Shenzhen Huatongwei International Inspection Co., Ltd.
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FCC PART 90 TEST REPORT

FCC Part 90

Report Reference No.....:	**WE10110010**
FCC ID.....:	**YAMPD70XVHF**
Compiled by (position+printed name+signature)..:	File administrators Eric Zhang
Supervised by (position+printed name+signature)..:	Test Engineer Wenliang Li
Approved by (position+printed name+signature)..:	Manager Jimmy Li
Date of issue.....:	Nov 24, 2010
Testing Laboratory Name.....:	**Shenzhen Huatongwei International Inspection Co., Ltd**
Address .....:	Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Applicant's name.....:	**Hytera Communications Corporation Ltd.**
Address .....:	HYT Tower,Hi-Tech Industrial Park North,Nanshan District,Shenzhen China.518057
Test specification:	
Standard .....:	**FCC Part 90: PRIVATE LAND MOBILE RADIO SERVICES**
TRF Originator.....:	Shenzhen Huatongwei International Inspection CO., Ltd
Master TRF.....:	Dated 2006-06

Test item description .....:	Digital Portable Radio
Trade Mark .....:	Hytera
Manufacturer .....:	**Hytera Communications Corporation Ltd.**
Model/Type reference.....:	PD702 VHF/ PD705 VHF/ PD706 VHF/ PD708 VHF/HD705 VHF
Listed Models .....:	/
Ratings .....:	DC 7.40 V
Modulation .....:	FM&4FSK
Channel Separation.....	12.5KHz&25KHz
Rated Power	5Watts(36.99dBm)/1Watts(30 dBm)
Operation Frequency Range	From 136 MHz to 174 MHz
Result.....:	**Positive**

TEST REPORT

Test Report No. :	WE10110010	Nov 24, 2010 Date of issue

Equipment under Test	:	Digital Portable Radio
Model /Type	:	PD702 VHF/ PD705 VHF/ PD706 VHF/ PD708 VHF /HD705 VHF
Listed Models	:	/
Applicant	:	**Hytera Communications Corporation Ltd.**
Address	:	HYT Tower,Hi-Tech Industrial Park North,Nanshan District,Shenzhen China.518057
Manufacturer	:	**Hytera Communications Corporation Ltd.**
Address	:	HYT Tower,Hi-Tech Industrial Park North,Nanshan District,Shenzhen China.518057

Test Result according to the standards on page 4:	**Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 90: PRIVATE LAND MOBILE RADIO SERVICES.

TIA/EIA 603: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

ANSI C63.4-2009: American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Nov 05, 2010
Testing commenced on	:	Nov 05, 2010
Testing concluded on	:	Nov 24, 2010

Note: The Test Report Redoes the Transmitter Radiated Spurious Emission based on the Test Report No.:WE10090026 Test Report

2.2. Product Description

The Hytera Communications Corporation Ltd.'s Model: PD702 VHF/ PD705 VHF/ PD706 VHF/ PD708 VHF/HD705 VHF or the "EUT" as referred to in this report; more general information as follows, for more details, refer to the user's manual of the EUT.

Name of EUT	Digital Portable Radio	
Model Number	PD702 VHF/ PD705 VHF/ PD706 VHF/ PD708 VHF/HD705 VHF	
FCC ID	YAMPD78XVHF	
Rated Output Power	5 Watts(36.99 dBm)/1 Watts(30.00 dBm)	
Modilation Type	FM for Analog Voice	
	4FSK for Digital Voice/Digital Data	
	4FSK for Digital Data	
Emission Designator	Analog	16K0F3E for 25KHz Channel Separation
		11K0F3E for 12.5KHz Channel Separation
	Digital	7K60FXD for Digital Data only
		7K60FXW for Digital Data & Digital Voice
Channel Separation	Analog Voice	12.5KHz&25KHz
	Digital Voice/Data	12.5KHz
	Digital Data	12.5KHz
Antenna Type	External	
Frequency Range	From 136 MHz to 174 MHz	
Maximum Transmitter Power	Analog	4.80 W for 25 KHz Channel Separation
		4.88 W for 12.5 KHz Channel Separation
	Digital	4.84 W for 12.5 KHz Channel Separation

Note: The product has the same digital working characters when operating in both two digitized voice/data mode (7K60FXD and 7K60FXW). So only one set of test results for digital modulation modes are provided in this test report.

2.3. Equipment under Test

Power supply system utilised

Power supply voltage	:	○	120V / 60 Hz	○	115V / 60Hz
		○	12 V DC	○	24 V DC
		●	Other (specified in blank below)		

DC 7.40V from battery

Test frequency list

Modulation Type	Test Channel	Test Frequency
Analog/FM	Low Channel	136.1220 MHz
	Middle Channel	152.1220 MHz
	High Channel	173.9220 MHz
Digital/4FSK	Low Channel	136.1220 MHz
	Middle Channel	152.1220 MHz
	High Channel	173.9220 MHz

2.4. Short description of the Equipment under Test (EUT)

136-174 MHz V frequency band Digital Portable Radio (PD702 VHF/ PD705 VHF/ PD706 VHF/ PD708 VHF/HD705 VHF).

For more details, refer to the user's manual of the EUT.

Serial number: Prototype

2.5. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.6. EUT operation mode

The EUT has been tested under typical operating condition and The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

2.7. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

○	Power Cable	Length (m) :	/
		Shield :	/
		Detachable :	/
○	Multimeter	Manufacturer :	/
		Model No. :	/

2.8. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **YAMPD70XVHF** filing to comply with FCC Part 90 Rules

2.9. Modifications

No modifications were implemented to meet testing criteria.

