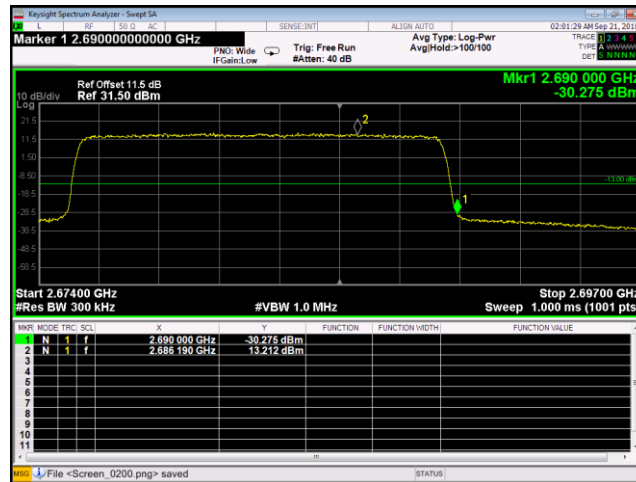
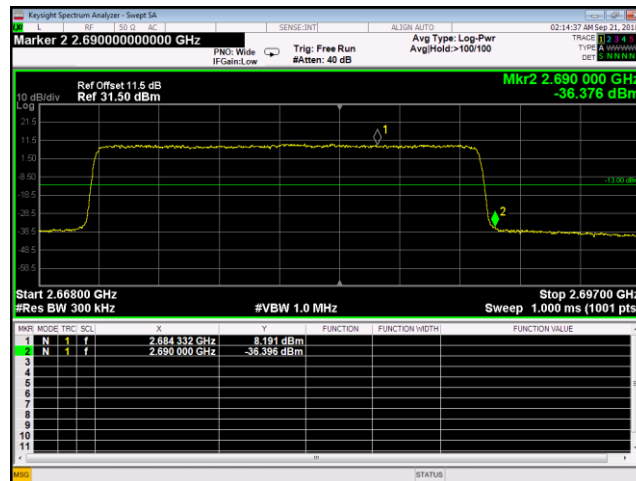
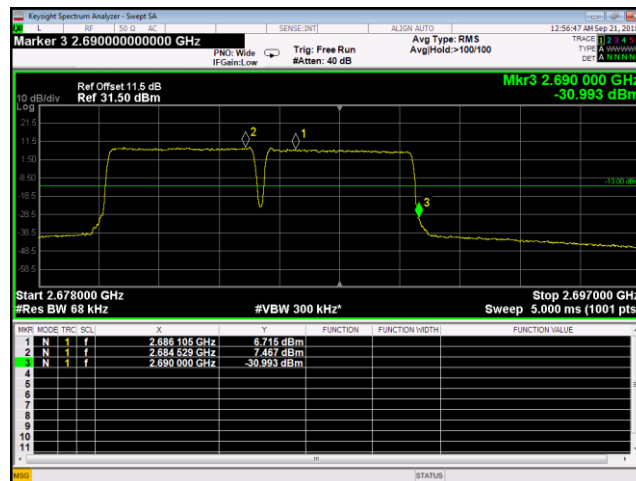




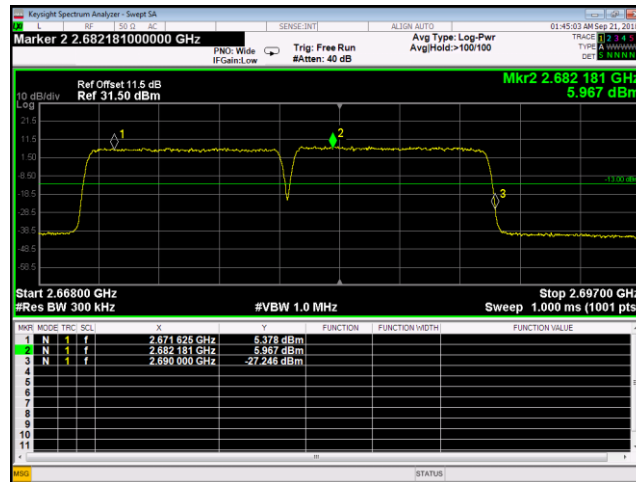
Plot 224. Antenna Terminals Band Edge, BRS 2500, high channel, one signal, port 2, 15 MHz



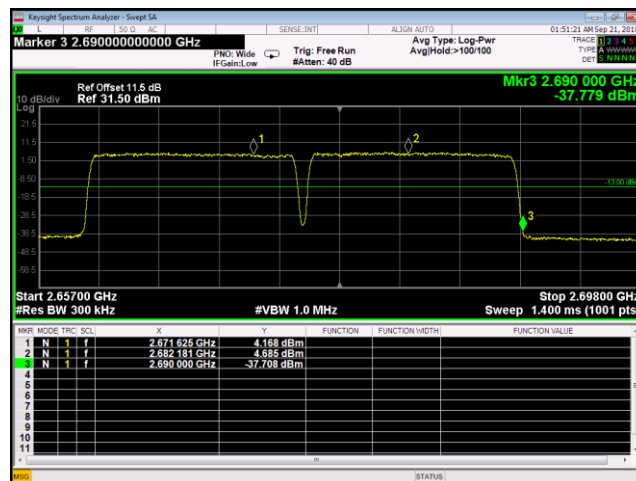
Plot 225. Antenna Terminals Band Edge, BRS 2500, high channel, one signal, port 2, 20 MHz



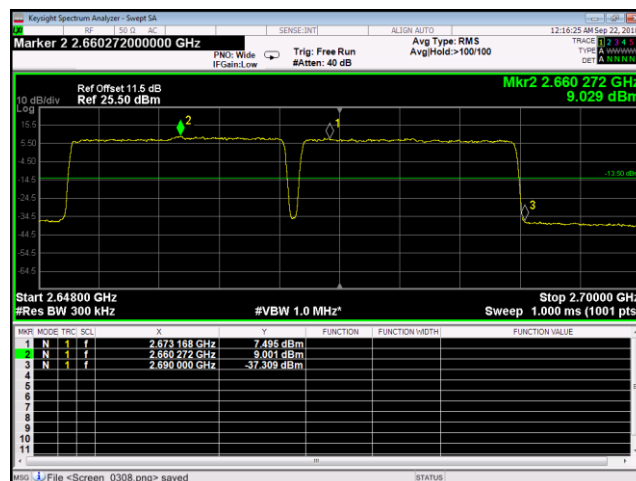
Plot 226. Antenna Terminals Band Edge, BRS 2500, high channel, two signal, port 1, 5 MHz



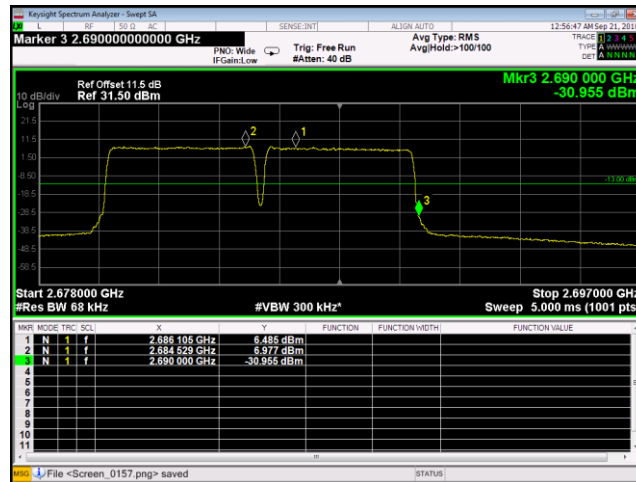
Plot 227. Antenna Terminals Band Edge, BRS 2500, high channel, two signal, port 1, 10 MHz



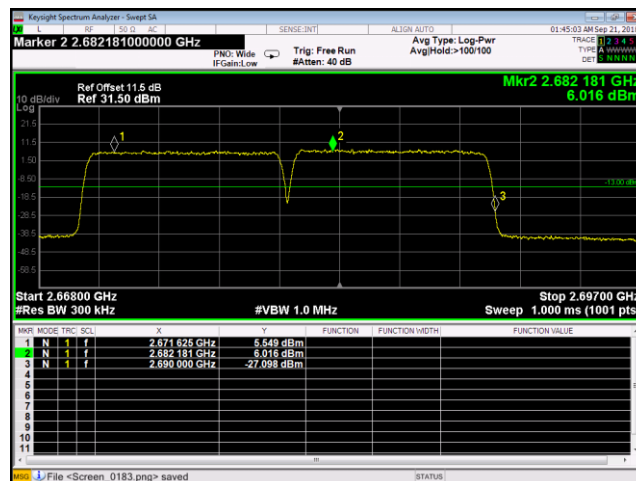
Plot 228. Antenna Terminals Band Edge, BRS 2500, high channel, two signal, port 1, 15 MHz



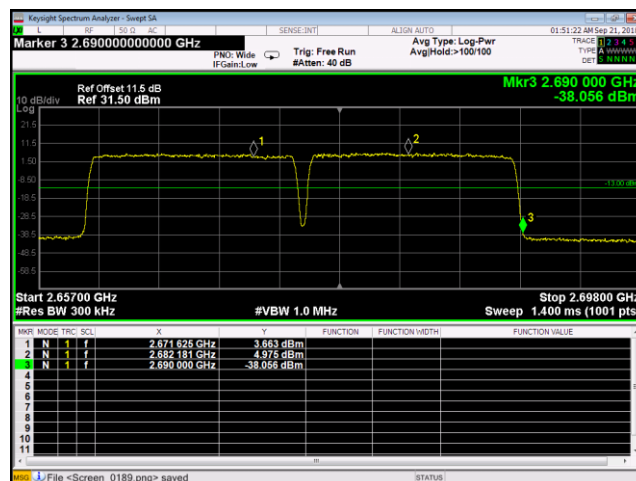
Plot 229. Antenna Terminals Band Edge, BRS 2500, high channel, two signal, port 1, 20 MHz



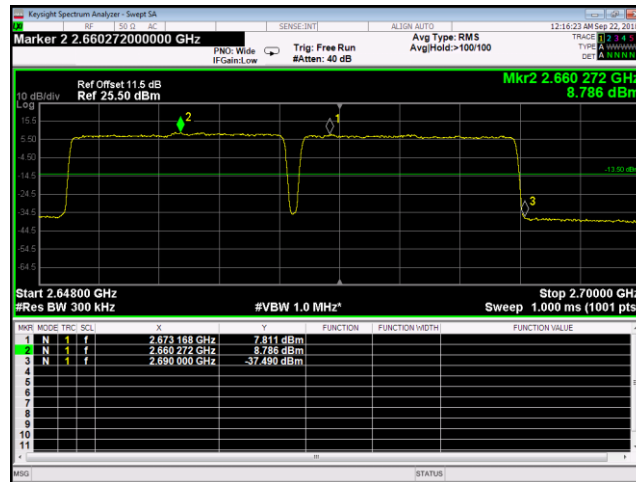
Plot 230. Antenna Terminals Band Edge, BRS 2500, high channel, two signal, port 2, 5 MHz



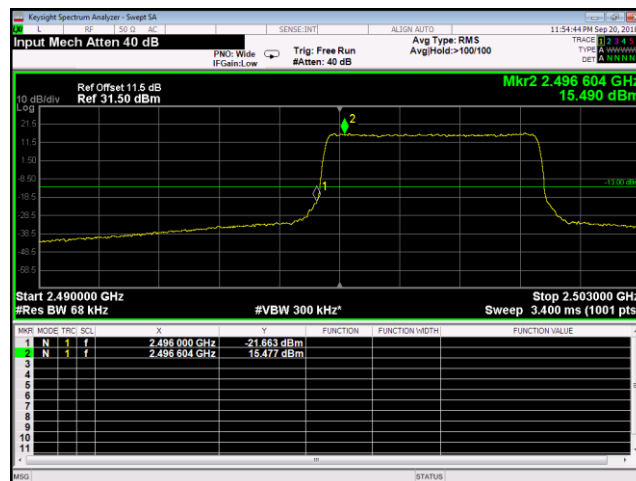
Plot 231. Antenna Terminals Band Edge, BRS 2500, high channel, two signal, port 2, 10 MHz



