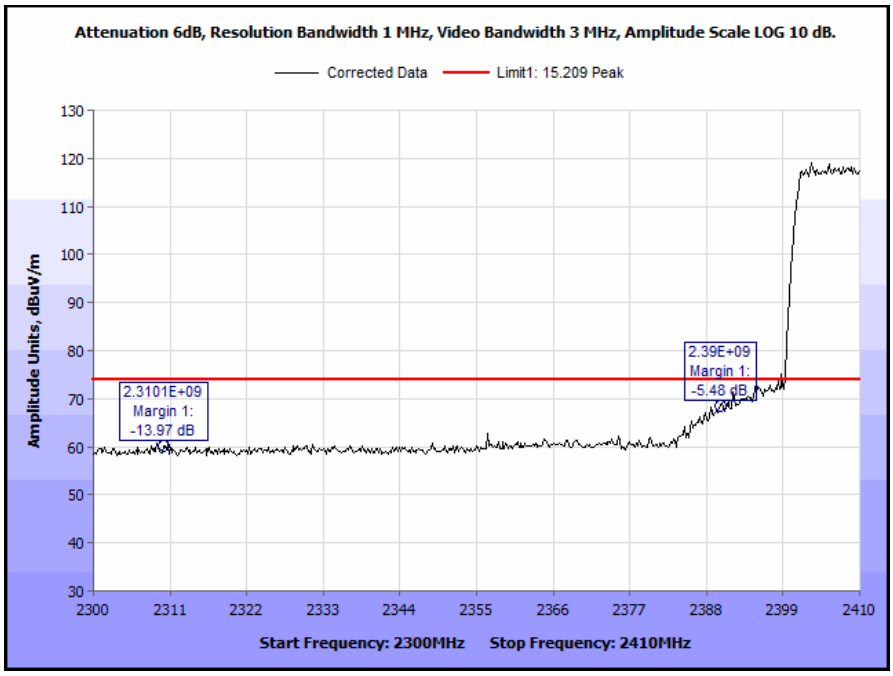


Plot 384. Radiated Restricted Band Edge, High Channel, 14 MHz, 24 dBi Antenna, Peak

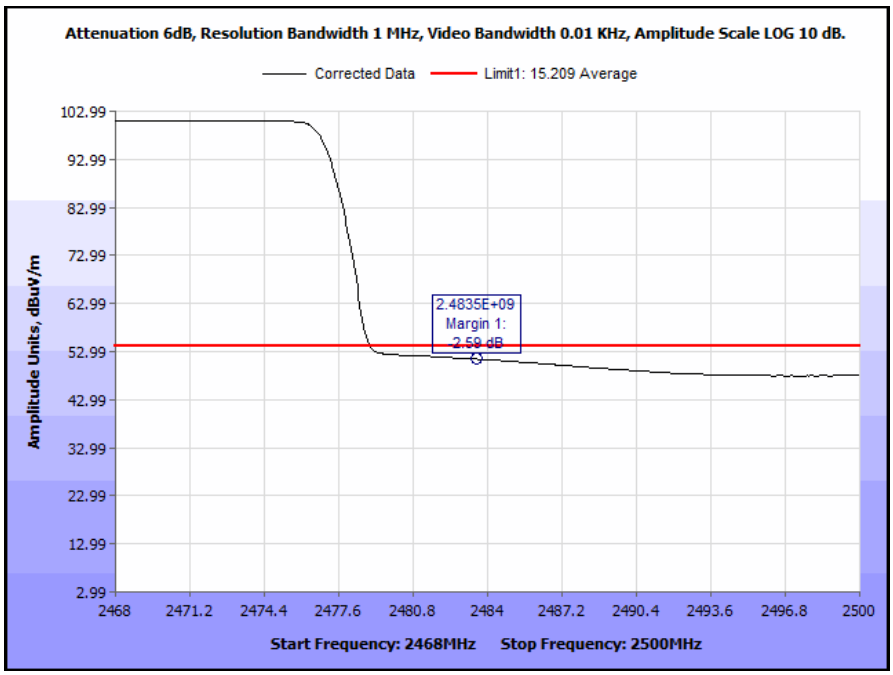
Radiated Band Edge Measurements, 20 MHz, 24 dBi Antenna



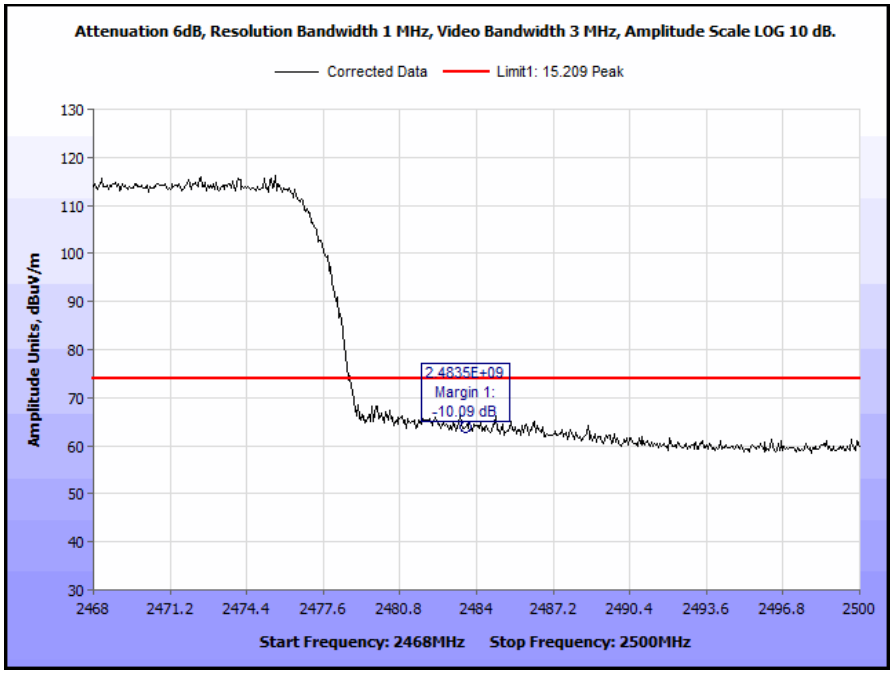
Plot 385. Radiated Restricted Band Edge, Low Channel, 20 MHz, 24 dBi Antenna, Average



Plot 386. Radiated Restricted Band Edge, Low Channel, 20 MHz, 24 dBi Antenna, Peak

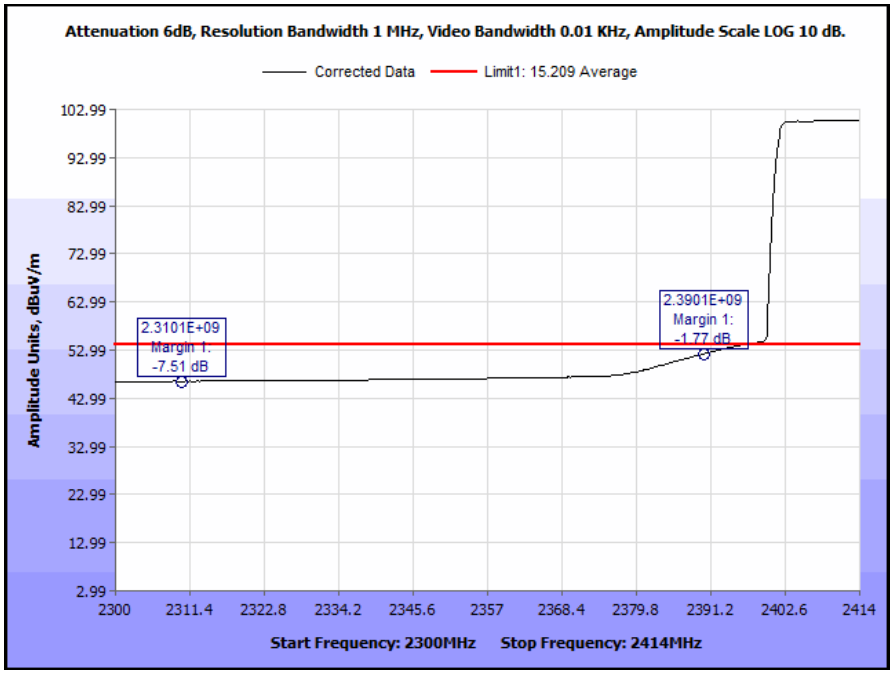


Plot 387. Radiated Restricted Band Edge, High Channel, 20 MHz, 24 dBi Antenna, Average

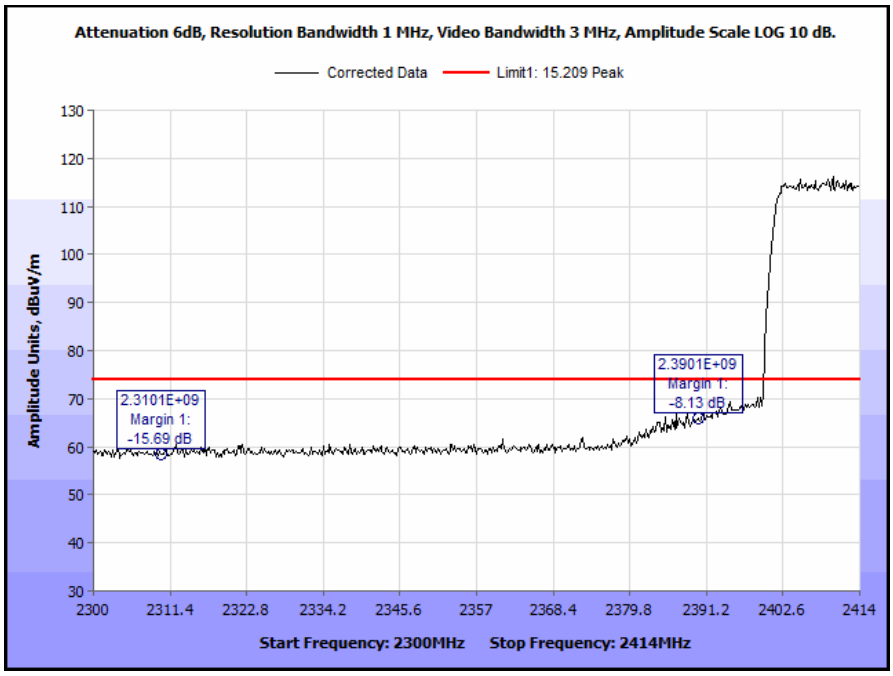


Plot 388. Radiated Restricted Band Edge, High Channel, 20 MHz, 24 dBi Antenna, Peak

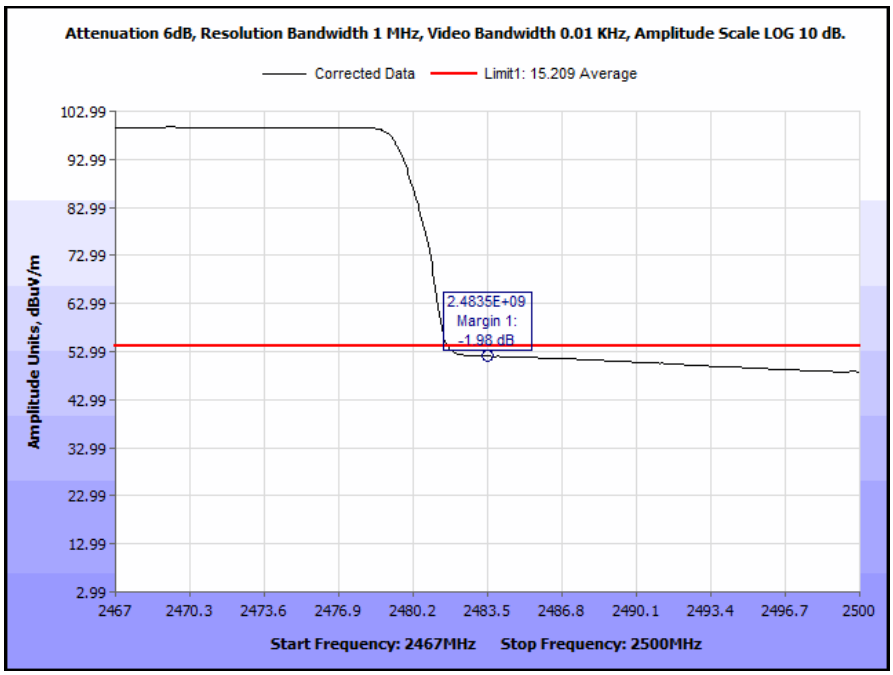
Radiated Band Edge Measurements, 28 MHz, 24 dBi Antenna



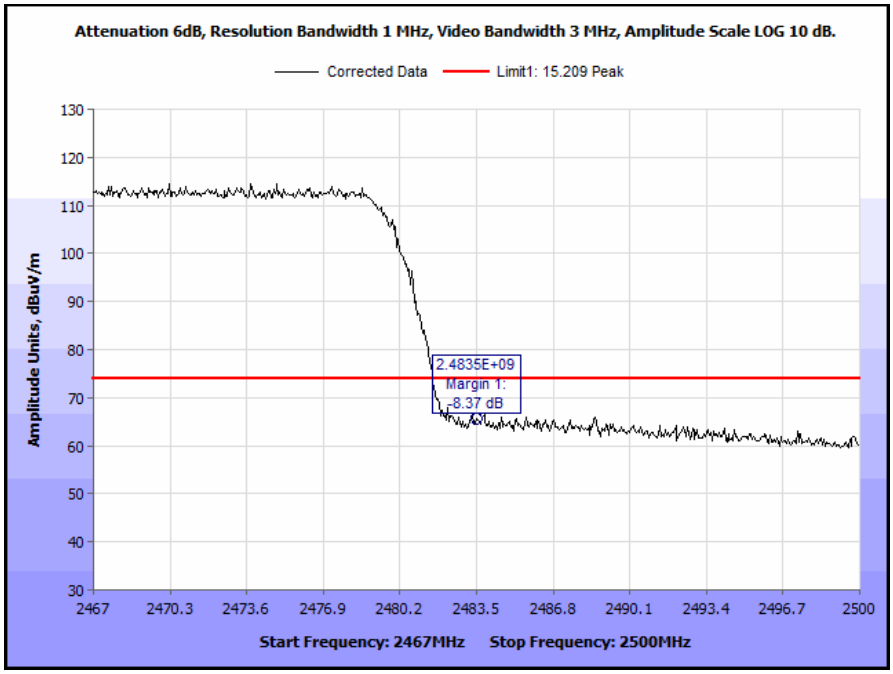
Plot 389. Radiated Restricted Band Edge, Low Channel, 28 MHz, 24 dBi Antenna, Average



Plot 390. Radiated Restricted Band Edge, Low Channel, 28 MHz, 24 dBi Antenna, Peak

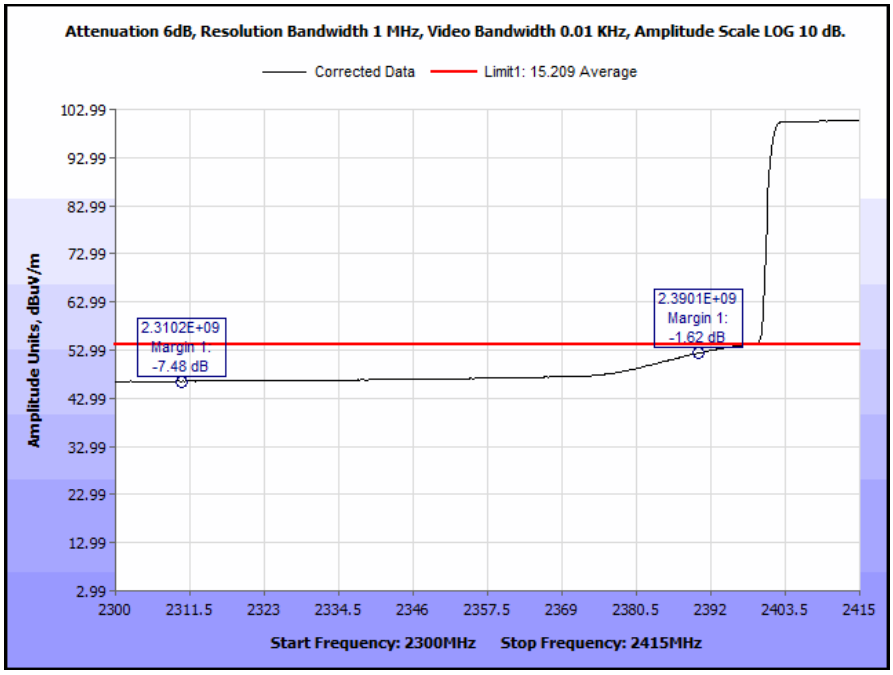


Plot 391. Radiated Restricted Band Edge, High Channel, 28 MHz, 24 dBi Antenna, Average

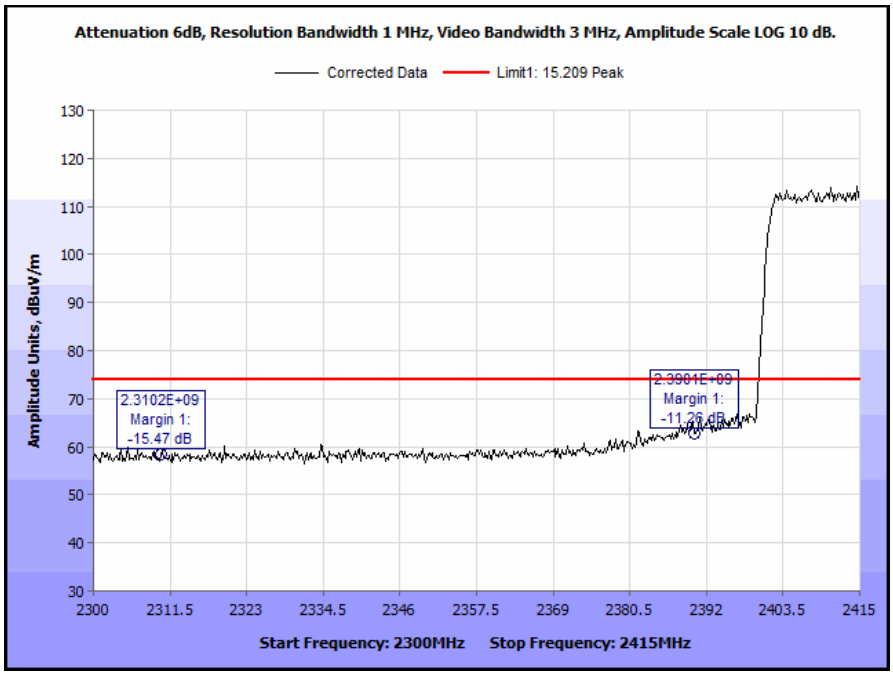


Plot 392. Radiated Restricted Band Edge, High Channel, 28 MHz, 24 dBi Antenna, Peak

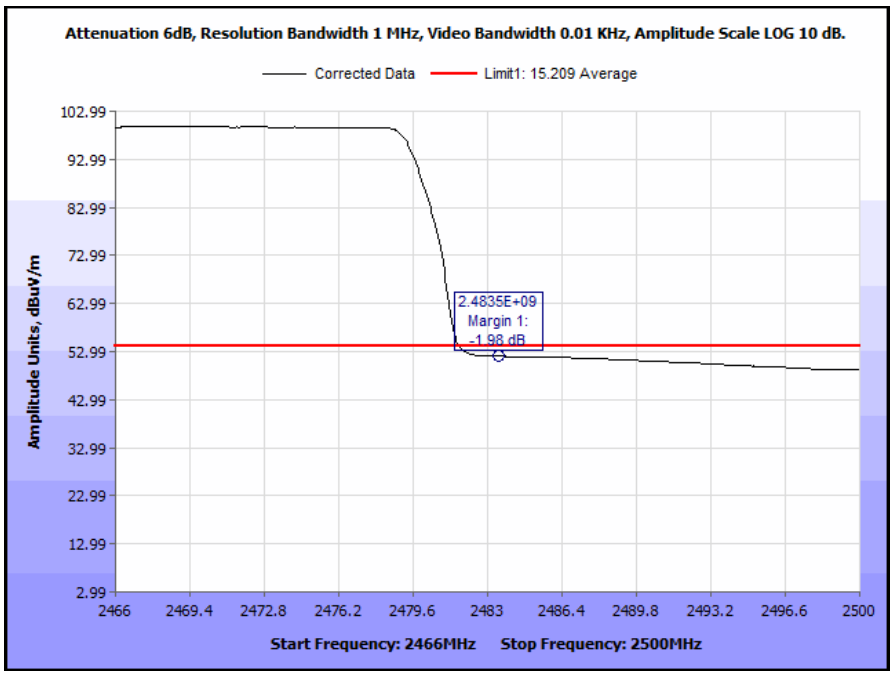
Radiated Band Edge Measurements, 30 MHz, 24 dBi Antenna



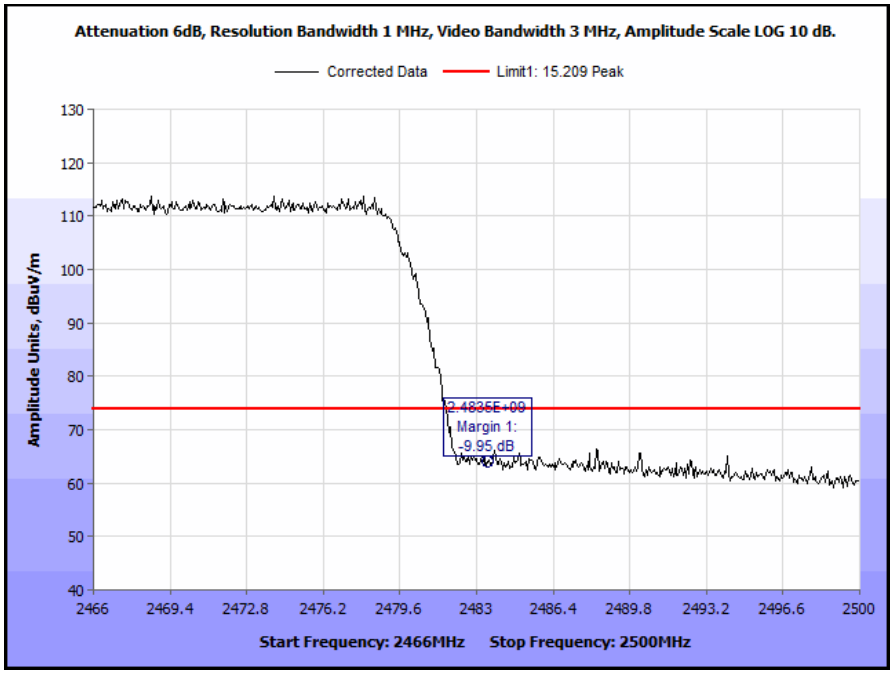
Plot 393. Radiated Restricted Band Edge, Low Channel, 30 MHz, 24 dBi Antenna, Average



Plot 394. Radiated Restricted Band Edge, Low Channel, 30 MHz, 24 dBi Antenna, Peak

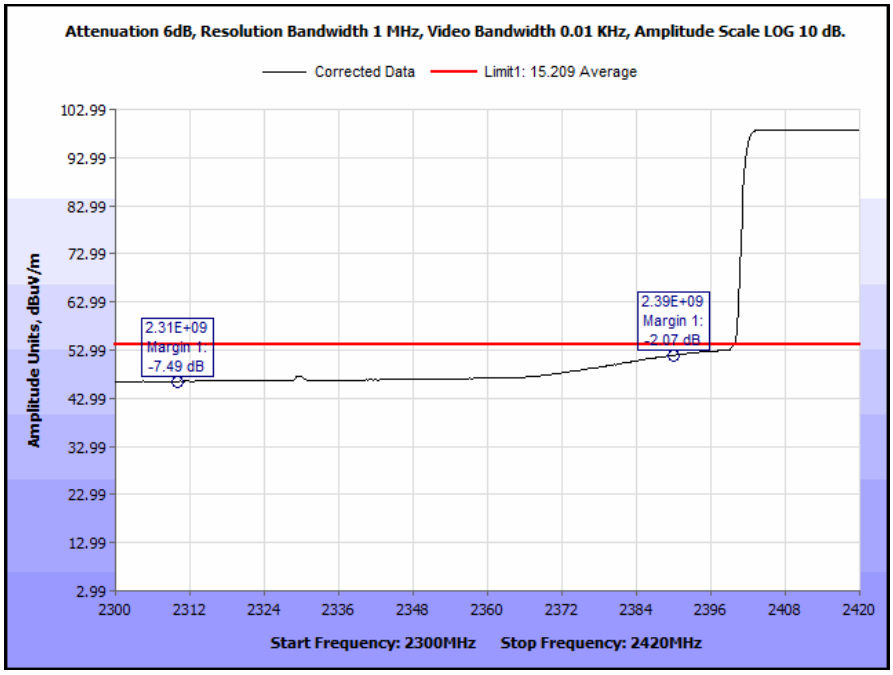


Plot 395. Radiated Restricted Band Edge, High Channel, 30 MHz, 24 dBi Antenna, Average

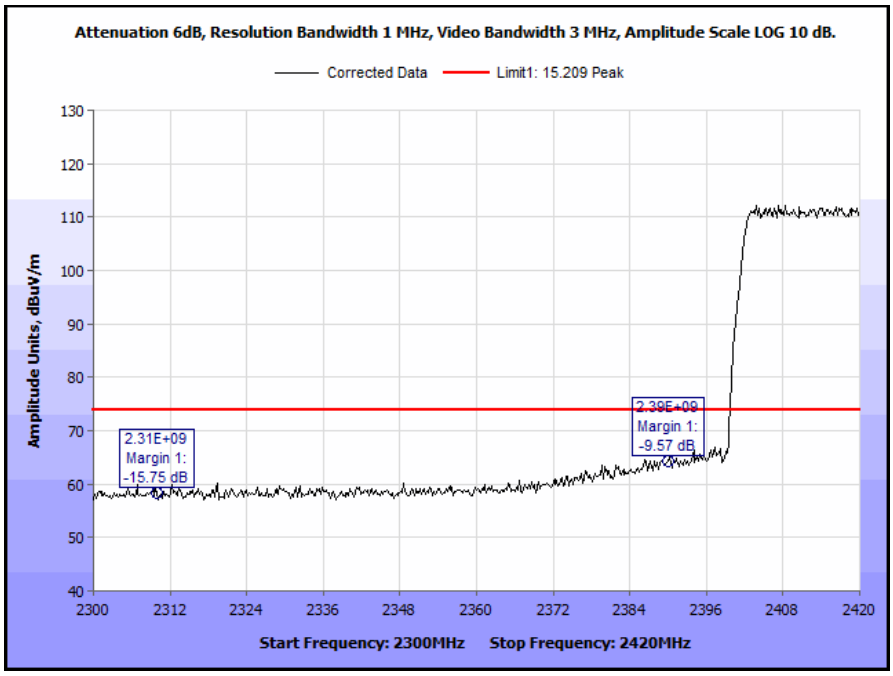


Plot 396. Radiated Restricted Band Edge, High Channel, 30 MHz, 24 dBi Antenna, Peak

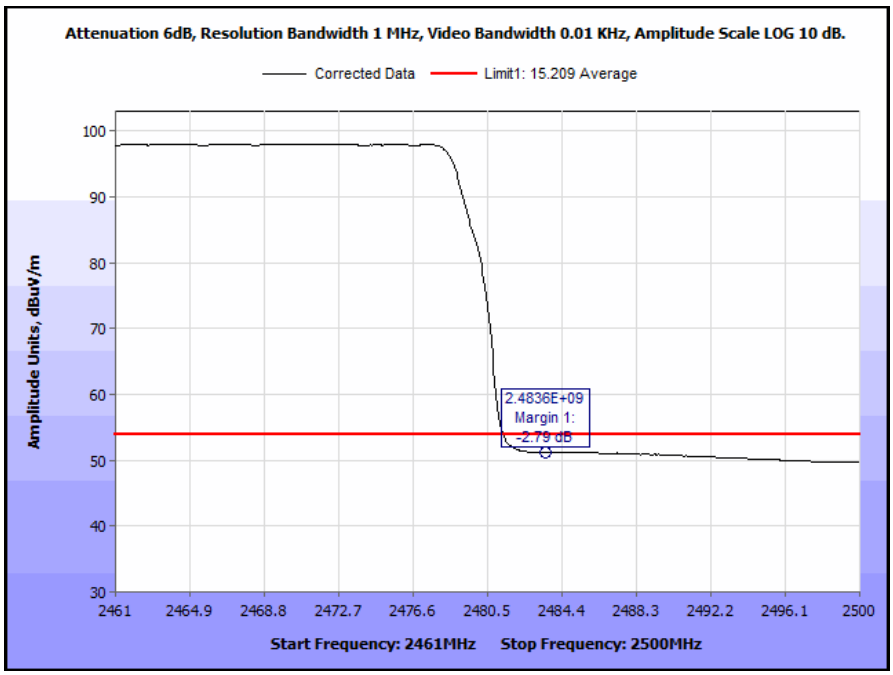
Radiated Band Edge Measurements, 40 MHz, 24 dBi Antenna



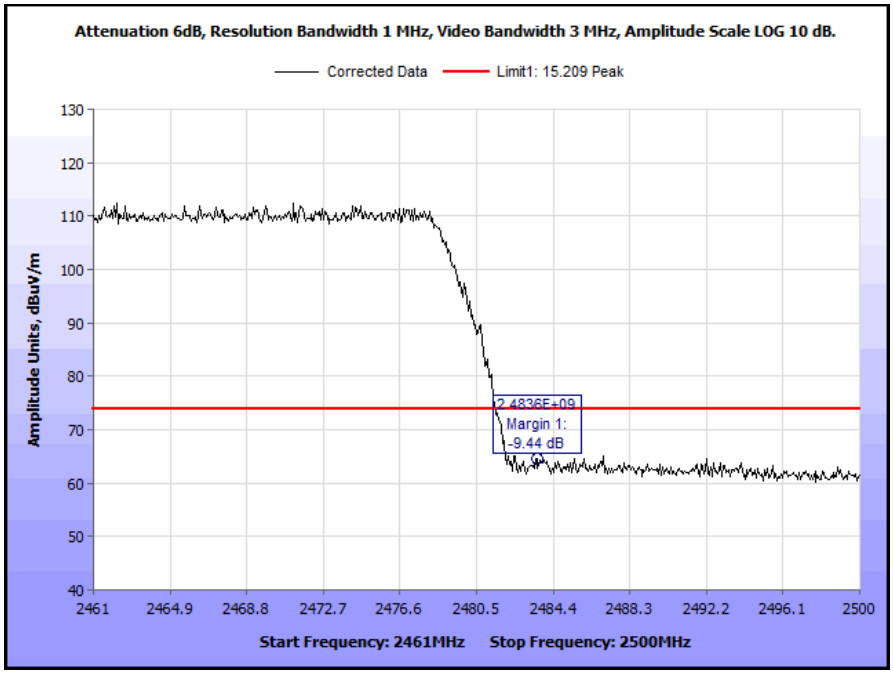
Plot 397. Radiated Restricted Band Edge, Low Channel, 40 MHz, 24 dBi Antenna, Average



Plot 398. Radiated Restricted Band Edge, Low Channel, 40 MHz, 24 dBi Antenna, Peak



Plot 399. Radiated Restricted Band Edge, High Channel, 40 MHz, 24 dBi Antenna, Average



Plot 400. Radiated Restricted Band Edge, High Channel, 40 MHz, 24 dBi Antenna, Peak

Electromagnetic Compatibility Criteria for Intentional Radiators

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

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

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

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): Djed Mouada

Test Date(s): 07/13/15

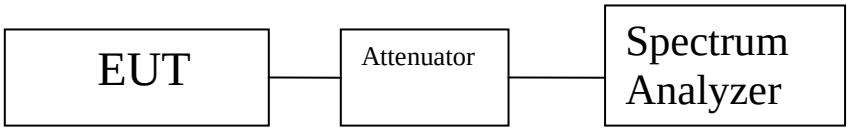
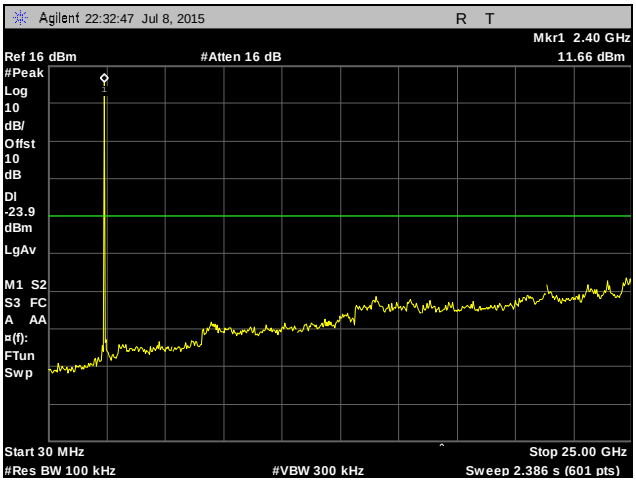
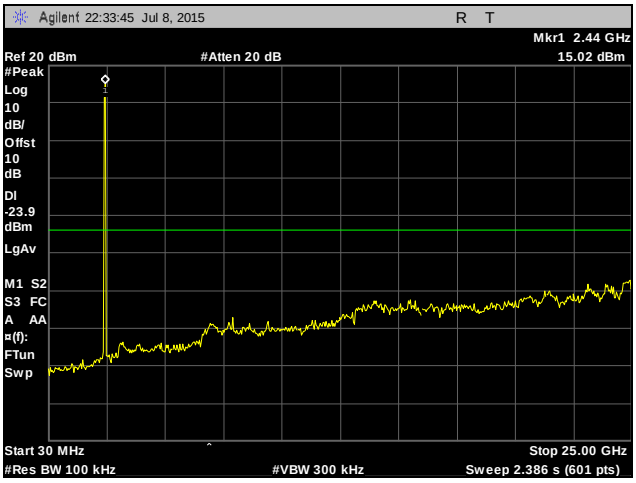


Figure 3. Block Diagram, Conducted Spurious Emissions Test Setup

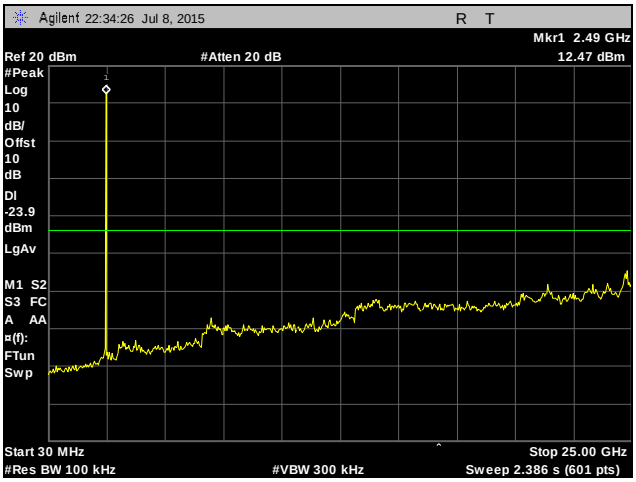
Conducted Spurious Emissions Test Results, 3.5 MHz, Chain 0



Plot 401. Conducted Spurious Emissions, Low Channel, 3.5 MHz, Chain 0

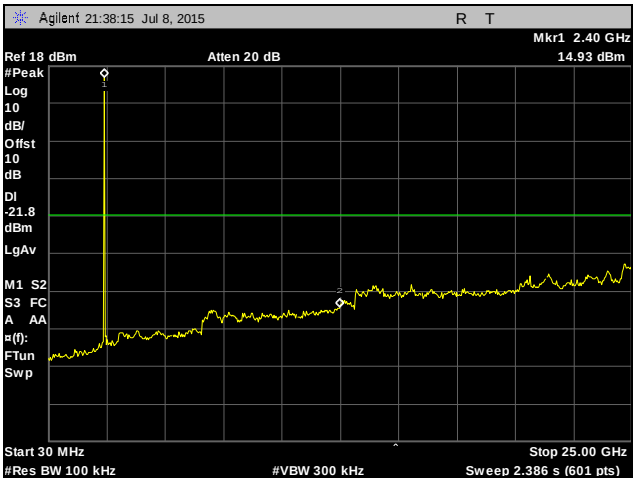


Plot 402. Conducted Spurious Emissions, Mid Channel, 3.5 MHz, Chain 0

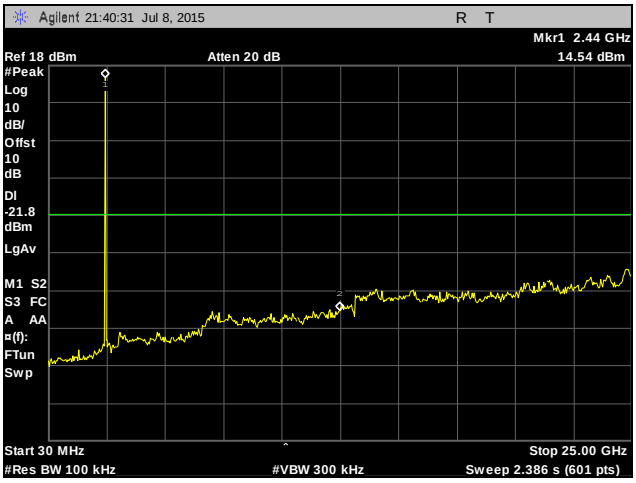


Plot 403. Conducted Spurious Emissions, High Channel, 3.5 MHz, Chain 0

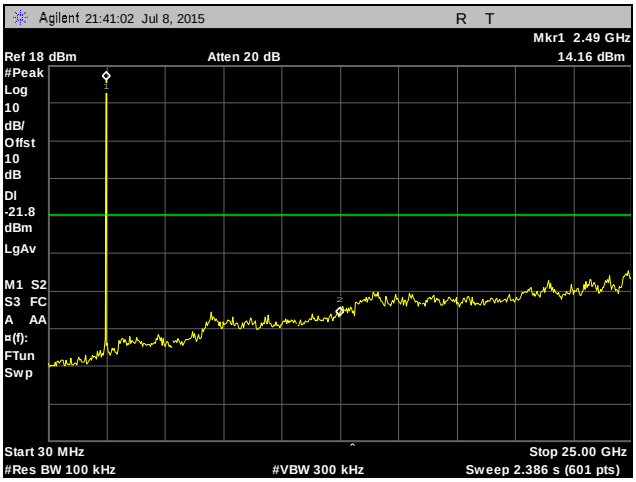
Conducted Spurious Emissions Test Results, 3.5 MHz, Chain 1