2.10. Note

1. The EUT is is a V frequency band (136-174MHz) Digital Portable Radio,The functions of the EUT listed as below:
2.

	Test Standards	Reference Report
Radio	FCC Part 90	WE10090016

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Huatongwei International Inspection Co., Ltd
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Phone: 86-755-26715686 Fax: 86-755-26748089

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2009) and CISPR Publication 22.

3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: August 02, 2007. Valid time is until March 29, 2012.

A2LA-Lab Cert. No. 2243.01

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time to Sep 30, 2011.

FCC-Registration No.: 662850

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 662850, Renewal date July 01, 2009.

IC-Registration No.: 5377

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377 on February 13th, 2009.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

NEMKO-Aut. No.: ELA125

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025:2005 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10; the Authorization is valid through July 07, 2011.

VCCI

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) and Shielded Room (8m×4m×3m) of Shenzhen Huatongwei International Inspection Co., Ltd has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2484. Date of Registration: December 20, 2009. Valid time is until December 19, 2012.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: December 20, 2009. Valid time is until December 19, 2012.

DNV

Shenzhen Huatongwei International Inspection Co Ltd has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025(2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until 24 Augest, 2013.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System

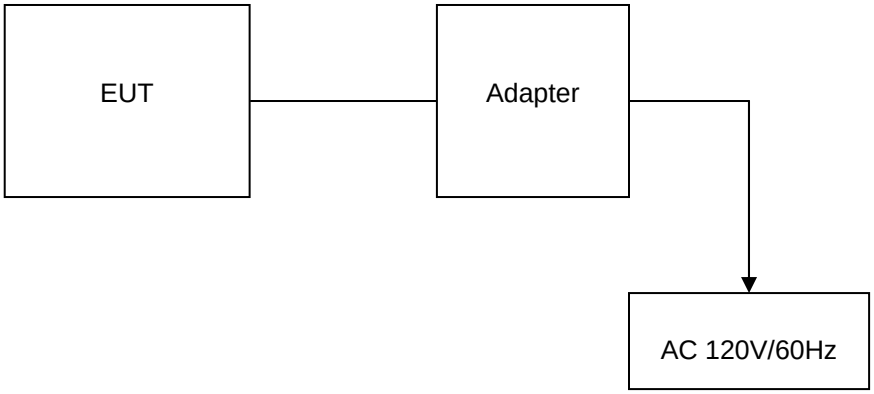


Table 2-1 Equipment Used in Tested System

Adapter: P/N: PS1014
Model: DSA-15P-12 US 120120
Input:100-240V～50/60Hz 0.5A
Output: +12V DC 1A
Power Cable: 180cm
◇ Shielded ◆ Unshielded

3.5. Discription of Tested Modes

The EUT (Didital Portable Radio) has been tested under normal operating condition. Three channels (the high, the middle and the low) are chosen for testing at each channel separation (12.5 KHz/ 25KHz).

3.6. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.24 dB	(1)
Radiated Emission	1~18GHz	5.16 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	3.39 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.7. Test Description

FCC Rules	Description of Test	Test Result
§ 90.210	Transmitter Radiated Spurious Emssion	Complies

3.8. Equipments Used during the Test

Transmitter Radiated Spurious Emssion & Occupied Bandwidth & Emission Mask & Receiver Radiated Spurious Emssion				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Ultra-Broadband Antenna	Rohde&Schwarz	HL562	100015	2011/11/24
EMI Test Receiver	Rohde&Schwarz	ESI 26	100009	2011/11/24
RF Test Panel	Rohde&Schwarz	TS / RSP	335015/ 0017	N/A
HORN ANTENNA	Rohde&Schwarz	HF906	100039	2011/11/24
Turntable	ETS	2088	2149	N/A
Antenna Mast	ETS	2075	2346	N/A
EMI Test Software	Rohde&Schwarz	ES-K1 V1.71	N/A	2011/11/24
RF COMMUNICATION TEST SET	HP	8920A	3813A10206	2011/11/24

4. TEST CONDITIONS AND RESULTS

4.1. Transmitter Radiated Spurious Emssion

TEST APPLICABLE

According to the TIA/EIA 603 test method, and according to Section 90.210, the power of each unwanted emission shall be less than Transmitted Power as specified below for transmitters designed to operate with 12.5 KHz channel bandwidth:

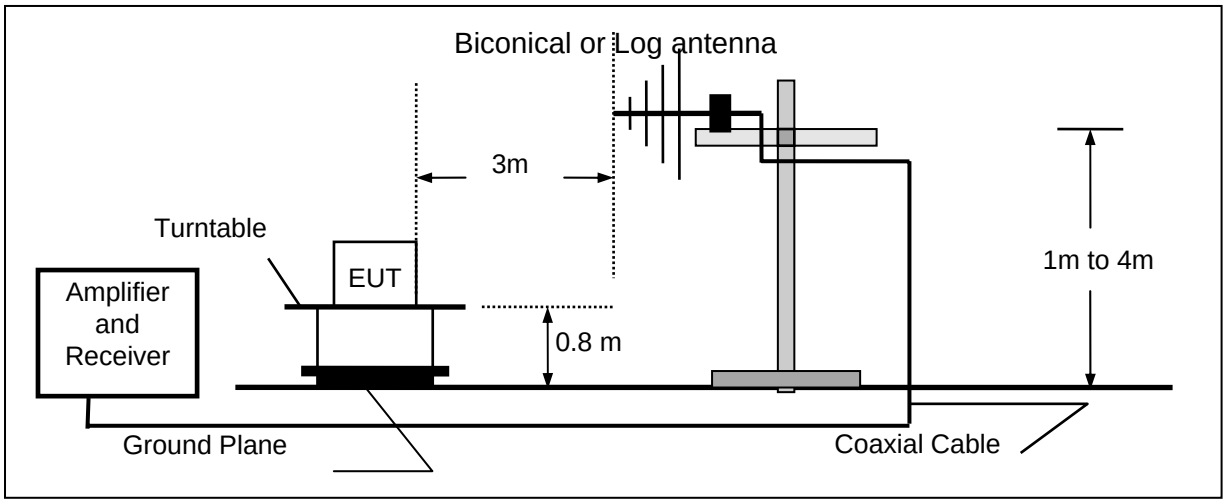
1 On any frequency removed from the center of the authorized bandwidth fo to 5.625 KHz removed from fo: Zero dB
2 On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in KHz) fo of more than 5.625 KHz but no more than 12.5 KHz: At least 7.27dB
3 On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in KHz) fo of more than 12.5 KHz: At least 50+10 log (P) dB or 70 dB, which ever is lesser attenuation.