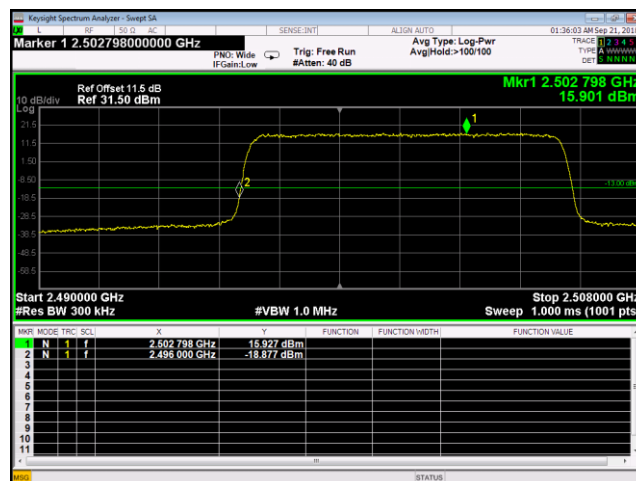
Plot 232. Antenna Terminals Band Edge, BRS 2500, high channel, two signal, port 2, 15 MHz



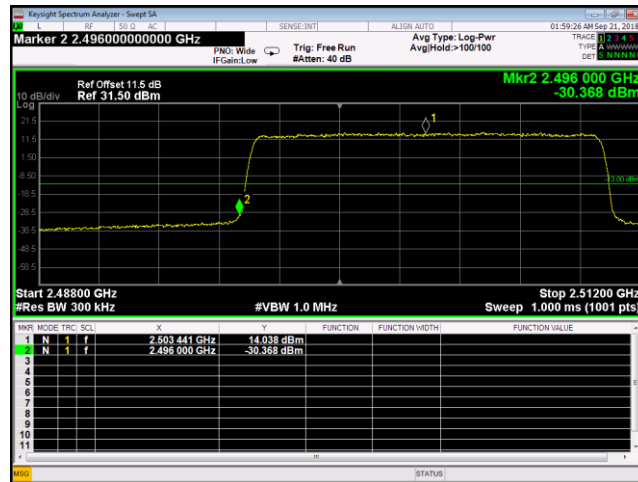
Plot 233. Antenna Terminals Band Edge, BRS 2500, high channel, two signal, port 2, 20 MHz



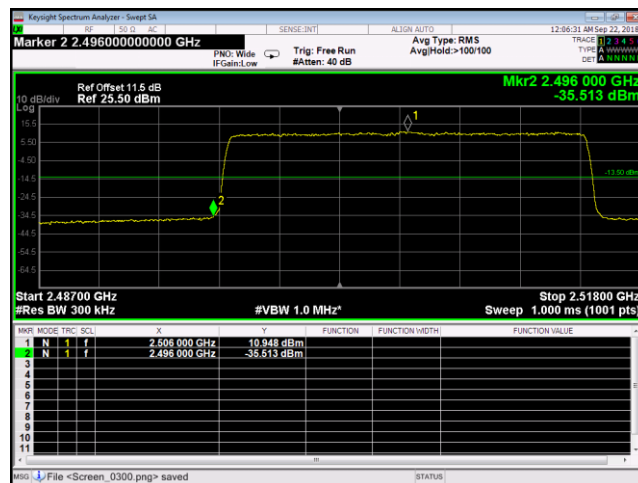
Plot 234. Antenna Terminals Band Edge, BRS 2500, low channel, one signal, port 1, 5 MHz



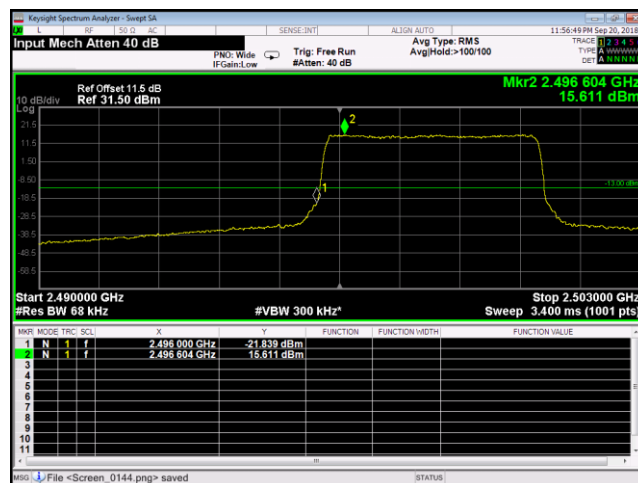
Plot 235. Antenna Terminals Band Edge, BRS 2500, low channel, one signal, port 1, 10 MHz



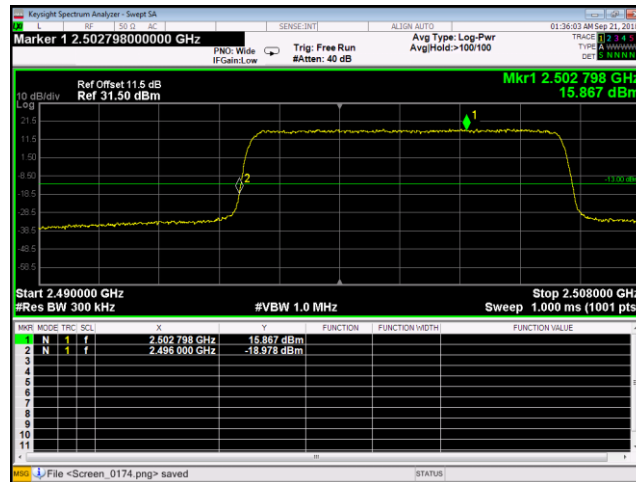
Plot 236. Antenna Terminals Band Edge, BRS 2500, low channel, one signal, port 1, 15 MHz



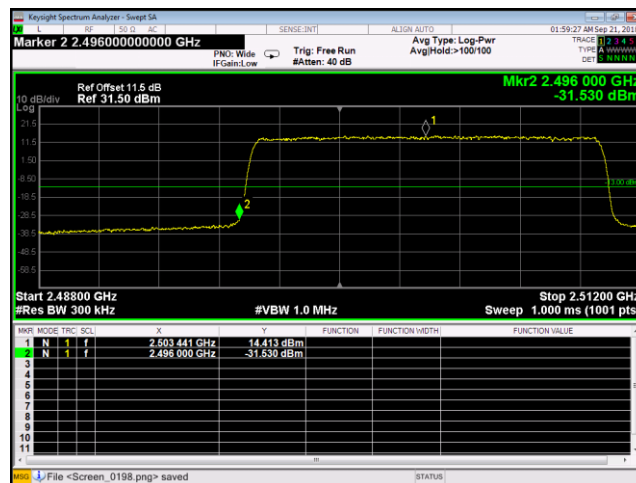
Plot 237. Antenna Terminals Band Edge, BRS 2500, low channel, one signal, port 1, 20 MHz



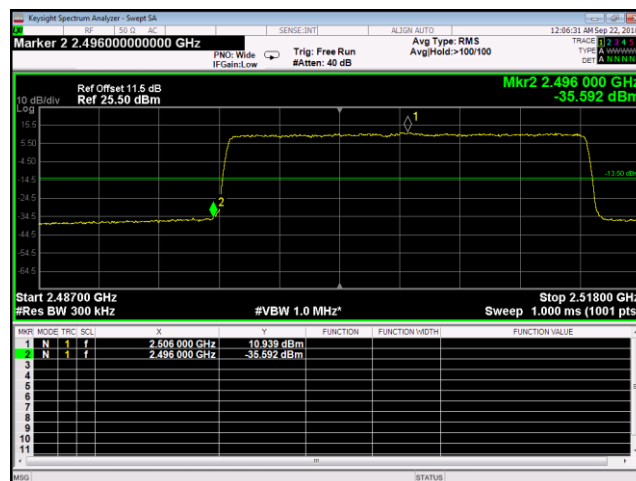
Plot 238. Antenna Terminals Band Edge, BRS 2500, low channel, one signal, port 2, 5 MHz



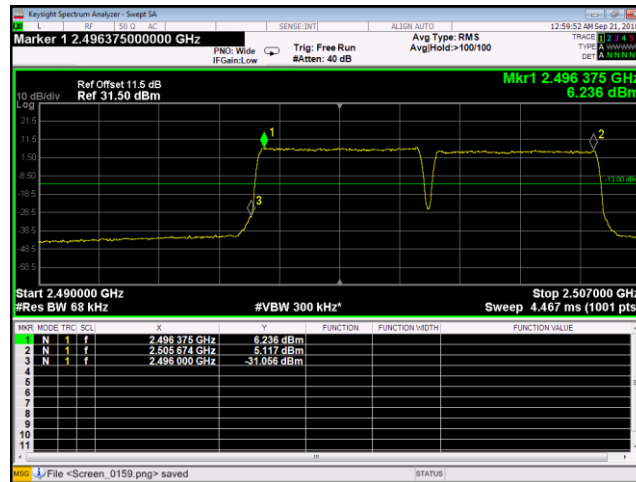
Plot 239. Antenna Terminals Band Edge, BRS 2500, low channel, one signal, port 2, 10 MHz



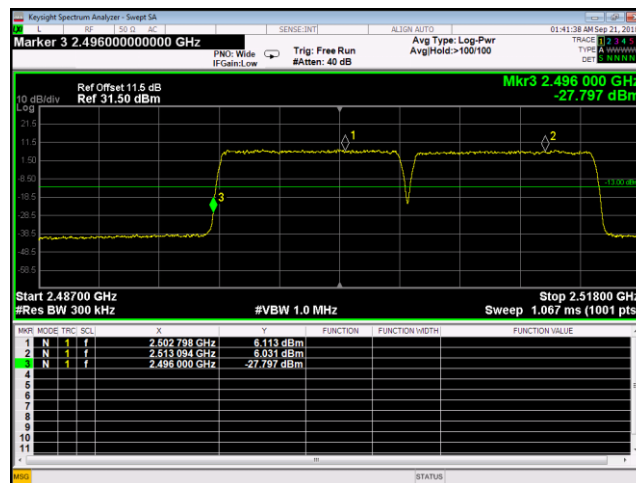
Plot 240. Antenna Terminals Band Edge, BRS 2500, low channel, one signal, port 2, 15 MHz



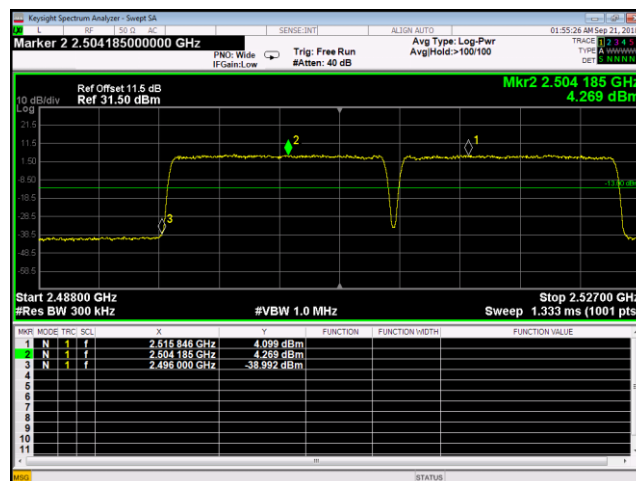
Plot 241. Antenna Terminals Band Edge, BRS 2500, low channel, one signal, port 2, 20 MHz