Plot 404. Conducted Spurious Emissions, Low Channel, 3.5 MHz, Chain 1

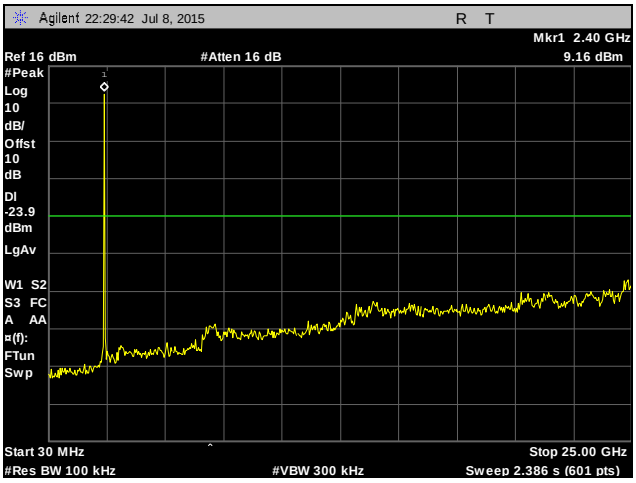


Plot 405. Conducted Spurious Emissions, Mid Channel, 3.5 MHz, Chain 1

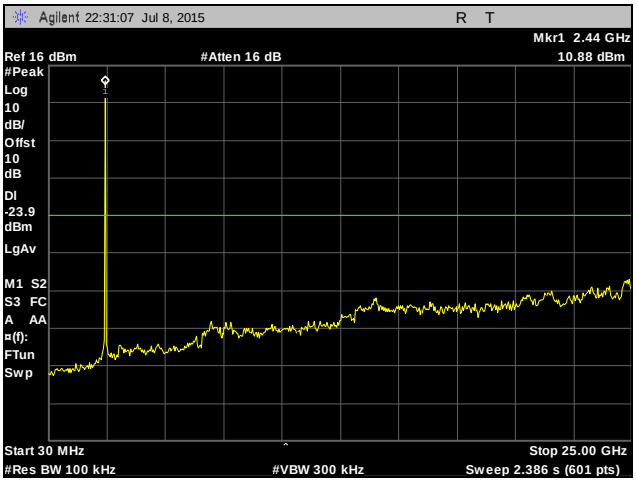


Plot 406. Conducted Spurious Emissions, High Channel, 3.5 MHz, Chain 1

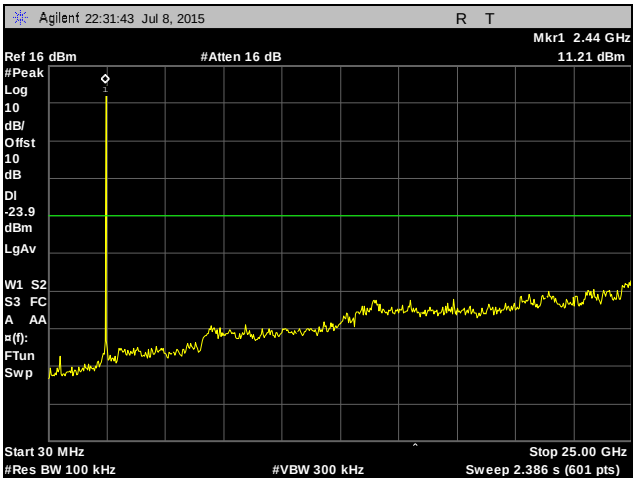
Conducted Spurious Emissions Test Results, 5 MHz, Chain 0



Plot 407. Conducted Spurious Emissions, Low Channel, 5 MHz, Chain 0

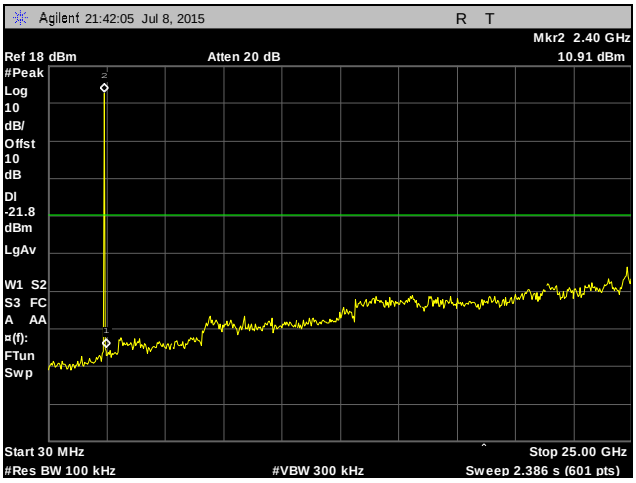


Plot 408. Conducted Spurious Emissions, Mid Channel, 5 MHz, Chain 0

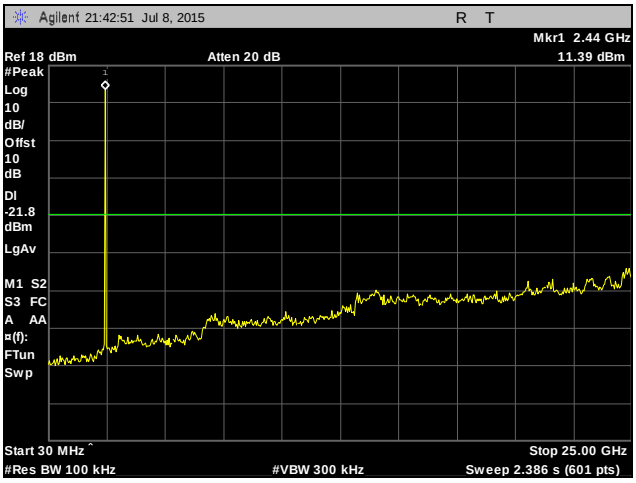


Plot 409. Conducted Spurious Emissions, High Channel, 5 MHz, Chain 0

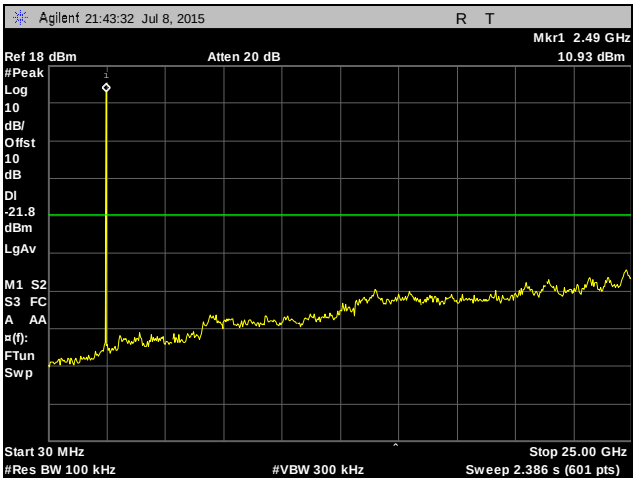
Conducted Spurious Emissions Test Results, 5 MHz, Chain 1



Plot 410. Conducted Spurious Emissions, Low Channel, 5 MHz, Chain 1

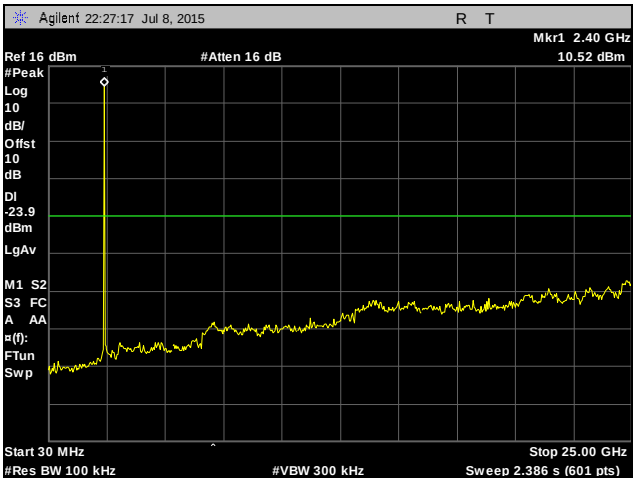


Plot 411. Conducted Spurious Emissions, Mid Channel, 5 MHz, Chain 1

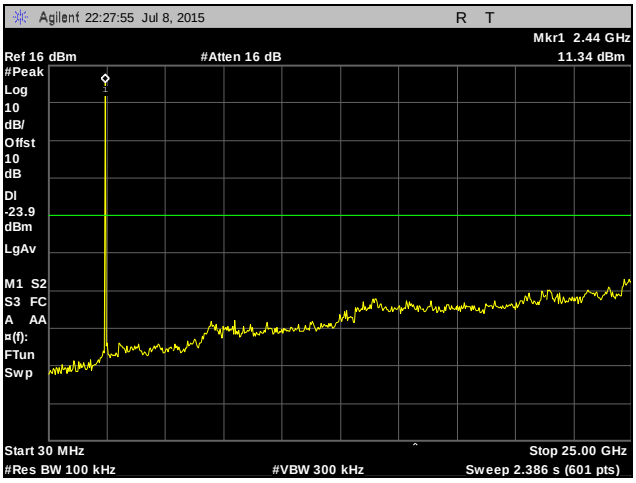


Plot 412. Conducted Spurious Emissions, High Channel, 5 MHz, Chain 1

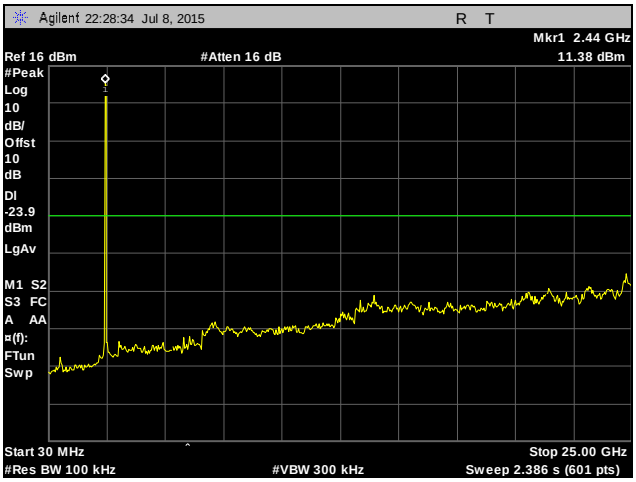
Conducted Spurious Emissions Test Results, 7 MHz, Chain 0



Plot 413. Conducted Spurious Emissions, Low Channel, 7 MHz, Chain 0

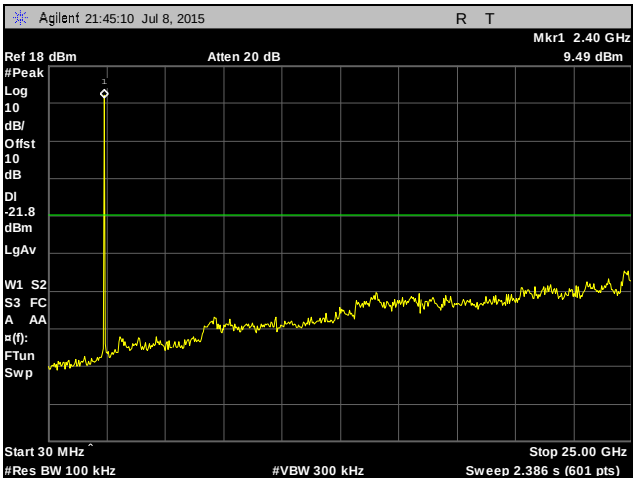


Plot 414. Conducted Spurious Emissions, Mid Channel, 7 MHz, Chain 0

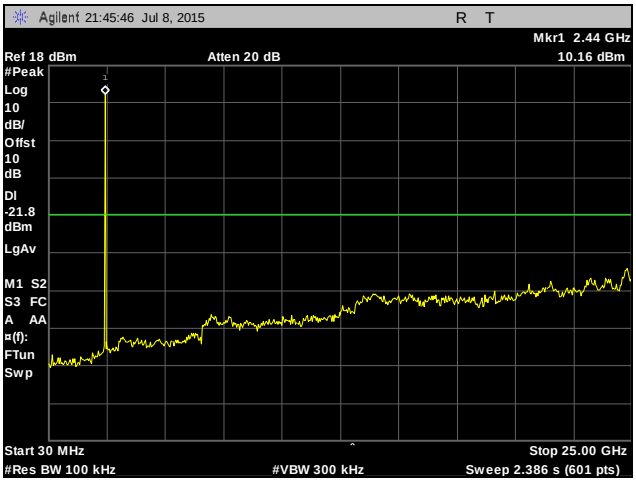


Plot 415. Conducted Spurious Emissions, High Channel, 7 MHz, Chain 0

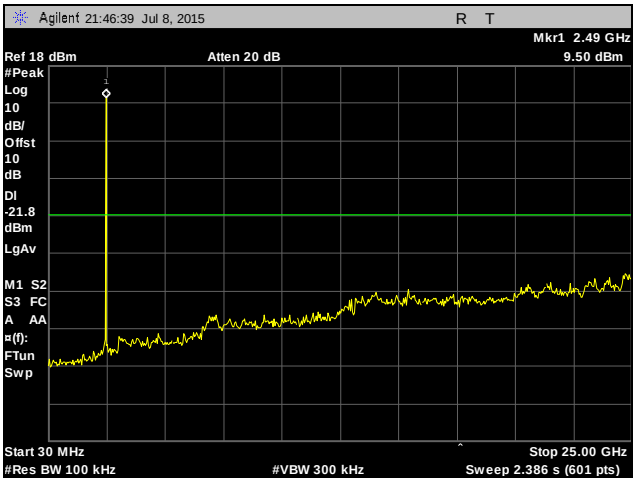
Conducted Spurious Emissions Test Results, 7 MHz, Chain 1



Plot 416. Conducted Spurious Emissions, Low Channel, 7 MHz, Chain 1

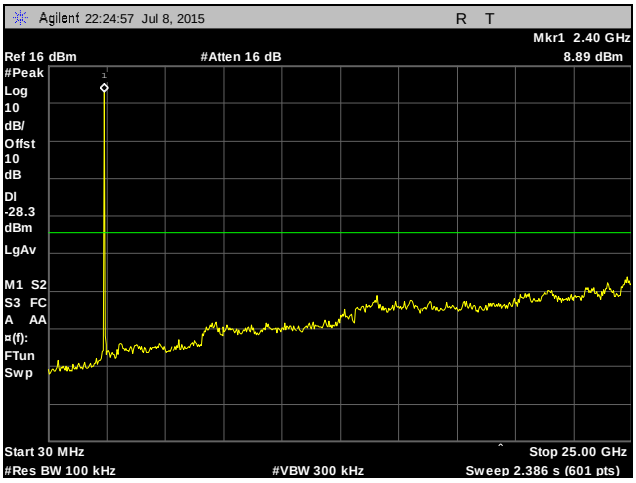


Plot 417. Conducted Spurious Emissions, Mid Channel, 7 MHz, Chain 1

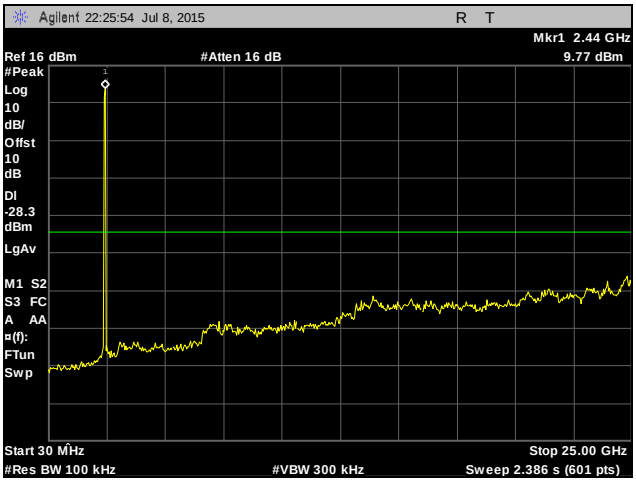


Plot 418. Conducted Spurious Emissions, High Channel, 7 MHz, Chain 1

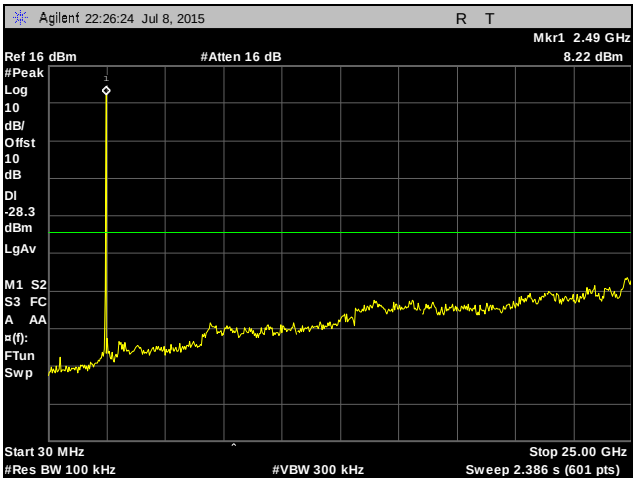
Conducted Spurious Emissions Test Results, 10 MHz, Chain 0



Plot 419. Conducted Spurious Emissions, Low Channel, 10 MHz, Chain 0

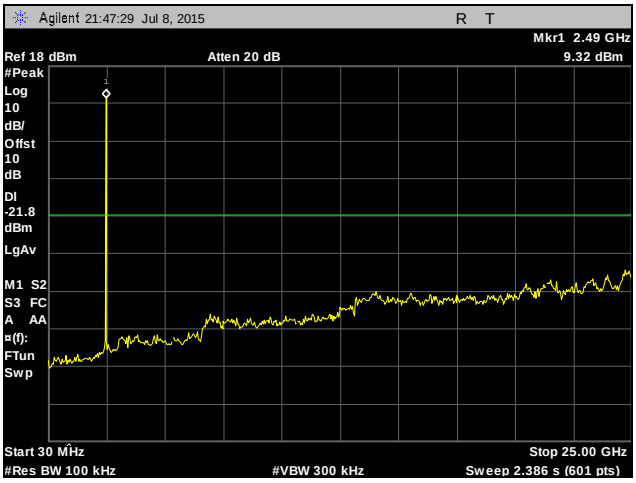


Plot 420. Conducted Spurious Emissions, Mid Channel, 10 MHz, Chain 0

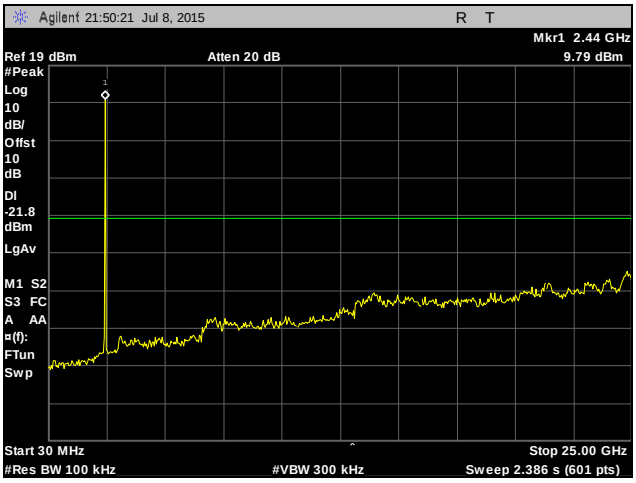


Plot 421. Conducted Spurious Emissions, High Channel, 10 MHz, Chain 0

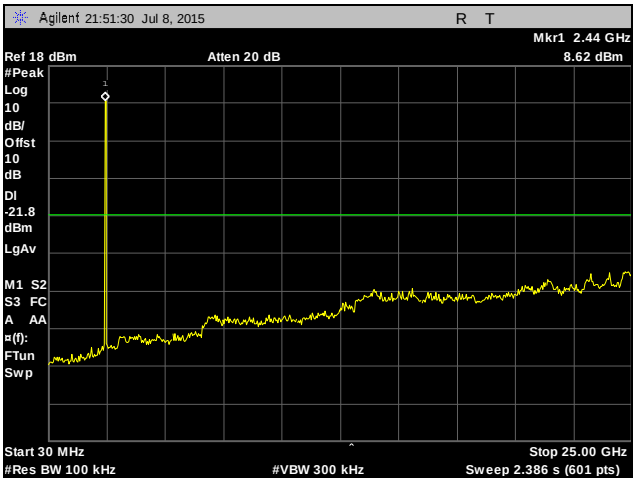
Conducted Spurious Emissions Test Results, 10 MHz, Chain 1



Plot 422. Conducted Spurious Emissions, Low Channel, 10 MHz, Chain 1

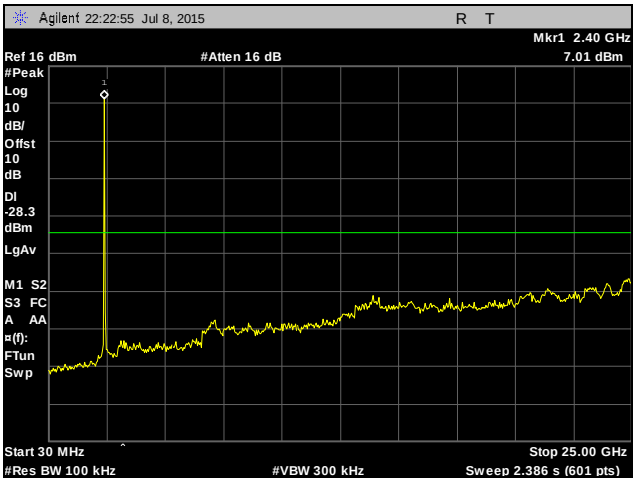


Plot 423. Conducted Spurious Emissions, Mid Channel, 10 MHz, Chain 1

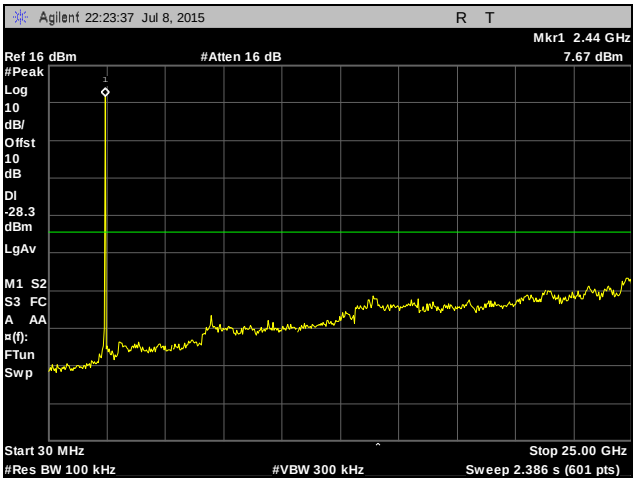


Plot 424. Conducted Spurious Emissions, High Channel, 10 MHz, Chain 1

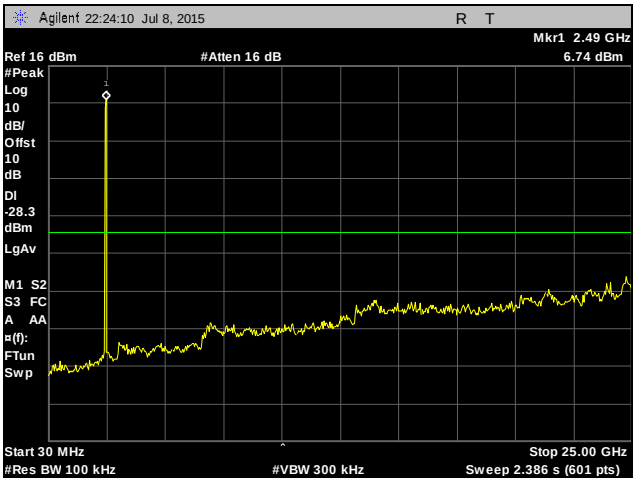
Conducted Spurious Emissions Test Results, 14 MHz, Chain 0



Plot 425. Conducted Spurious Emissions, Low Channel, 14 MHz, Chain 0

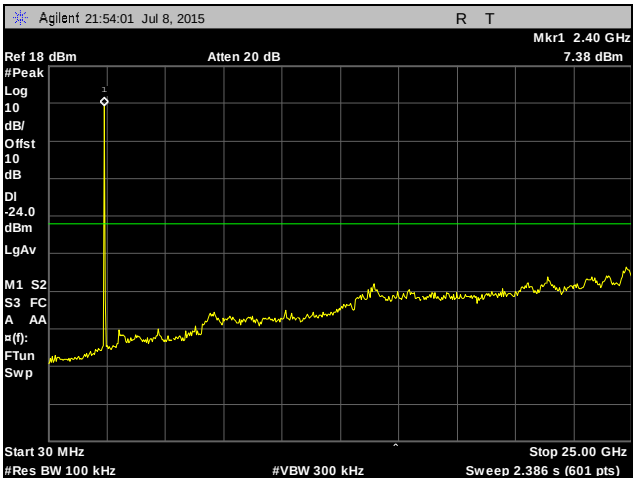


Plot 426. Conducted Spurious Emissions, Mid Channel, 14 MHz, Chain 0

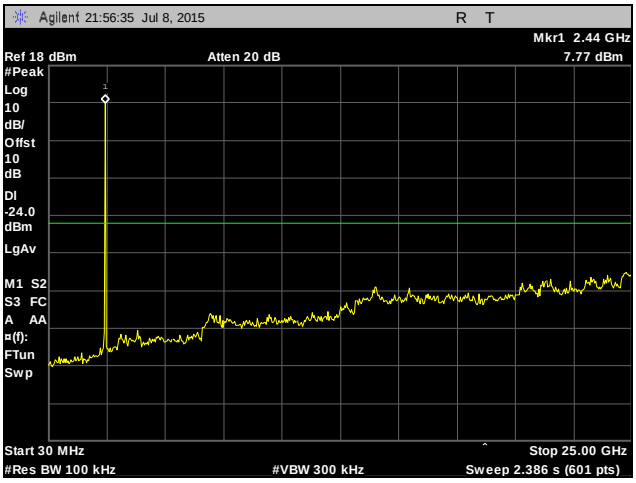


Plot 427. Conducted Spurious Emissions, High Channel, 14 MHz, Chain 0

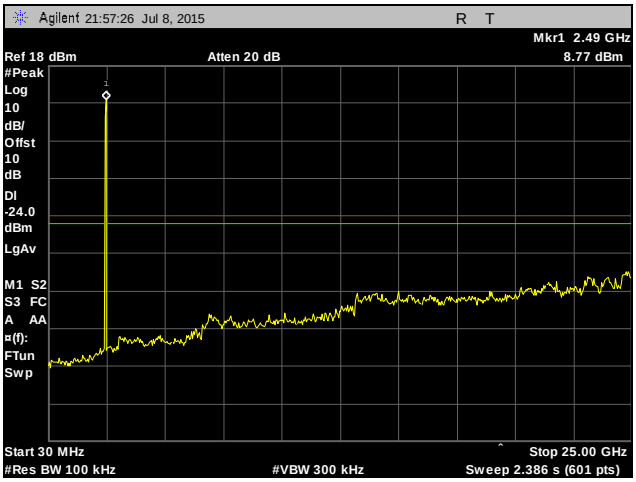
Conducted Spurious Emissions Test Results, 14 MHz, Chain 1



Plot 428. Conducted Spurious Emissions, Low Channel, 14 MHz, Chain 1

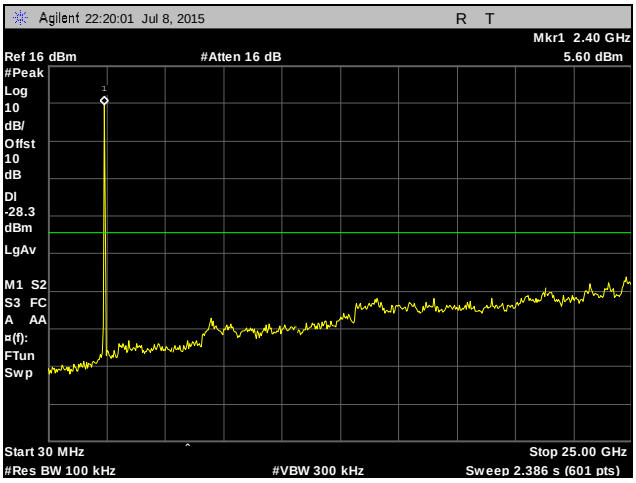


Plot 429. Conducted Spurious Emissions, Mid Channel, 14 MHz, Chain 1

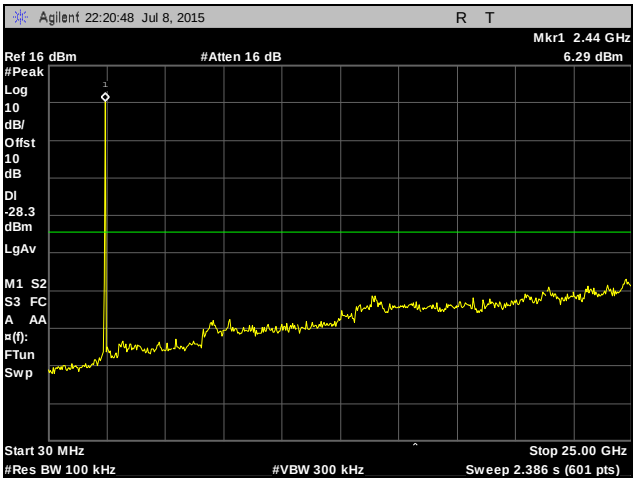


Plot 430. Conducted Spurious Emissions, High Channel, 14 MHz, Chain 1

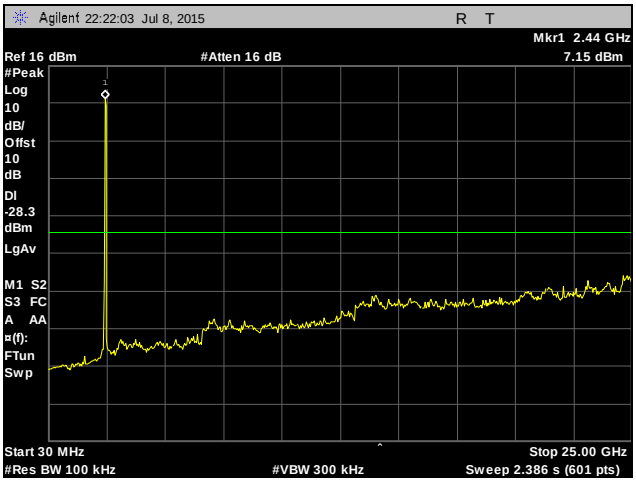
Conducted Spurious Emissions Test Results, 20 MHz, Chain 0



Plot 431. Conducted Spurious Emissions, Low Channel, 20 MHz, Chain 0

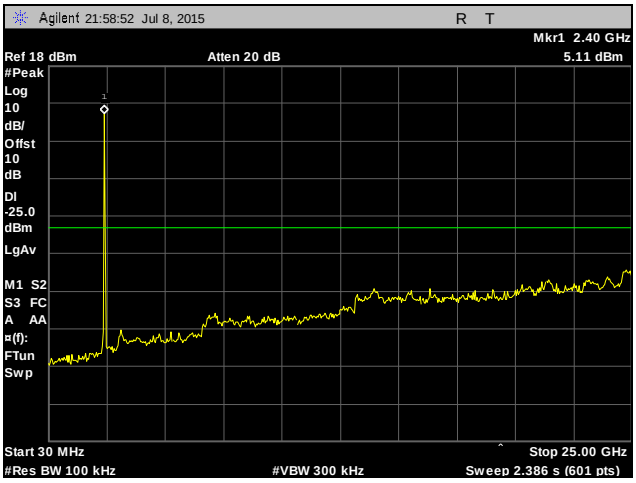


Plot 432. Conducted Spurious Emissions, Mid Channel, 20 MHz, Chain 0

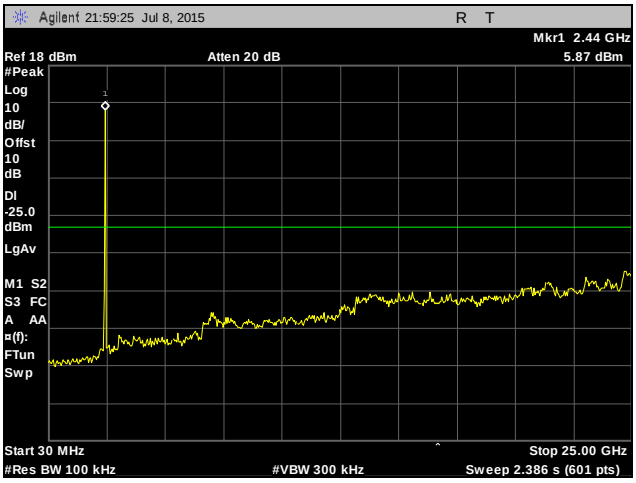


Plot 433. Conducted Spurious Emissions, High Channel, 20 MHz, Chain 0

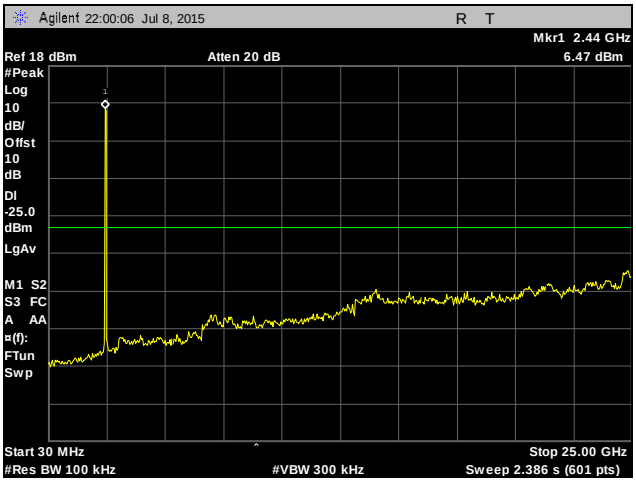
Conducted Spurious Emissions Test Results, 20 MHz, Chain 1



Plot 434. Conducted Spurious Emissions, Low Channel, 20 MHz, Chain 1

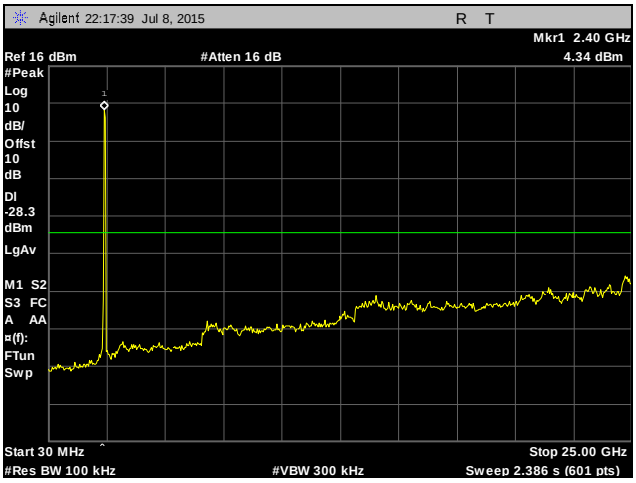


Plot 435. Conducted Spurious Emissions, Mid Channel, 20 MHz, Chain 1

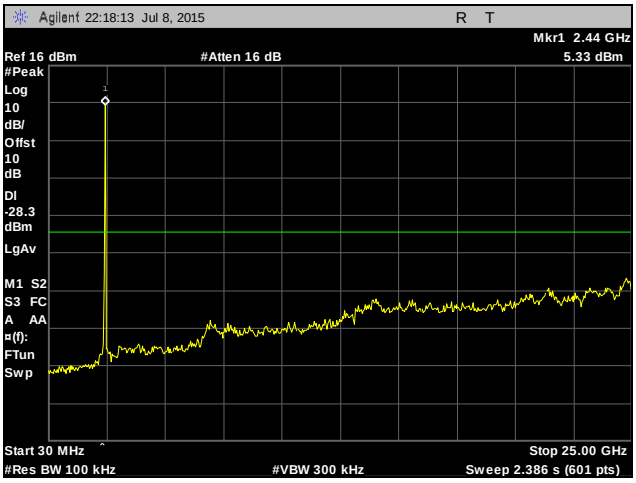


Plot 436. Conducted Spurious Emissions, High Channel, 20 MHz, Chain 1

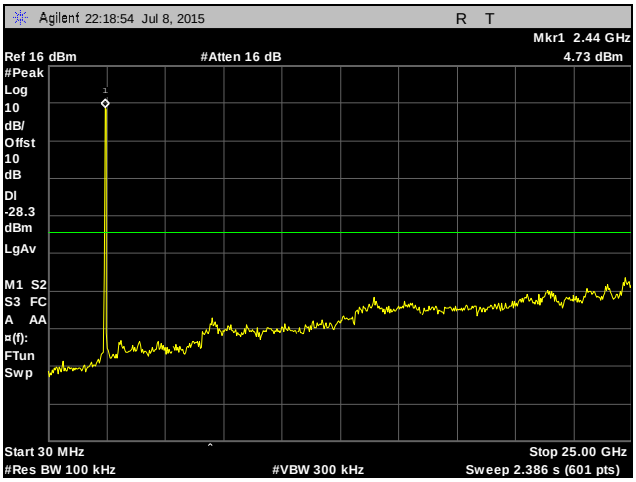
Conducted Spurious Emissions Test Results, 28 MHz, Chain 0