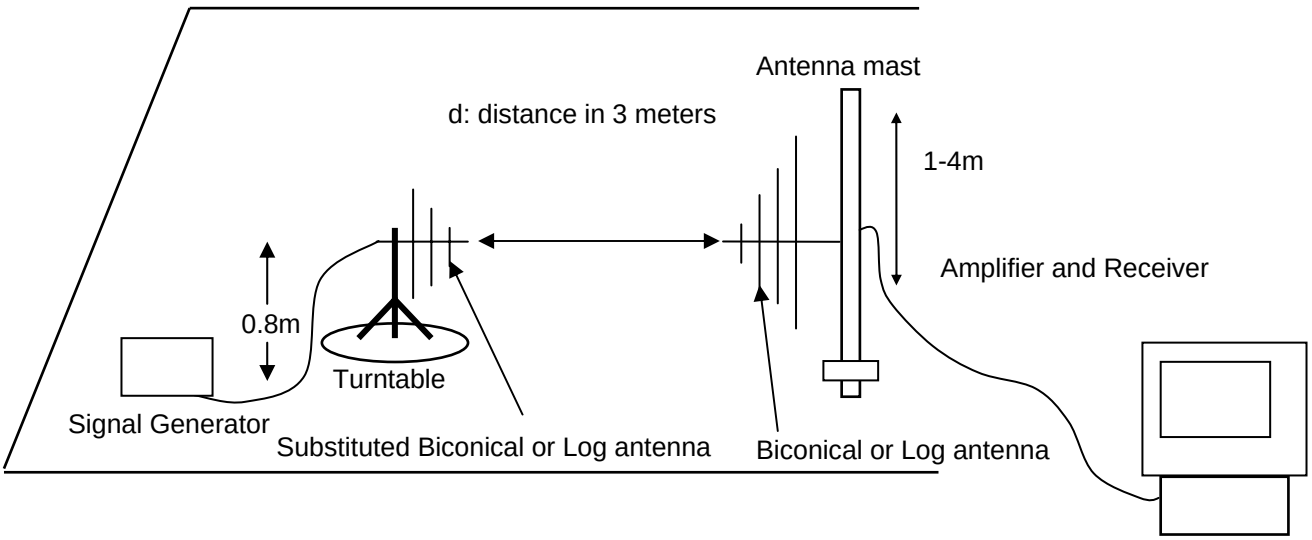
For transmitters designed to transmit with 25 KHz channel separation and equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as following:

1 On any frequency removed from the assigned frequency by more than 50 percent, but no more than 100 percent of the authorized bandwidth: At least 25 dB.
2 On any frequency removed from the assigned frequency by more than 100 percent, but no more than 250 percent of the authorized bandwidth: At least 35 dB.
3 On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43+10Log (P) dB.