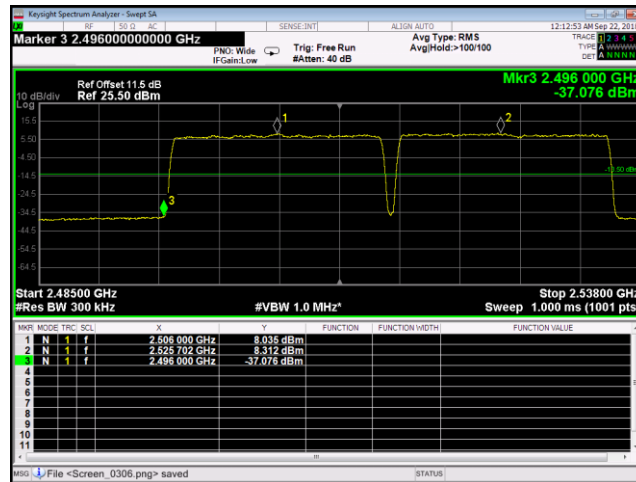
Plot 242. Antenna Terminals Band Edge, BRS 2500, low channel, two signal, port 1, 5 MHz



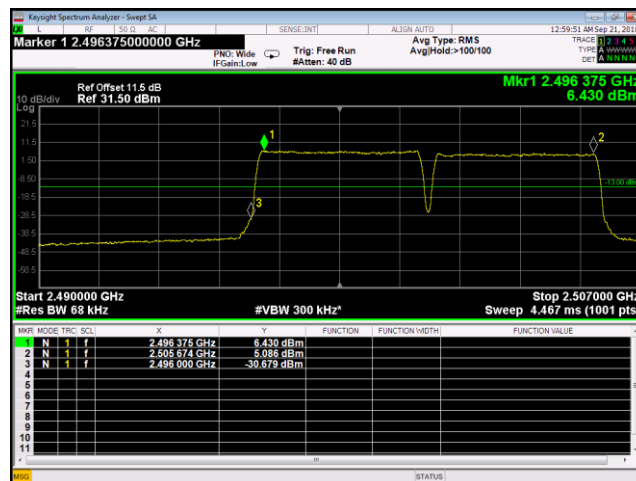
Plot 243. Antenna Terminals Band Edge, BRS 2500, low channel, two signal, port 1, 10 MHz



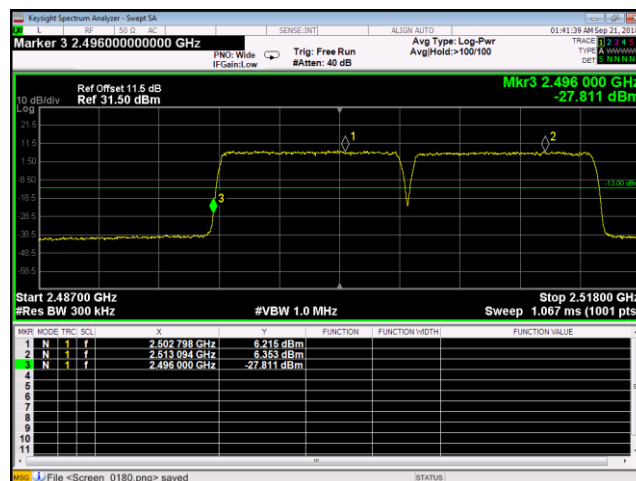
Plot 244. Antenna Terminals Band Edge, BRS 2500, low channel, two signal, port 1, 15 MHz



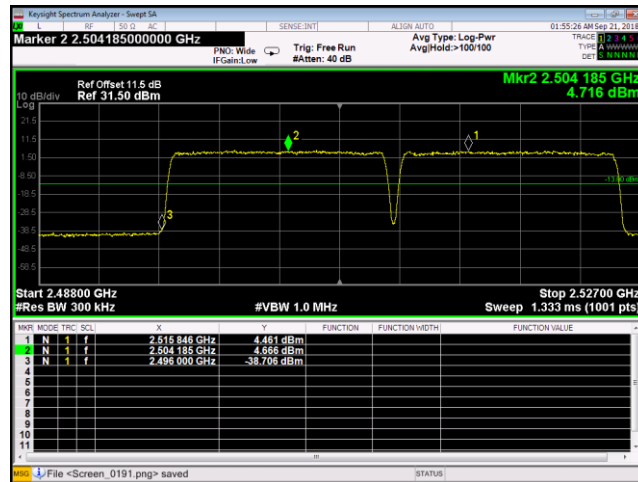
Plot 245. Antenna Terminals Band Edge, BRS 2500, low channel, two signal, port 1, 20 MHz



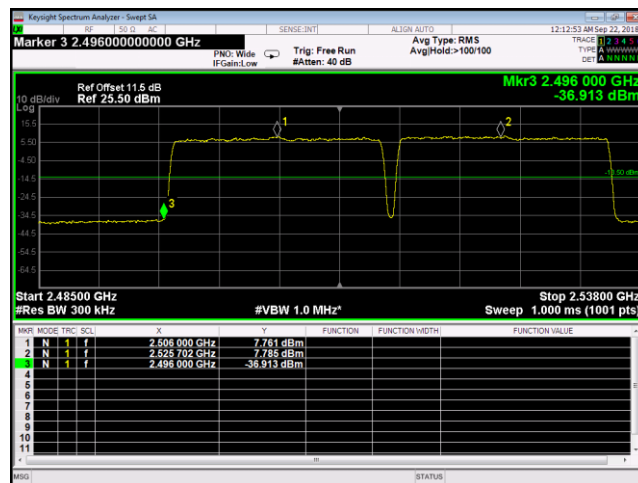
Plot 246. Antenna Terminals Band Edge, BRS 2500, low channel, two signal, port 2, 5 MHz



Plot 247. Antenna Terminals Band Edge, BRS 2500, low channel, two signal, port 2, 10 MHz



Plot 248. Antenna Terminals Band Edge, BRS 2500, low channel, two signal, port 2, 15 MHz



Plot 249. Antenna Terminals Band Edge, BRS 2500, low channel, two signal, port 2, 20 MHz

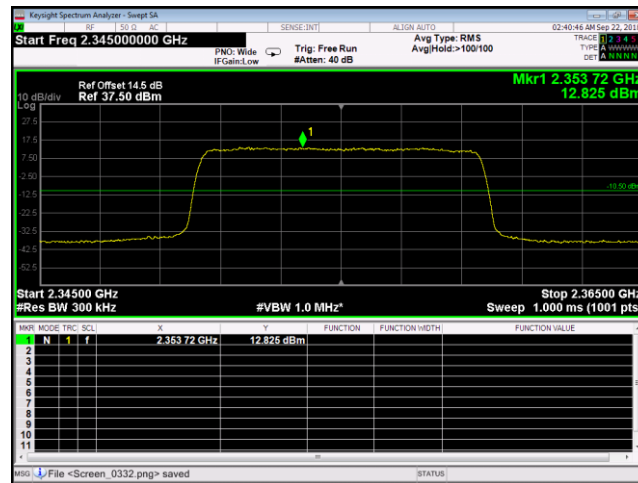


Electromagnetic Compatibility Criteria for Intentional Radiators

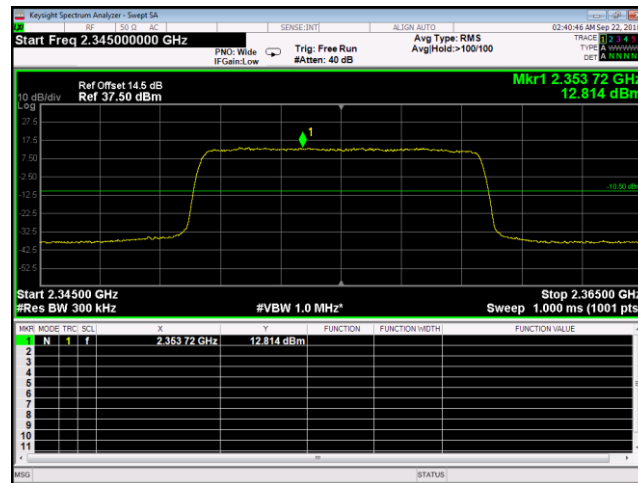
Intermodulation

Test Requirement(s):	Spurious emissions shall be measured using a single test signal sequentially tuned to the low, middle, and high channels or frequencies within each authorized frequency band of operation. Out-of-band/out-of-block emissions (including intermodulation products) shall be measured under each of the following two stimulus conditions: a) two adjacent test signals sequentially tuned to the lower and upper frequency band/block edges; b) a single test signal, sequentially tuned to the lowest and highest frequencies or channels within the frequency band/block under examination.
Test Procedures:	Test was performed using the procedure specified in Section 3.6.2 of the KDB 935210 D05 v01r02.
Test Results:	Equipment was found compliant with these requirements.
Test Engineer(s):	Deepak Giri
Test Date(s):	September 25, 2018

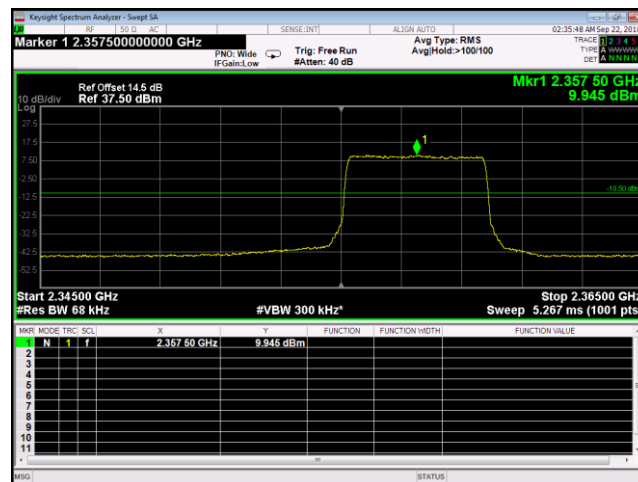
Intermodulation, Test Results



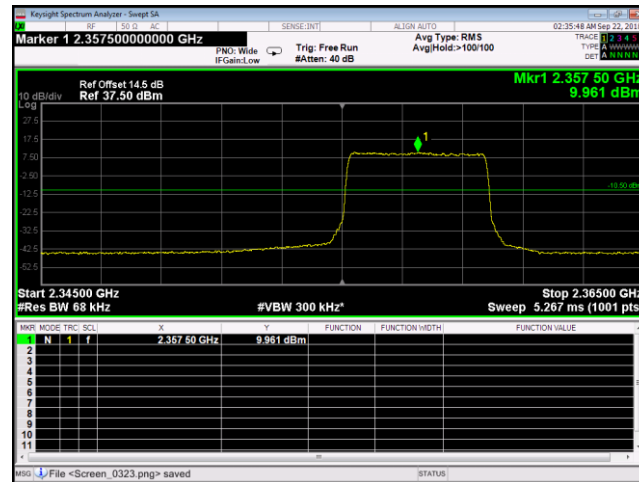
Plot 250. Intermodulation, WCS 2300, high channel, port 2, 10 MHz