Plot 437. Conducted Spurious Emissions, Low Channel, 28 MHz, Chain 0

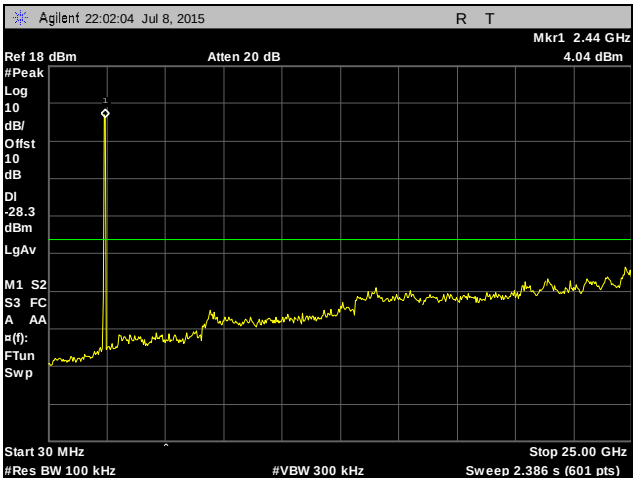


Plot 438. Conducted Spurious Emissions, Mid Channel, 28 MHz, Chain 0

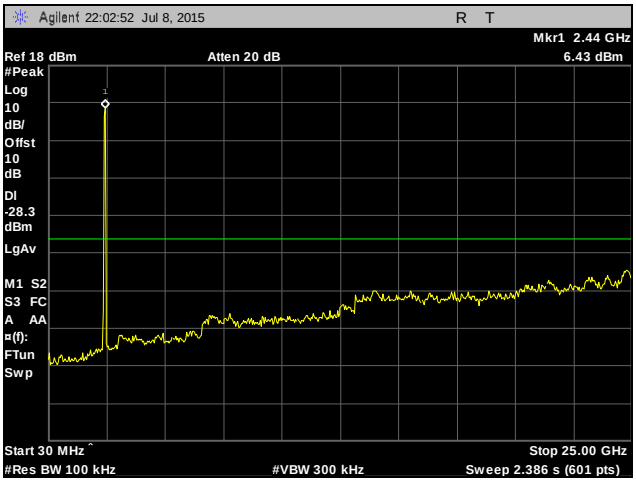


Plot 439. Conducted Spurious Emissions, High Channel, 28 MHz, Chain 0

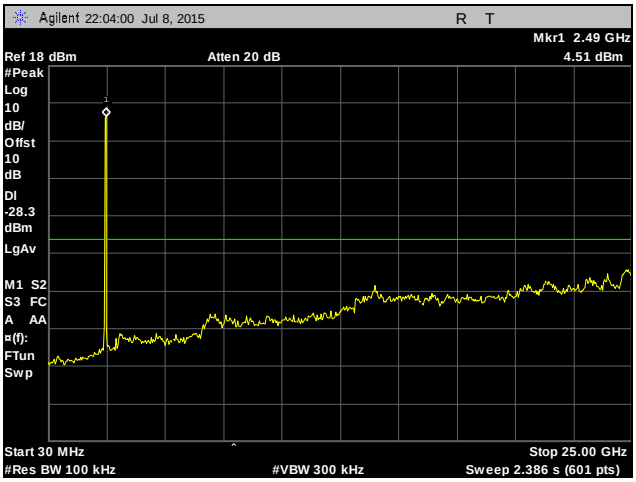
Conducted Spurious Emissions Test Results, 28 MHz, Chain 1



Plot 440. Conducted Spurious Emissions, Low Channel, 28 MHz, Chain 1

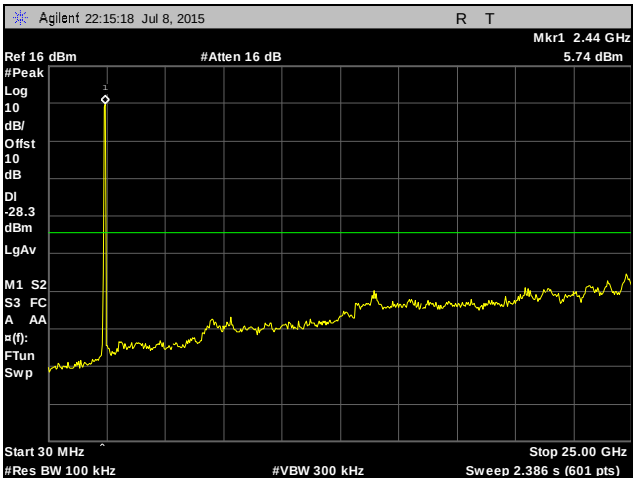


Plot 441. Conducted Spurious Emissions, Mid Channel, 28 MHz, Chain 1

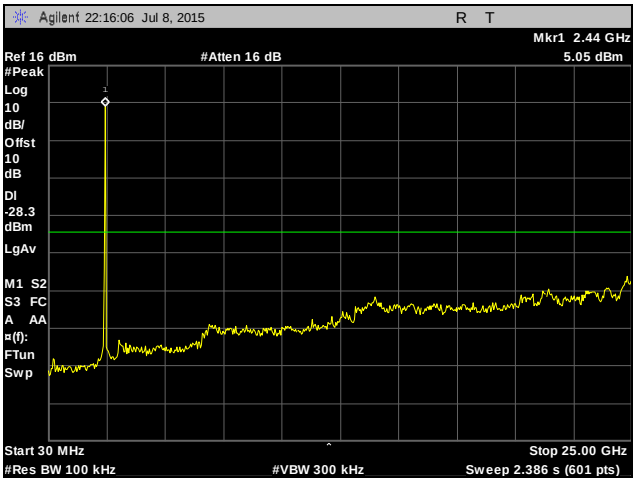


Plot 442. Conducted Spurious Emissions, High Channel, 28 MHz, Chain 1

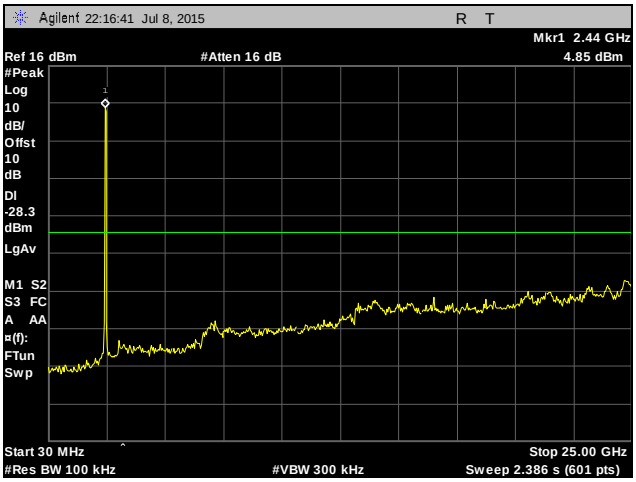
Conducted Spurious Emissions Test Results, 30 MHz, Chain 0



Plot 443. Conducted Spurious Emissions, Low Channel, 30 MHz, Chain 0

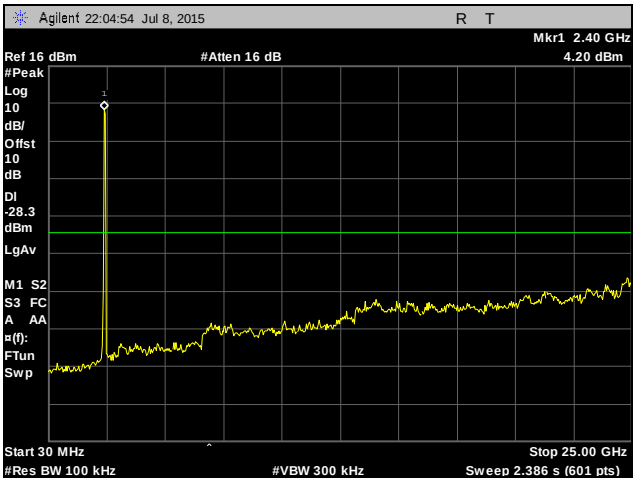


Plot 444. Conducted Spurious Emissions, Mid Channel, 30 MHz, Chain 0

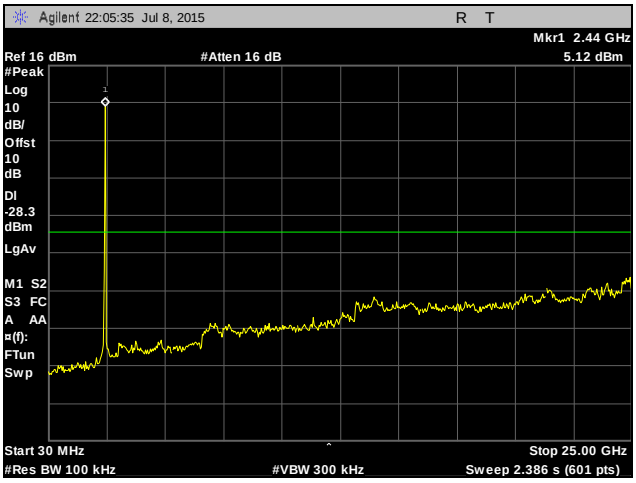


Plot 445. Conducted Spurious Emissions, High Channel, 30 MHz, Chain 0

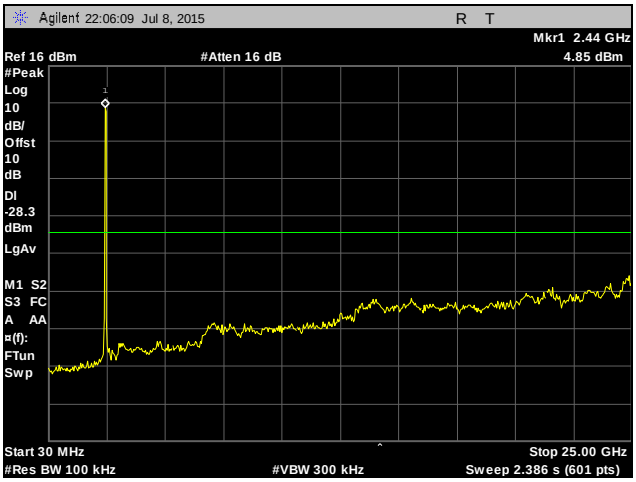
Conducted Spurious Emissions Test Results, 30 MHz, Chain 1



Plot 446. Conducted Spurious Emissions, Low Channel, 30 MHz, Chain 1

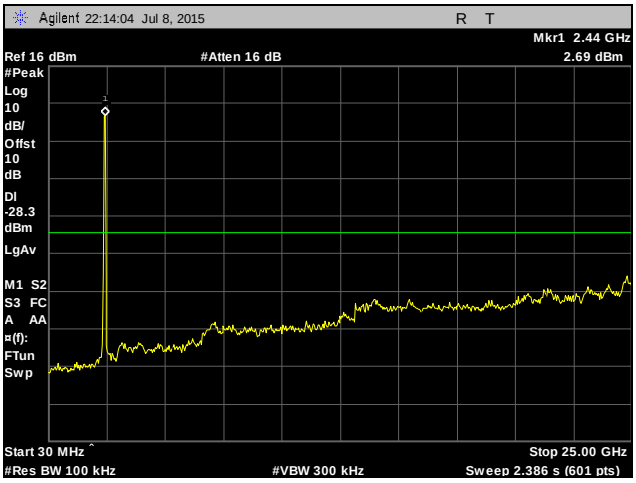


Plot 447. Conducted Spurious Emissions, Mid Channel, 30 MHz, Chain 1

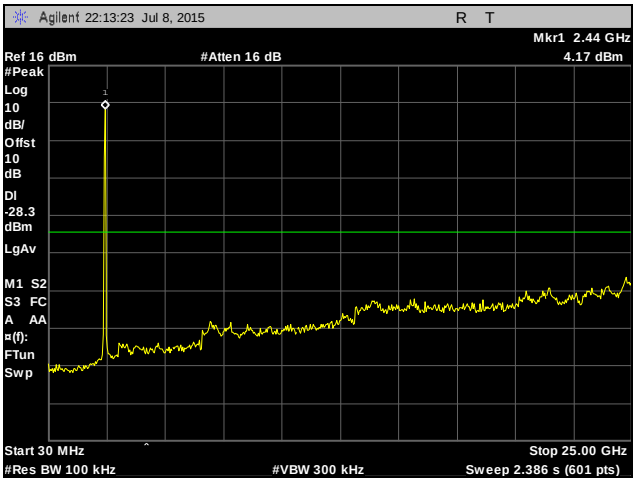


Plot 448. Conducted Spurious Emissions, High Channel, 30 MHz, Chain 1

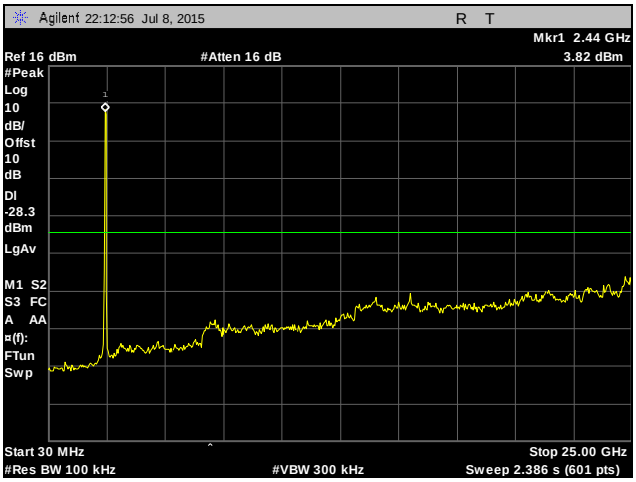
Conducted Spurious Emissions Test Results, 40 MHz, Chain 0



Plot 449. Conducted Spurious Emissions, Low Channel, 40 MHz, Chain 0

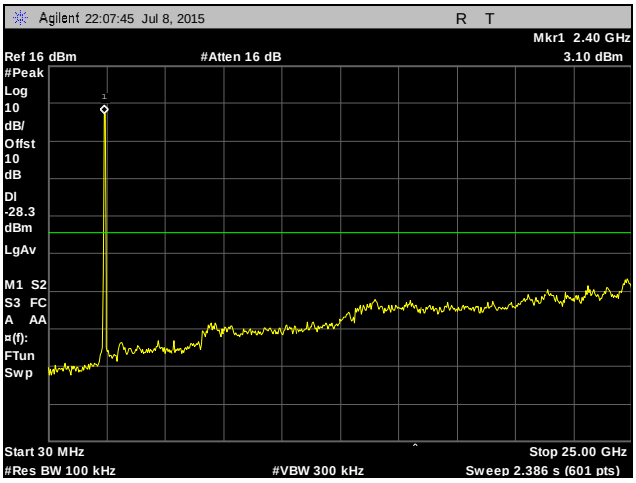


Plot 450. Conducted Spurious Emissions, Mid Channel, 40 MHz, Chain 0

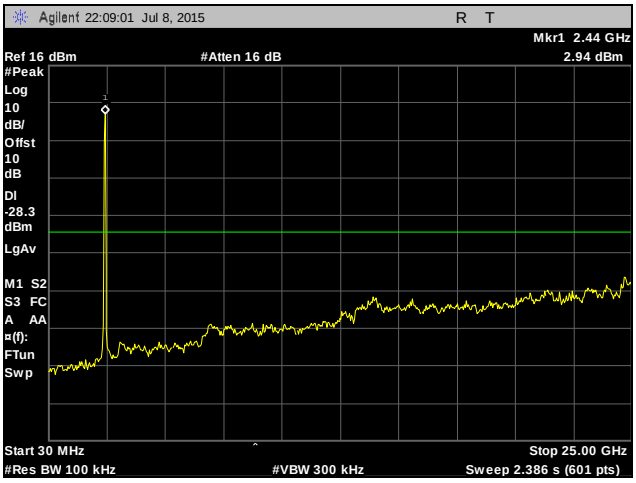


Plot 451. Conducted Spurious Emissions, High Channel, 40 MHz, Chain 0

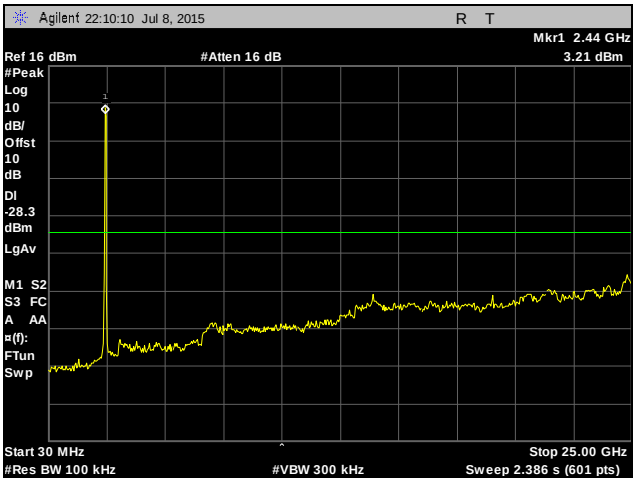
Conducted Spurious Emissions Test Results, 40 MHz, Chain 1