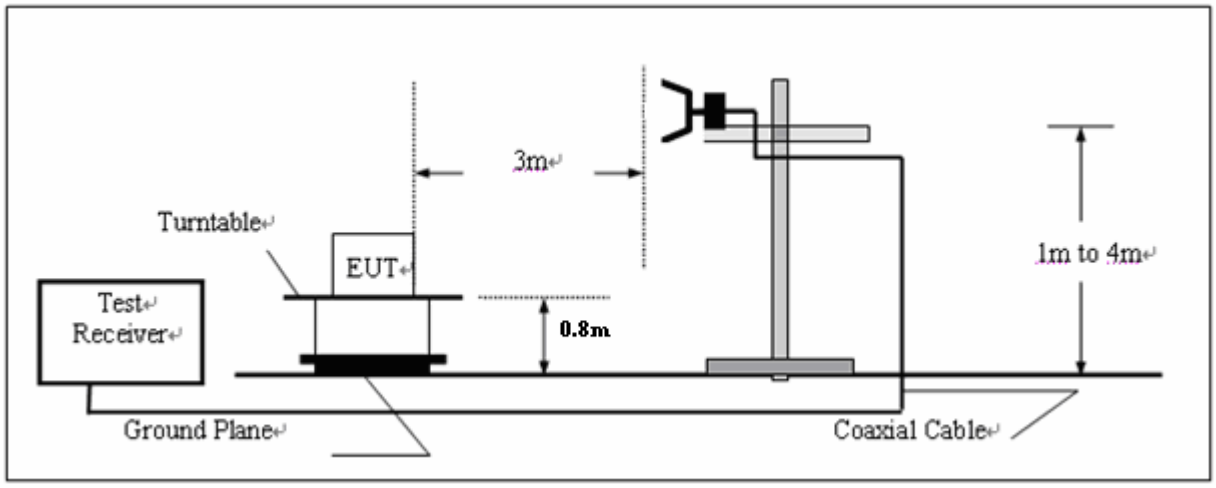
TEST CONFIGURATION

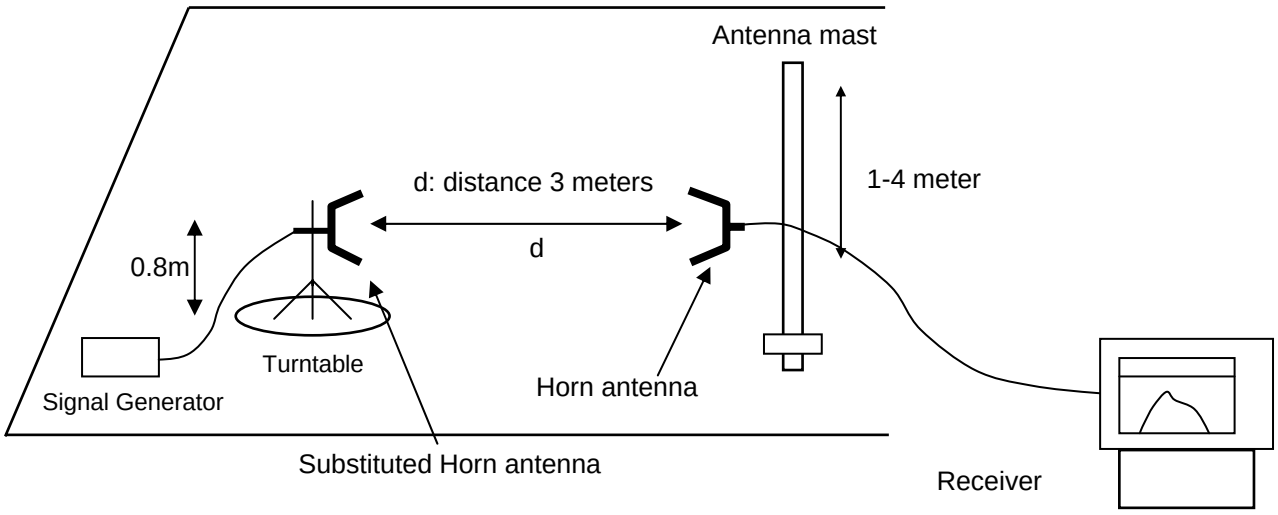
Below 1GHz





Above 1GHz





TEST PROCEDURE

1 On a test site, the EUT shall be placed on a turntable and in the position closest to the normal use as declared by the user.
2 The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.
3 The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as in dicated on the report. The detector selection is based on how close the emission level was approaching the limit.
4 The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
5 The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.
6 The transmitter shall than be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
7 The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.
8 The maximum signal level detected by the measuring receiver shall be noted.
9 The measurement shall be repeated with the test antenna set to horizontal polarization.
10 Replace the antenna with a proper Antenna (substitution antenna).
11 The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.
12 The substitution antenna shall be connected to a calibrated signal generator.

13 If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
14 The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
15 The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
16 The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
17 The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization

TEST RESULTS

The Transmitter Radiated Spurious Emssion was performed to the Rated high power (5Watt) and Rated low power (1Watt) the datum that reported below is the worst case (Rated high power) of the two rated power conditions.

Modulation Type: FM

FCC Part 22.359, 74.462, 80.211 and 90.210 and RSS Gen, RSS 119 Issue 9 (25 kHz bandwidth only):
On any frequency removed from the center of the assigned channel by more than 250 percent at least:
Low: 43 + 10 log (Pwatts) = 43 + 10 log (4.69) =49.71 dB
High: 43 + 10 log (Pwatts) = 43 + 10 log (4.80) =49.81 dB
Calculation: Limit (dBm) =EL-43-10log10 (TP)
Notes: EL is the emission level of the Output Power expressed in dBm,
In this application, the EL is 36.99 dBm.
Limit (dBm) =36.99-43-10log10 (4.80) = -13 dBm

FCC Part 22.359, 74.462, 80.211 and 90.210 and RSS Gen, RSS 119 Issue 9 (25 kHz bandwidth only): On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f d in kHz) of more than 12.5 kHz at least:
Low: 50 + 10 log (Pwatts) = 50 + 10 log (4.72) =56.74 dB
High: 50 + 10 log (Pwatts) = 50 + 10 log (4.88) =56.88 dB
Note: In general, the worse case attenuation requirement shown above was applied.
Calculation: Limit (dBm) =EL-50-10log10 (TP)
Notes: EL is the emission level of the Output Power expressed in dBm,
In this application, the EL is 36.99 dBm.
Limit (dBm) =36.99-50-10log10 (4.88) = -20 dBm