Plot 251. Intermodulation, WCS 2300, high channel, port 1, 10 MHz



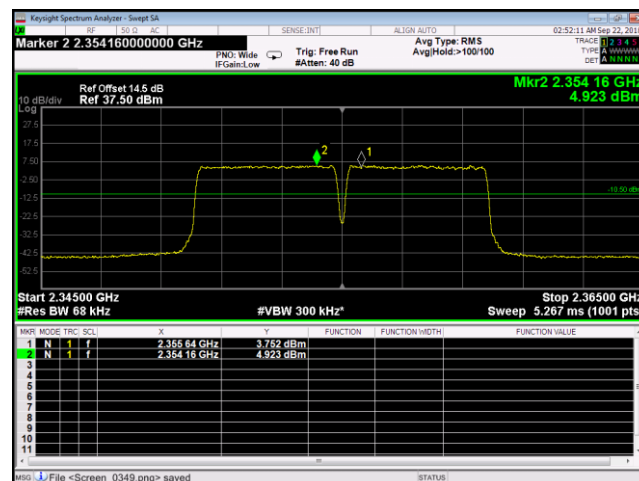
Plot 252. Intermodulation, WCS 2300, high channel, one signal, 1, 5 MHz



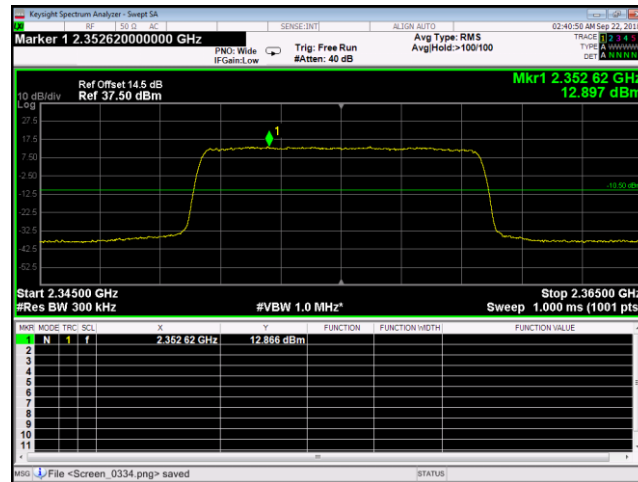
Plot 253. Intermodulation, WCS 2300, high channel, one signal, 2.5 MHz



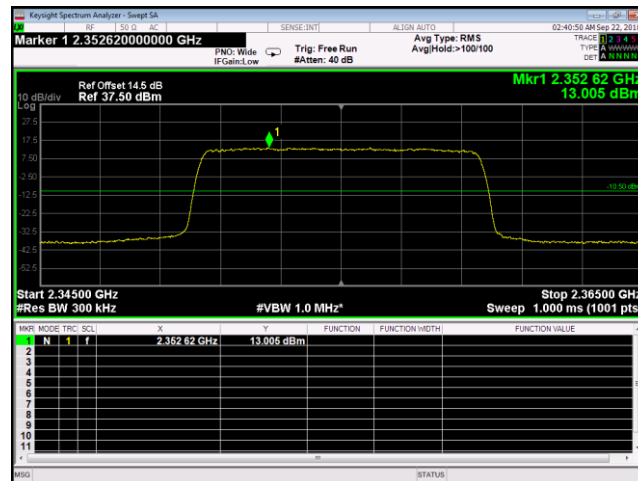
Plot 254. Intermodulation, WCS 2300, high channel, two signal, port 1, 5 MHz



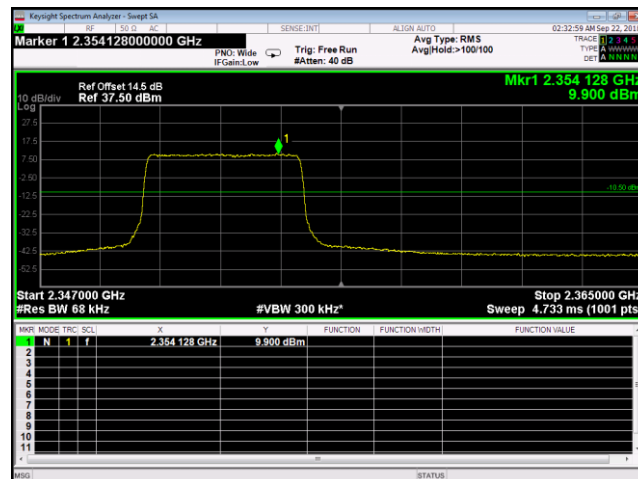
Plot 255. Intermodulation, WCS 2300, high signal, two signal, port 2, 5 MHz



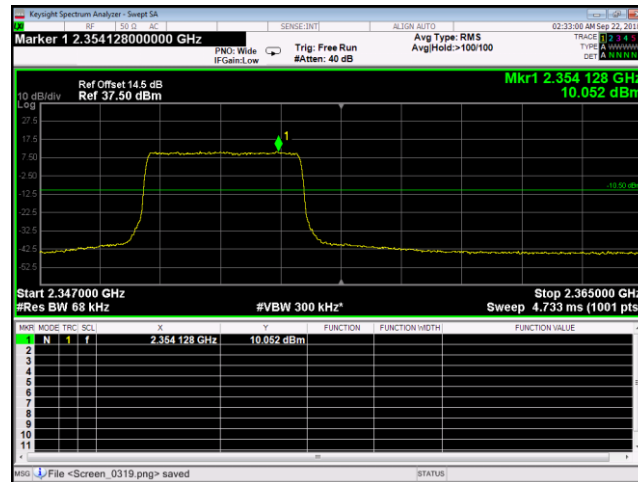
Plot 256. Intermodulation, WCS 2300, low channel, port 1, 10 MHz



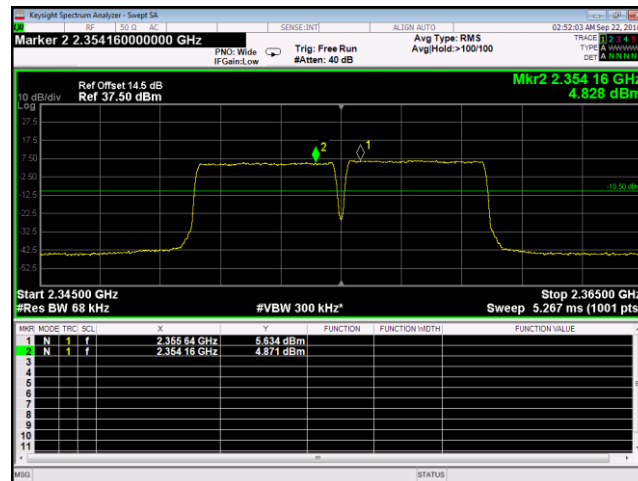
Plot 257. Intermodulation, WCS 2300, low channel, port 2, 10 MHz



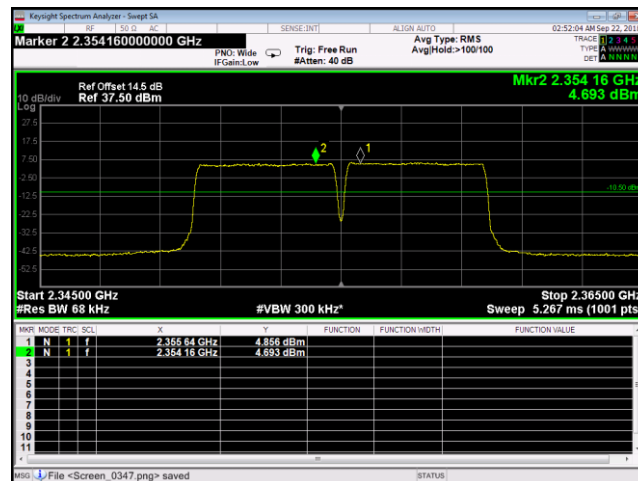
Plot 258. Intermodulation, WCS 2300, low channel, one signal, port 1, 5 MHz



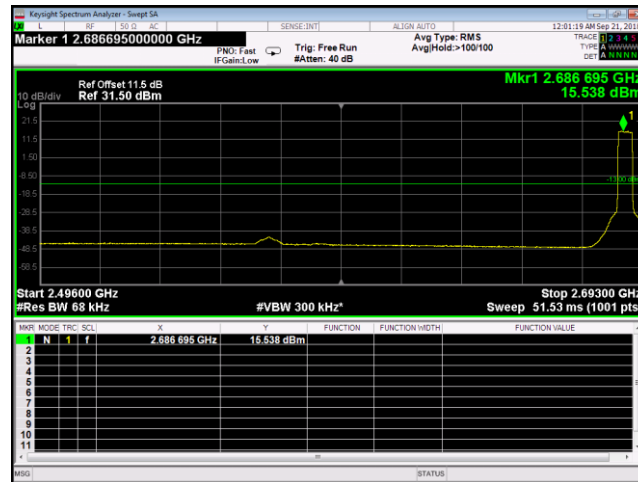
Plot 259. Intermodulation, WCS 2300, low channel, one signal, port 2, 5 MHz



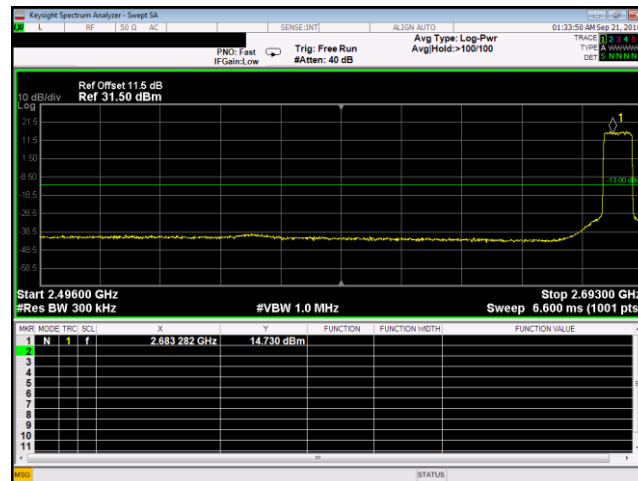
Plot 260. Intermodulation, WCS 2300, low channel, two signal, port 1, 5 MHz



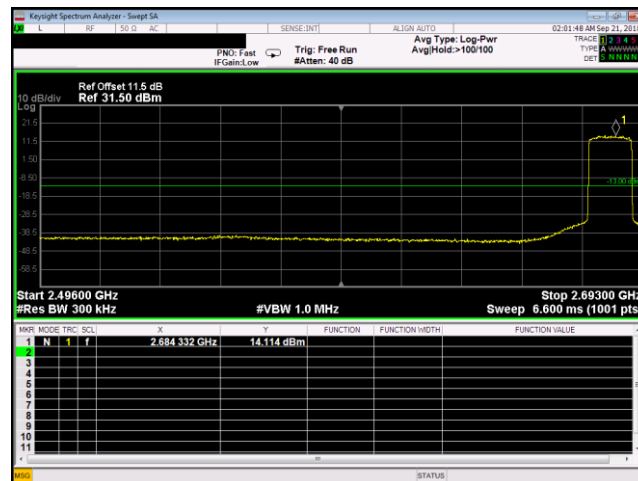
Plot 261. Intermodulation, WCS 2300, low channel, two signal, port 2, 5 MHz



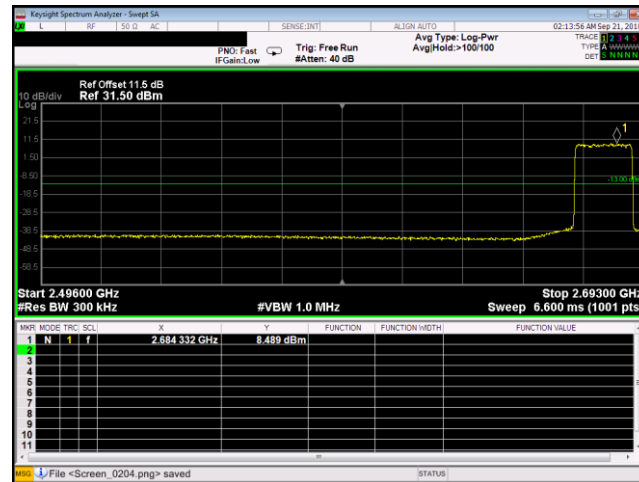
Plot 262. Intermodulation, BRS 2500, high channel, one signal, port 1, 5 MHz