Plot 452. Conducted Spurious Emissions, Low Channel, 40 MHz, Chain 1

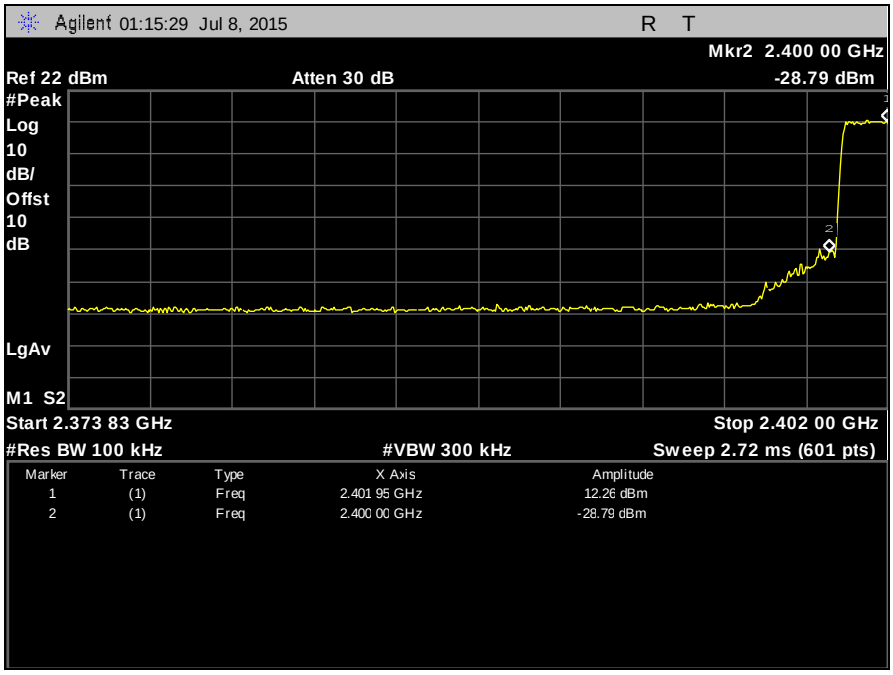


Plot 453. Conducted Spurious Emissions, Mid Channel, 40 MHz, Chain 1

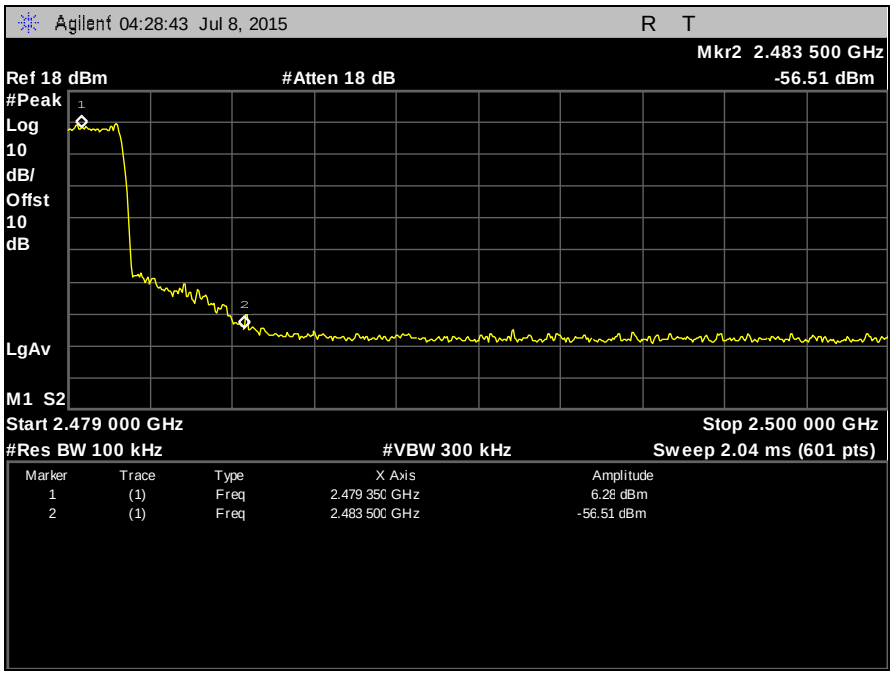


Plot 454. Conducted Spurious Emissions, High Channel, 40 MHz, Chain 1

Conducted Band Edge Measurements, 3.5 MHz, Chain 0

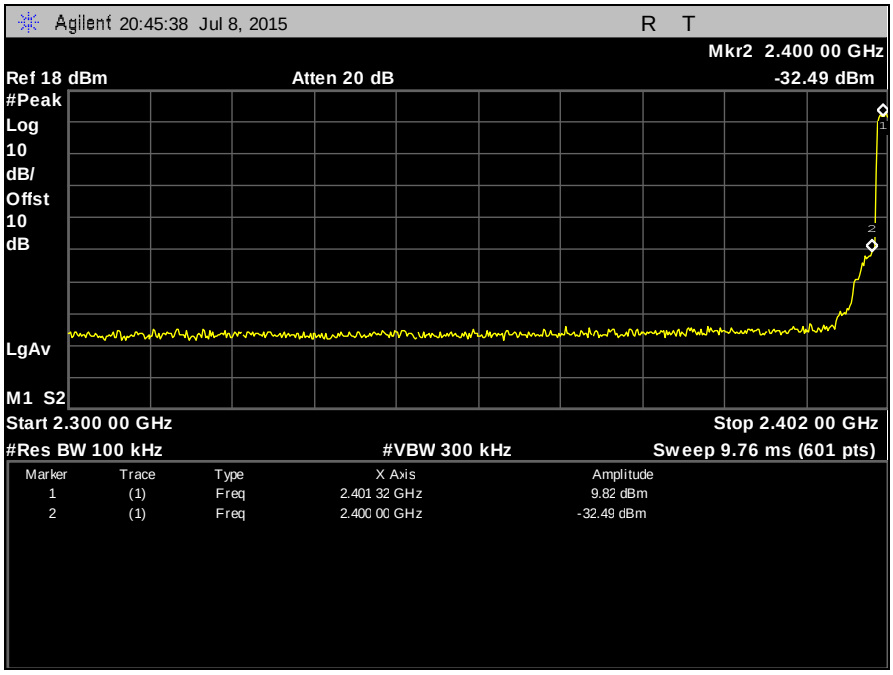


Plot 455. Conducted Band Edge, Low Channel, 3.5 MHz, Chain 0

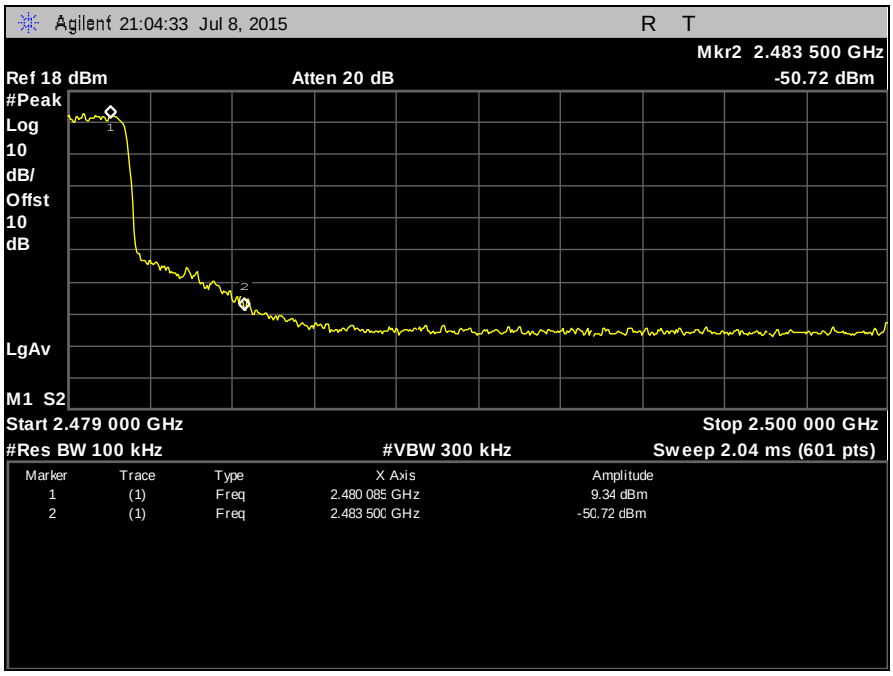


Plot 456. Conducted Band Edge, High Channel, 3.5 MHz, Chain 0

Conducted Band Edge Measurements, 3.5 MHz, Chain 1

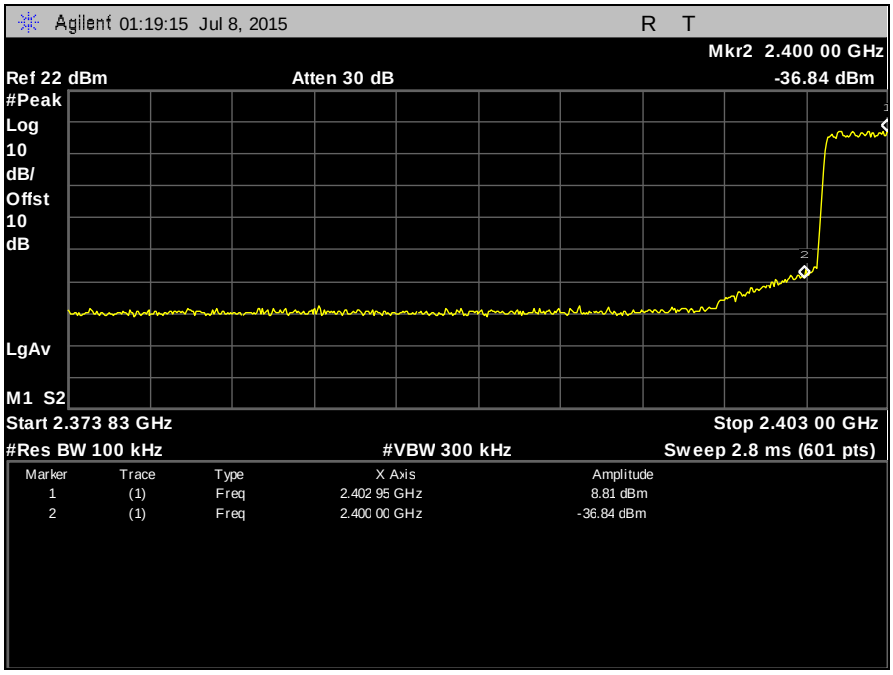


Plot 457. Conducted Band Edge, Low Channel, 3.5 MHz, Chain 1

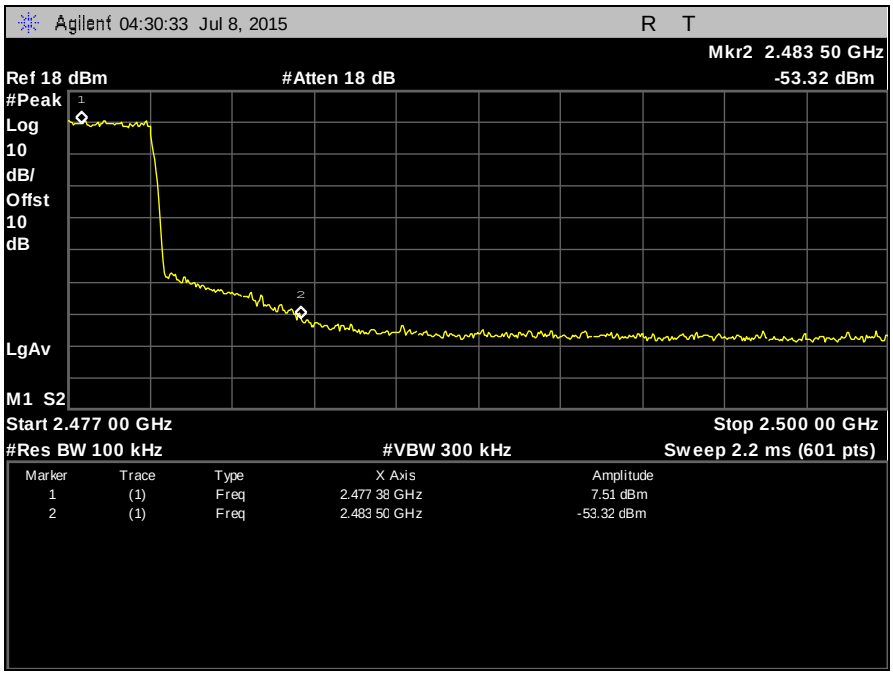


Plot 458. Conducted Band Edge, High Channel, 3.5 MHz, Chain 1

Conducted Band Edge Measurements, 5 MHz, Chain 1

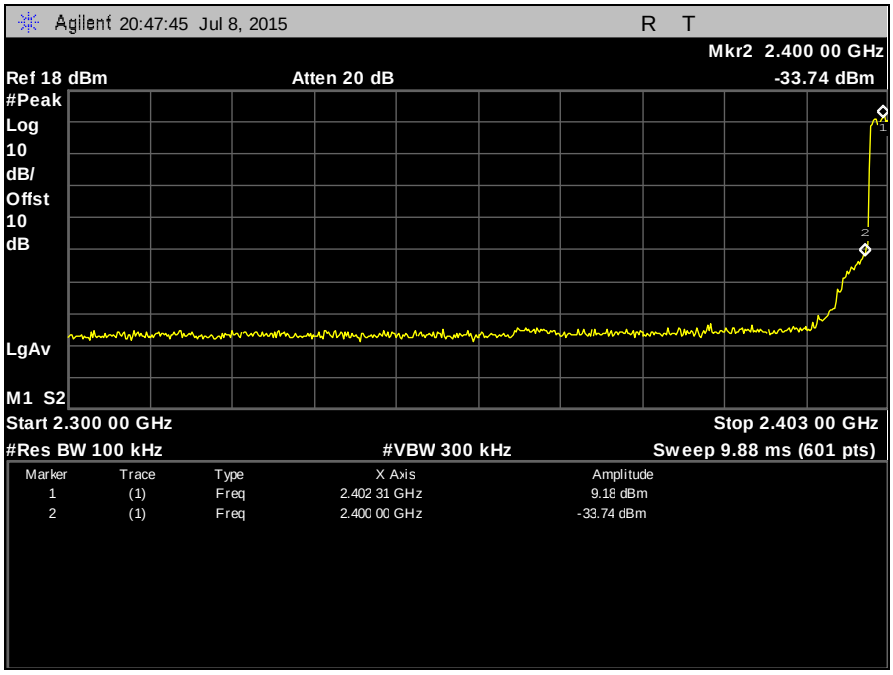


Plot 459. Conducted Band Edge, Low Channel, 5 MHz, Chain 0

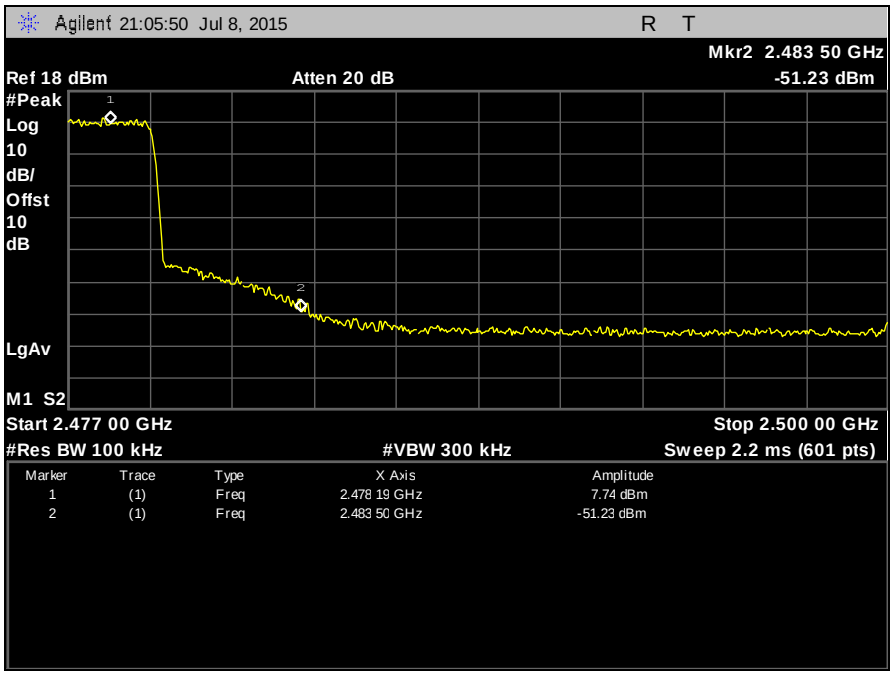


Plot 460. Conducted Band Edge, High Channel, 5 MHz, Chain 0

Conducted Band Edge Measurements, 5 MHz, Chain 1

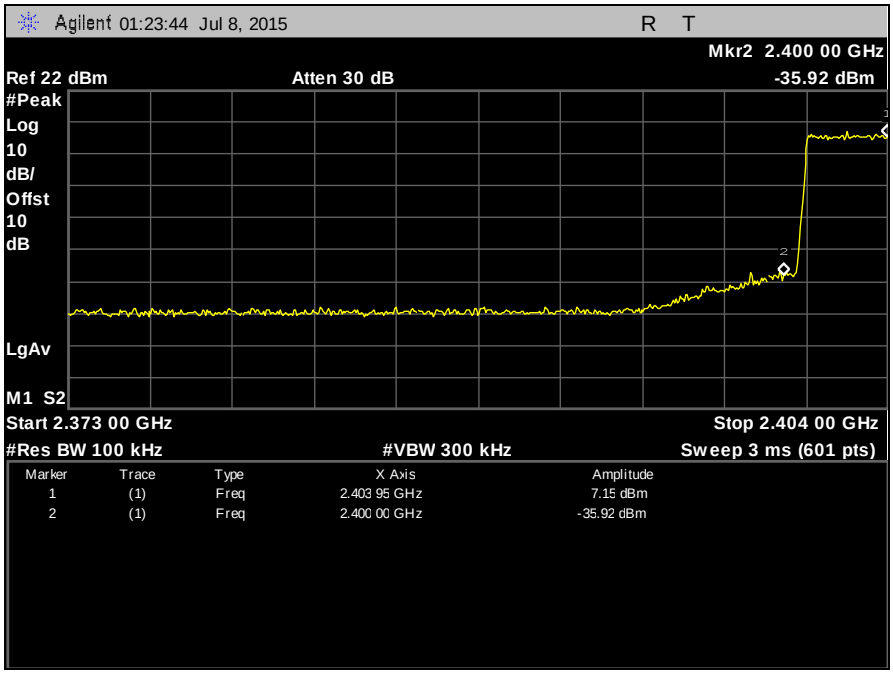


Plot 461. Conducted Band Edge, Low Channel, 5 MHz, Chain 1

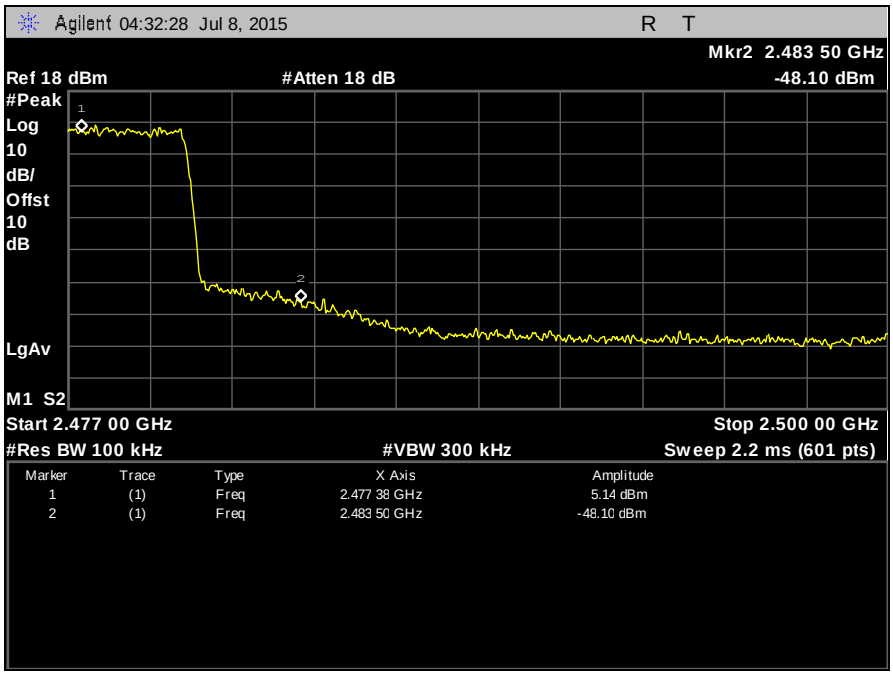


Plot 462. Conducted Band Edge, High Channel, 5 MHz, Chain 1

Conducted Band Edge Measurements, 7 MHz, Chain 0

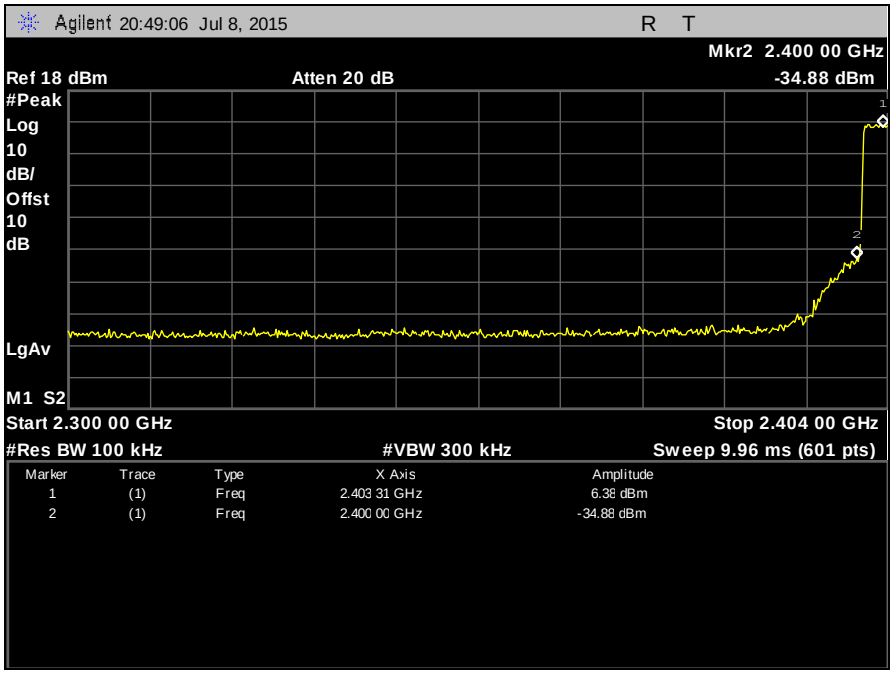


Plot 463. Conducted Band Edge, Low Channel, 7 MHz, Chain 0

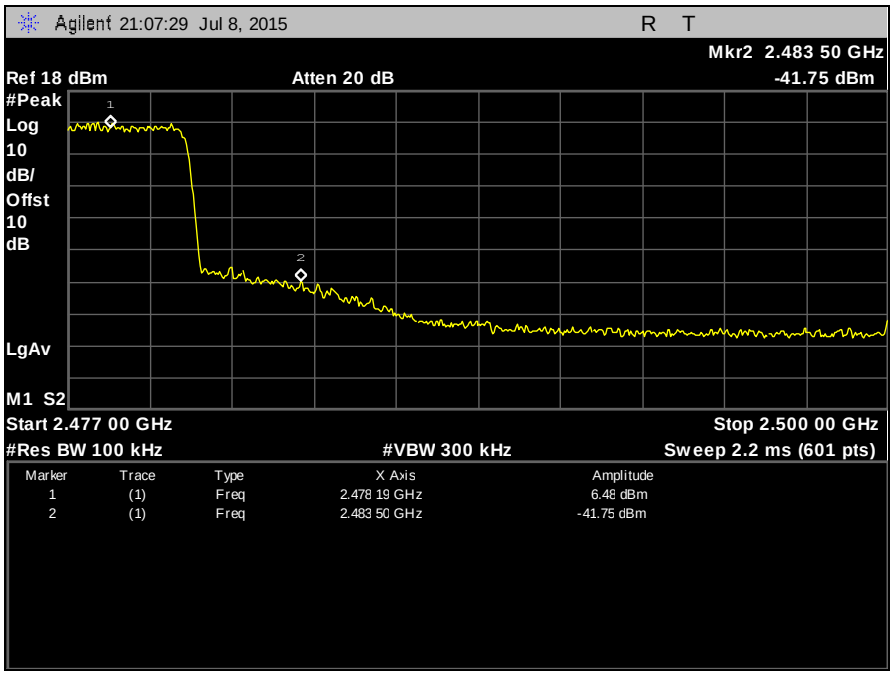


Plot 464. Conducted Band Edge, High Channel, 7 MHz, Chain 0

Conducted Band Edge Measurements, 7 MHz, Chain 1

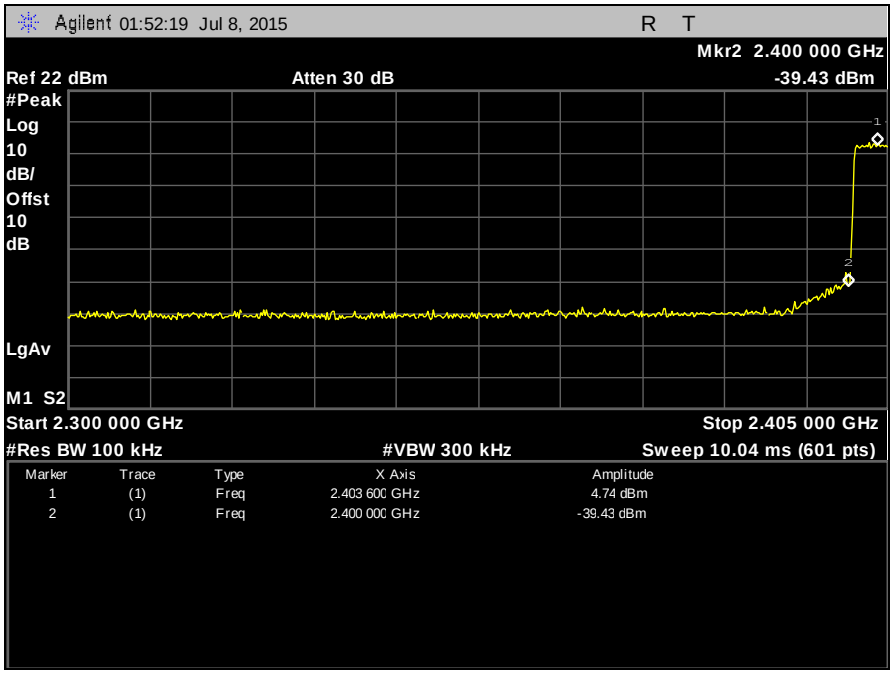


Plot 465. Conducted Band Edge, Low Channel, 7 MHz, Chain 1

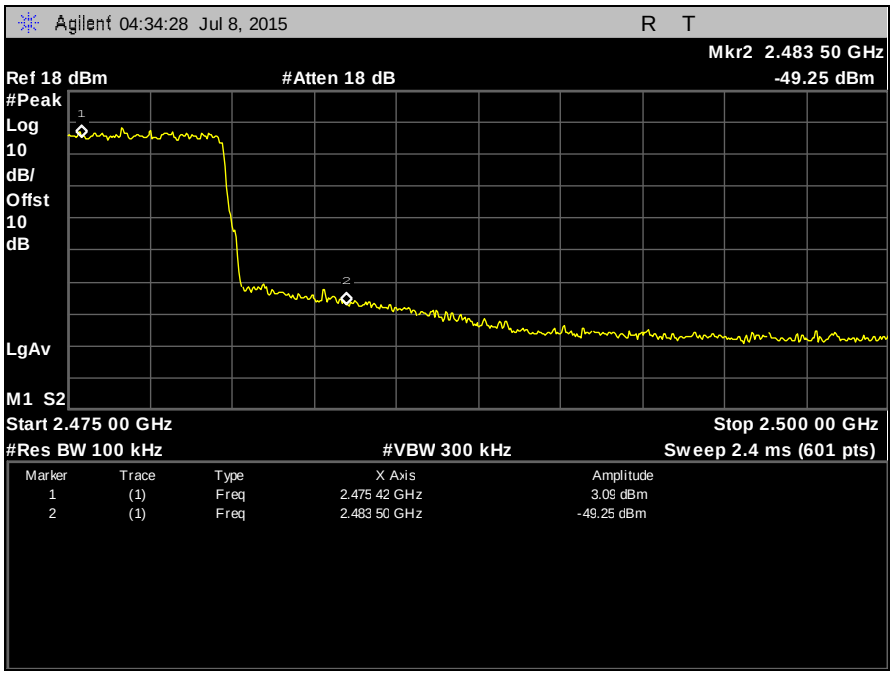


Plot 466. Conducted Band Edge, High Channel, 7 MHz, Chain 1

Conducted Band Edge Measurements, 10 MHz, Chain 0

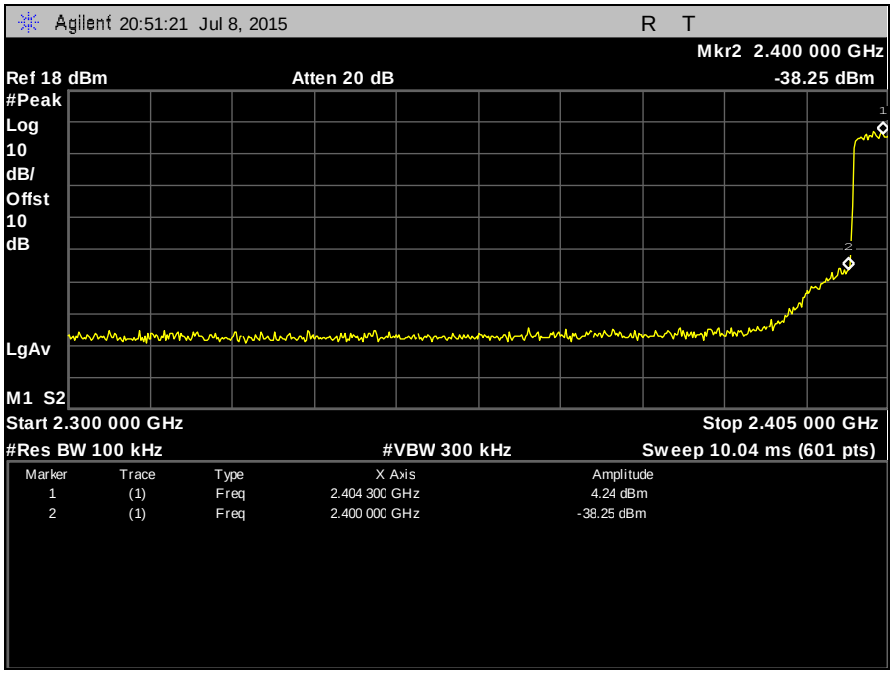


Plot 467. Conducted Band Edge, Low Channel, 10 MHz, Chain 0

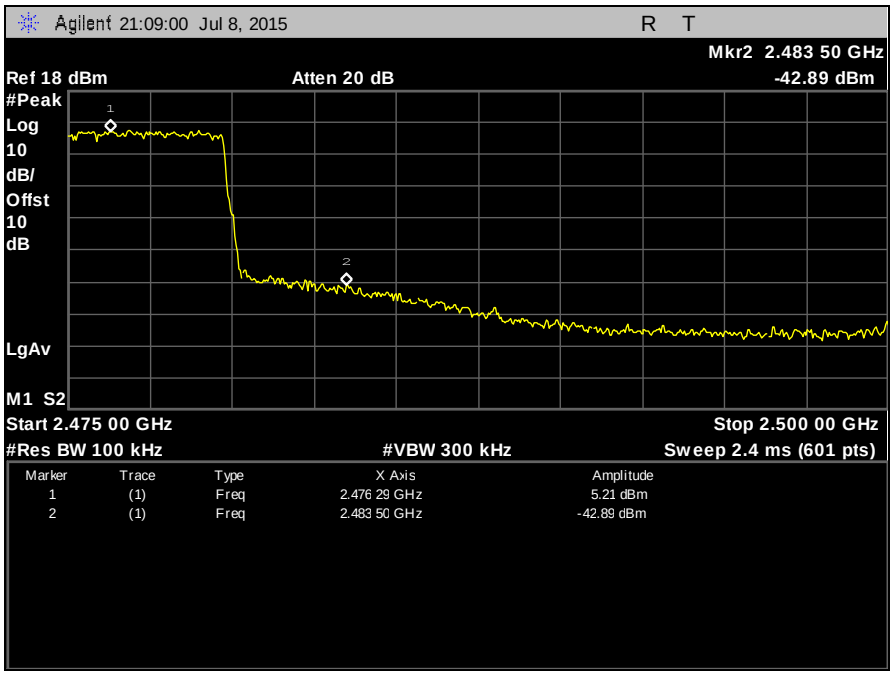


Plot 468. Conducted Band Edge, High Channel, 10 MHz, Chain 0

Conducted Band Edge Measurements, 10 MHz, Chain 1

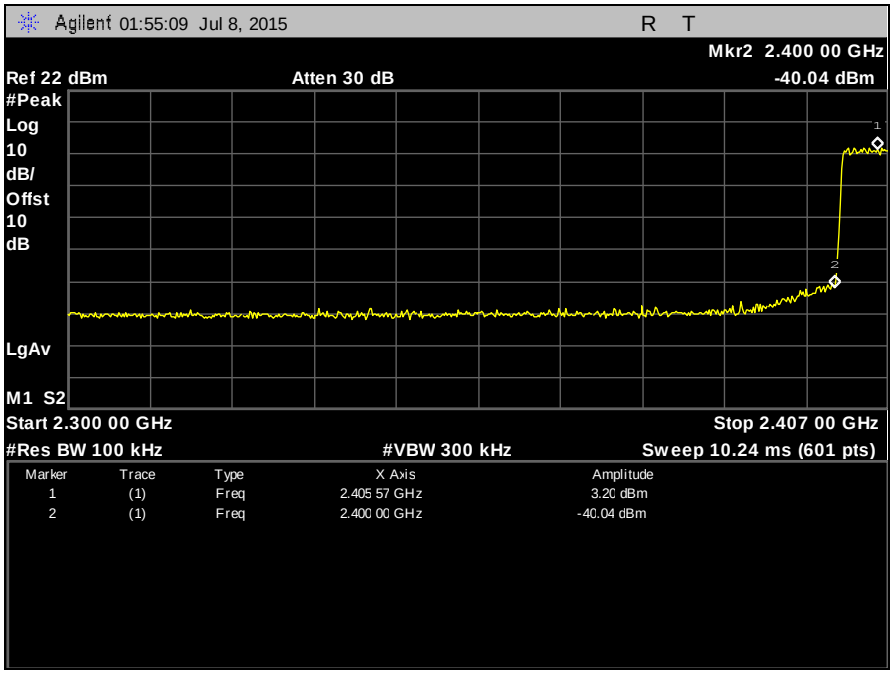


Plot 469. Conducted Band Edge, Low Channel, 10 MHz, Chain 1

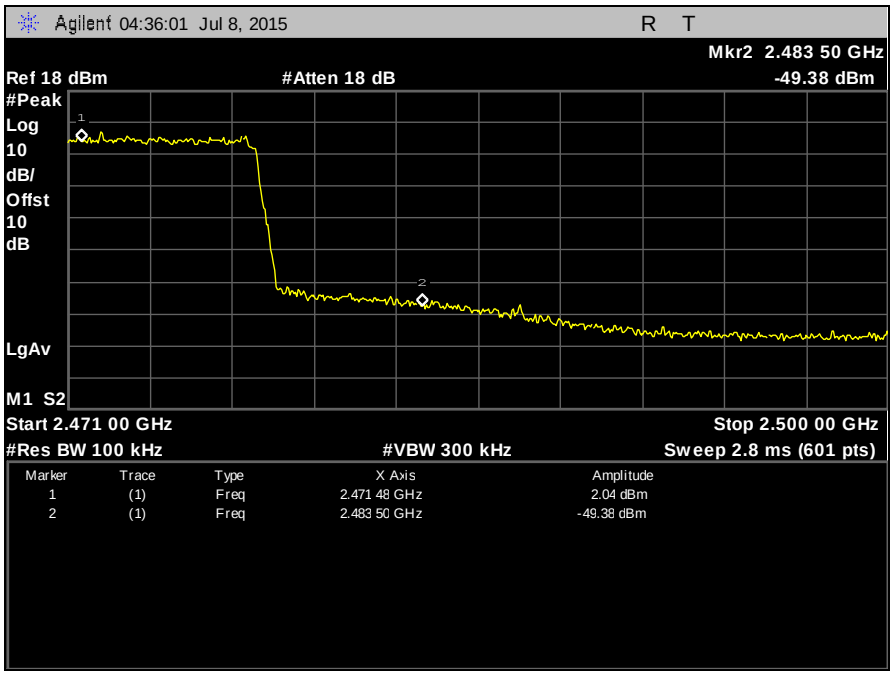


Plot 470. Conducted Band Edge, High Channel, 10 MHz, Chain 1

Conducted Band Edge Measurements, 14 MHz, Chain 0

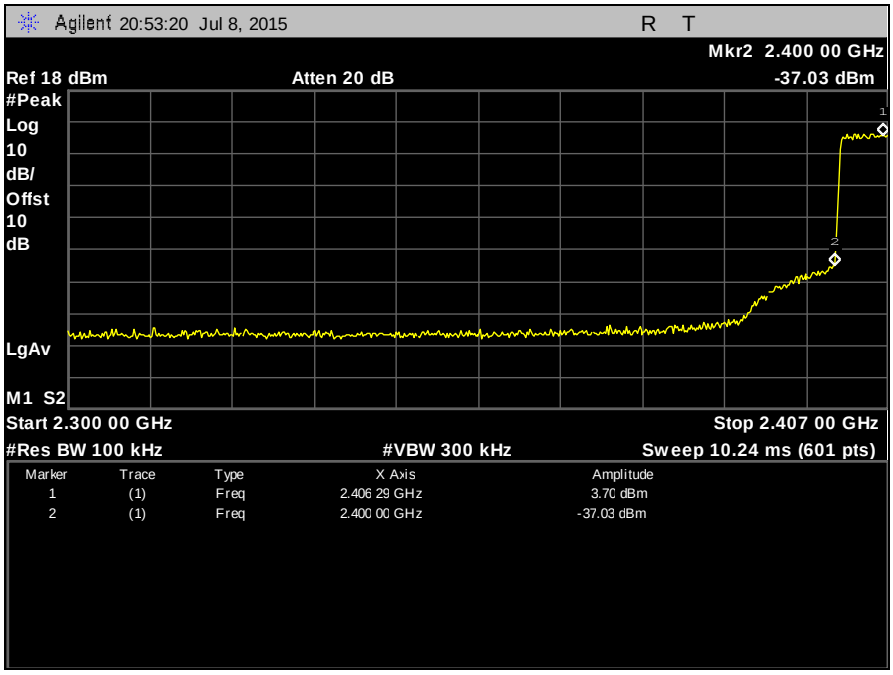


Plot 471. Conducted Band Edge, Low Channel, 14 MHz, Chain 0

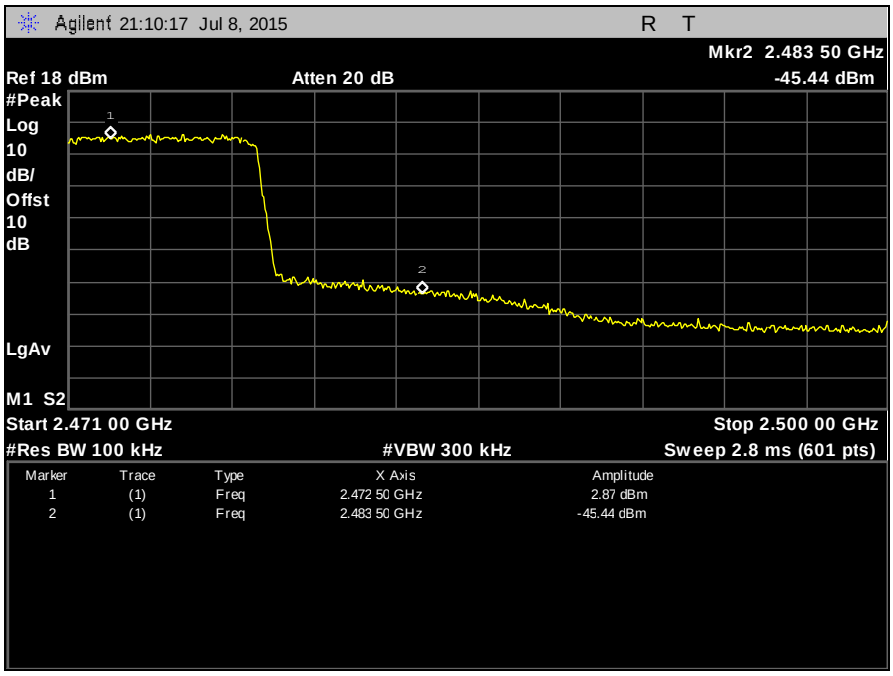


Plot 472. Conducted Band Edge, High Channel, 14 MHz, Chain 0

Conducted Band Edge Measurements, 14 MHz, Chain 1

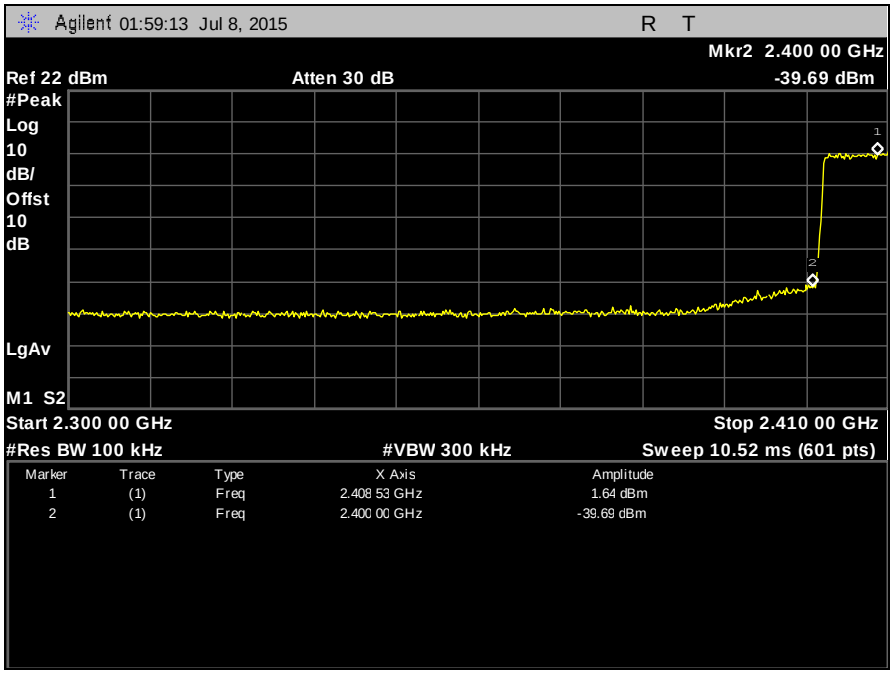


Plot 473. Conducted Band Edge, Low Channel, 14 MHz, Chain 1

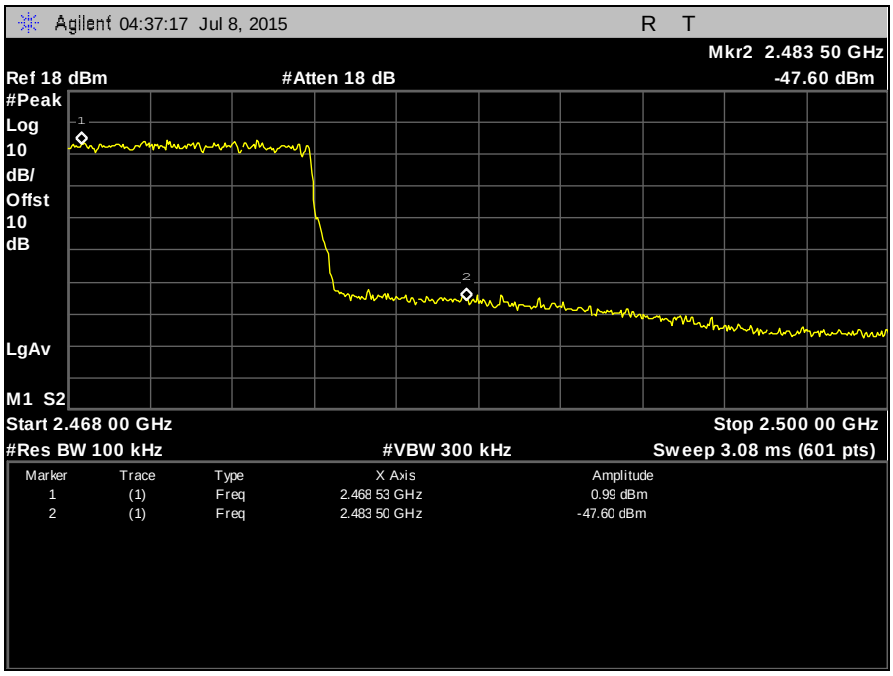


Plot 474. Conducted Band Edge, High Channel, 14 MHz, Chain 1

Conducted Band Edge Measurements, 20 MHz, Chain 0

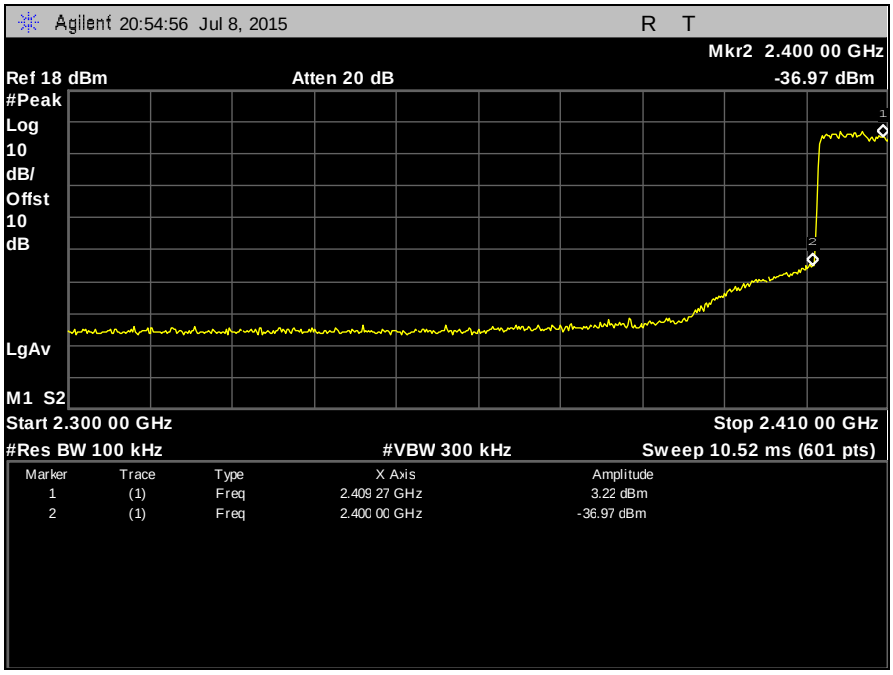


Plot 475. Conducted Band Edge, Low Channel, 20 MHz, Chain 0

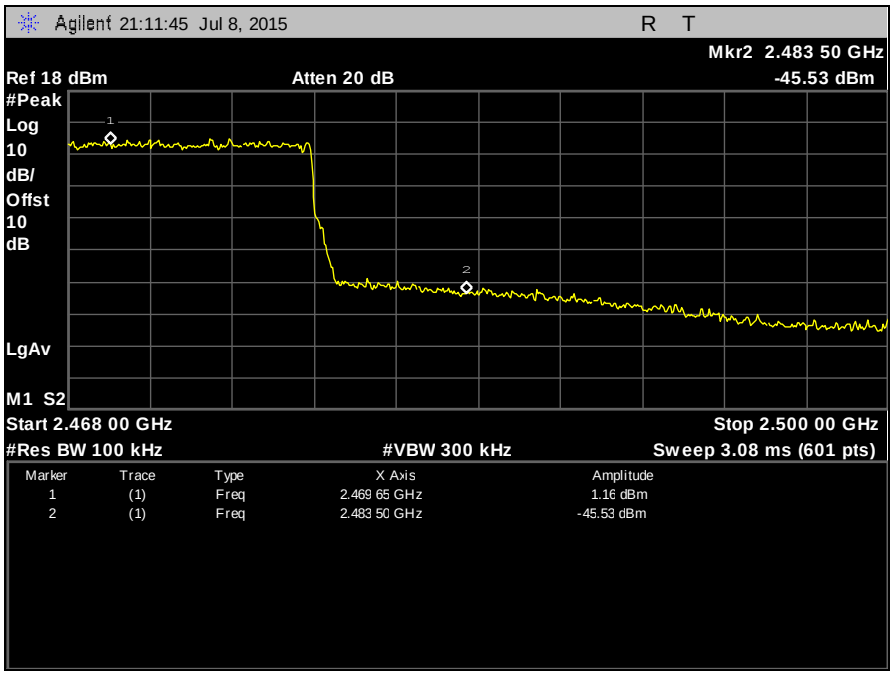


Plot 476. Conducted Band Edge, High Channel, 20 MHz, Chain 0

Conducted Band Edge Measurements, 20 MHz, Chain 1

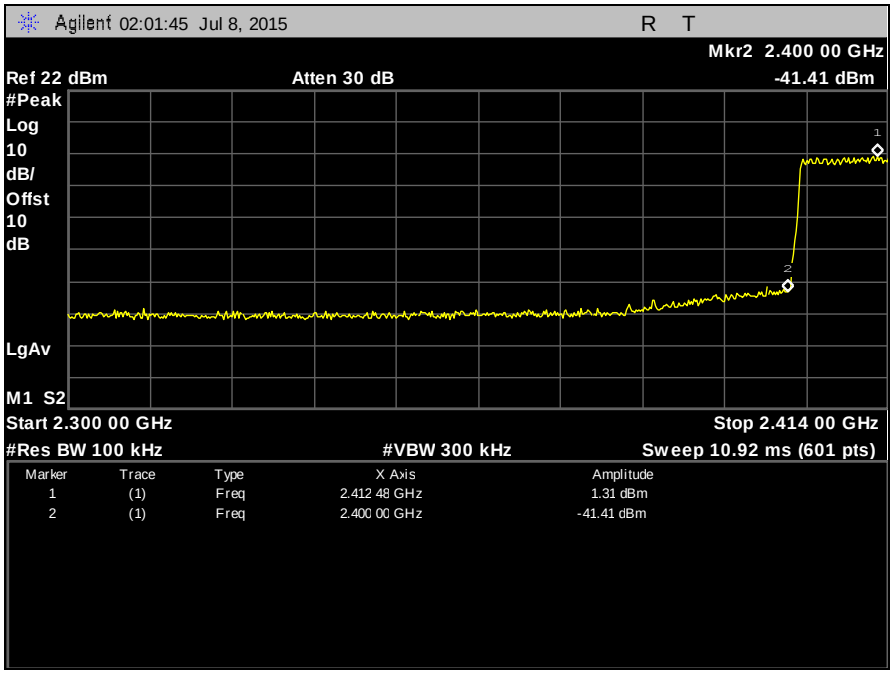


Plot 477. Conducted Band Edge, Low Channel, 20 MHz, Chain 1

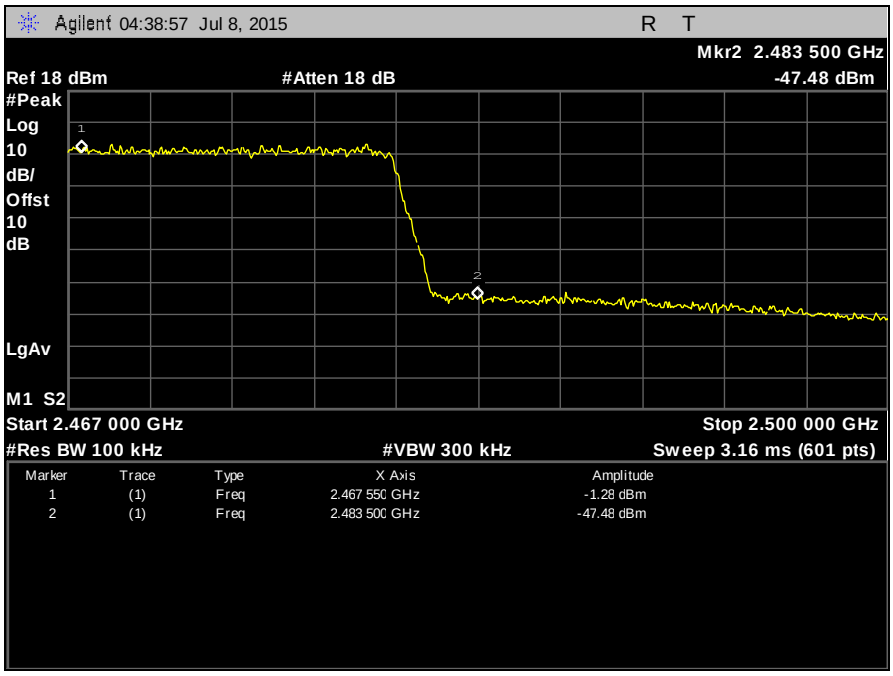


Plot 478. Conducted Band Edge, High Channel, 20 MHz, Chain 1

Conducted Band Edge Measurements, 28 MHz, Chain 0

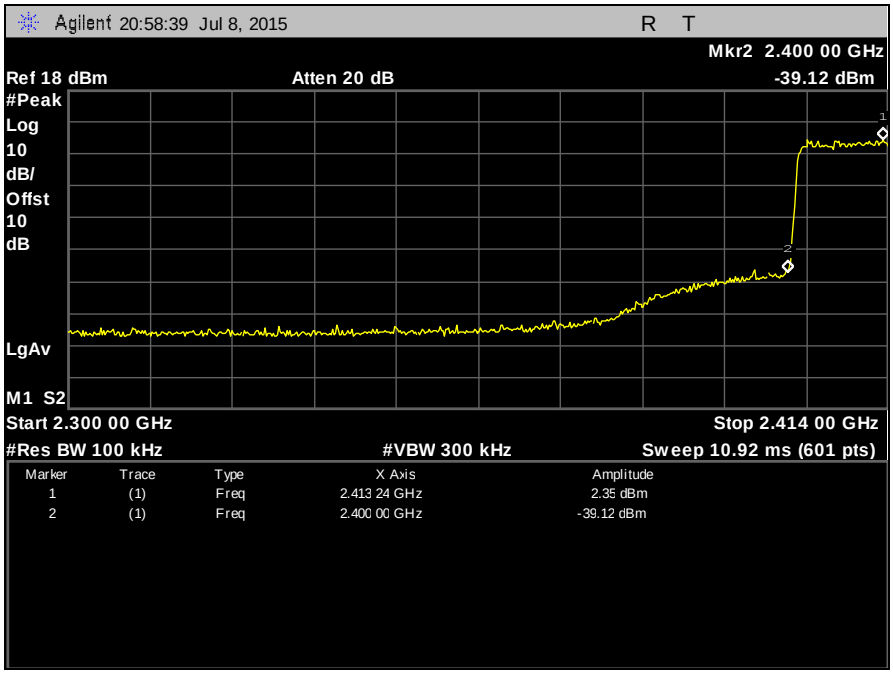


Plot 479. Conducted Band Edge, Low Channel, 28 MHz, Chain 0

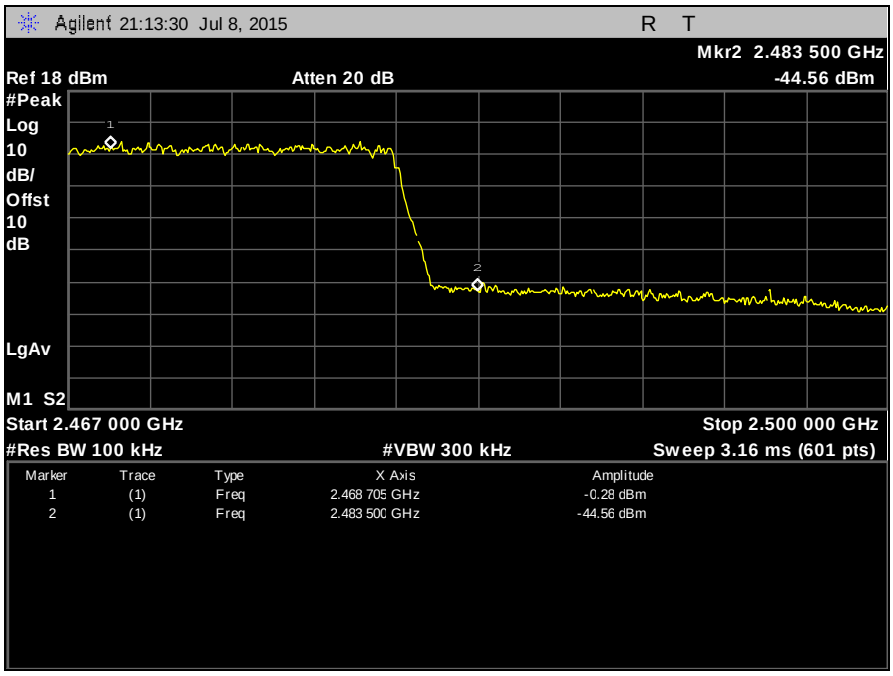


Plot 480. Conducted Band Edge, High Channel, 28 MHz, Chain 0

Conducted Band Edge Measurements, 28 MHz, Chain 1

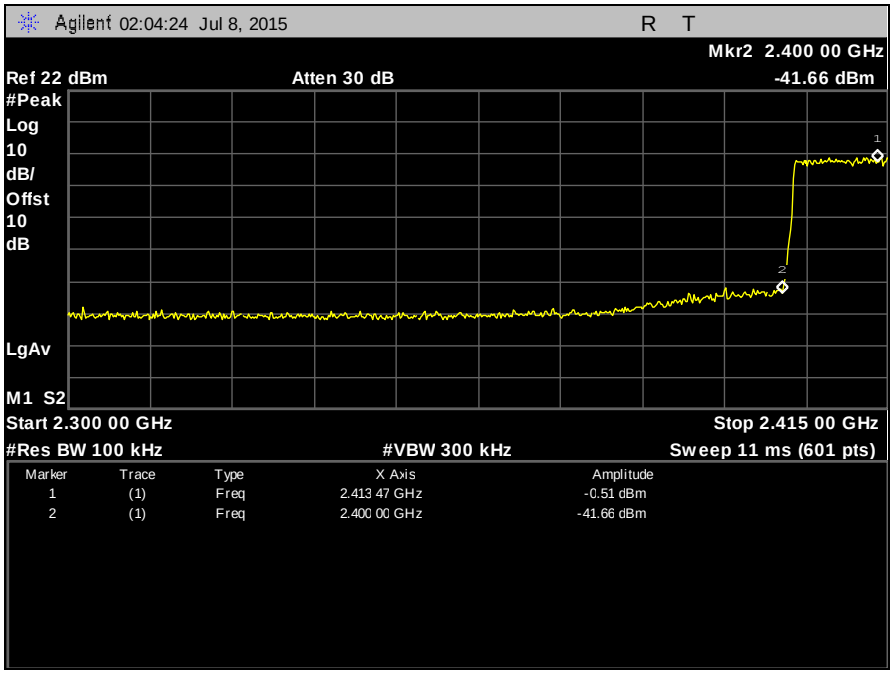


Plot 481. Conducted Band Edge, Low Channel, 28 MHz, Chain 1

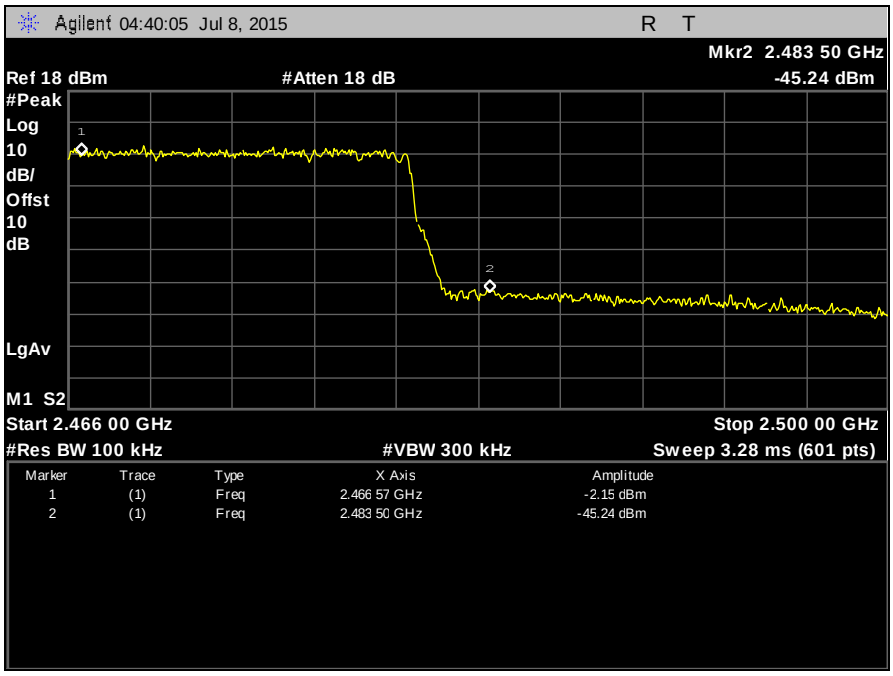


Plot 482. Conducted Band Edge, High Channel, 28 MHz, Chain 1

Conducted Band Edge Measurements, 30 MHz, Chain 0

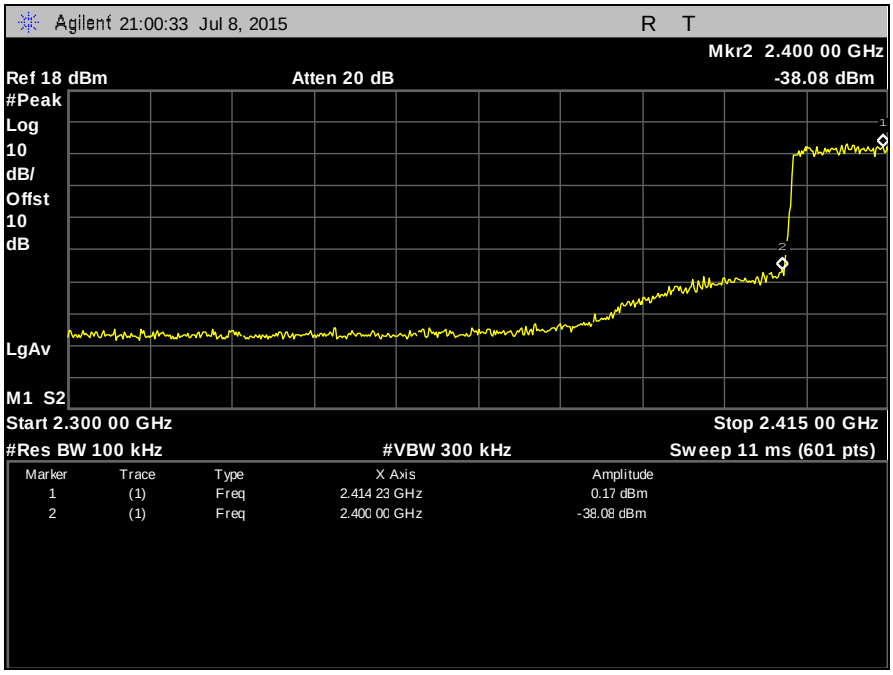


Plot 483. Conducted Band Edge, Low Channel, 30 MHz, Chain 0

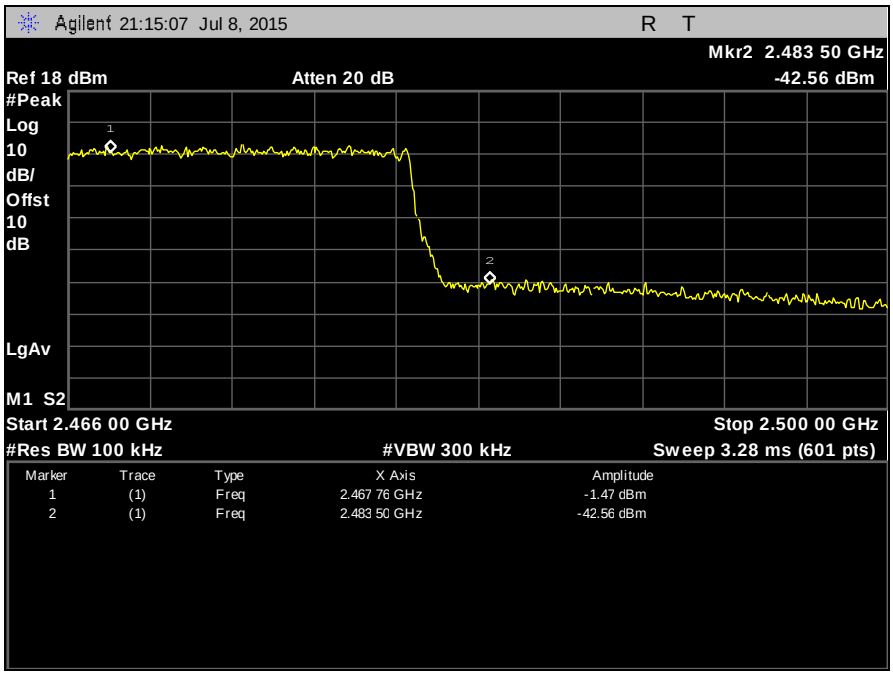


Plot 484. Conducted Band Edge, High Channel, 30 MHz, Chain 0

Conducted Band Edge Measurements, 30 MHz, Chain 1

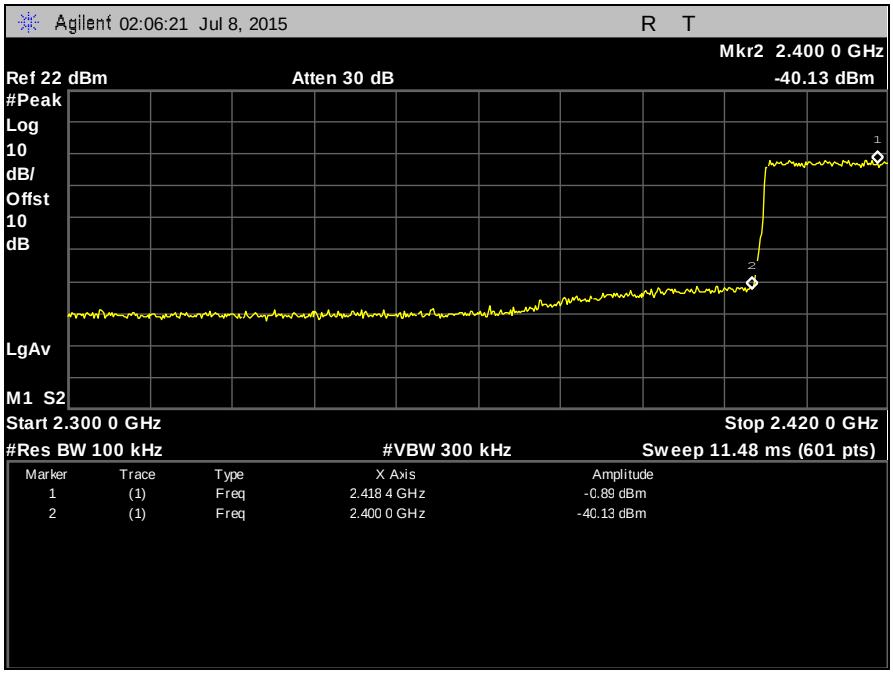


Plot 485. Conducted Band Edge, Low Channel, 30 MHz, Chain 1

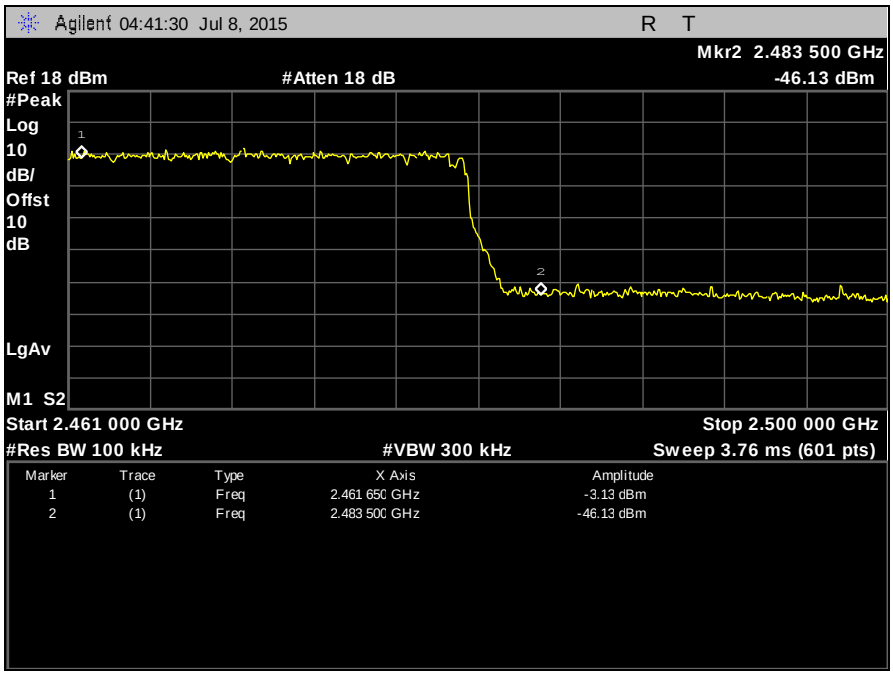


Plot 486. Conducted Band Edge, High Channel, 30 MHz, Chain 1

Conducted Band Edge Measurements, 40 MHz, Chain 0

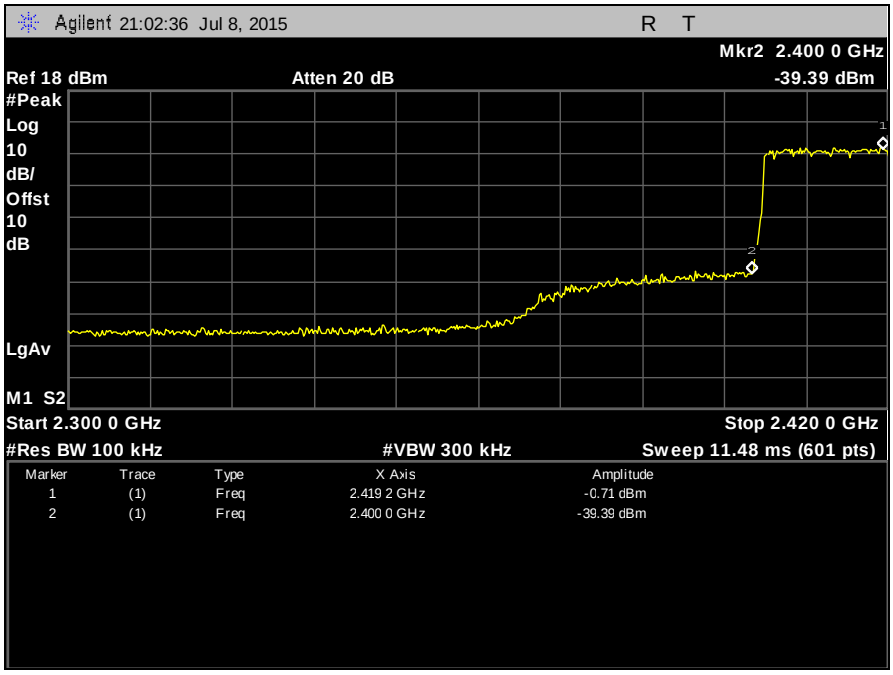


Plot 487. Conducted Band Edge, Low Channel, 40 MHz, Chain 0

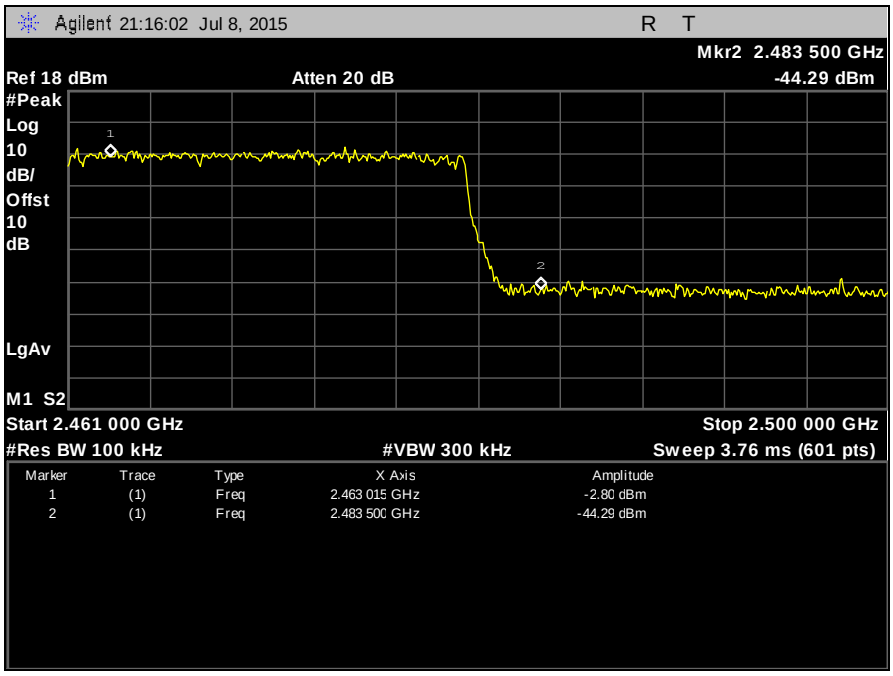


Plot 488. Conducted Band Edge, High Channel, 40 MHz, Chain 0

Conducted Band Edge Measurements, 40 MHz, Chain 1



Plot 489. Conducted Band Edge, Low Channel, 40 MHz, Chain 1



Plot 490. Conducted Band Edge, High Channel, 40 MHz, Chain 1

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 throughout each of the 100 sweeps of power averaging. The RBW was set to 3 kHz and a VBW set to 9 kHz or greater. The spectrum analyzer was set to an auto sweep time and a peak detector was used. 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: Djed Mouada

Test Date: 07/14/15

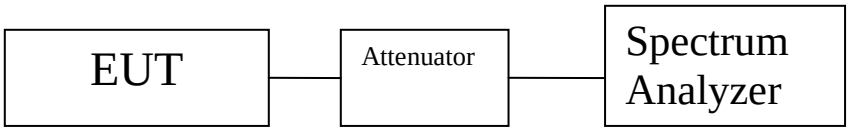