Modulation Type: 4FSK

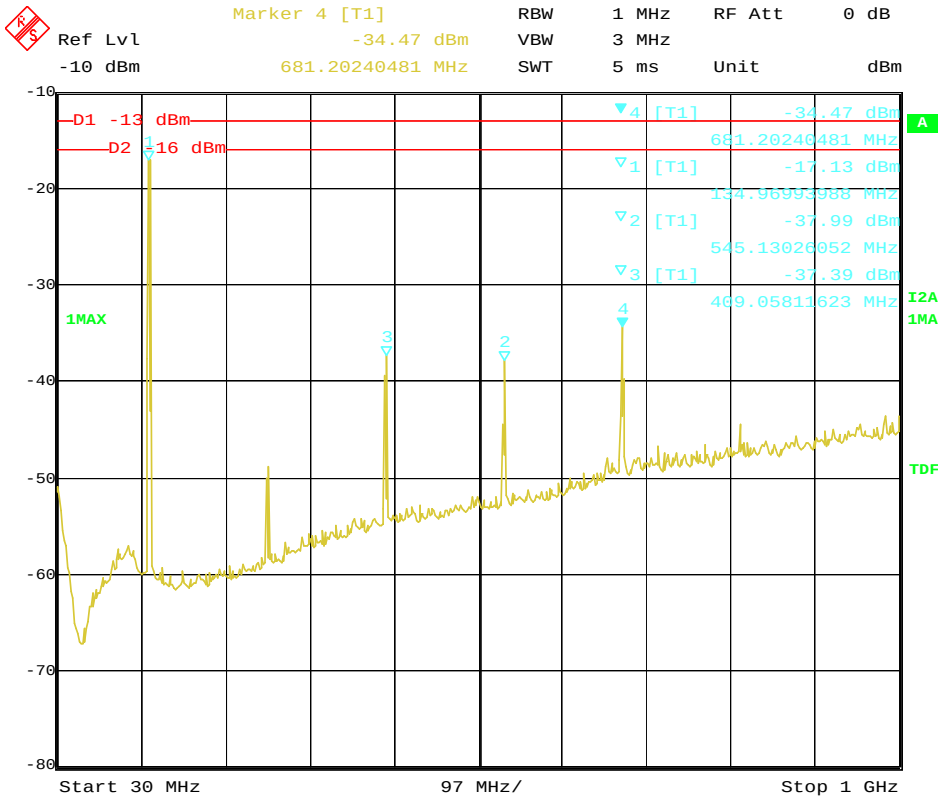
FCC Part 22.359, 74.462, 80.211 and 90.210 and RSS Gen, RSS 119 Issue 9 (12.5 kHz Bandwidth only):
On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f d in kHz) of more than 12.5 kHz at least:
Low: 50 + 10 log (Pwatts) = 50 + 10 log (4.69) =56.71 dB
High: 50 + 10 log (Pwatts) = 50 + 10 log (4.84) =56.85 dB
Note: In general, the worse case attenuation requirement shown above was applied.
Calculation: Limit (dBm) =EL-50-10log10 (TP)
Notes: EL is the emission level of the Output Power expressed in dBm,
In this application, the EL is 36.99 dBm.
Limit (dBm) =36.99-50-10log10 (4.84) = -20 dBm

Note: 1. In general, the worse case attenuation requirement shown above was applied.
2. The measurement frequency range from 30 MHz to 4 GHz.
3. ******* means that the emission level is too low to be measured or at least 20 dB down than the limit.
4. Corrected Power (dBm) = SG O/P-Cable + Ant Gain

Plots of Transmitter Radiated Spurious Emission Measurement

Modulation Type: FM

The Low channel for 25 KHz Channel Separation @ Horizontal



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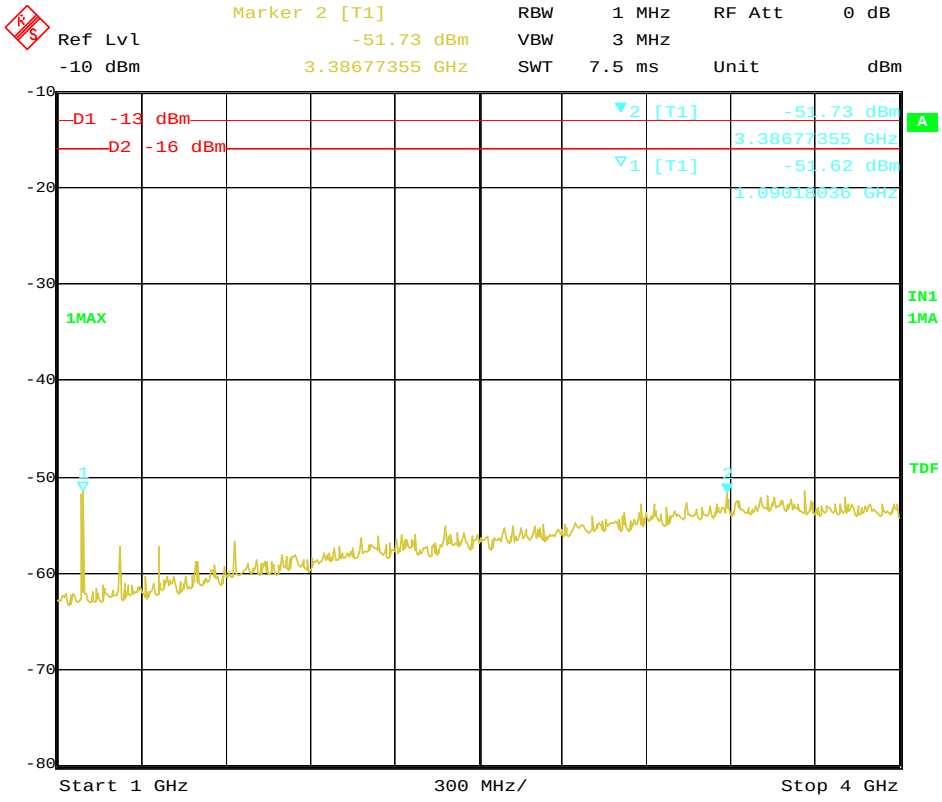