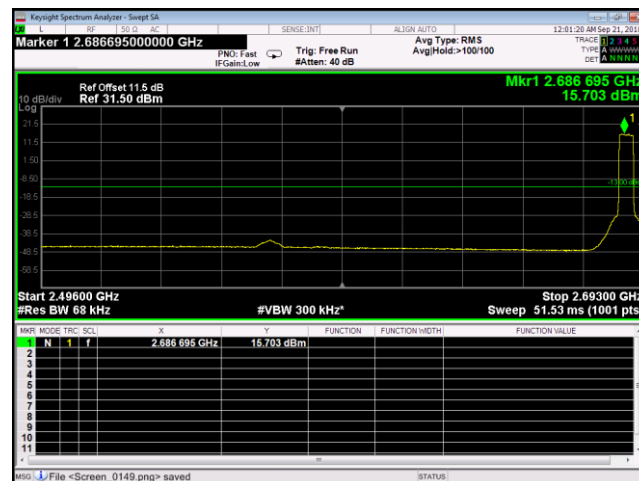
Plot 263. Intermodulation, BRS 2500, high channel, one signal, port 1, 10 MHz



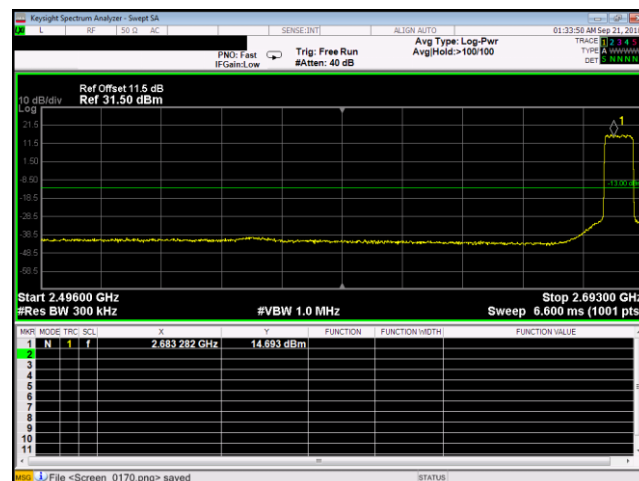
Plot 264. Intermodulation, BRS 2500, high channel, one signal, port 1, 15 MHz



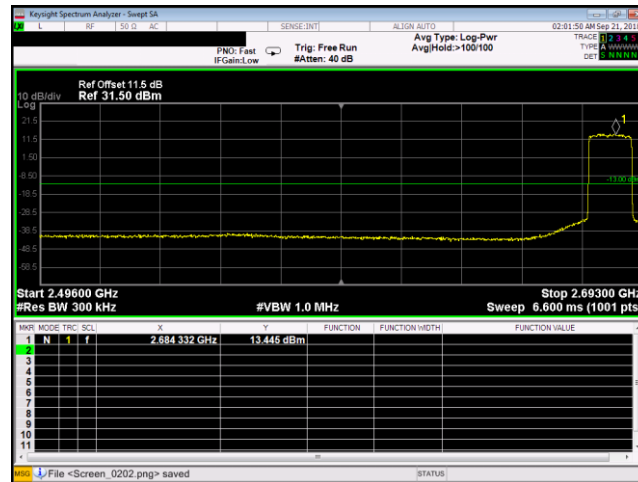
Plot 265. Intermodulation, BRS 2500, high channel, one signal, port 1, 20 MHz



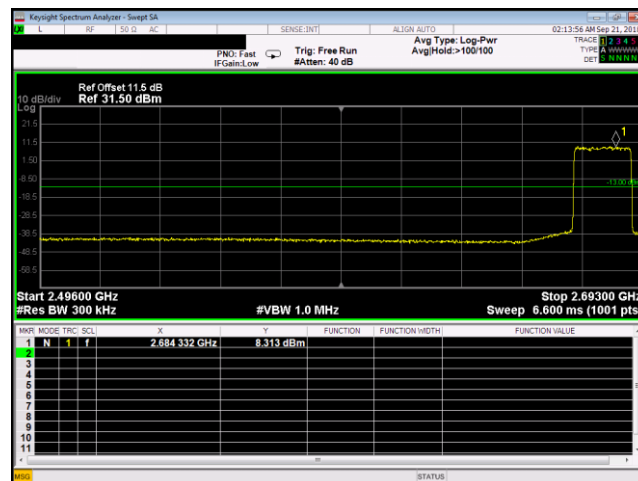
Plot 266. Intermodulation, BRS 2500, high channel, one signal, port 2, 5 MHz



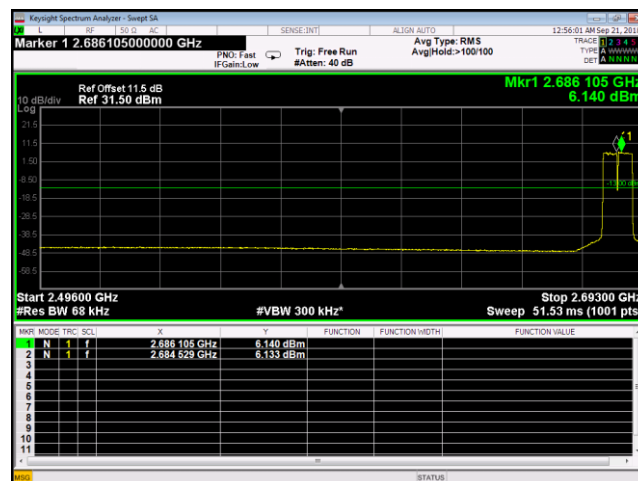
Plot 267. Intermodulation, BRS 2500, high channel, one signal, port 2, 10 MHz



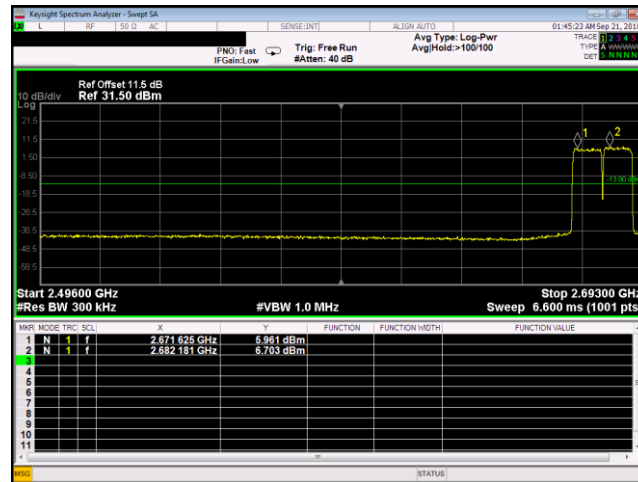
Plot 268. Intermodulation, BRS 2500, high channel, one signal, port 2, 15 MHz



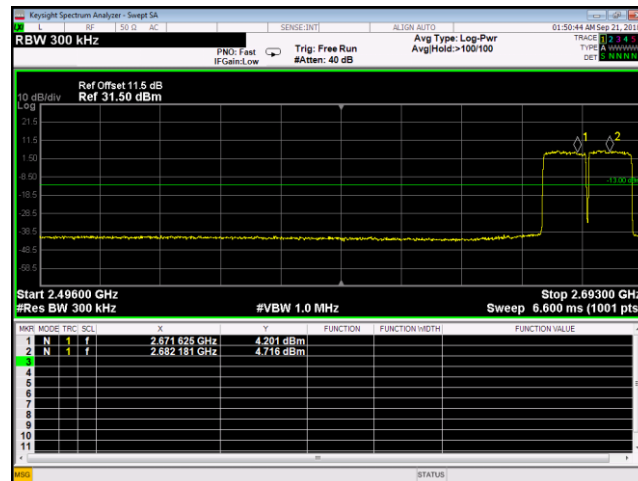
Plot 269. Intermodulation, BRS 2500, high channel, one signal, port 2, 20 MHz



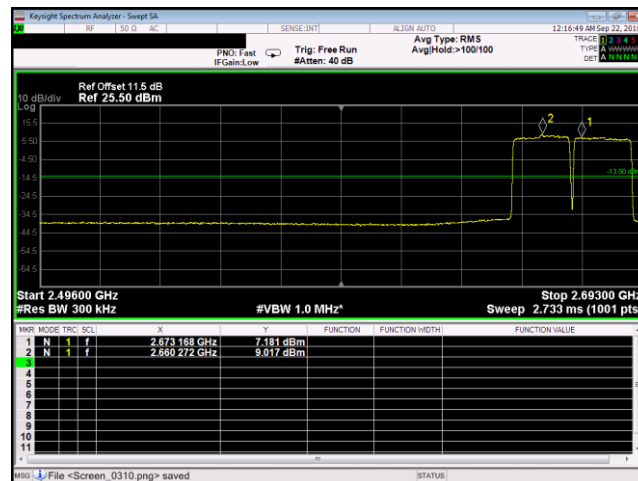
Plot 270. Intermodulation, BRS 2500, high channel, two signal, port 1, 5 MHz



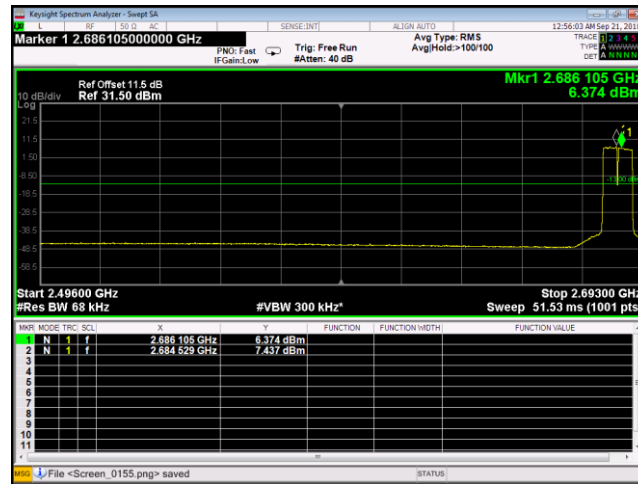
Plot 271. Intermodulation, BRS 2500, high channel, two signal, port 1, 10 MHz



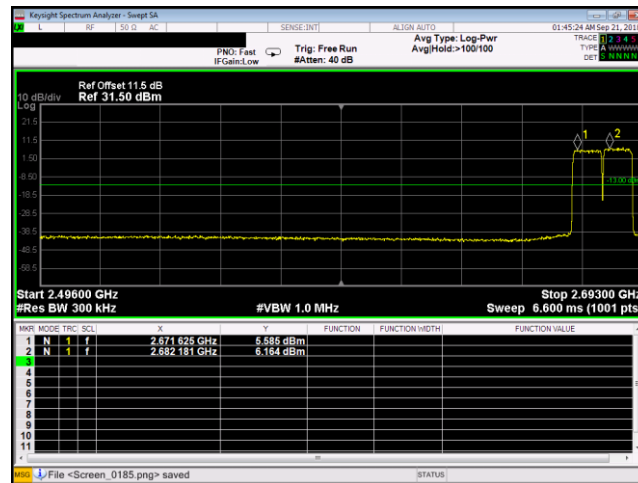
Plot 272. Intermodulation, BRS 2500, high channel, two signal, port 1, 15 MHz