Figure 4. Block Diagram, Peak Power Spectral Density Test Setup

Peak Power Spectral Density Test Results

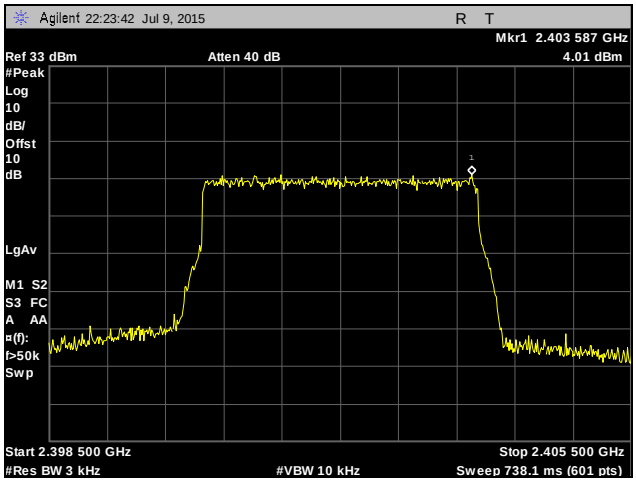
6 dBi Antenna					
3.5MHz	**Chain 0 (dBm)**	**Chain 1(dBm)**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	4.01	4.48	7.262	8	-0.738
Mid	4.53	4.97	7.766	8	-0.234
High	4.51	3.64	7.107	8	-0.893
5MHz	**Chain 0**	**Chain 1**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	4.62	4.45	7.546	8	-0.454
Mid	4.95	4.55	7.765	8	-0.235
High	4.68	3.89	7.313	8	-0.687
7MHz	**Chain 0**	**Chain 1**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	3.81	3.99	6.911	8	-1.089
Mid	4.56	4.26	7.423	8	-0.577
High	3.87	4.07	6.981	8	-1.019
10MHz	**Chain 0**	**Chain 1**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	4.3	4.22	7.27	8	-0.73
Mid	3.88	3.9	6.9	8	-1.1
High	3.02	3.76	6.416	8	-1.584
14MHz	**Chain 0**	**Chain 1**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	4.21	4.99	7.628	8	-0.372
Mid	4.91	4.99	7.96	8	-0.04
High	4.49	4.18	7.348	8	-0.652
20MHz	**Chain 0**	**Chain 1**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	4.32	4.6	7.473	8	-0.527
Mid	4.4	4.89	7.662	8	-0.338
High	2.98	4.76	6.971	8	-1.029
28MHz	**Chain 0**	**Chain 1**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	3.95	4.35	7.165	8	-0.835
Mid	3.59	4.32	6.981	8	-1.019
High	3.95	4.35	7.165	8	-0.835
30MHz	**Chain 0**	**Chain 1**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	4.01	4.562	7.305	8	-0.695
Mid	3.76	4.55	7.183	8	-0.817
High	4.62	4.01	7.336	8	-0.664
40MHz	**Chain 0**	**Chain 1**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	3.35	4.437	6.938	8	-1.062
Mid	4.71	4.307	7.523	8	-0.477
High	4.36	4.56	7.471	8	-0.529

Table 15. Peak Power Spectral Density, Test Results, 6 dBi Antenna

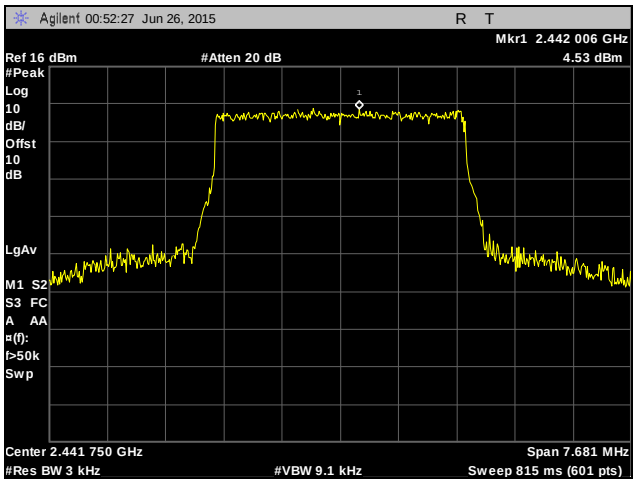
24 dBi Antenna					
3.5MHz	**Chain 0 (dBm)**	**Chain 1(dBm)**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	-1.16	-1.79	1.547	2	-0.453
Mid	-1.75	-1.74	1.265	2	-0.735
High	-0.83	-1.71	1.763	2	-0.237
5MHz	**Chain 0**	**Chain 1**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	-1.5	-2.55	1.017	2	-0.983
Mid	-1.89	-1.54	1.299	2	-0.701
High	-1.92	-1.8	1.151	2	-0.849
7MHz	**Chain 0**	**Chain 1**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	-2.94	-2.32	0.391	2	-1.609
Mid	-3.12	-1.71	0.652	2	-1.348
High	-3.59	-1.55	0.559	2	-7.441
10MHz	**Chain 0**	**Chain 1**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	-3.69	-2.52	-0.055	2	-2.055
Mid	-3.55	-3.13	-0.325	2	-2.325
High	-3.72	-2.99	-0.329	2	-8.329
14MHz	**Chain 0**	**Chain 1**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	-2.82	-1.71	0.781	2	-1.219
Mid	-2.49	-1.93	0.809	2	-1.191
High	-2.03	-1.99	1	2	-1
20MHz	**Chain 0**	**Chain 1**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	-3.12	-1.56	0.74	2	-1.26
Mid	-2.37	-1.9	0.882	2	-1.118
High	-2.37	-2.16	0.747	2	-1.253
28MHz	**Chain 0**	**Chain 1**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	-3.15	-3.44	-0.282	2	-2.282
Mid	-2.89	-2.41	0.367	2	-1.633
High	-3.23	-3.68	-0.439	2	-2.439
30MHz	**Chain 0**	**Chain 1**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	-2.64	-2.92	0.233	2	-1.767
Mid	-3.64	-2.82	-0.2	2	-2.2
High	-3.41	-2.03	0.345	2	-1.655
40MHz	**Chain 0**	**Chain 1**	**sum (dBm)**	**Limit (dBm)**	**Margin**
Low	-3.41	-1.44	0.696	2	-1.304
Mid	-3.61	-3.13	-0.353	2	-2.353
High	-2.83	-1.59	0.844	2	-1.156

Table 16. Peak Power Spectral Density, Test Results, 24 dBi Antenna

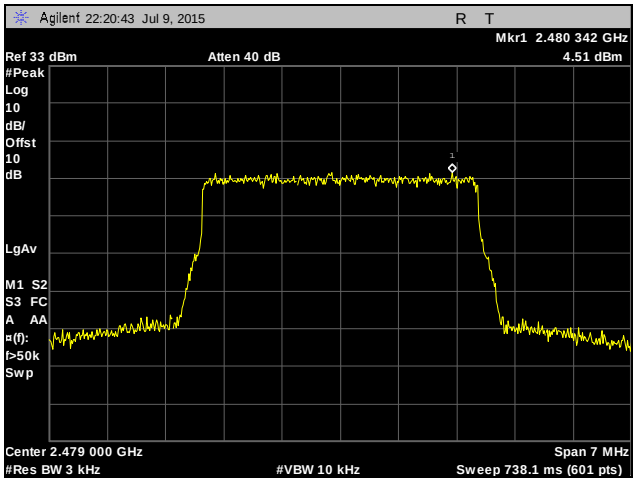
Peak Power Spectral Density Test Results, 3.5 MHz, Chain 0, 6 dBi Antenna



Plot 491. Peak Power Spectral Density, Low Channel, 3.5 MHz, Chain 0, 6 dBi Antenna

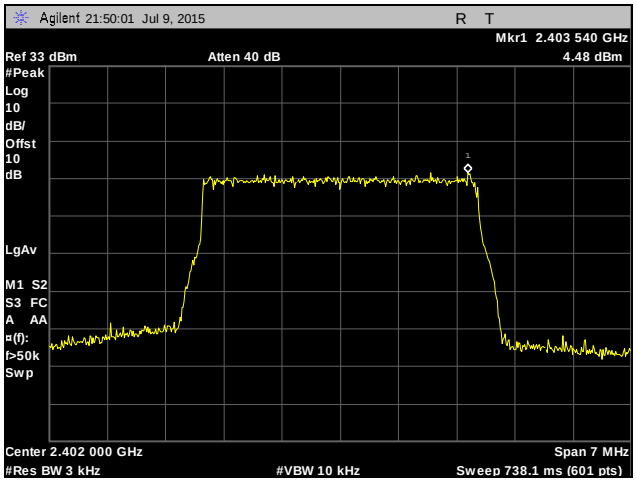


Plot 492. Peak Power Spectral Density, Mid Channel, 3.5 MHz, Chain 0, 6 dBi Antenna

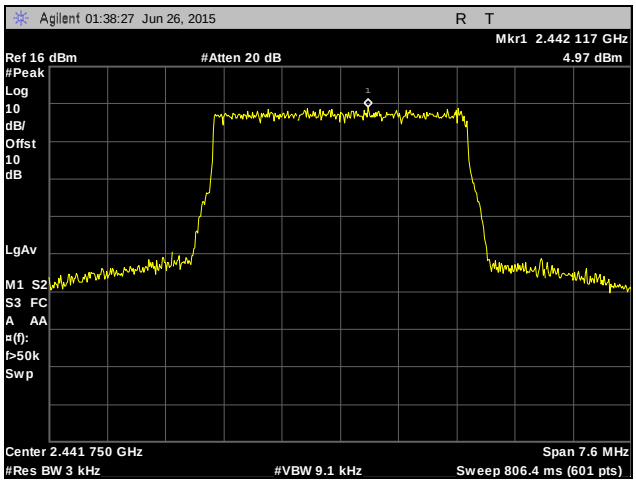


Plot 493. Peak Power Spectral Density, High Channel, 3.5 MHz, Chain 0, 6 dBi Antenna

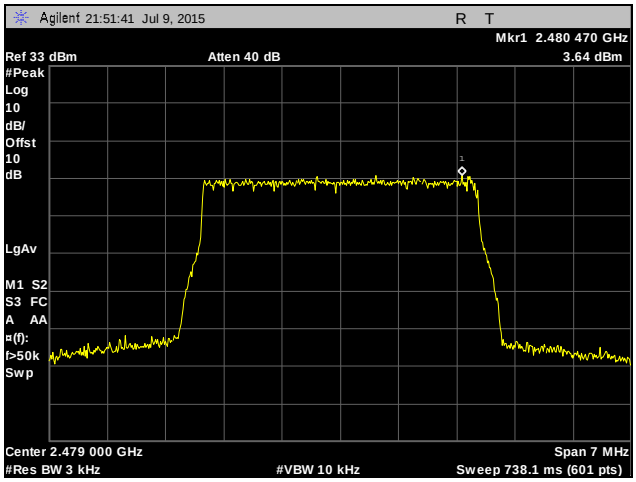
Peak Power Spectral Density Test Results, 3.5 MHz, Chain 1, 6 dBi Antenna



Plot 494. Peak Power Spectral Density, Low Channel, 3.5 MHz, Chain 1, 6 dBi Antenna

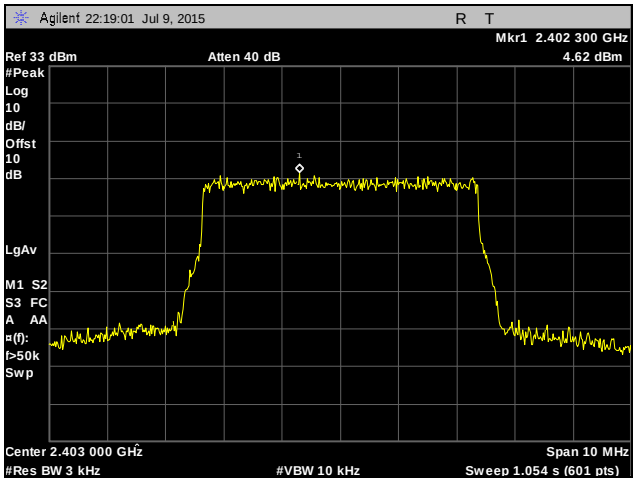


Plot 495. Peak Power Spectral Density, Mid Channel, 3.5 MHz, Chain 1, 6 dBi Antenna

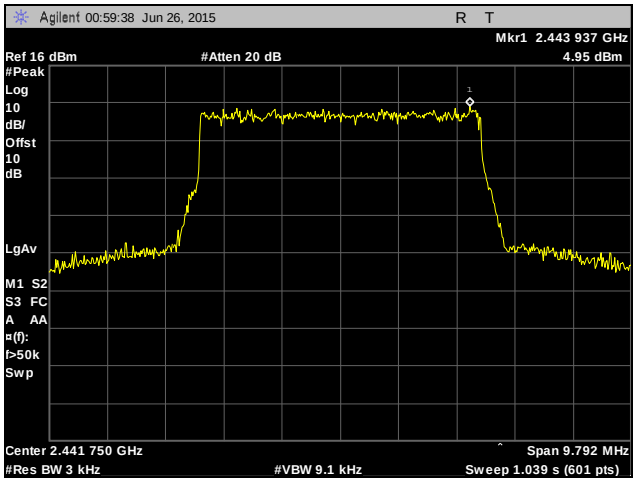


Plot 496. Peak Power Spectral Density, High Channel, 3.5 MHz, Chain 1, 6 dBi Antenna

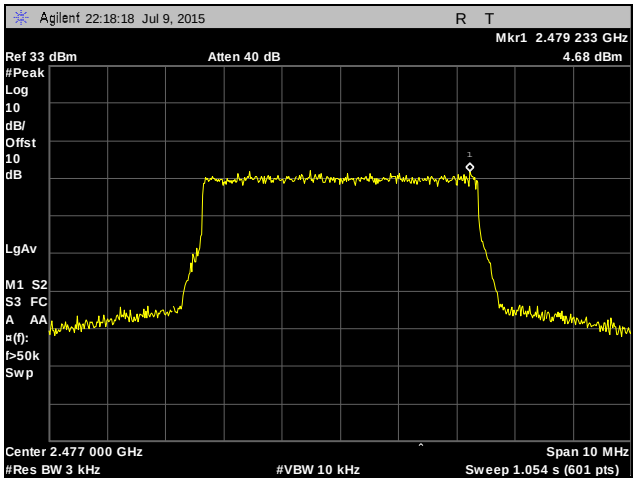
Peak Power Spectral Density Test Results, 5 MHz, Chain 0, 6 dBi Antenna



Plot 497. Peak Power Spectral Density, Low Channel, 5 MHz, Chain 0, 6 dBi Antenna

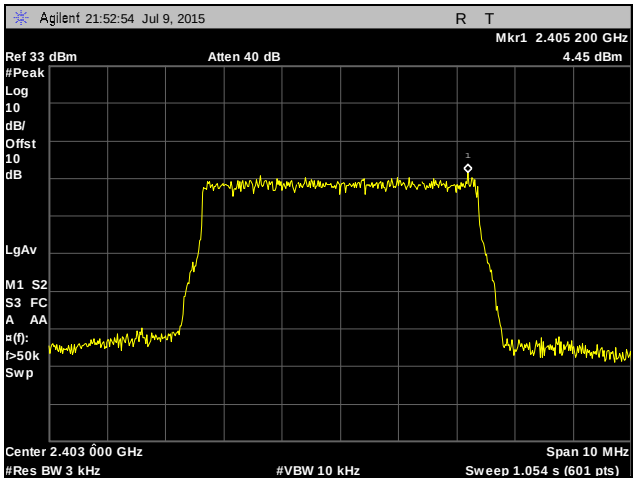


Plot 498. Peak Power Spectral Density, Mid Channel, 5 MHz, Chain 0, 6 dBi Antenna

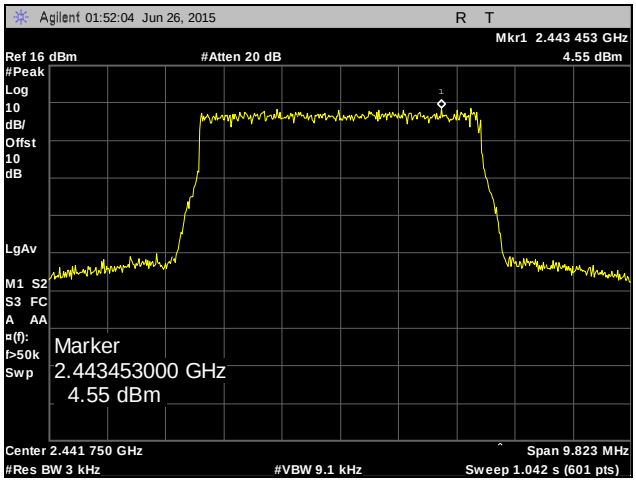


Plot 499. Peak Power Spectral Density, High Channel, 5 MHz, Chain 0, 6 dBi Antenna

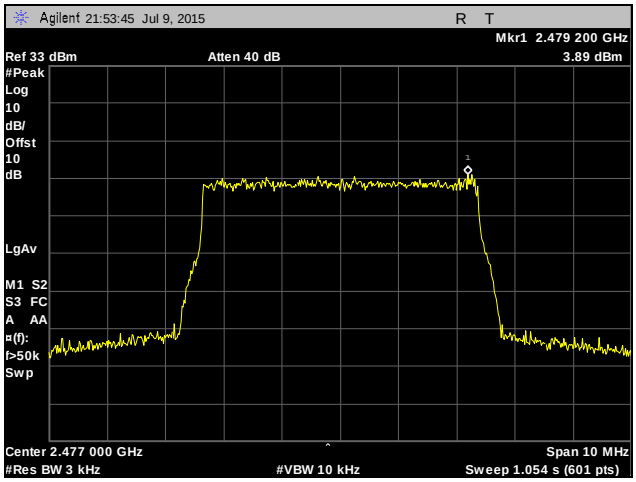
Peak Power Spectral Density Test Results, 5 MHz, Chain 1, 6 dBi Antenna



Plot 500. Peak Power Spectral Density, Low Channel, 5 MHz, Chain 1, 6 dBi Antenna

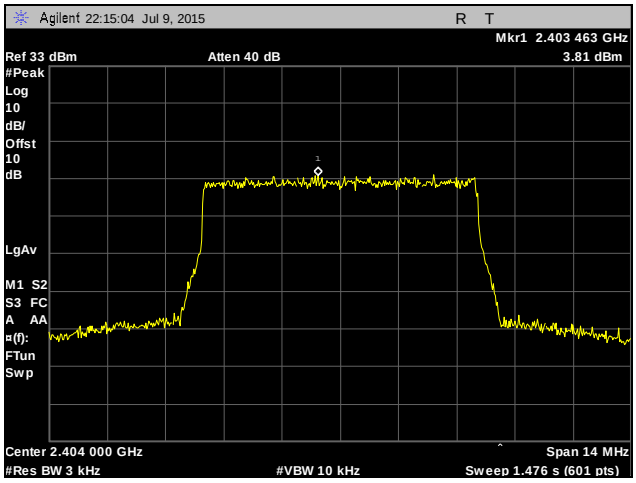


Plot 501. Peak Power Spectral Density, Mid Channel, 5 MHz, Chain 1, 6 dBi Antenna

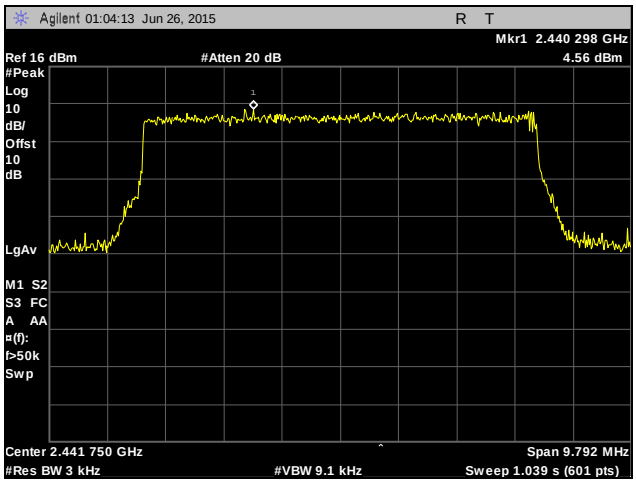


Plot 502. Peak Power Spectral Density, High Channel, 5 MHz, Chain 1, 6 dBi Antenna