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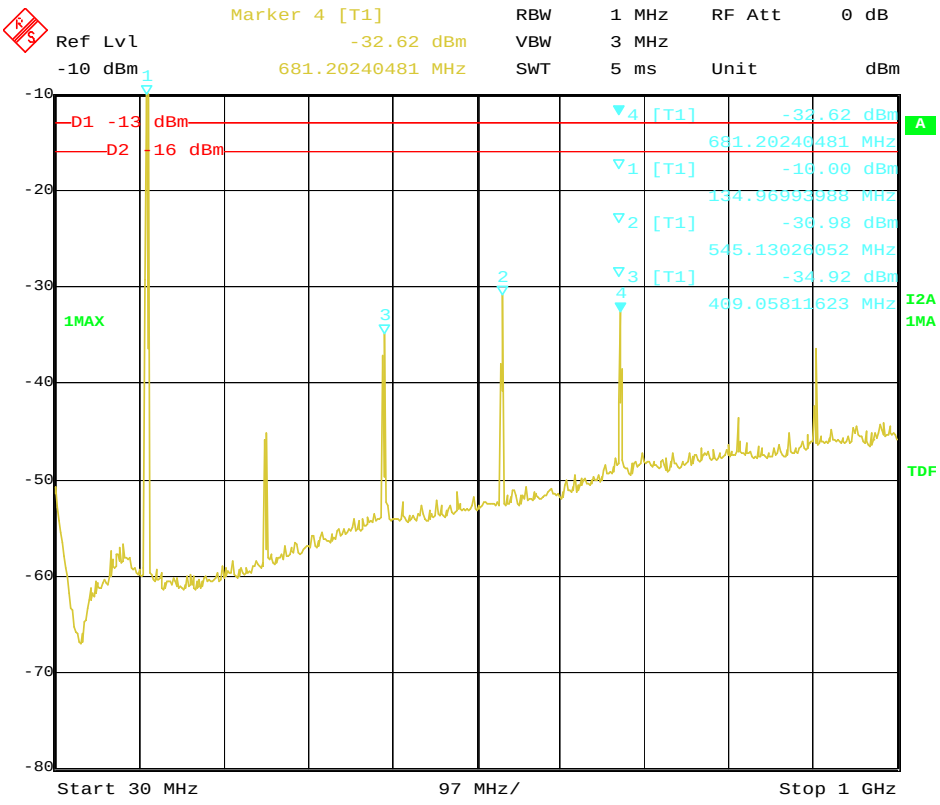

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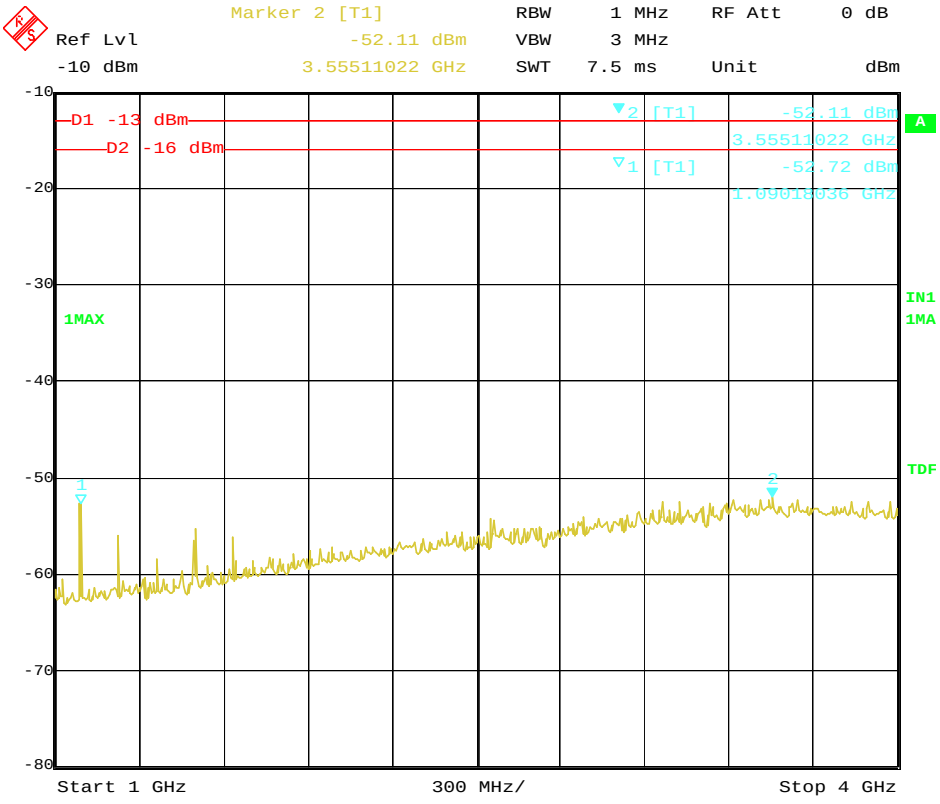