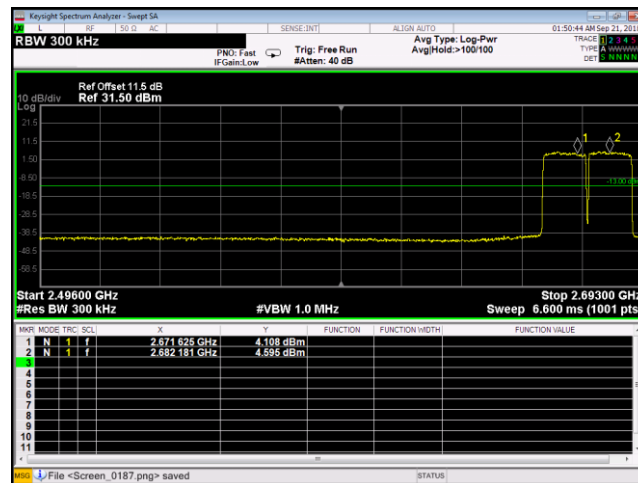
Plot 273. Intermodulation, BRS 2500, high channel, two signal, port 1, 20 MHz



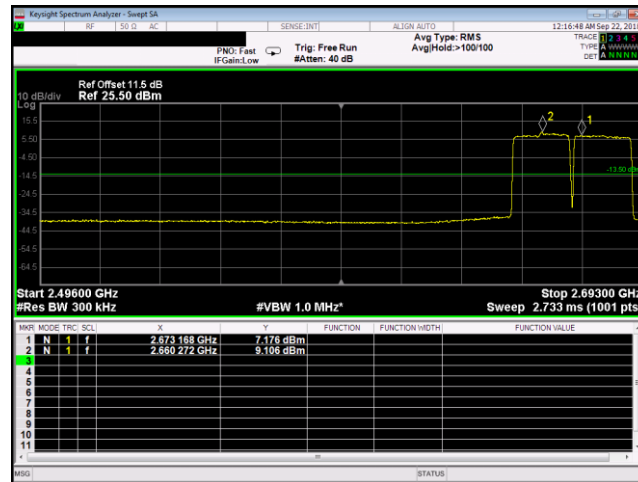
Plot 274. Intermodulation, BRS 2500, high channel, two signal, port 2, 5 MHz



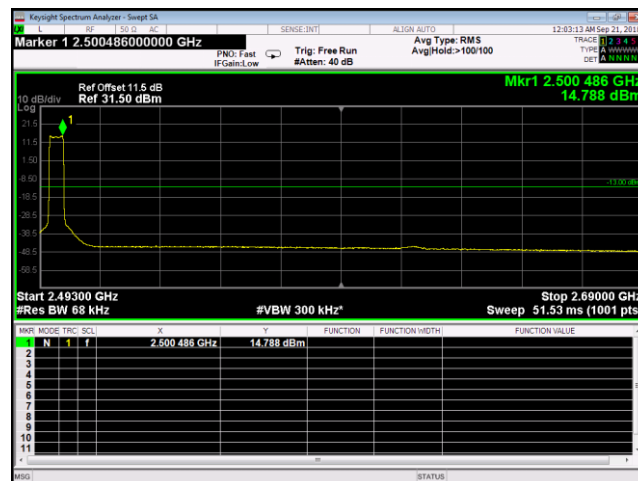
Plot 275. Intermodulation, BRS 2500, high channel, two signal, port 2, 10 MHz



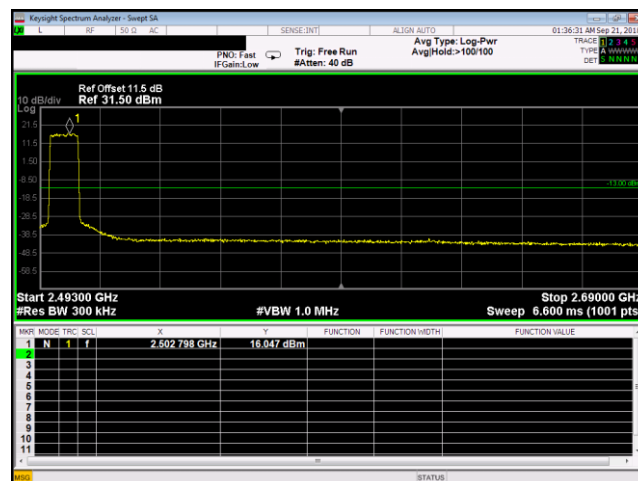
Plot 276. Intermodulation, BRS 2500, high channel, two signal, port 2, 15 MHz



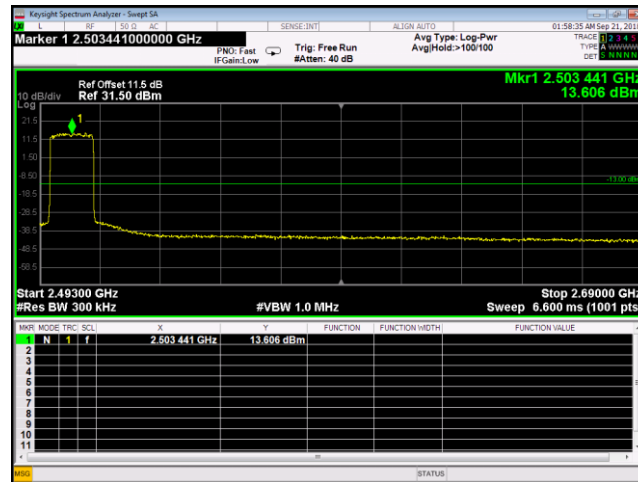
Plot 277. Intermodulation, BRS 2500, high channel, two signal, port 2, 20 MHz



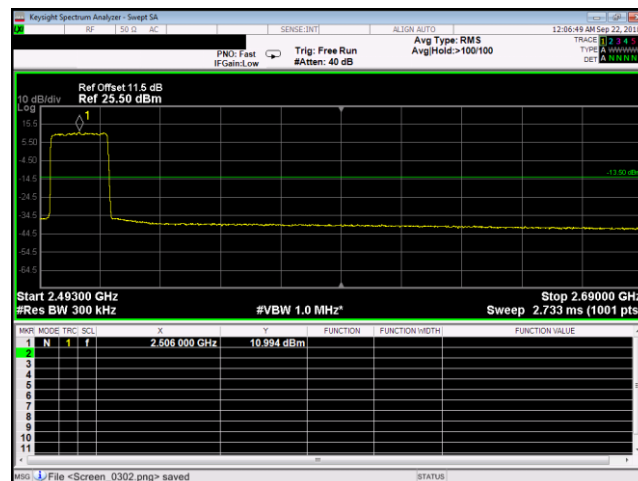
Plot 278. Intermodulation, BRS 2500, low channel, one signal, port 1, 5 MHz



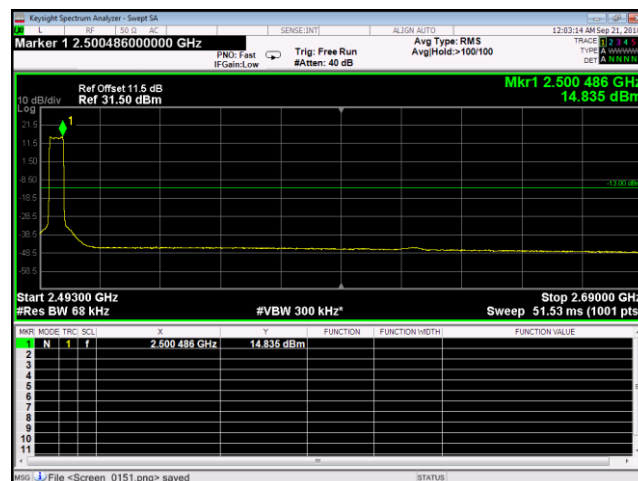
Plot 279. Intermodulation, BRS 2500, low channel, one signal, port 1, 10 MHz



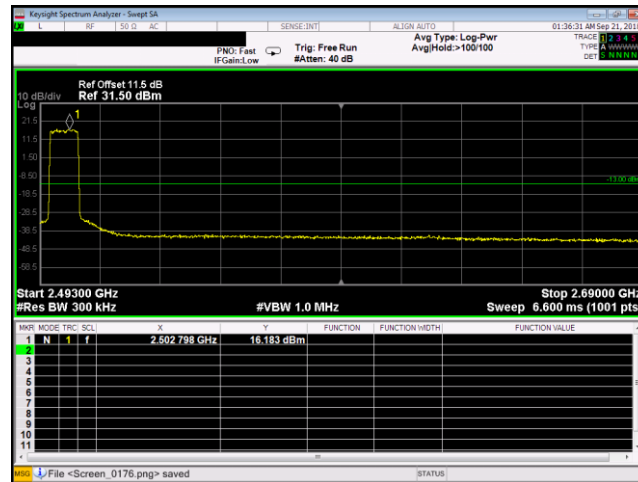
Plot 280. Intermodulation, BRS 2500, low channel, one signal, port 1, 15 MHz



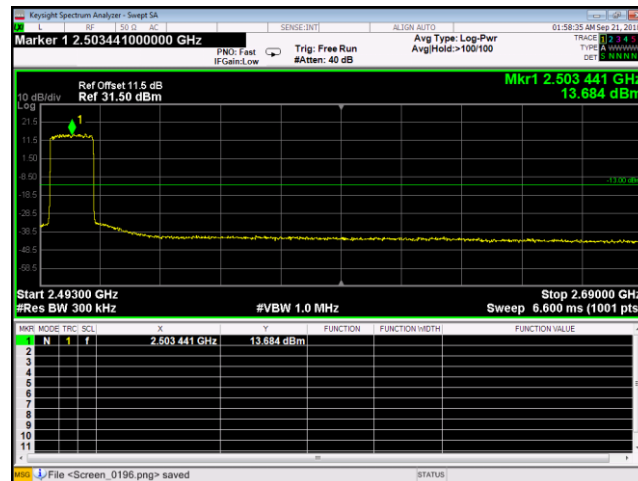
Plot 281. Intermodulation, BRS 2500, low channel, one signal, port 1, 20 MHz



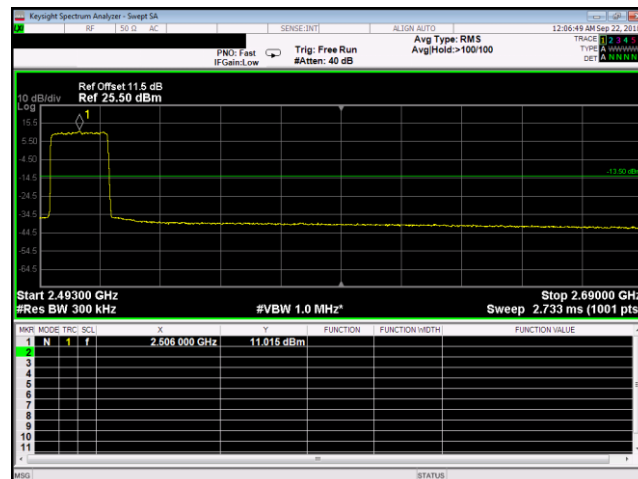
Plot 282. Intermodulation, BRS 2500, low channel, one signal, port 2, 5 MHz



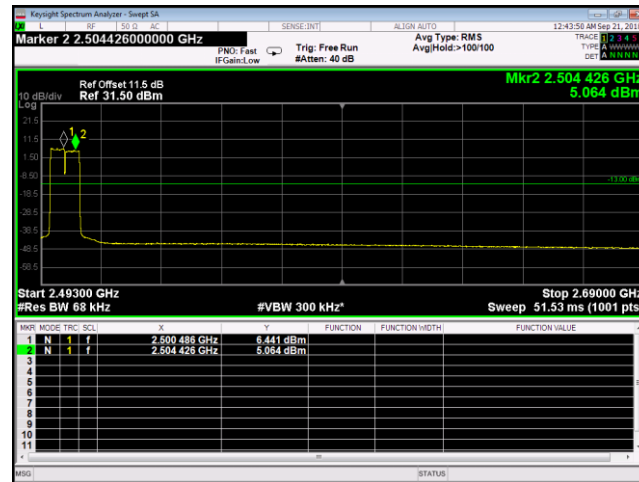
Plot 283. Intermodulation, BRS 2500, low channel, one signal, port 2, 10 MHz