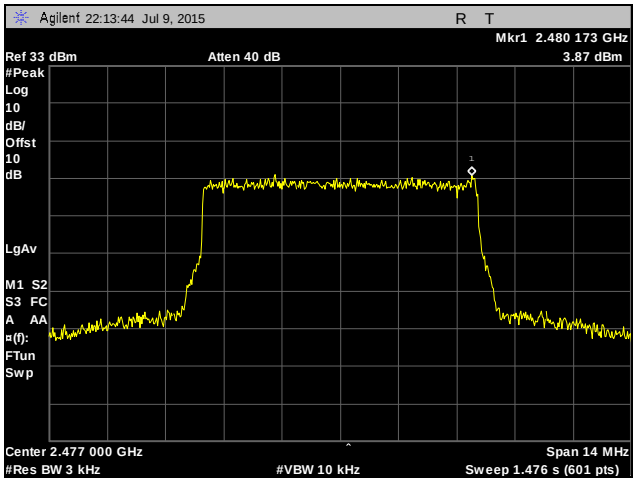
Peak Power Spectral Density Test Results, 7 MHz, Chain 0, 6 dBi Antenna



Plot 503. Peak Power Spectral Density, Low Channel, 7 MHz, Chain 0, 6 dBi Antenna

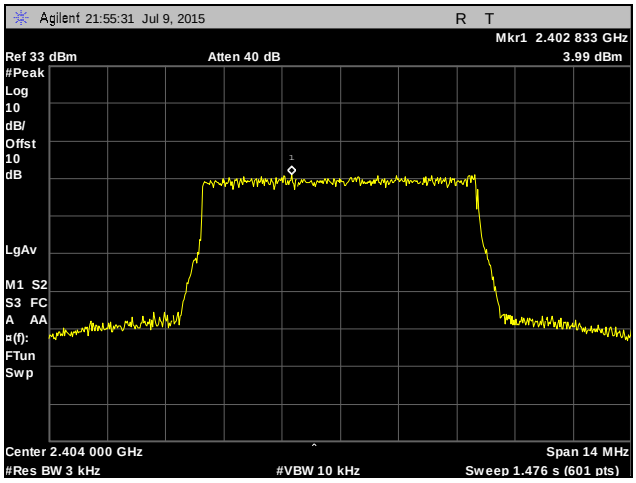


Plot 504. Peak Power Spectral Density, Mid Channel, 7 MHz, Chain 0, 6 dBi Antenna

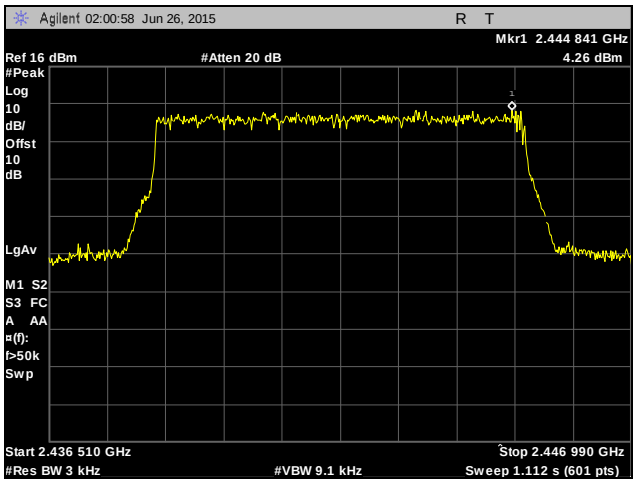


Plot 505. Peak Power Spectral Density, High Channel, 7 MHz, Chain 0, 6 dBi Antenna

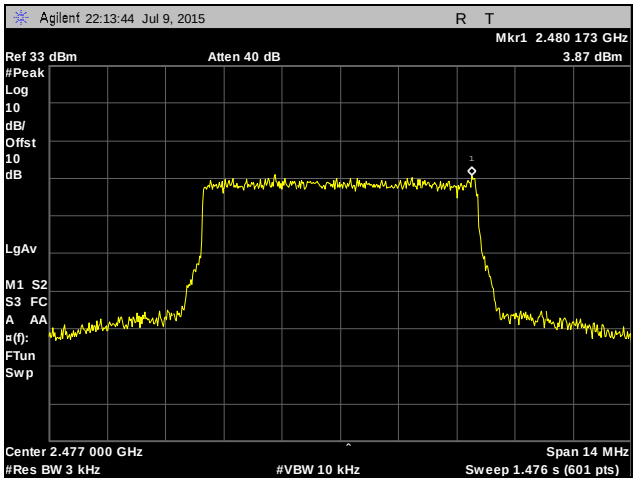
Peak Power Spectral Density Test Results, 7 MHz, Chain 1, 6 dBi Antenna



Plot 506. Peak Power Spectral Density, Low Channel, 7 MHz, Chain 1, 6 dBi Antenna

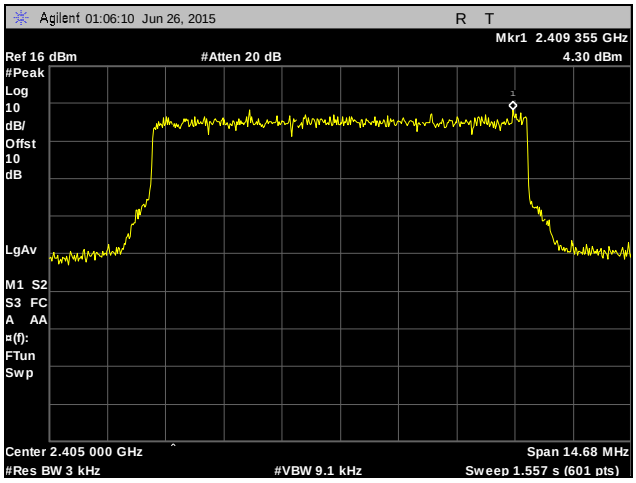


Plot 507. Peak Power Spectral Density, Mid Channel, 7 MHz, Chain 1, 6 dBi Antenna

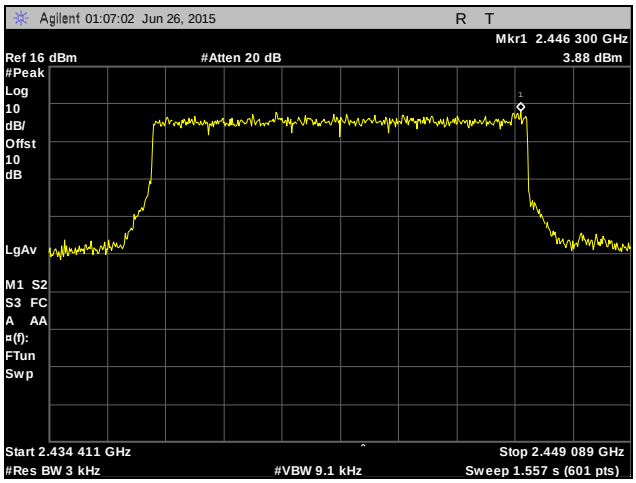


Plot 508. Peak Power Spectral Density, High Channel, 7 MHz, Chain 1, 6 dBi Antenna

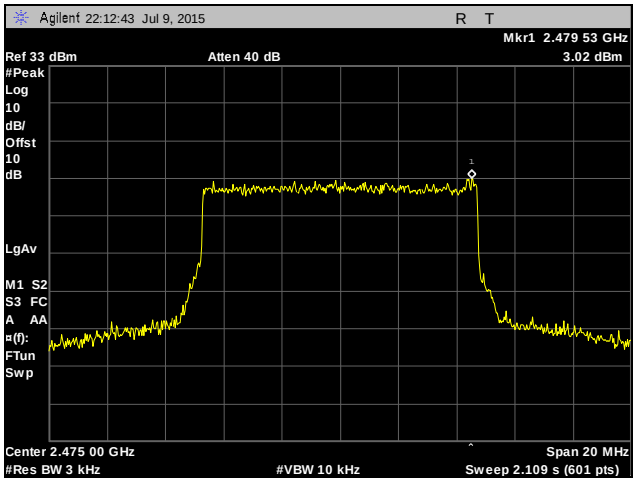
Peak Power Spectral Density Test Results, 10 MHz, Chain 0, 6 dBi Antenna



Plot 509. Peak Power Spectral Density, Low Channel, 10 MHz, Chain 0, 6 dBi Antenna

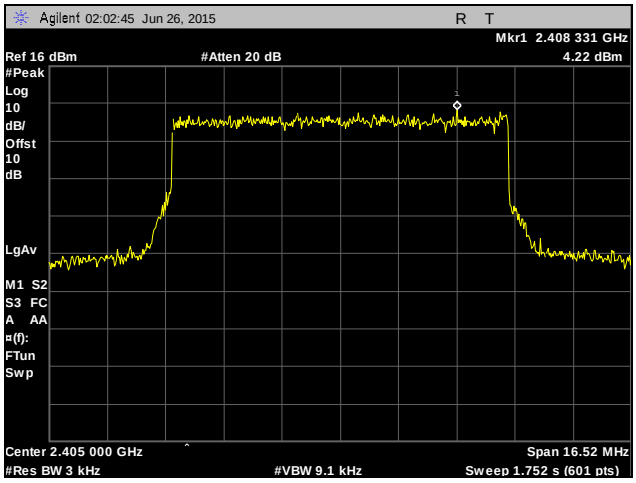


Plot 510. Peak Power Spectral Density, Mid Channel, 10 MHz, Chain 0, 6 dBi Antenna

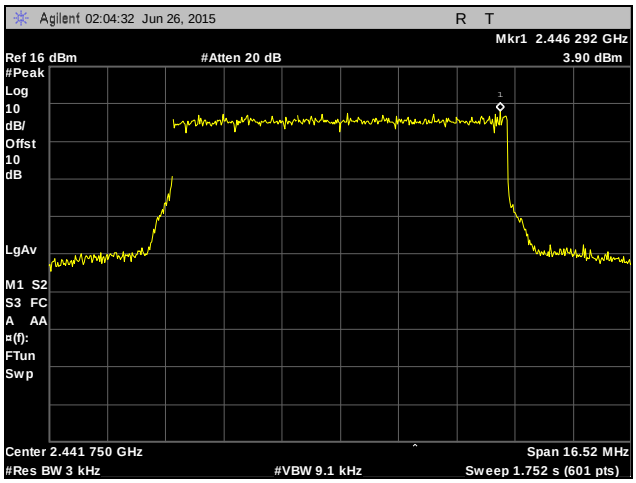


Plot 511. Peak Power Spectral Density, High Channel, 10 MHz, Chain 0, 6 dBi Antenna

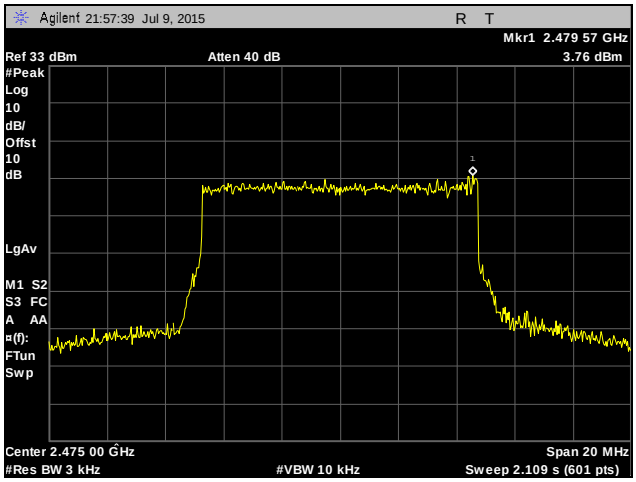
Peak Power Spectral Density Test Results, 10 MHz, Chain 1, 6 dBi Antenna



Plot 512. Peak Power Spectral Density, Low Channel, 10 MHz, Chain 1, 6 dBi Antenna

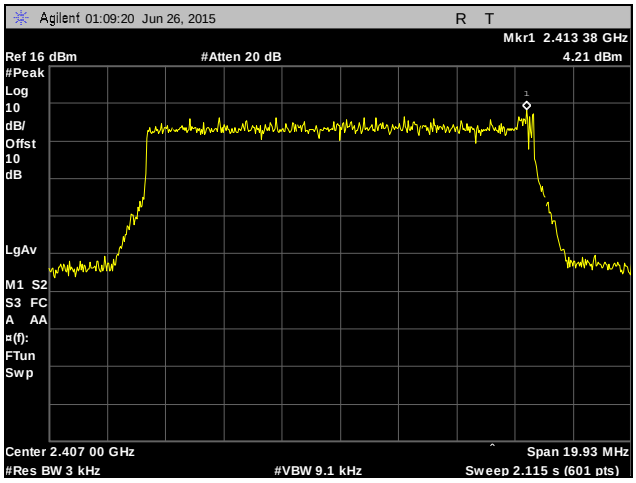


Plot 513. Peak Power Spectral Density, Mid Channel, 10 MHz, Chain 1, 6 dBi Antenna

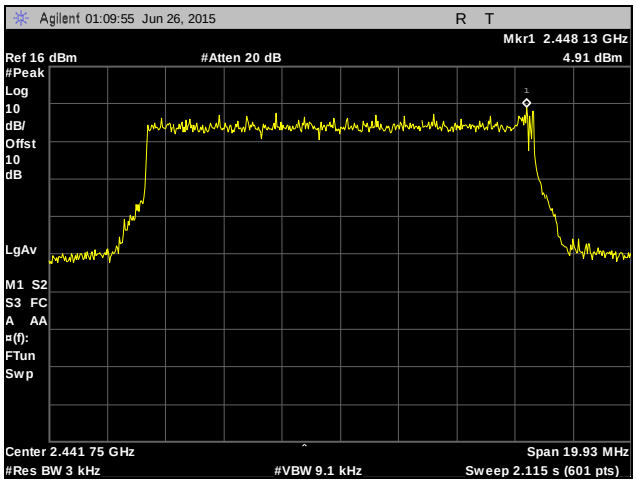


Plot 514. Peak Power Spectral Density, High Channel, 10 MHz, Chain 1, 6 dBi Antenna

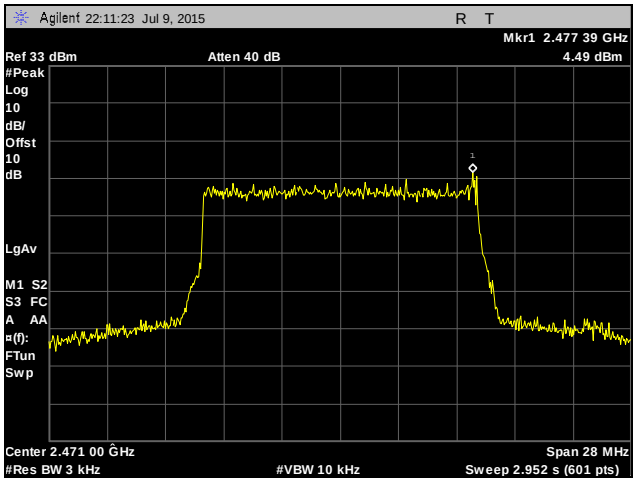
Peak Power Spectral Density Test Results, 14 MHz, Chain 0, 6 dBi Antenna



Plot 515. Peak Power Spectral Density, Low Channel, 14 MHz, Chain 0, 6 dBi Antenna

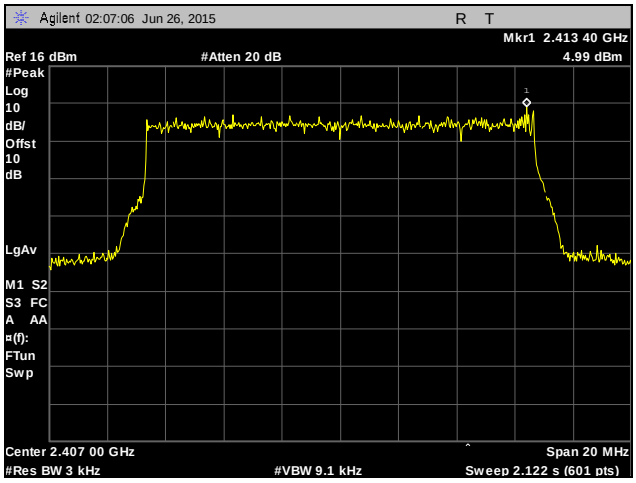


Plot 516. Peak Power Spectral Density, Mid Channel, 14 MHz, Chain 0, 6 dBi Antenna

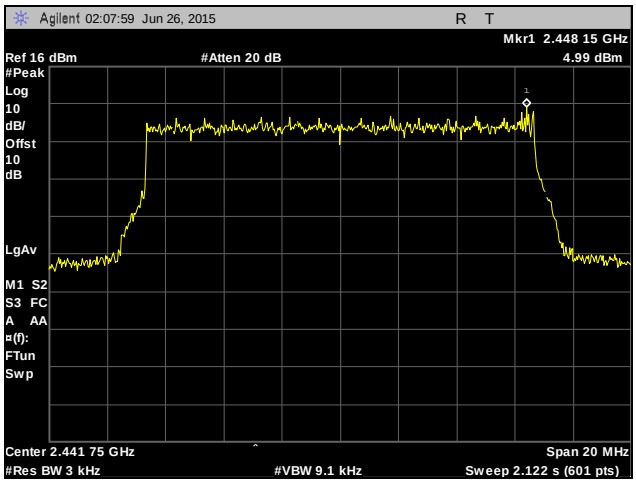


Plot 517. Peak Power Spectral Density, High Channel, 14 MHz, Chain 0, 6 dBi Antenna

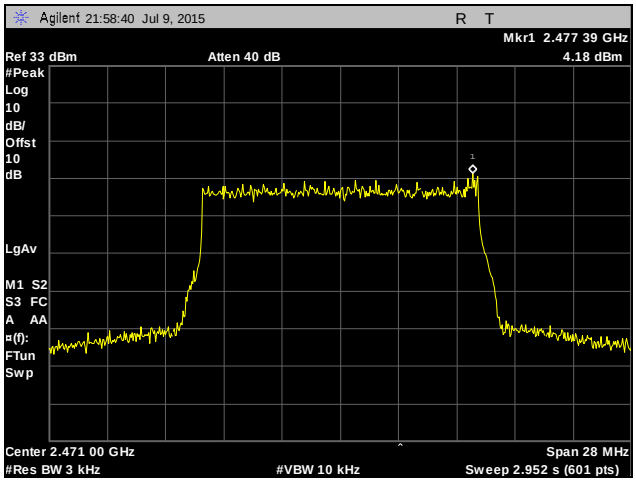
Peak Power Spectral Density Test Results, 14 MHz, Chain 1, 6 dBi Antenna



Plot 518. Peak Power Spectral Density, Low Channel, 14 MHz, Chain 1, 6 dBi Antenna

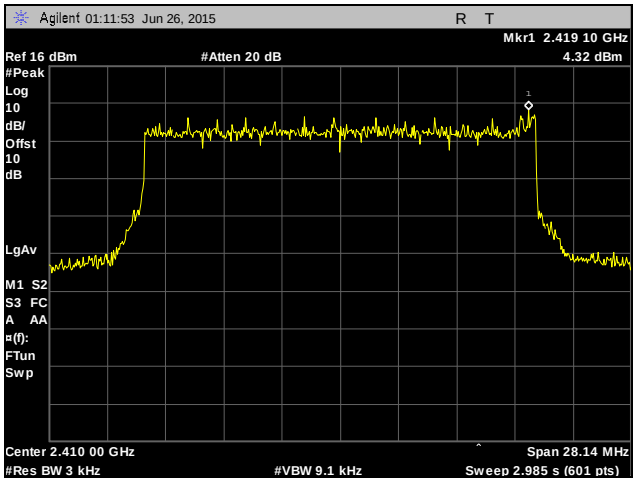


Plot 519. Peak Power Spectral Density, Mid Channel, 14 MHz, Chain 1, 6 dBi Antenna

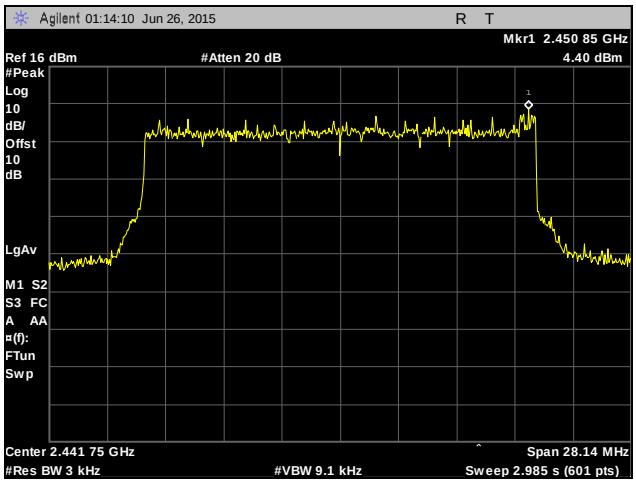


Plot 520. Peak Power Spectral Density, High Channel, 14 MHz, Chain 1, 6 dBi Antenna

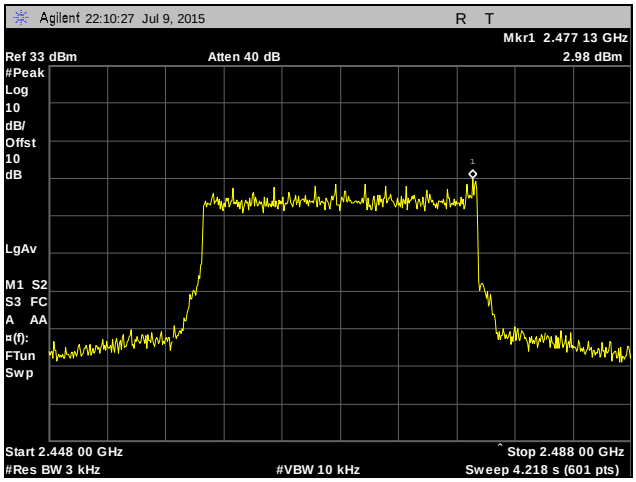
Peak Power Spectral Density Test Results, 20 MHz, Chain 0, 6 dBi Antenna



Plot 521. Peak Power Spectral Density, Low Channel, 20 MHz, Chain 0, 6 dBi Antenna

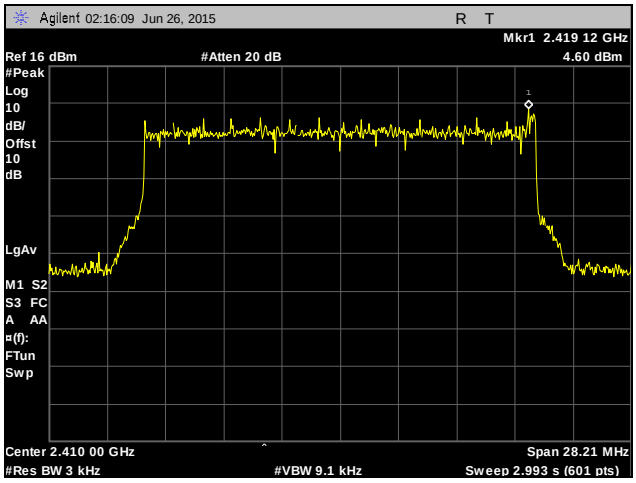


Plot 522. Peak Power Spectral Density, Mid Channel, 20 MHz, Chain 0, 6 dBi Antenna

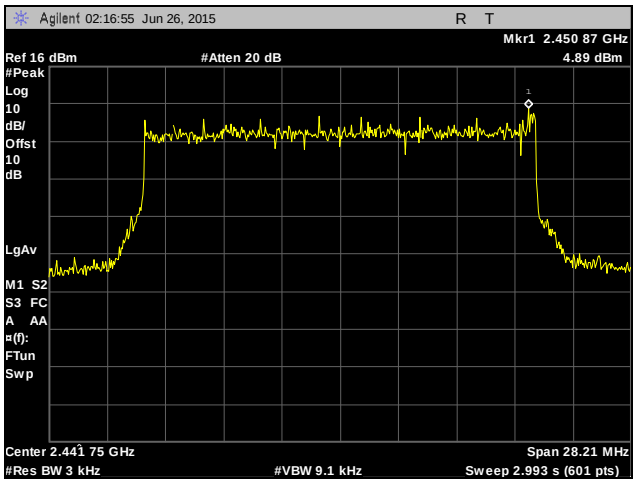


Plot 523. Peak Power Spectral Density, High Channel, 20 MHz, Chain 0, 6 dBi Antenna

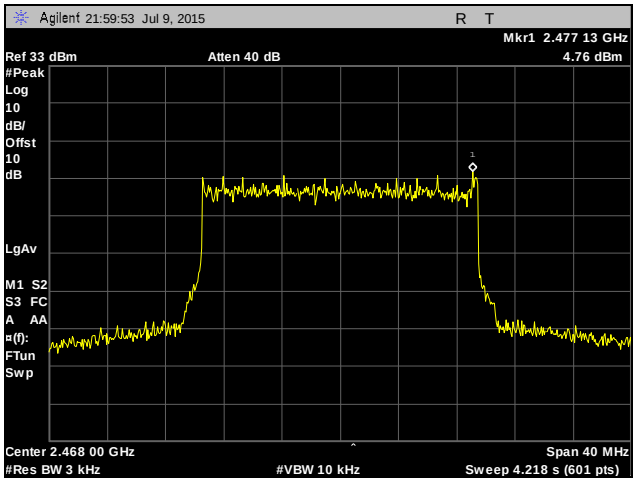
Peak Power Spectral Density Test Results, 20 MHz, Chain 1, 6 dBi Antenna



Plot 524. Peak Power Spectral Density, Low Channel, 20 MHz, Chain 1, 6 dBi Antenna

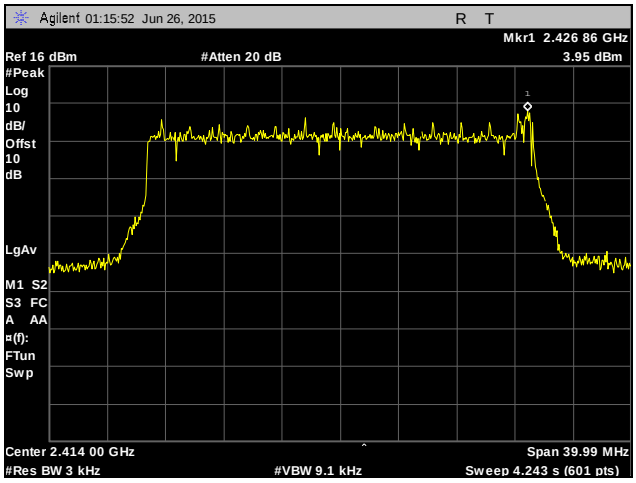


Plot 525. Peak Power Spectral Density, Mid Channel, 20 MHz, Chain 1, 6 dBi Antenna

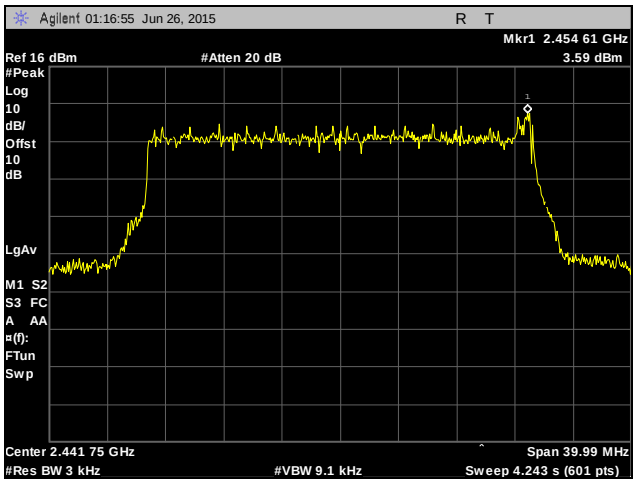


Plot 526. Peak Power Spectral Density, High Channel, 20 MHz, Chain 1, 6 dBi Antenna

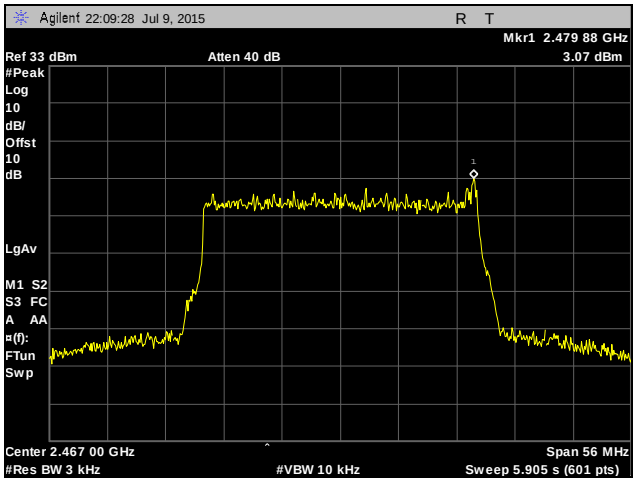
Peak Power Spectral Density Test Results, 28 MHz, Chain 0, 6 dBi Antenna



Plot 527. Peak Power Spectral Density, Low Channel, 28 MHz, Chain 0, 6 dBi Antenna

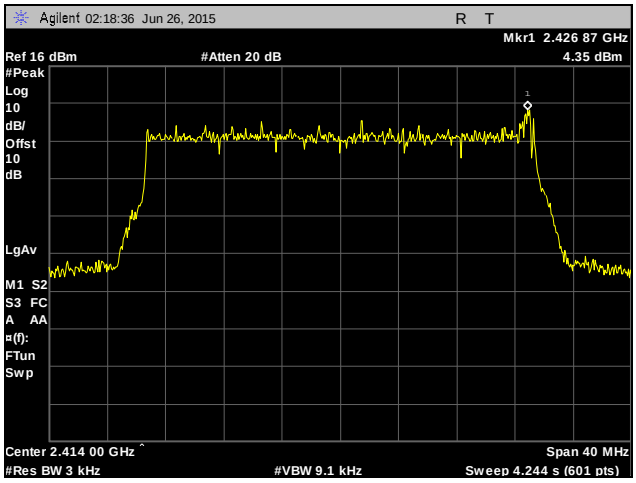


Plot 528. Peak Power Spectral Density, Mid Channel, 28 MHz, Chain 0, 6 dBi Antenna

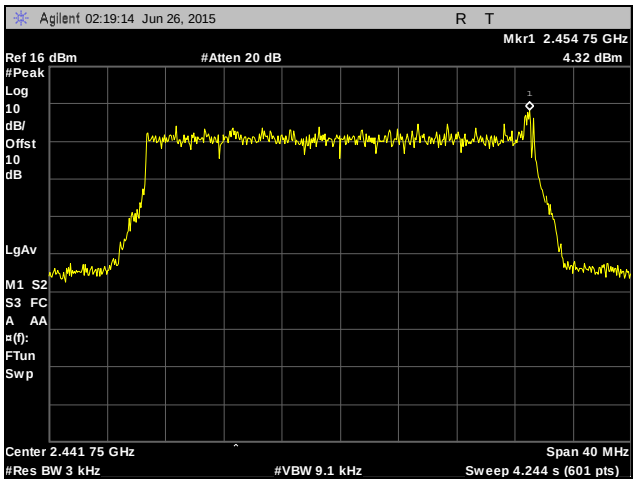


Plot 529. Peak Power Spectral Density, High Channel, 28 MHz, Chain 0, 6 dBi Antenna

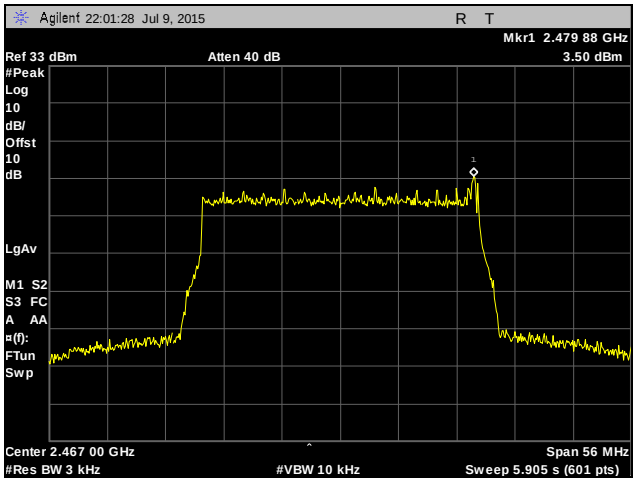
Peak Power Spectral Density Test Results, 28 MHz, Chain 1, 6 dBi Antenna



Plot 530. Peak Power Spectral Density, Low Channel, 28 MHz, Chain 1, 6 dBi Antenna

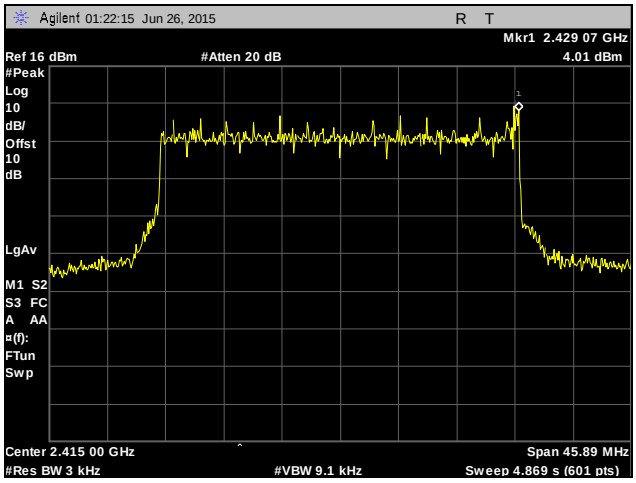


Plot 531. Peak Power Spectral Density, Mid Channel, 28 MHz, Chain 1, 6 dBi Antenna

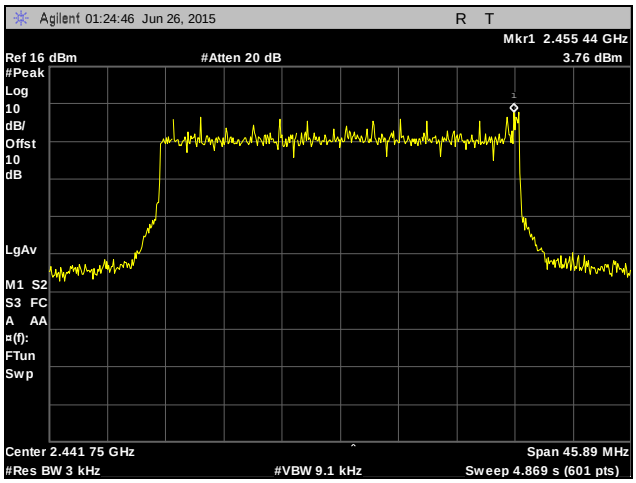


Plot 532. Peak Power Spectral Density, High Channel, 28 MHz, Chain 1, 6 dBi Antenna

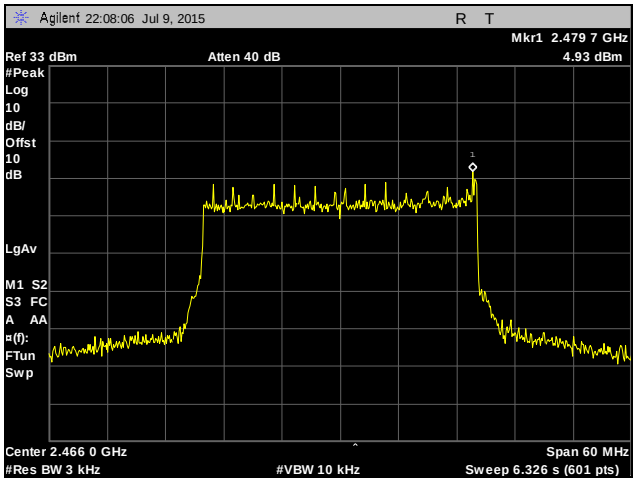
Peak Power Spectral Density Test Results, 30 MHz, Chain 0, 6 dBi Antenna



Plot 533. Peak Power Spectral Density, Low Channel, 30 MHz, Chain 0, 6 dBi Antenna

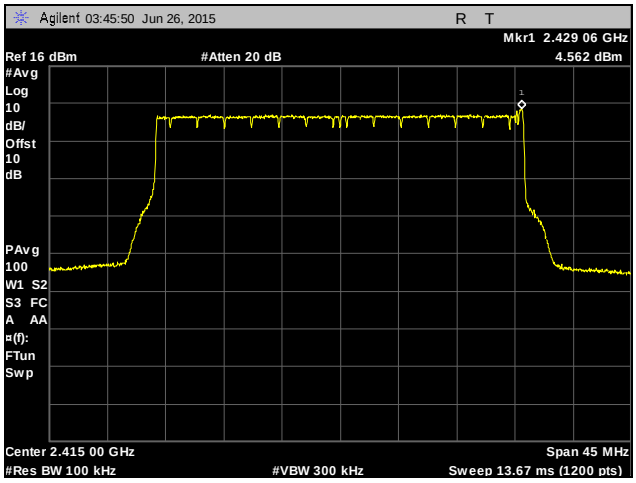


Plot 534. Peak Power Spectral Density, Mid Channel, 30 MHz, Chain 0, 6 dBi Antenna