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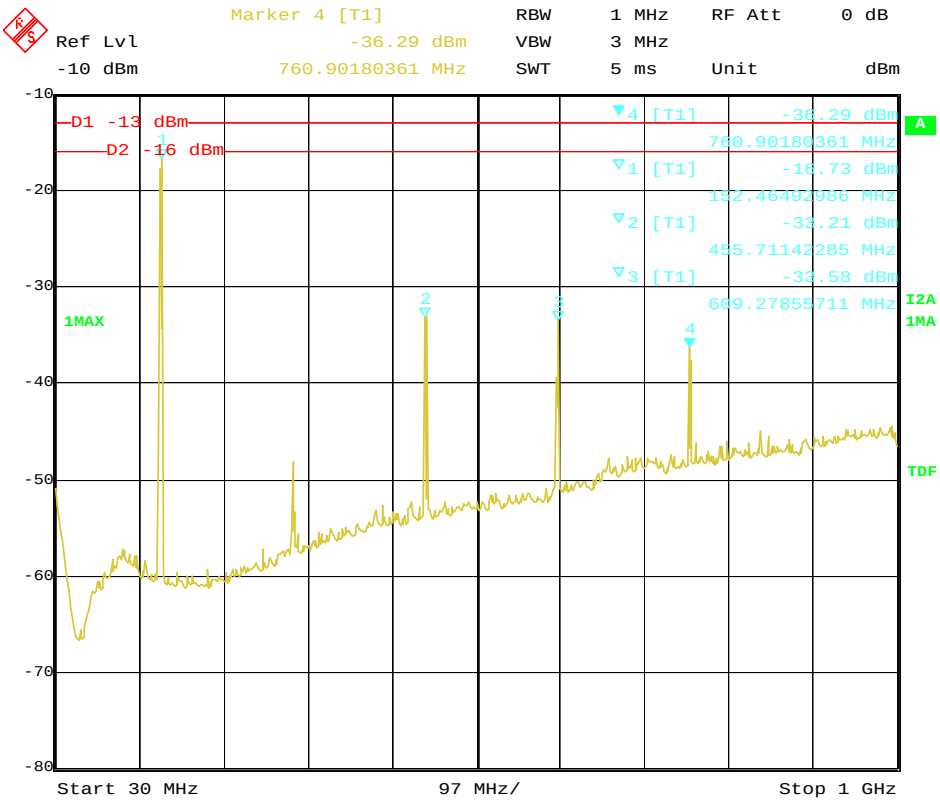
The Middle channel for 25 KHz Channel Separation @ Horizontal



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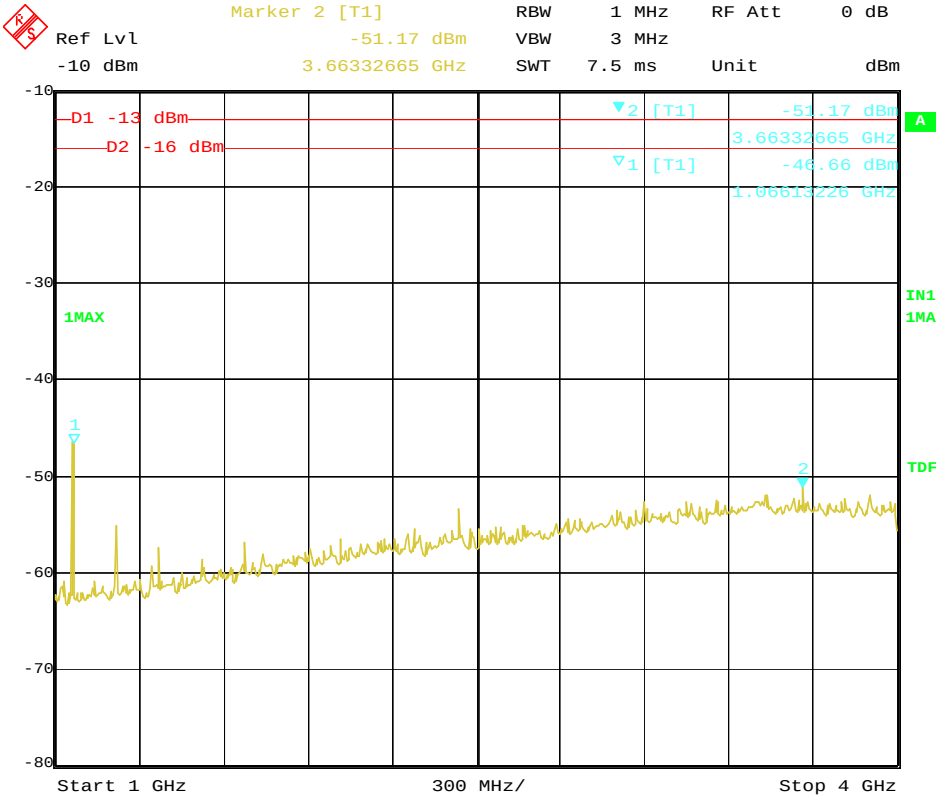

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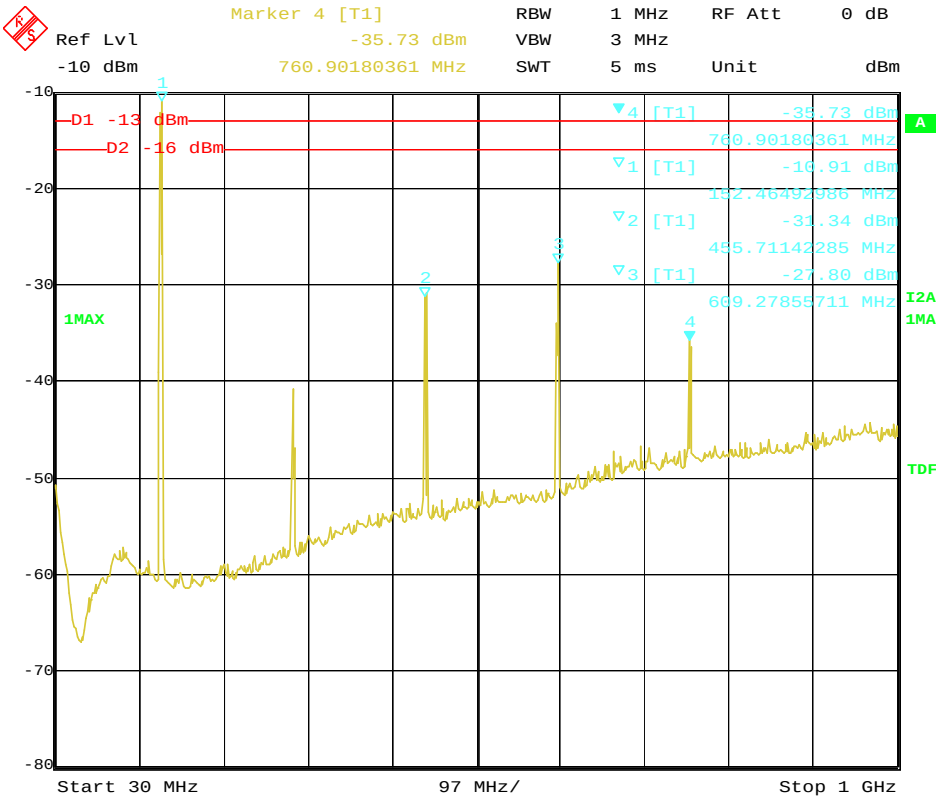
The Middle channel for 25 KHz Channel Separation@ Vertical