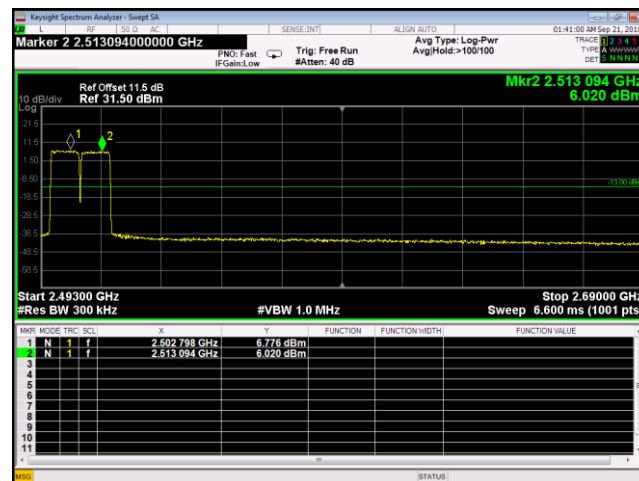
Plot 284. Intermodulation, BRS 2500, low channel, one signal, port 2, 15 MHz



Plot 285. Intermodulation, BRS 2500, low channel, one signal, port 2, 20 MHz



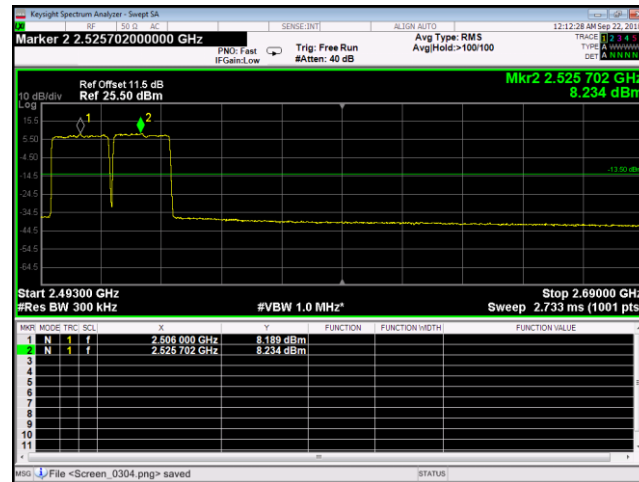
Plot 286. Intermodulation, BRS 2500, low channel, two signal, port 1, 5 MHz



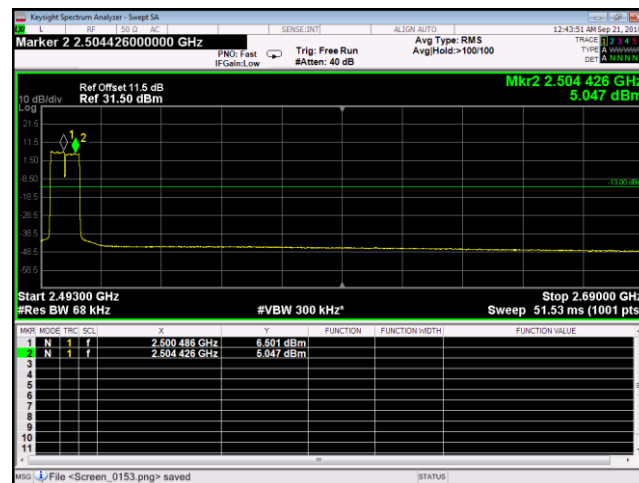
Plot 287. Intermodulation, BRS 2500, low channel, two signal, port 1, 10 MHz



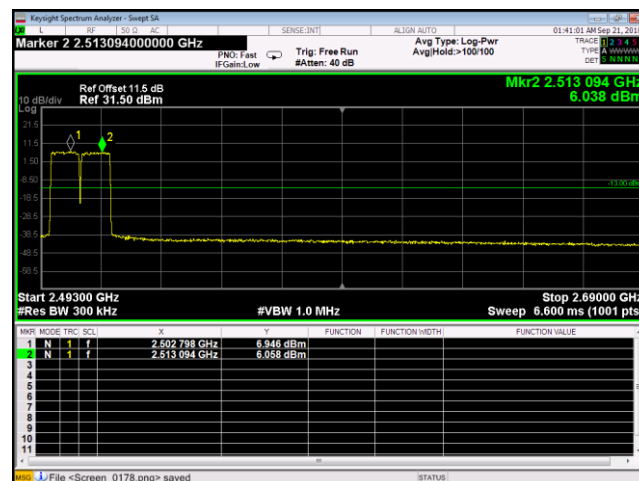
Plot 288. Intermodulation, BRS 2500, low channel, two signal, port 1, 15 MHz



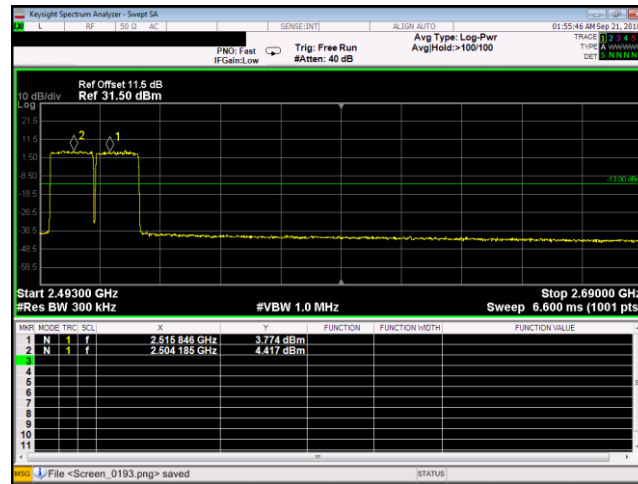
Plot 289. Intermodulation, BRS 2500, low channel, two signal, port 1, 20 MHz



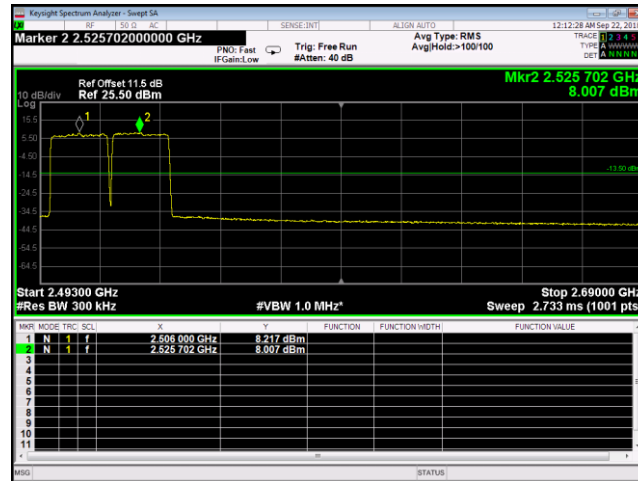
Plot 290. Intermodulation, BRS 2500, low signal, two signal, port 2, 5 MHz



Plot 291. Intermodulation, BRS 2500, low channel, two signal, port 2, 10 MHz



Plot 292. Intermodulation, BRS 2500, low channel, two signal, port 2, 15 MHz



Plot 293. Intermodulation, BRS 2500, low channel, two signal, port 2, 20 MHz



Electromagnetic Compatibility Criteria for Intentional Radiators

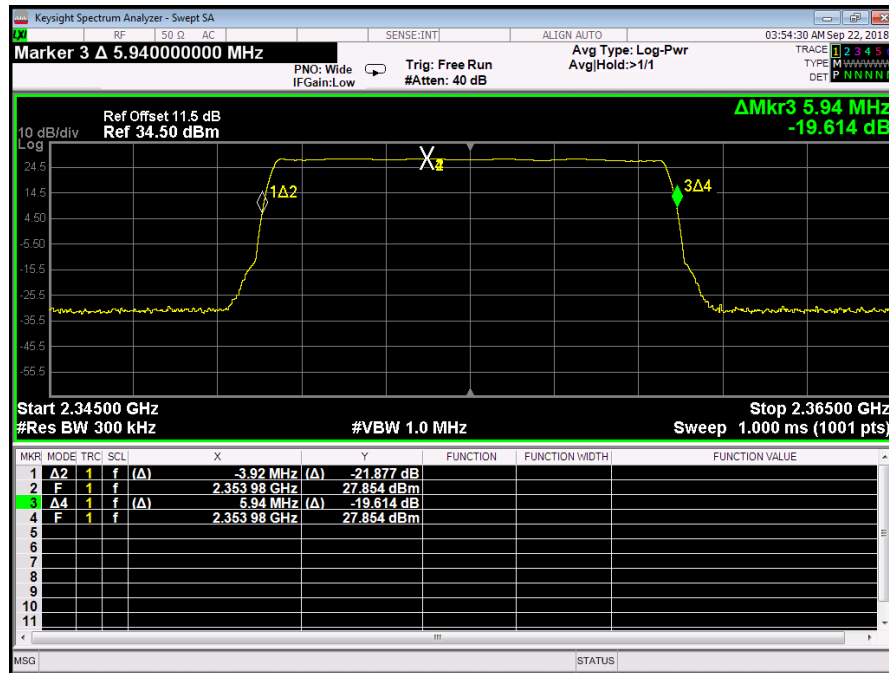
Filter Response

Test Procedures: Test was performed according to section 3.3 of the FCC KDB 935210 D05 v01r02.

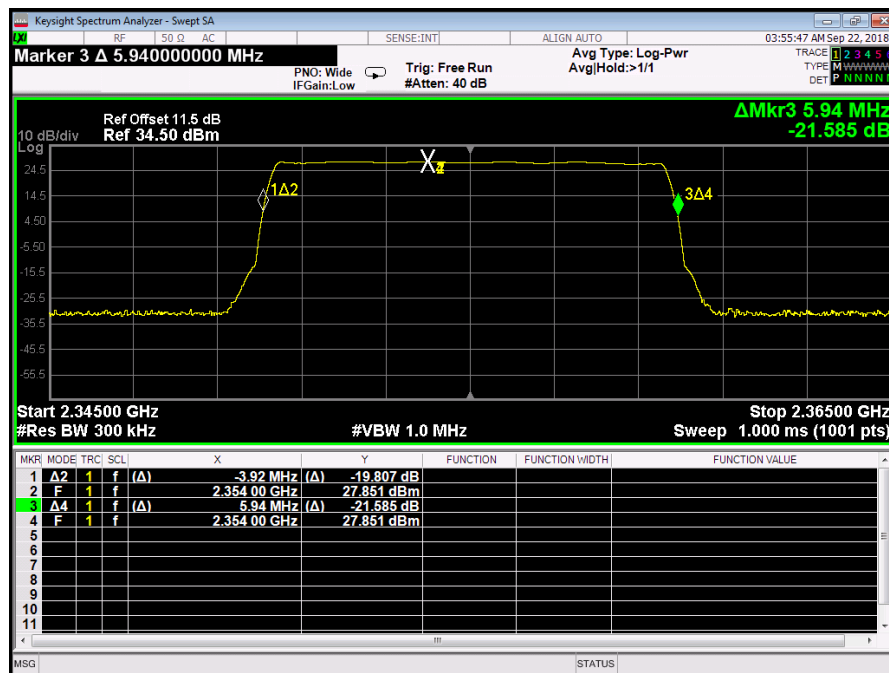
Test Results: Equipment was found compliant with the requirements of this section.