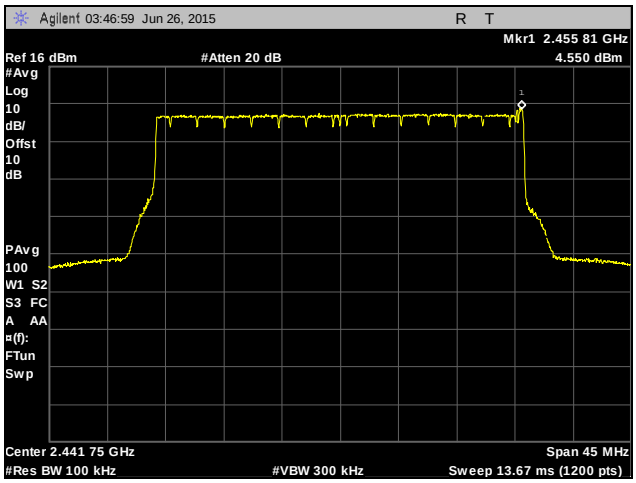


Plot 535. Peak Power Spectral Density, High Channel, 30 MHz, Chain 0, 6 dBi Antenna

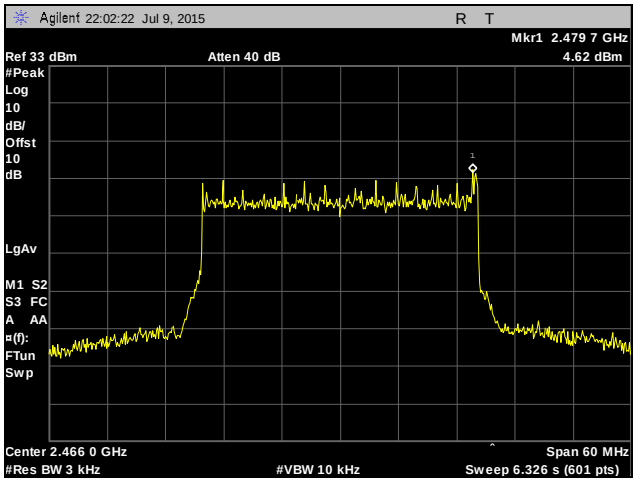
Peak Power Spectral Density Test Results, 30 MHz, Chain 1, 6 dBi Antenna



Plot 536. Peak Power Spectral Density, Low Channel, 30 MHz, Chain 1, 6 dBi Antenna

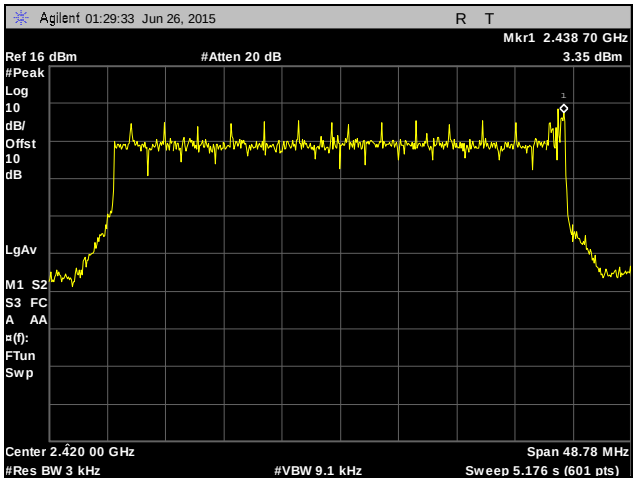


Plot 537. Peak Power Spectral Density, Mid Channel, 30 MHz, Chain 1, 6 dBi Antenna

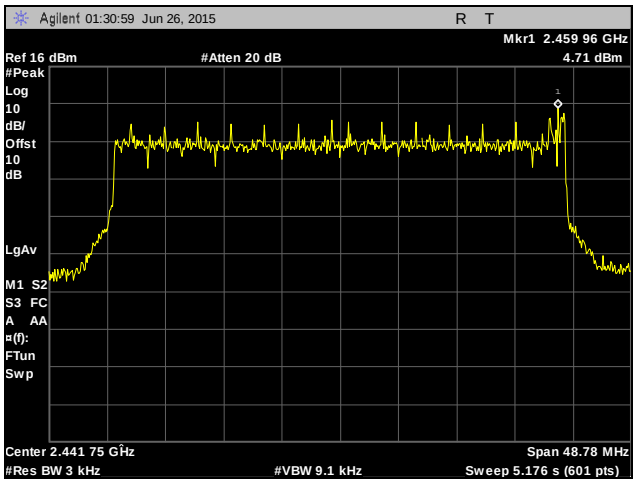


Plot 538. Peak Power Spectral Density, High Channel, 30 MHz, Chain 1, 6 dBi Antenna

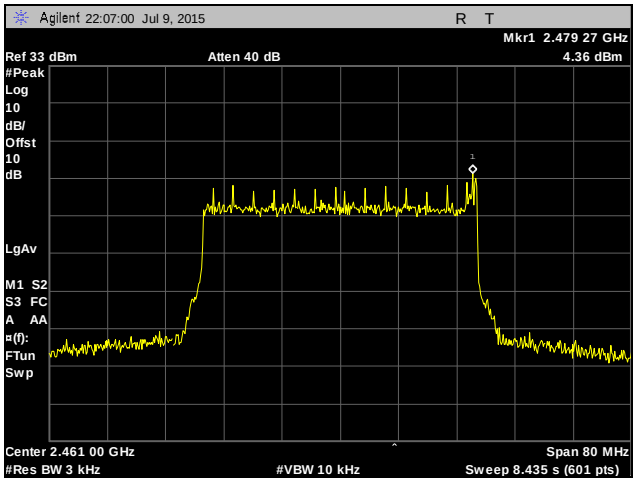
Peak Power Spectral Density Test Results, 40 MHz, Chain 0, 6 dBi Antenna



Plot 539. Peak Power Spectral Density, Low Channel, 40 MHz, Chain 0, 6 dBi Antenna

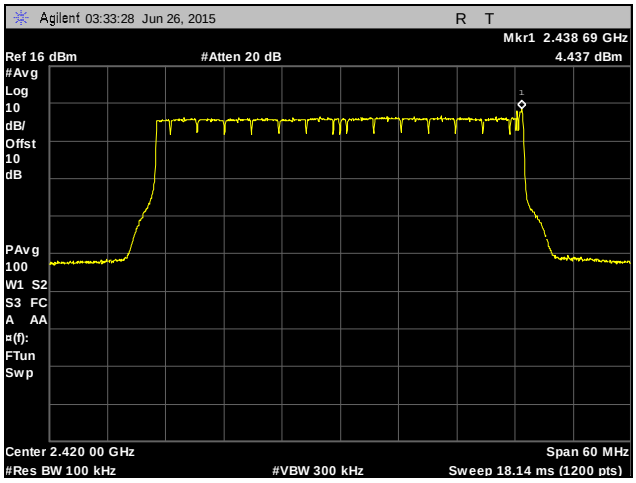


Plot 540. Peak Power Spectral Density, Mid Channel, 40 MHz, Chain 0, 6 dBi Antenna

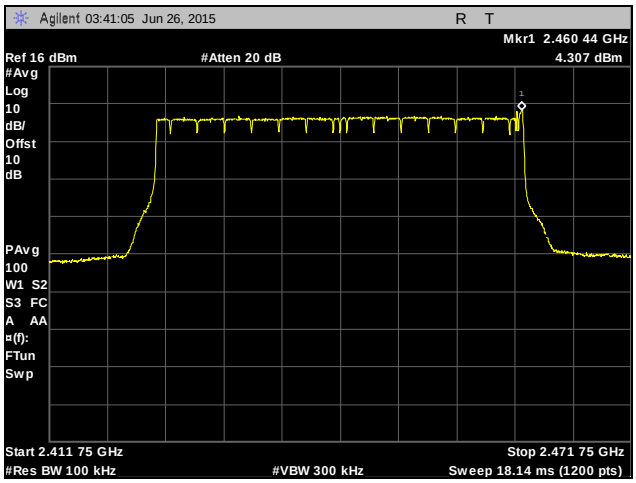


Plot 541. Peak Power Spectral Density, High Channel, 40 MHz, Chain 0, 6 dBi Antenna

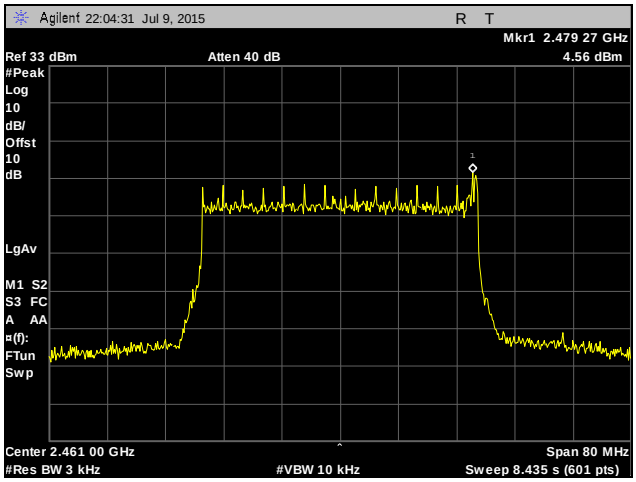
Peak Power Spectral Density Test Results, 40 MHz, Chain 1, 6 dBi Antenna



Plot 542. Peak Power Spectral Density, Low Channel, 40 MHz, Chain 1, 6 dBi Antenna

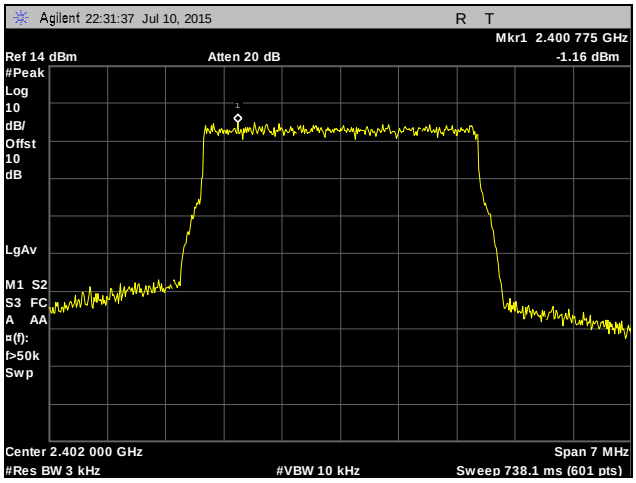


Plot 543. Peak Power Spectral Density, Mid Channel, 40 MHz, Chain 1, 6 dBi Antenna

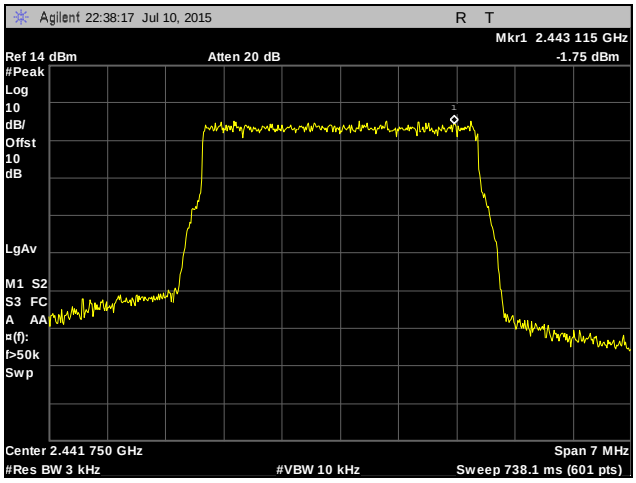


Plot 544. Peak Power Spectral Density, High Channel, 40 MHz, Chain 1, 6 dBi Antenna

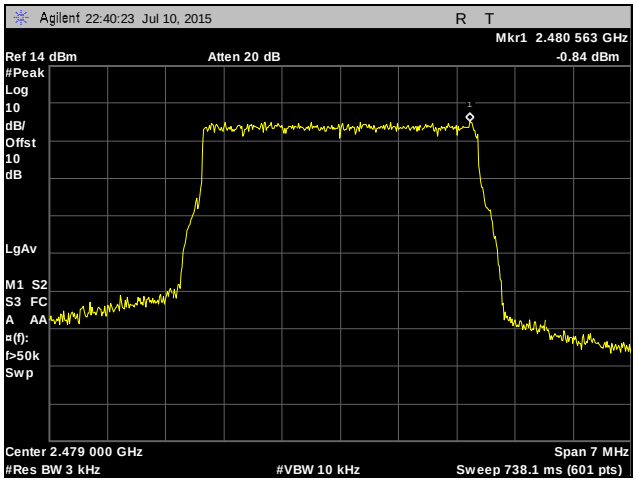
Peak Power Spectral Density Test Results, 3.5 MHz, Chain 0, 24 dBi Antenna



Plot 545. Peak Power Spectral Density, Low Channel, 3.5 MHz, Chain 0, 24 dBi Antenna

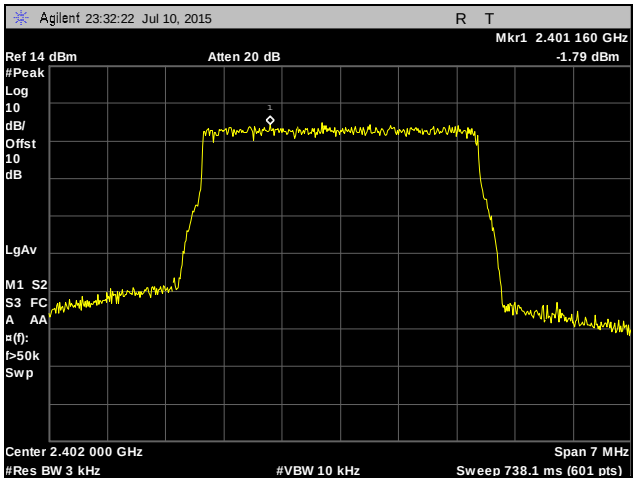


Plot 546. Peak Power Spectral Density, Mid Channel, 3.5 MHz, Chain 0, 24 dBi Antenna

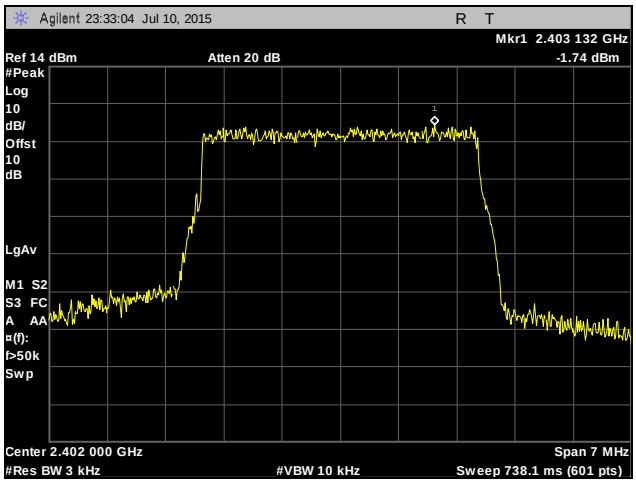


Plot 547. Peak Power Spectral Density, High Channel, 3.5 MHz, Chain 0, 24 dBi Antenna

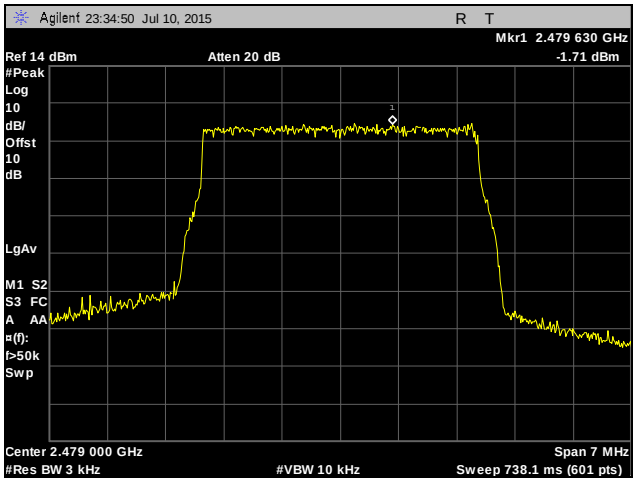
Peak Power Spectral Density Test Results, 3.5 MHz, Chain 1, 24 dBi Antenna



Plot 548. Peak Power Spectral Density, Low Channel, 3.5 MHz, Chain 1, 24 dBi Antenna

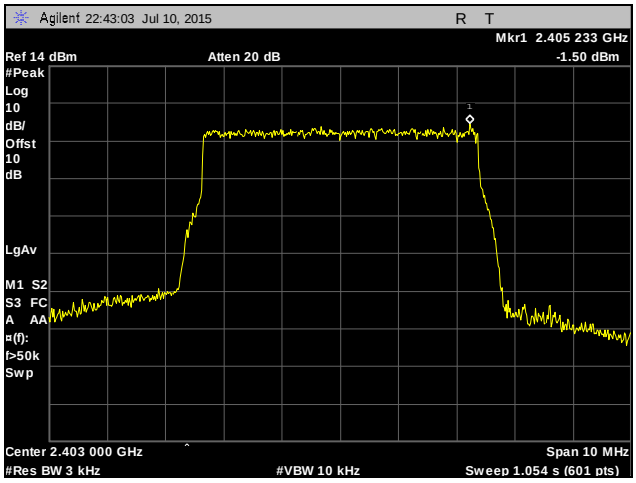


Plot 549. Peak Power Spectral Density, Mid Channel, 3.5 MHz, Chain 1, 24 dBi Antenna

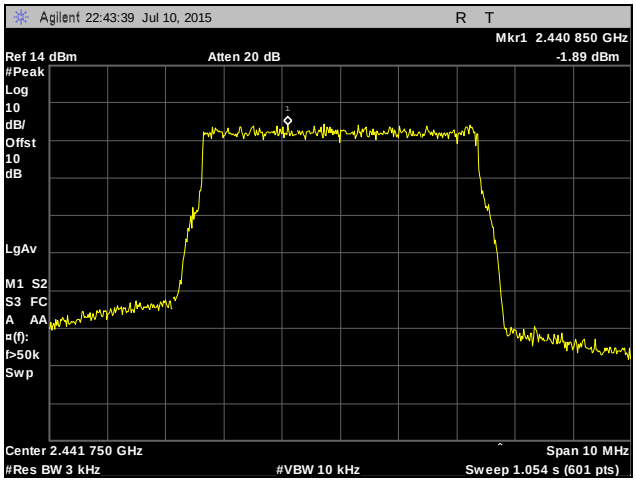


Plot 550. Peak Power Spectral Density, High Channel, 3.5 MHz, Chain 1, 24 dBi Antenna

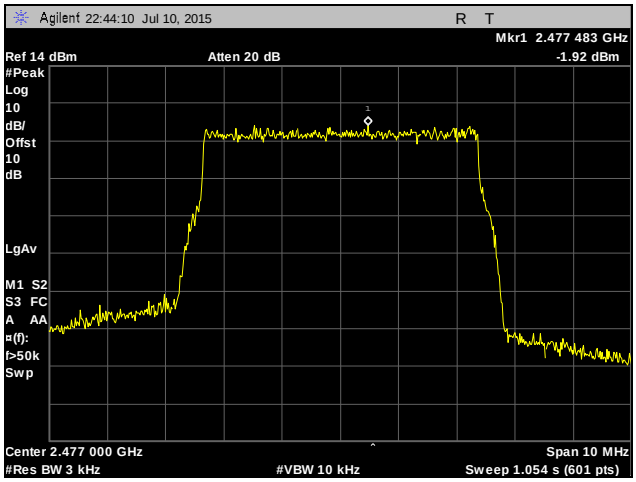
Peak Power Spectral Density Test Results, 5 MHz, Chain 0, 24 dBi Antenna



Plot 551. Peak Power Spectral Density, Low Channel, 5 MHz, Chain 0, 24 dBi Antenna

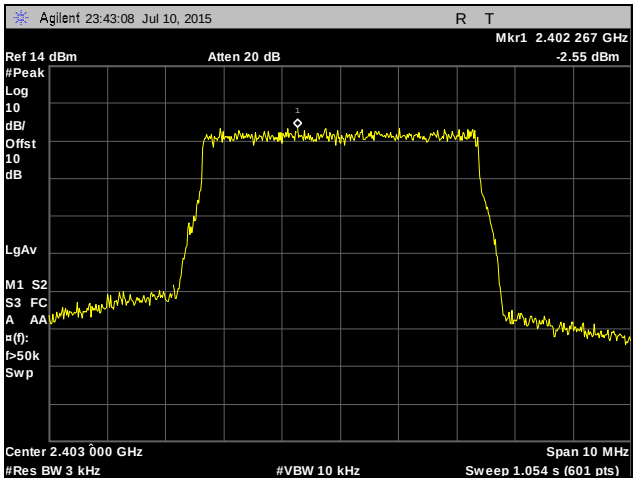


Plot 552. Peak Power Spectral Density, Mid Channel, 5 MHz, Chain 0, 24 dBi Antenna

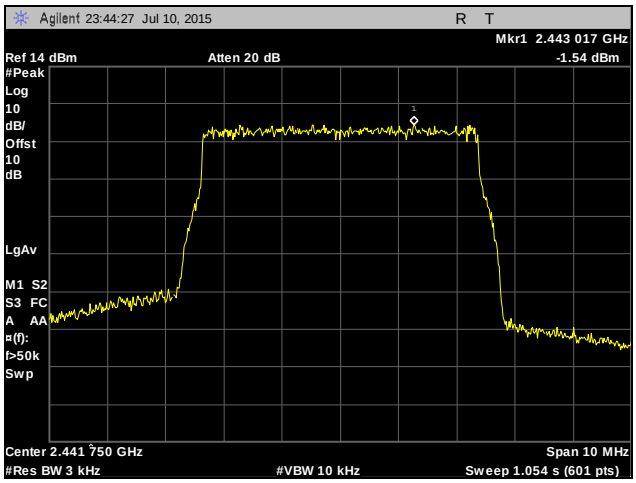


Plot 553. Peak Power Spectral Density, High Channel, 5 MHz, Chain 0, 24 dBi Antenna

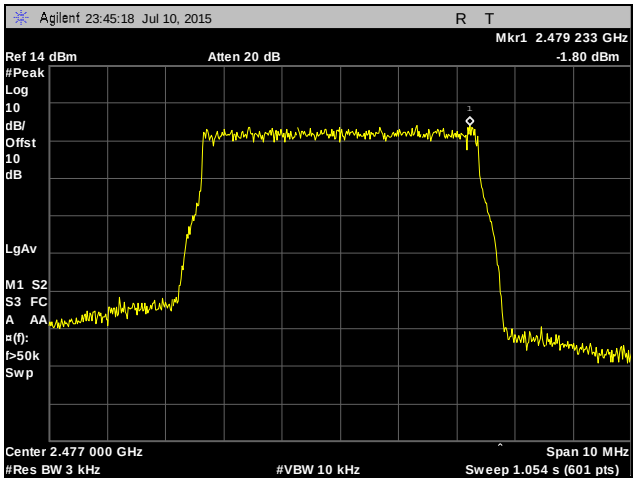
Peak Power Spectral Density Test Results, 5 MHz, Chain 1, 24 dBi Antenna



Plot 554. Peak Power Spectral Density, Low Channel, 5 MHz, Chain 1, 24 dBi Antenna

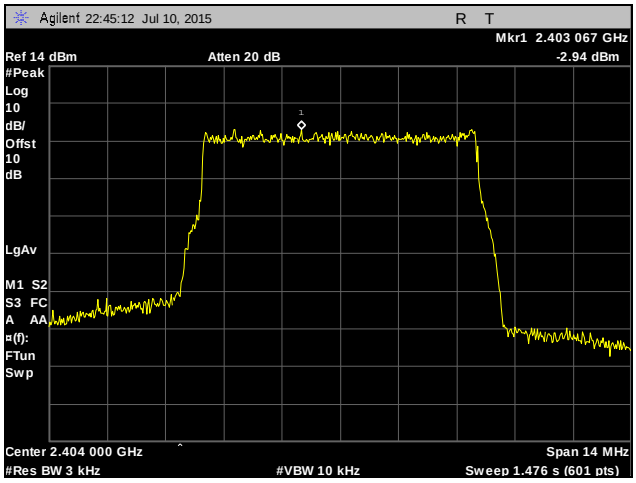


Plot 555. Peak Power Spectral Density, Mid Channel, 5 MHz, Chain 1, 24 dBi Antenna

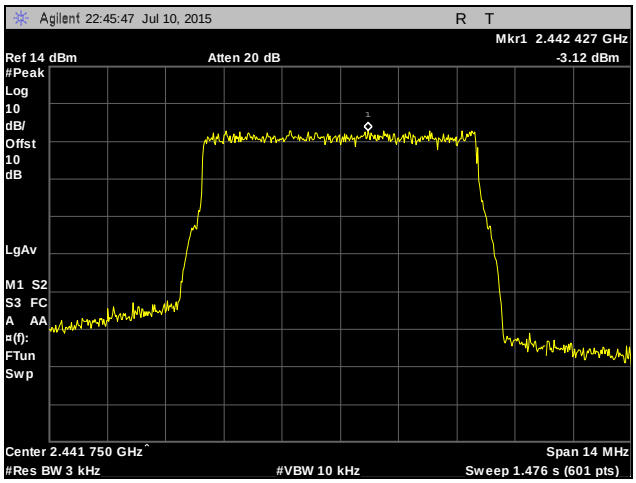


Plot 556. Peak Power Spectral Density, High Channel, 5 MHz, Chain 1, 24 dBi Antenna

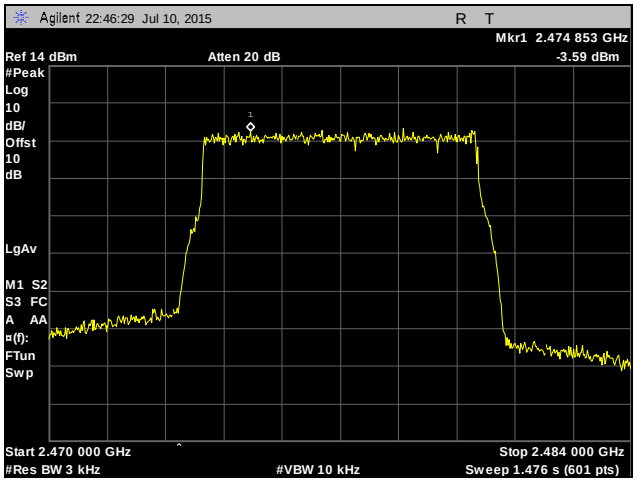
Peak Power Spectral Density Test Results, 7 MHz, Chain 0, 24 dBi Antenna



Plot 557. Peak Power Spectral Density, Low Channel, 7 MHz, Chain 0, 24 dBi Antenna

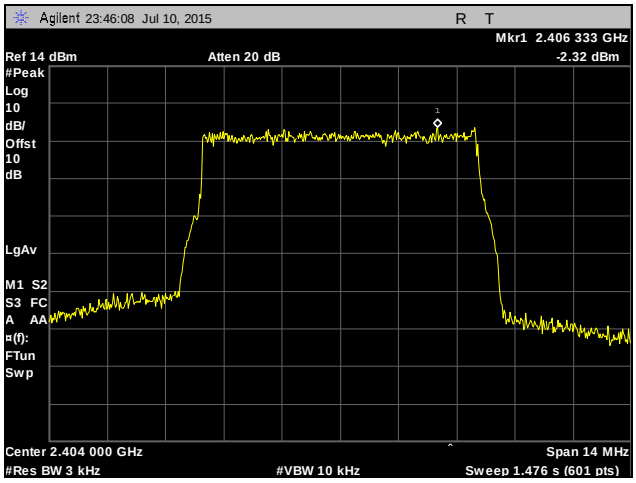


Plot 558. Peak Power Spectral Density, Mid Channel, 7 MHz, Chain 0, 24 dBi Antenna

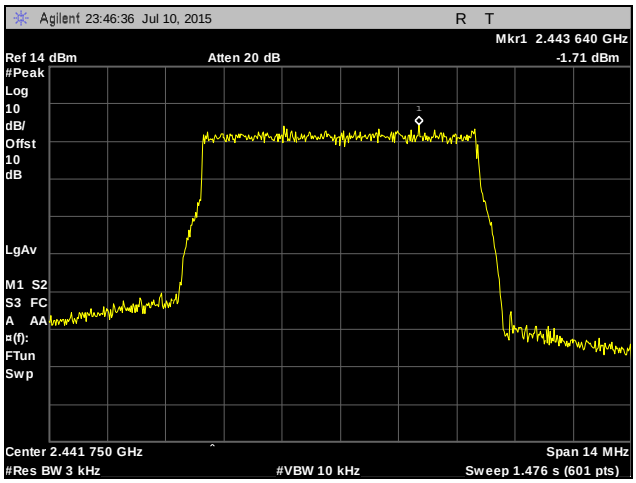


Plot 559. Peak Power Spectral Density, High Channel, 7 MHz, Chain 0, 24 dBi Antenna

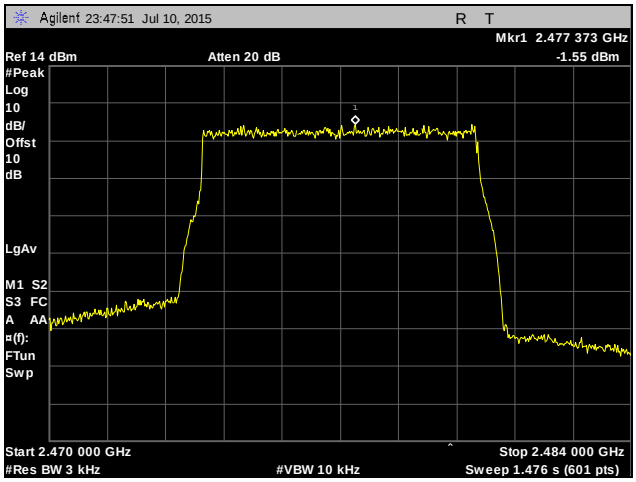
Peak Power Spectral Density Test Results, 7 MHz, Chain 1, 24 dBi Antenna



Plot 560. Peak Power Spectral Density, Low Channel, 7 MHz, Chain 1, 24 dBi Antenna

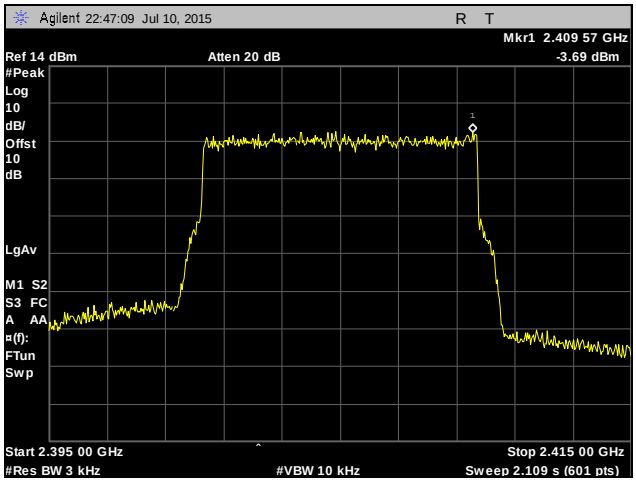


Plot 561. Peak Power Spectral Density, Mid Channel, 7 MHz, Chain 1, 24 dBi Antenna

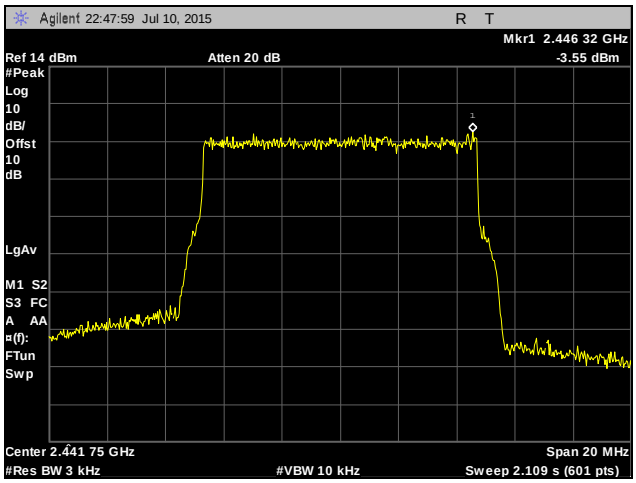


Plot 562. Peak Power Spectral Density, High Channel, 7 MHz, Chain 1, 24 dBi Antenna

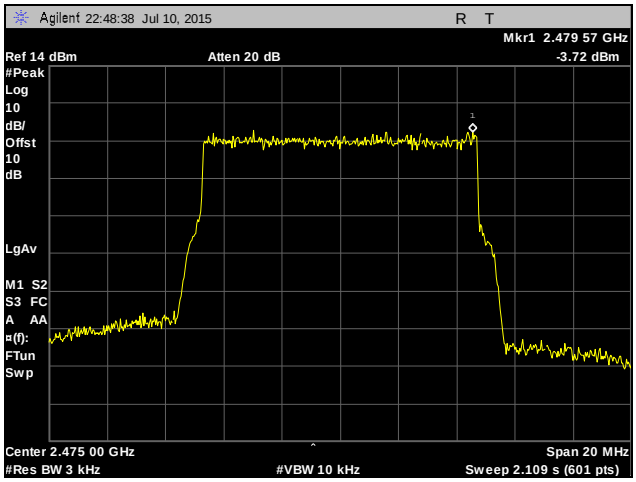
Peak Power Spectral Density Test Results, 10 MHz, Chain 0, 24 dBi Antenna



Plot 563. Peak Power Spectral Density, Low Channel, 10 MHz, Chain 0, 24 dBi Antenna

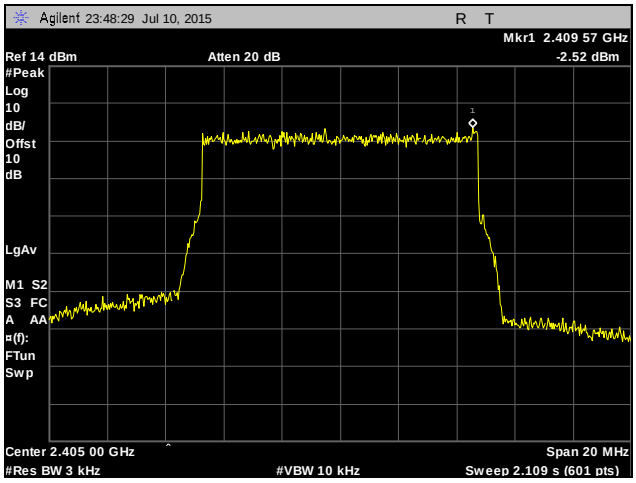


Plot 564. Peak Power Spectral Density, Mid Channel, 10 MHz, Chain 0, 24 dBi Antenna

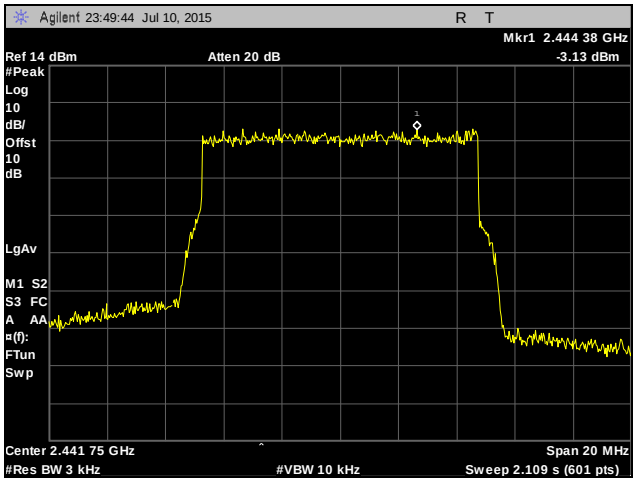


Plot 565. Peak Power Spectral Density, High Channel, 10 MHz, Chain 0, 24 dBi Antenna

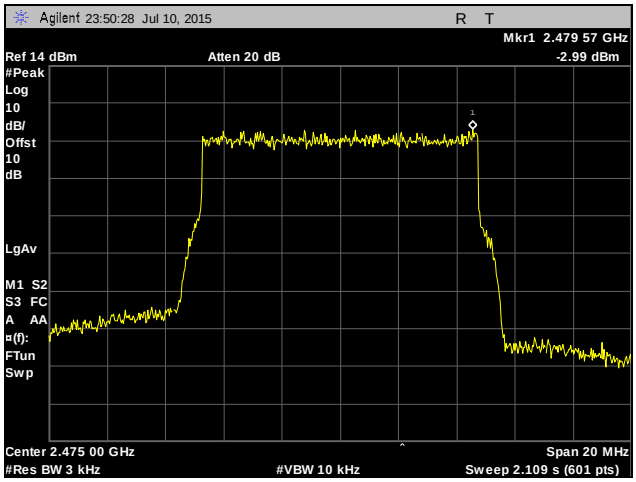
Peak Power Spectral Density Test Results, 10 MHz, Chain 1, 24 dBi Antenna



Plot 566. Peak Power Spectral Density, Low Channel, 10 MHz, Chain 1, 24 dBi Antenna

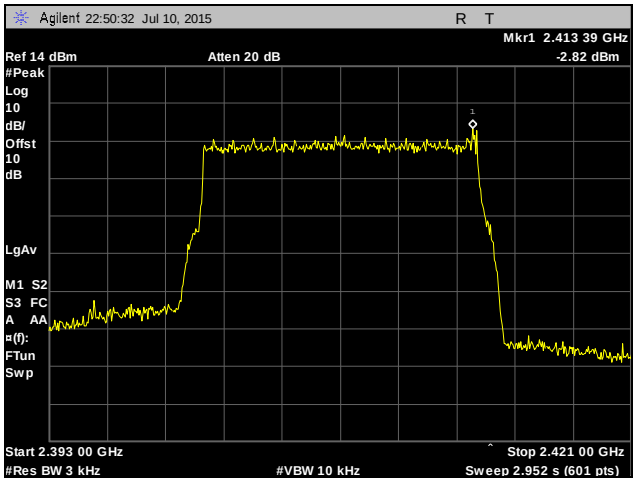


Plot 567. Peak Power Spectral Density, Mid Channel, 10 MHz, Chain 1, 24 dBi Antenna

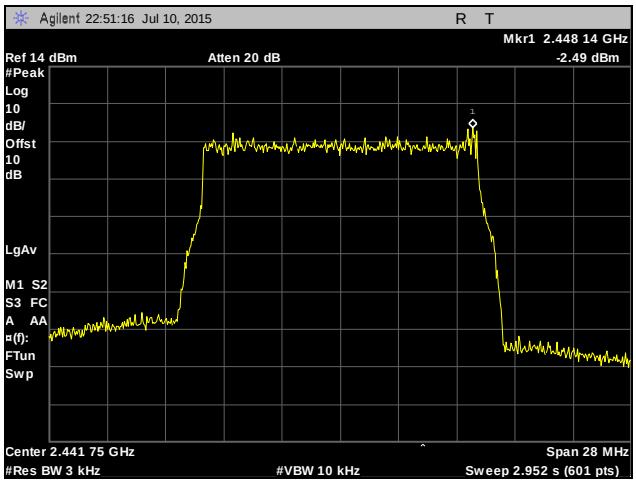


Plot 568. Peak Power Spectral Density, High Channel, 10 MHz, Chain 1, 24 dBi Antenna

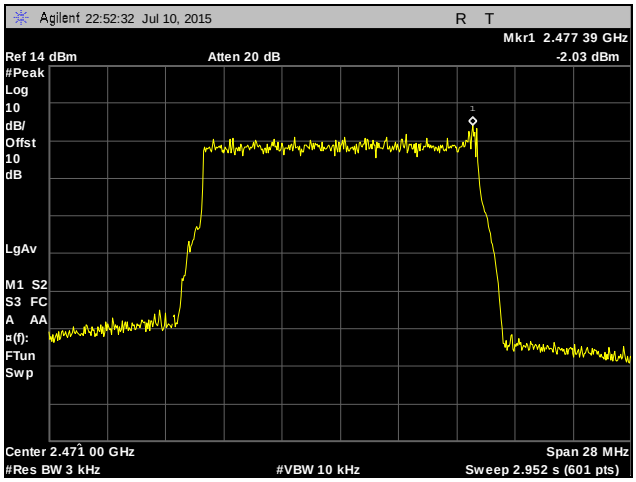
Peak Power Spectral Density Test Results, 14 MHz, Chain 0, 24 dBi Antenna



Plot 569. Peak Power Spectral Density, Low Channel, 14 MHz, Chain 0, 24 dBi Antenna

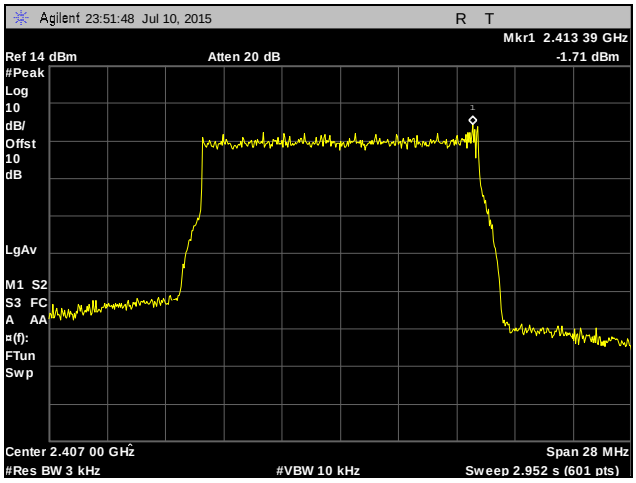


Plot 570. Peak Power Spectral Density, Mid Channel, 14 MHz, Chain 0, 24 dBi Antenna

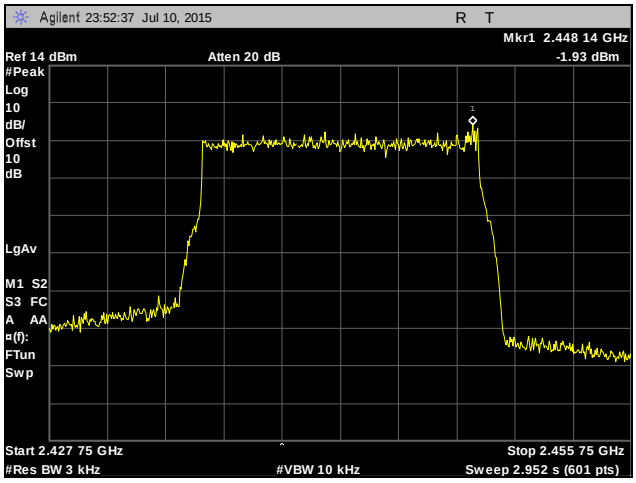


Plot 571. Peak Power Spectral Density, High Channel, 14 MHz, Chain 0, 24 dBi Antenna

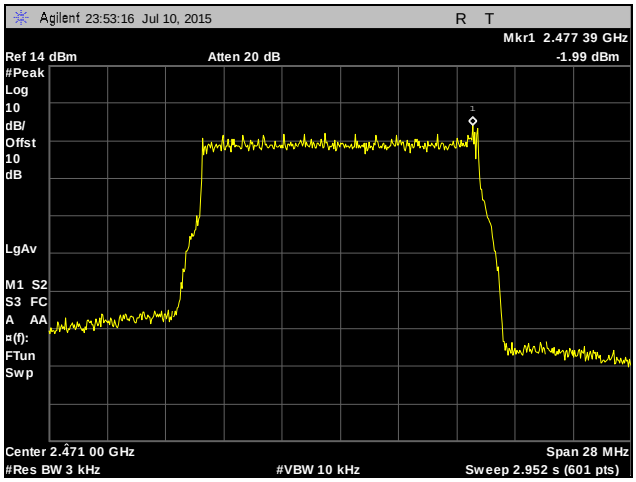
Peak Power Spectral Density Test Results, 14 MHz, Chain 1, 24 dBi Antenna



Plot 572. Peak Power Spectral Density, Low Channel, 14 MHz, Chain 1, 24 dBi Antenna

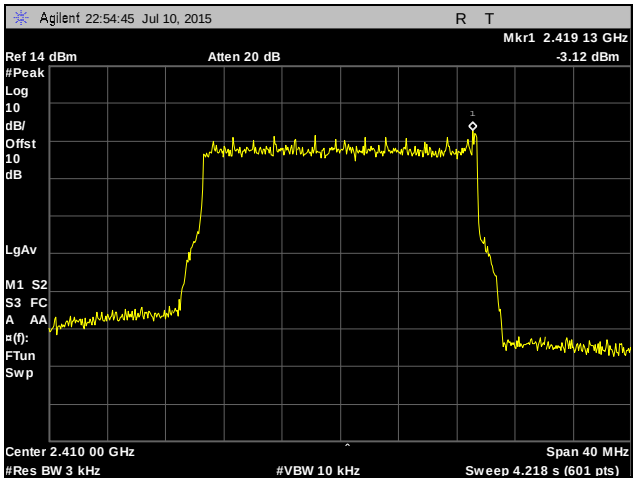


Plot 573. Peak Power Spectral Density, Mid Channel, 14 MHz, Chain 1, 24 dBi Antenna

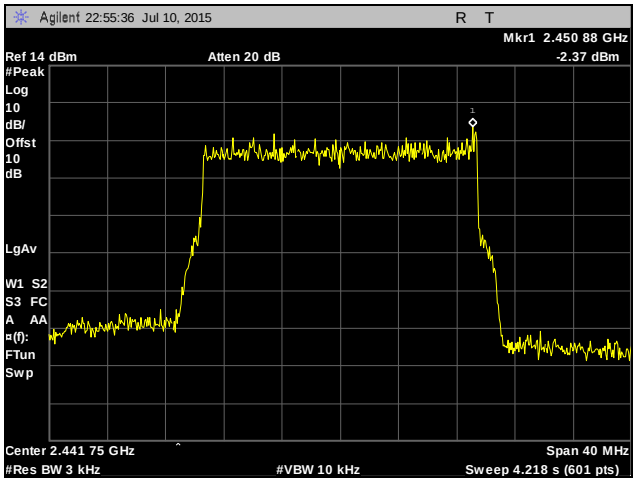


Plot 574. Peak Power Spectral Density, High Channel, 14 MHz, Chain 1, 24 dBi Antenna

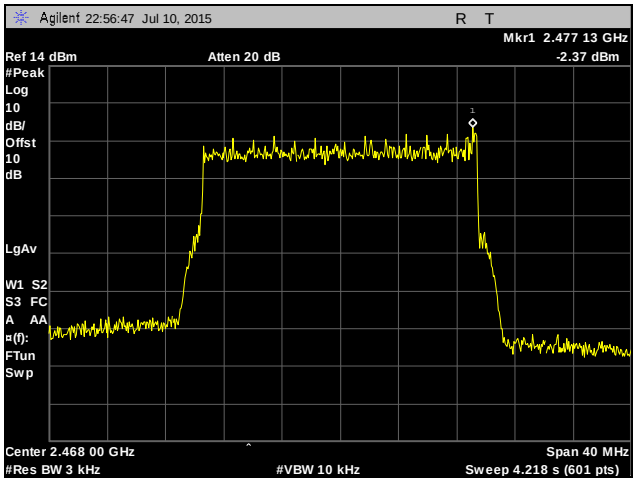
Peak Power Spectral Density Test Results, 20 MHz, Chain 0, 24 dBi Antenna



Plot 575. Peak Power Spectral Density, Low Channel, 20 MHz, Chain 0, 24 dBi Antenna

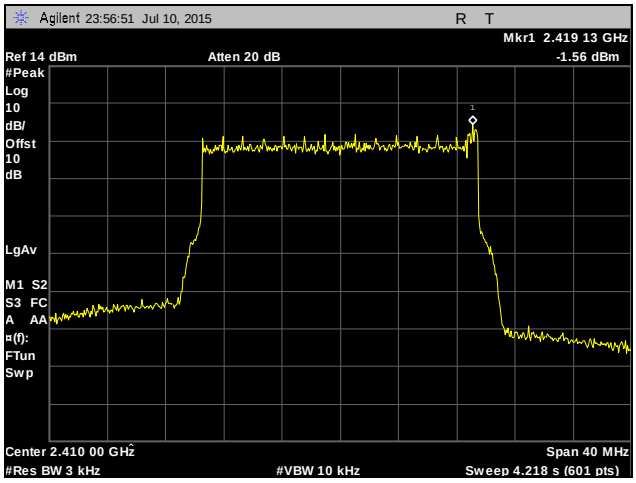


Plot 576. Peak Power Spectral Density, Mid Channel, 20 MHz, Chain 0, 24 dBi Antenna

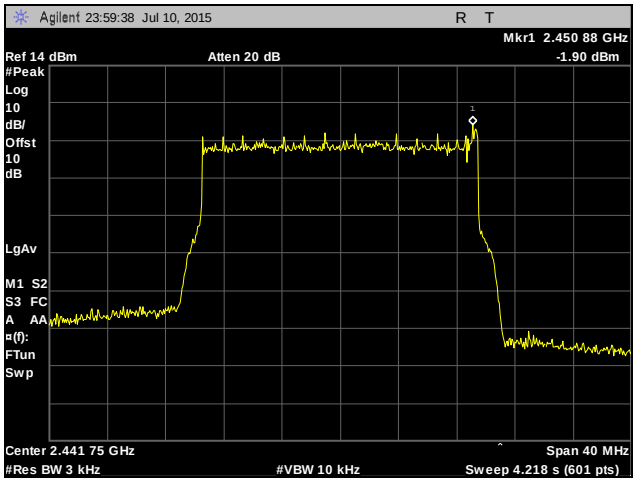


Plot 577. Peak Power Spectral Density, High Channel, 20 MHz, Chain 0, 24 dBi Antenna

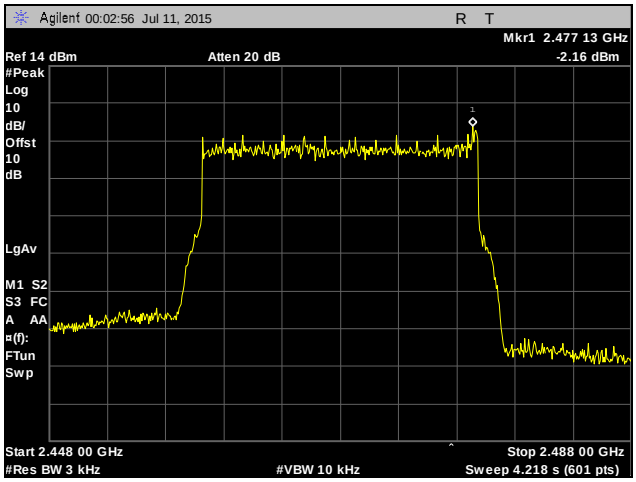
Peak Power Spectral Density Test Results, 20 MHz, Chain 1, 24 dBi Antenna



Plot 578. Peak Power Spectral Density, Low Channel, 20 MHz, Chain 1, 24 dBi Antenna

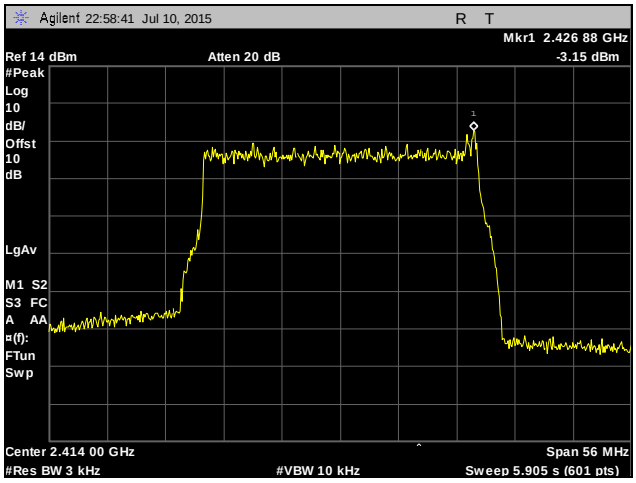


Plot 579. Peak Power Spectral Density, Mid Channel, 20 MHz, Chain 1, 24 dBi Antenna

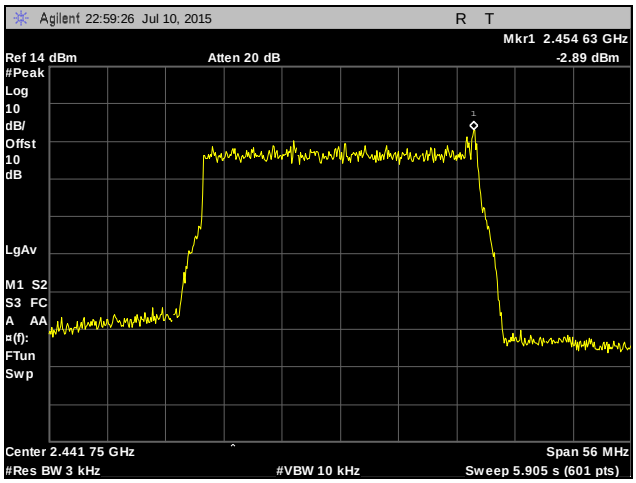


Plot 580. Peak Power Spectral Density, High Channel, 20 MHz, Chain 1, 24 dBi Antenna

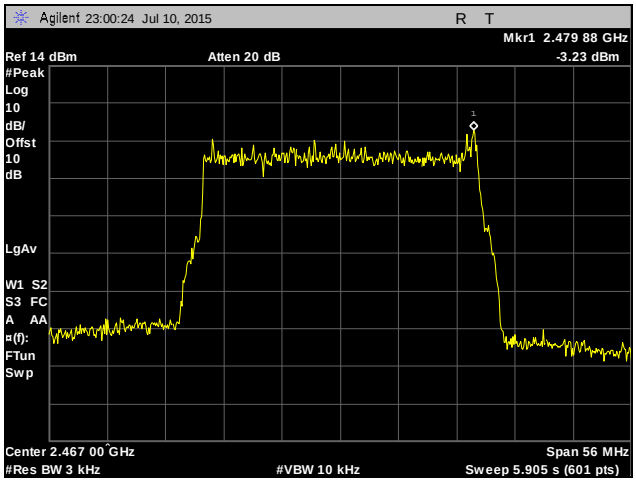
Peak Power Spectral Density Test Results, 28 MHz, Chain 0, 24 dBi Antenna



Plot 581. Peak Power Spectral Density, Low Channel, 28 MHz, Chain 0, 24 dBi Antenna

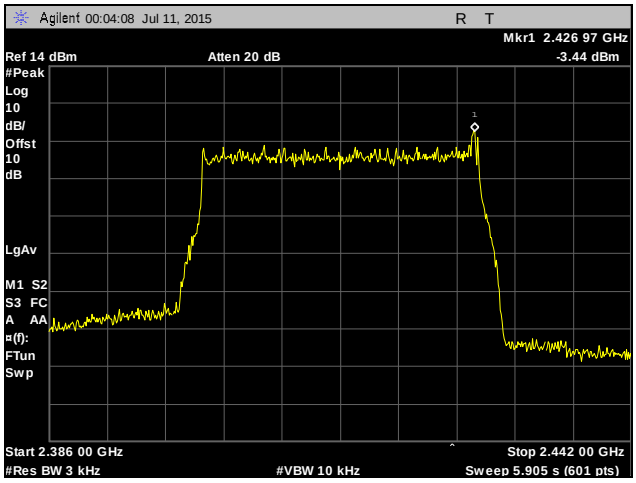


Plot 582. Peak Power Spectral Density, Mid Channel, 28 MHz, Chain 0, 24 dBi Antenna

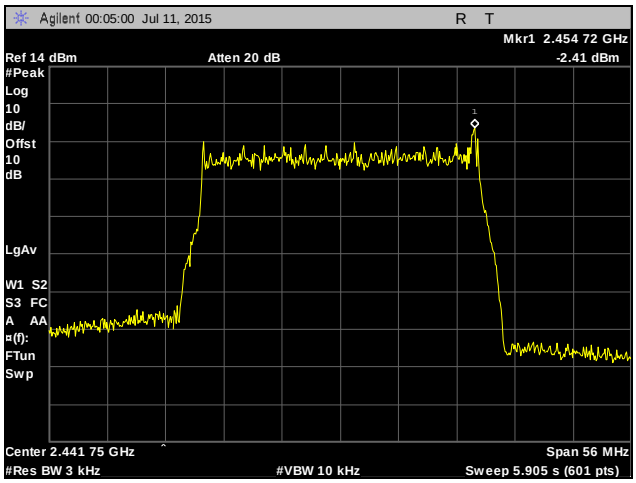


Plot 583. Peak Power Spectral Density, High Channel, 28 MHz, Chain 0, 24 dBi Antenna

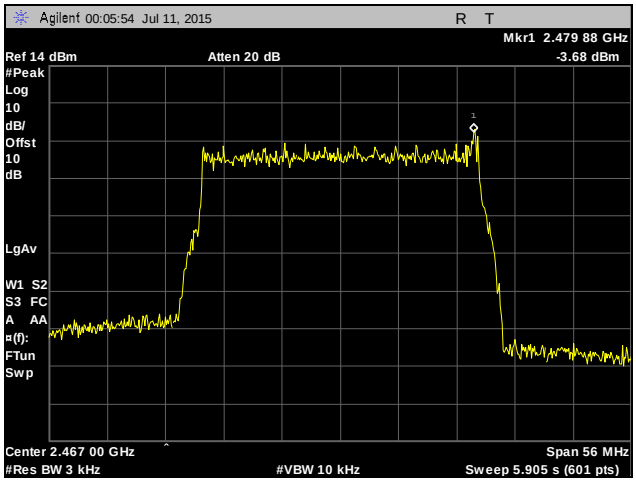
Peak Power Spectral Density Test Results, 28 MHz, Chain 1, 24 dBi Antenna



Plot 584. Peak Power Spectral Density, Low Channel, 28 MHz, Chain 1, 24 dBi Antenna

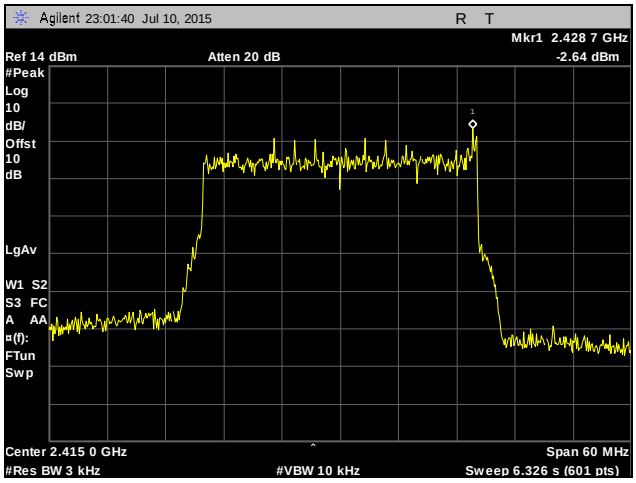


Plot 585. Peak Power Spectral Density, Mid Channel, 28 MHz, Chain 1, 24 dBi Antenna

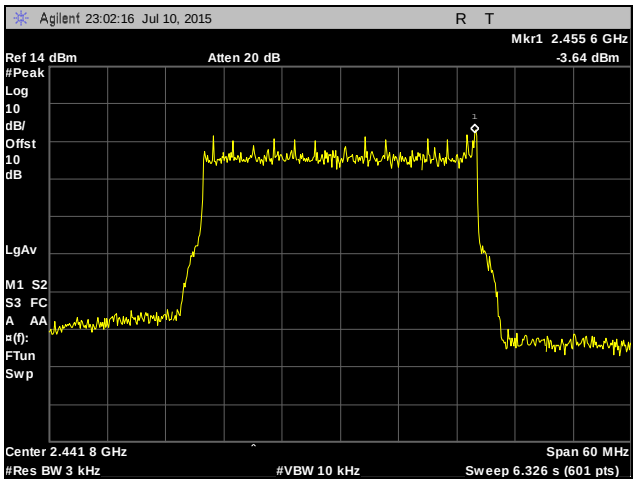


Plot 586. Peak Power Spectral Density, High Channel, 28 MHz, Chain 1, 24 dBi Antenna

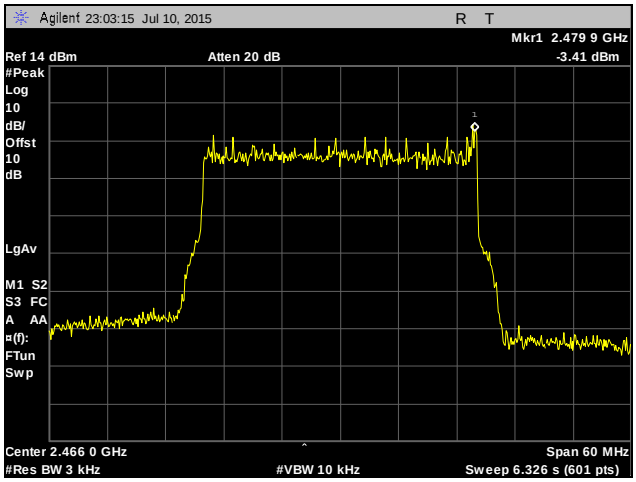
Peak Power Spectral Density Test Results, 30 MHz, Chain 0, 24 dBi Antenna



Plot 587. Peak Power Spectral Density, Low Channel, 30 MHz, Chain 0, 24 dBi Antenna

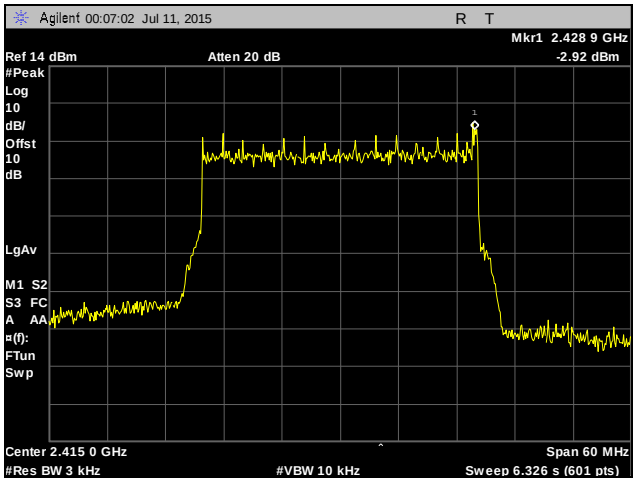


Plot 588. Peak Power Spectral Density, Mid Channel, 30 MHz, Chain 0, 24 dBi Antenna

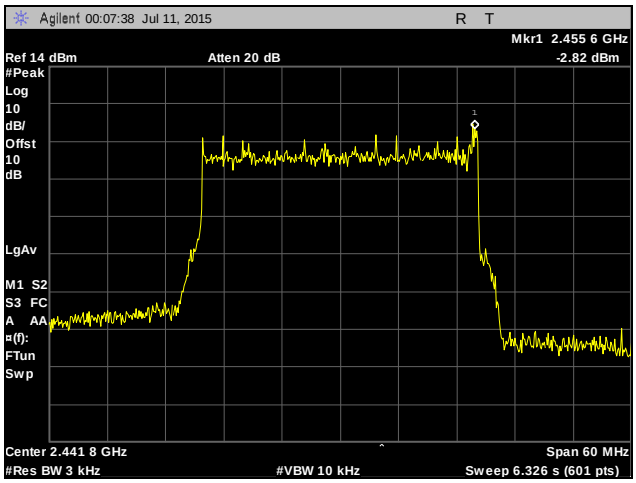


Plot 589. Peak Power Spectral Density, High Channel, 30 MHz, Chain 0, 24 dBi Antenna

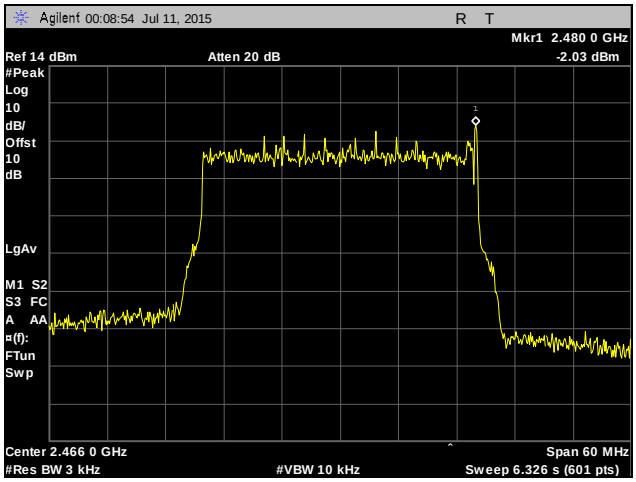
Peak Power Spectral Density Test Results, 30 MHz, Chain 1, 24 dBi Antenna



Plot 590. Peak Power Spectral Density, Low Channel, 30 MHz, Chain 1, 24 dBi Antenna

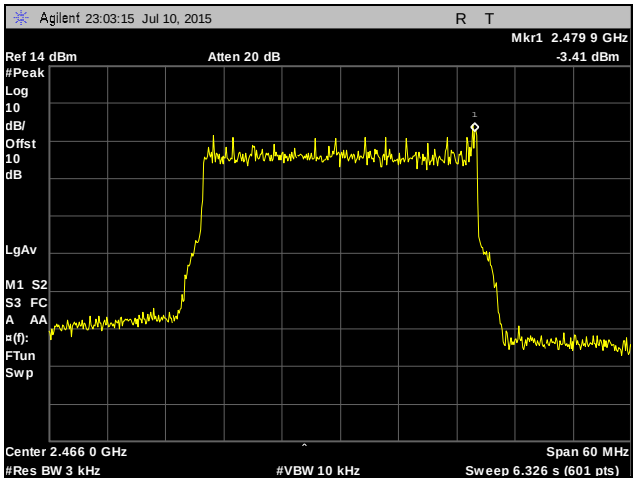


Plot 591. Peak Power Spectral Density, Mid Channel, 30 MHz, Chain 1, 24 dBi Antenna

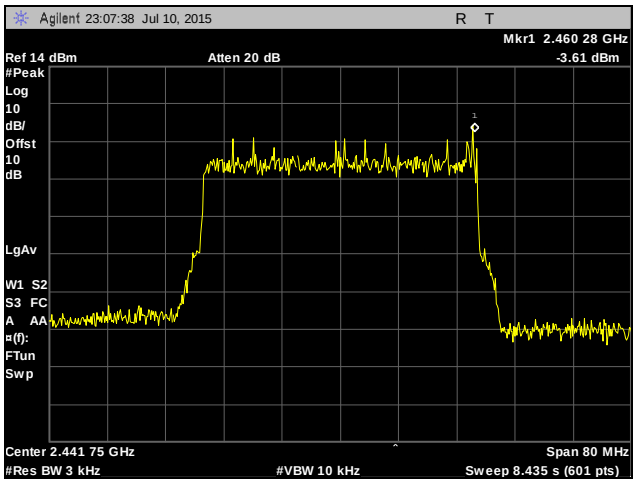


Plot 592. Peak Power Spectral Density, High Channel, 30 MHz, Chain 1, 24 dBi Antenna

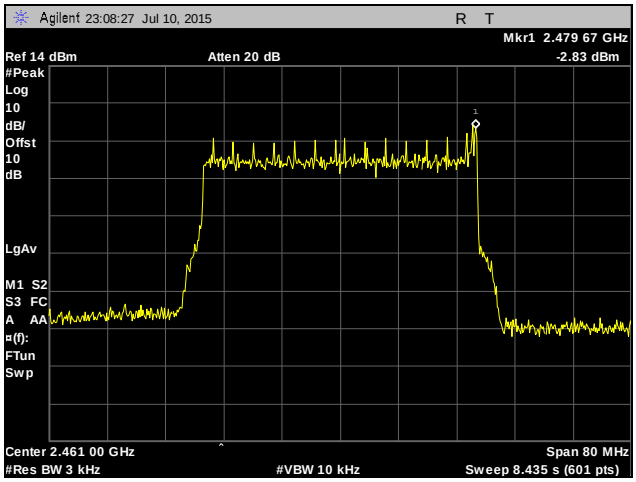
Peak Power Spectral Density Test Results, 40 MHz, Chain 0, 24 dBi Antenna



Plot 593. Peak Power Spectral Density, Low Channel, 40 MHz, Chain 0, 24 dBi Antenna

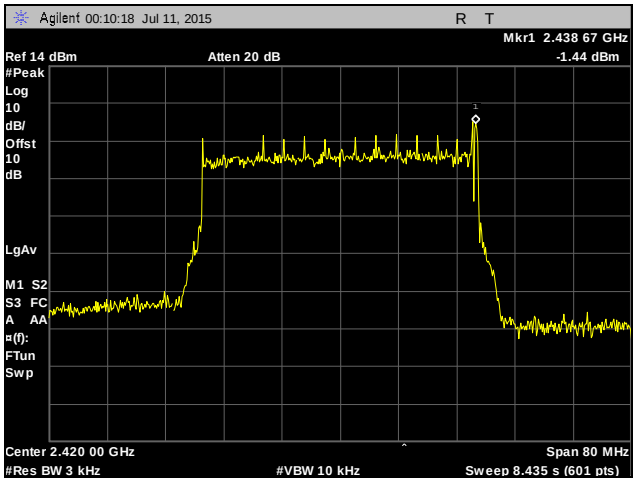


Plot 594. Peak Power Spectral Density, Mid Channel, 40 MHz, Chain 0, 24 dBi Antenna

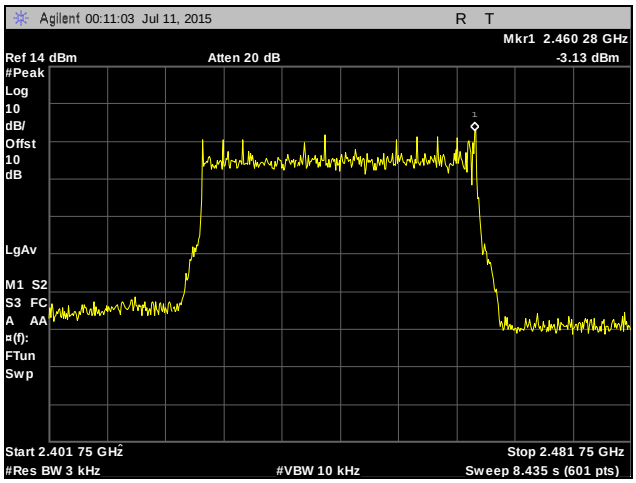


Plot 595. Peak Power Spectral Density, High Channel, 40 MHz, Chain 0, 24 dBi Antenna

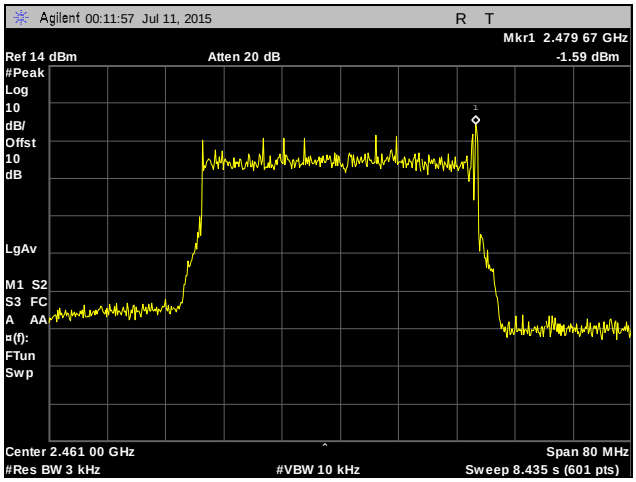
Peak Power Spectral Density Test Results, 40 MHz, Chain 1, 24 dBi Antenna



Plot 596. Peak Power Spectral Density, Low Channel, 40 MHz, Chain 1, 24 dBi Antenna



Plot 597. Peak Power Spectral Density, Mid Channel, 40 MHz, Chain 1, 24 dBi Antenna



Plot 598. Peak Power Spectral Density, High Channel, 40 MHz, Chain 1, 24 dBi Antenna

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.

6 dBi Antenna

MPE Limit Calculation: EUT's operating frequencies @ 2400-2483.5; highest conducted power = 985.37 mW (i.e. 29.936 dBm) (peak) therefore, Limit for Uncontrolled exposure: 1 mW/cm2 or 10 W/m2

EUT maximum antenna gain = 6 dBi.

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

$S = PG / 4\Pi R2$

where, S = Power Density (1 mW/cm2)
P = Power Input to antenna (985.37 mW)
G = Antenna Gain (3.981072 numeric)
R = Distance to the center of Radiation of the antenna

P = 985.37 mW
R = 20 cm
G = 3.98107

S = 985.37 *3.98107/ 4(3.1416)(20)^2
S = 0.78 mW/cm^2

Therefore, EUT meets the Uncontrolled Exposure limit at 20 cm

24 dBi Antenna

MPE Limit Calculation: EUT's operating frequencies @ 2400-2483.5MHz; highest conducted power = 250.8996 mW (i.e. 23.995 dBm) (peak) therefore, Limit for Uncontrolled exposure: 1 mW/cm2 or 10 W/m2

EUT maximum antenna gain = 24 dBi.

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

$S = PG / 4\Pi R2$

where, S = Power Density (1 mW/cm2)
P = Power Input to antenna (250.8996 mW)
G = Antenna Gain (251.1886numeric)
R = Distance to the center of Radiation of the antenna

P = 250.8996 mW
R = 71 cm
G = 3.98107

S = 250.1886 *250.8996/ 4(3.1416)(71)^2
S = 1 mW/cm^2

Therefore, EUT meets the Uncontrolled Exposure limit at 71 cm

IV. Test Equipment

Test Equipment

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

Table 17. Test Equipment List

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

MET Asset #	Equipment	Manufacturer	Model	Last Cal Date	Cal Due Date
1T4409	EMI RECEIVER	ROHDE & SCHWARZ	ESIB7	10/29/2014	10/29/2016
1T4751	ANTENNA - BILOG	SUNOL SCIENCES	JB6	7/29/2014	1/29/2016
1T4771	PSA SPECTRUM ANALYZER	AGILENT TECHNOLOGIES	E4446A	11/25/2014	11/25/2015
1T4745	ANTENNA, HORN	ETS-LINDGREN	3116	06/27/2015	12/27/2016
1T4612	SPECTRUM ANALYZER	AGILENT TECHNOLOGIES	E4407B	7/25/2014	7/25/2015
1T4483	ANTENNA; HORN	ETS-LINDGREN	3117	2/28/2014	8/28/2015
1T2665	ANTENNA; HORN	EMCO	3115	4/3/2014	10/3/2015
1T4505	TEMPERATURE CHAMBER	TEST EQUITY	115	2/11/2015	2/11/2016
1T4300	SEMI-ANECHOIC CHAMBER # 1 (NSA)	EMC TEST SYSTEMS	NONE	7/24/2012	7/24/2015

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

Verification & User's Manual Information

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

§ 15.105 Information to the user.

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

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

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

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

– Reorient or relocate the receiving antenna.

– Increase the separation between the equipment and receiver.

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

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

End of Report