Test Engineer(s): Deepak Giri

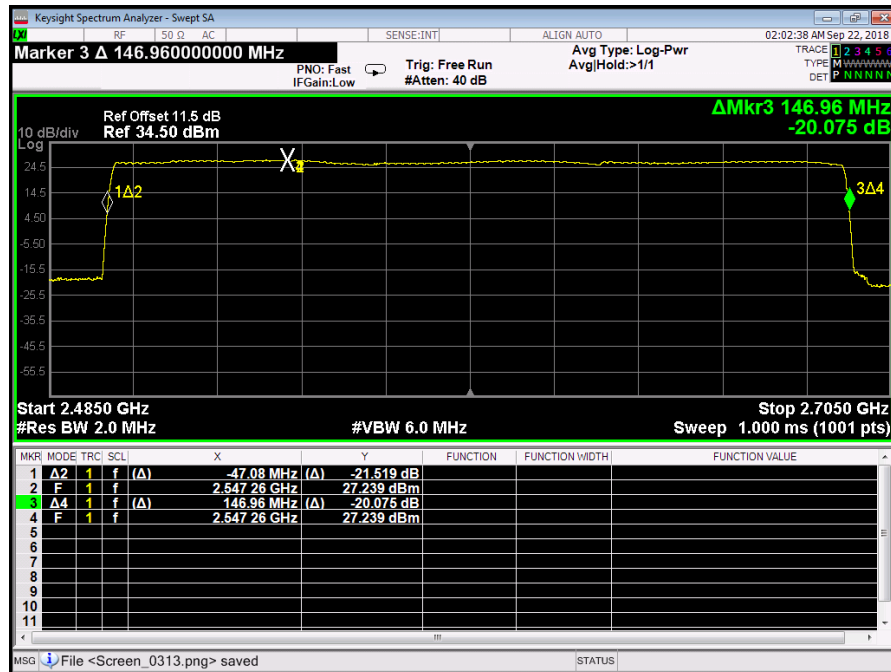
Test Date(s): September 21, 2018



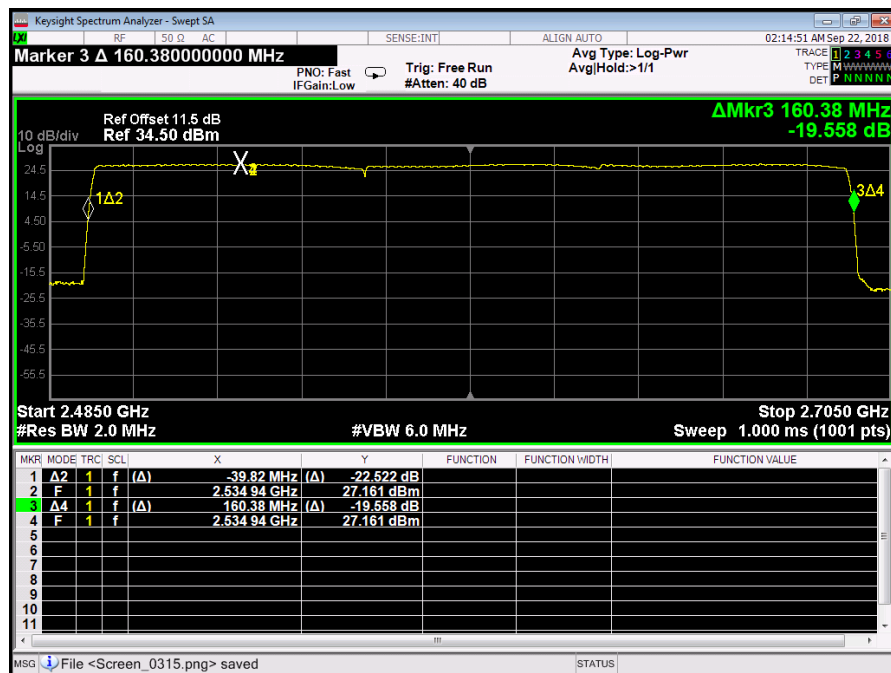
Plot 294. Out of band Rejection, WCS 2300, port 1, 5 MHz



Plot 295. Out of band Rejection, WCS 2300, port 2, 5 MHz



Plot 296. Out of band Rejection, BRS 2500, port 1



Plot 297. Out of band Rejection, BRS 2500, port 2



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.

MET Asset #	Equipment	Manufacturer	Model	Last Cal Date	Cal Due Date
1T4300A	SEMI-ANECHOIC CHAMBER # 1 (FCC)	EMC TEST SYSTEMS	NONE	01/31/2016	01/31/2019
1T4751	Antenna - Bilog	Sunol Sciences	JB6	07/30/2018	01/30/2020
1T4409	EMI Receiver	Rohde & Schwarz	ESIB7	12/07/2016	12/07/2018
1T4149	High-Frequency Anechoic Chamber	Ray Proof	81	08/23/2001	08/23/2002
1T4483	Antenna; Horn	ETS-Lindgren	3117	04/19/2017	10/19/2018
1T8831	Signal Analyzer (CXA)	Keysight Technologies	N9000A	01/29/2018	01/29/2019
1T4612	Spectrum Analyzer	Agilent Technologies	E4407B	05/15/2018	11/15/2019
1T4497	Signal Generator	Agilent Technologies	E4432B	04/22/2016	10/22/2017
1T4299	Signal Generator	HP	E4432B	12/12/2016	06/12/2018
1T8743	Preamplifier	A.H. Systems, Inc.	PAM-0118P	03/11/2015	03/11/2016
1T4483	Antenna; Horn	ETS-Lindgren	3117	04/19/2017	10/19/2018
1T8831	Signal Analyzer (CXA)	Keysight Technologies	N9000A	01/29/2018	01/29/2019

Table 10. Test Equipment List

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



Andrew Wireless Systems
CAPM – 23/23/25/25TDD/ Models 7820689-0001 and 7820689-0002

Electromagnetic Compatibility
Test Equipment
CFR Title 47 Part 27



V. Certification & User's Manual Information



Certification & User's Manual Information

A. Certification Information

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

§ 2.801 Radio-frequency device defined.

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

- (a) The various types of radio communication transmitting devices described throughout this chapter.
- (b) *The incidental, unintentional and intentional radiators defined in Part 15 of this chapter.*
- (c) The industrial, scientific, and medical equipment described in Part 18 of this chapter.
- (d) Any part or component thereof which in use emits radio-frequency energy by radiation, conduction, or other means.

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

- (a) Except as provided elsewhere in this chapter, no person shall sell or lease, or offer for sale or lease (including advertising for sale or lease), or import, ship or distribute for the purpose of selling or leasing or offering for sale or lease, any radio frequency device unless:
 - (1) In the case of a device subject to certification, such device has been authorized by the Commission in accordance with the rules in this chapter and is properly identified and labeled as required by §2.925 and other relevant sections in this chapter; or
 - (2) In the case of a device that is not required to have a grant of equipment authorization issued by the Commission, but which must comply with the specified technical standards prior to use, such device also complies with all applicable administrative (including verification of the equipment or authorization under a Declaration of Conformity, where required), technical, labeling and identification requirements specified in this chapter.
- (d) Notwithstanding the provisions of paragraph (a) of this section, the offer for sale solely to business, commercial, industrial, scientific or medical users (but not an offer for sale to other parties or to end users located in a residential environment) of a radio frequency device that is in the conceptual, developmental, design or pre-production stage is permitted prior to equipment authorization or, for devices not subject to the equipment authorization requirements, prior to a determination of compliance with the applicable technical requirements *provided* that the prospective buyer is advised in writing at the time of the offer for sale that the equipment is subject to the FCC rules and that the equipment will comply with the appropriate rules before delivery to the buyer or to centers of distribution.



- (e)(1) Notwithstanding the provisions of paragraph (a) of this section, prior to equipment authorization or determination of compliance with the applicable technical requirements any radio frequency device may be operated, but not marketed, for the following purposes and under the following conditions:
- (i) *Compliance testing;*
 - (ii) Demonstrations at a trade show provided the notice contained in paragraph (c) of this section is displayed in a conspicuous location on, or immediately adjacent to, the device;
 - (iii) Demonstrations at an exhibition conducted at a business, commercial, industrial, scientific or medical location, but excluding locations in a residential environment, provided the notice contained in paragraphs (c) or (d) of this section, as appropriate, is displayed in a conspicuous location on, or immediately adjacent to, the device;
 - (iv) Evaluation of product performance and determination of customer acceptability, provided such operation takes place at the manufacturer's facilities during developmental, design or pre-production states; or
 - (v) Evaluation of product performance and determination of customer acceptability where customer acceptability of a radio frequency device cannot be determined at the manufacturer's facilities because of size or unique capability of the device, provided the device is operated at a business, commercial, industrial, scientific or medical user's site, but not at a residential site, during the development, design or pre-production stages.
- (e)(2) For the purpose of paragraphs (e)(1)(iv) and (e)(1)(v) of this section, the term *manufacturer's facilities* includes the facilities of the party responsible for compliance with the regulations and the manufacturer's premises, as well as the facilities of other entities working under the authorization of the responsible party in connection with the development and manufacture, but not the marketing, of the equipment.
- (f) For radio frequency devices subject to verification and sold solely to business, commercial, industrial, scientific and medical users (excluding products sold to other parties or for operation in a residential environment), parties responsible for verification of the devices shall have the option of ensuring compliance with the applicable technical specifications of this chapter at each end user's location after installation, provided that the purchase or lease agreement includes a proviso that such a determination of compliance be made and is the responsibility of the party responsible for verification of the equipment.



Certification & User's Manual Information

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

§ 2.901 Basis and Purpose

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

§ 2.907 Certification.

- (a) Certification is an equipment authorization issued by the Commission, based on representation and test data submitted by the applicant.
- (b) Certification attaches to all units subsequently marketed by the grantee which are identical (see Section 2.908) to the sample tested except for permissive changes or other variations authorized by the Commission pursuant to Section 2.1043.

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



Certification & User's Manual Information

§ 2.948 Description of measurement facilities.

- (a) Each party making measurements of equipment that is subject to an equipment authorization under Part 15 or Part 18 of this chapter, regardless of whether the measurements are filed with the Commission or kept on file by the party responsible for compliance of equipment marketed within the U.S. or its possessions, shall compile a description of the measurement facilities employed.
 - (1) If the measured equipment is subject to the verification procedure, the description of the measurement facilities shall be retained by the party responsible for verification of the equipment.
 - (i) *If the equipment is verified through measurements performed by an independent laboratory, it is acceptable for the party responsible for verification of the equipment to rely upon the description of the measurement facilities retained by or placed on file with the Commission by that laboratory. In this situation, the party responsible for the verification of the equipment is not required to retain a duplicate copy of the description of the measurement facilities.*
 - (ii) If the equipment is verified based on measurements performed at the installation site of the equipment, no specific site calibration data is required. It is acceptable to retain the description of the measurement facilities at the site at which the measurements were performed.
 - (2) If the equipment is to be authorized by the Commission under the certification procedure, the description of the measurement facilities shall be filed with the Commission's Laboratory in Columbia, Maryland. The data describing the measurement facilities need only be filed once but must be updated as changes are made to the measurement facilities or as otherwise described in this section. At least every three years, the organization responsible for filing the data with the Commission shall certify that the data on file is current.



Certification & User's Manual Information

1. Label and User's Manual Information

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

§ 15.19 Labeling requirements.

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

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

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

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

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

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

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

- (4) Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified under paragraph (a) of this section is required to be affixed only to the main control unit.
- (5) When the device is so small or for such use that it is not practicable to place the statement specified under paragraph (a) of this section on it, the information required by this paragraph shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed. However, the FCC identifier or the unique identifier, as appropriate, must be displayed on the device.

§ 15.21 Information to user.

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



Verification & User's Manual Information

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

§ 15.105 Information to the user.

- (a) For a Class 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