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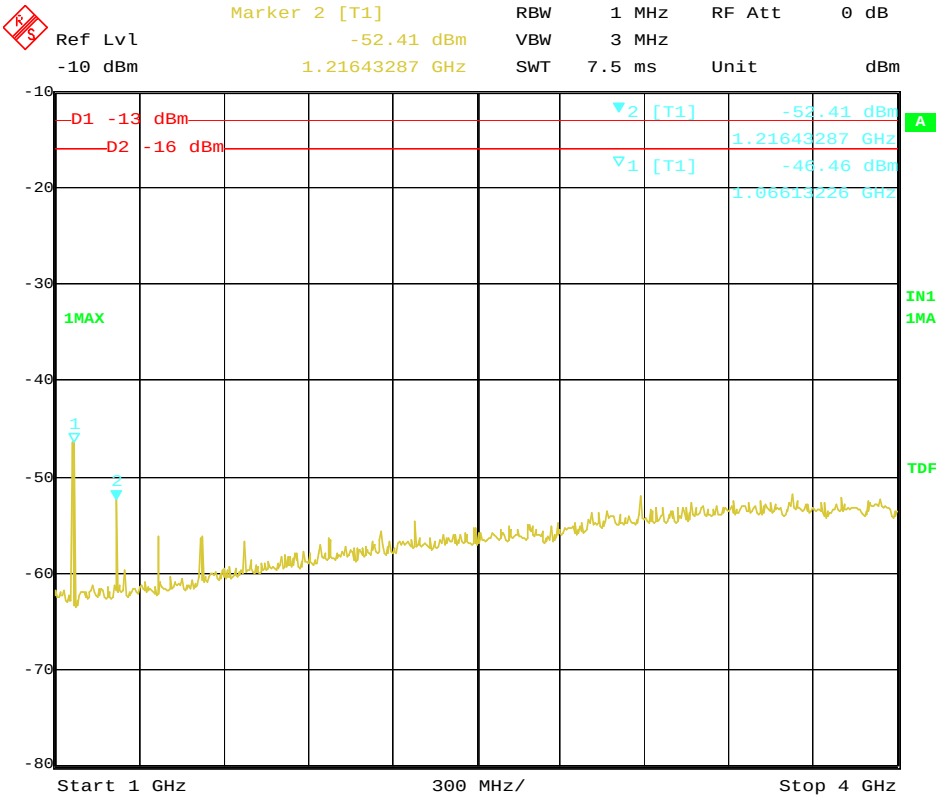

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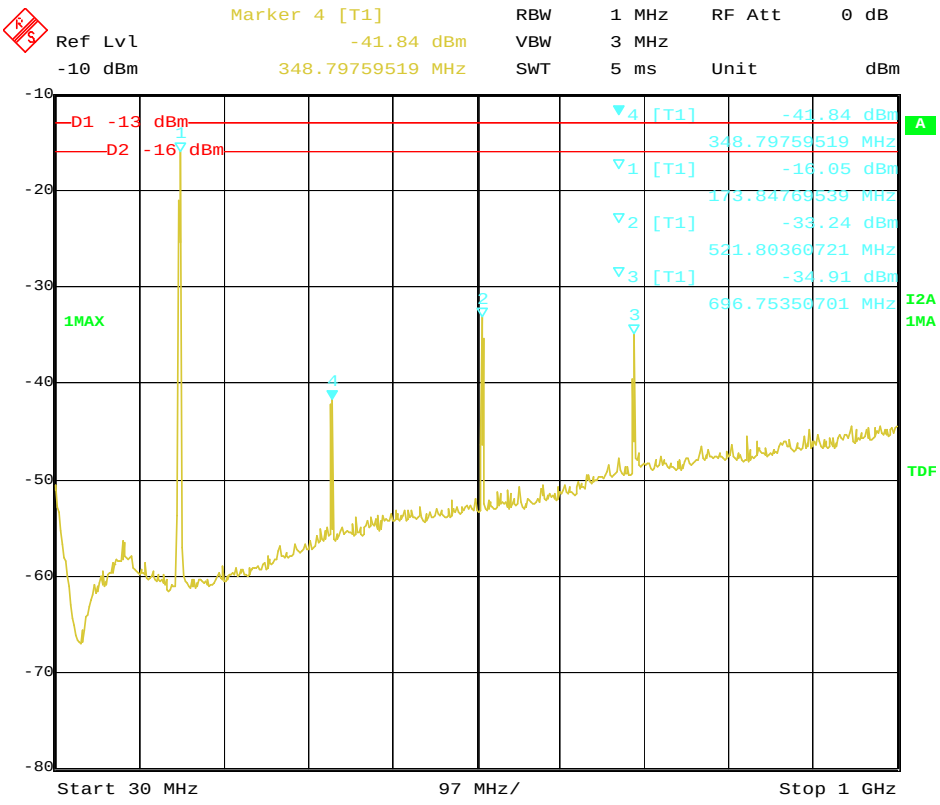
The High channel for 25 KHz Channel Separation @ Horizontal



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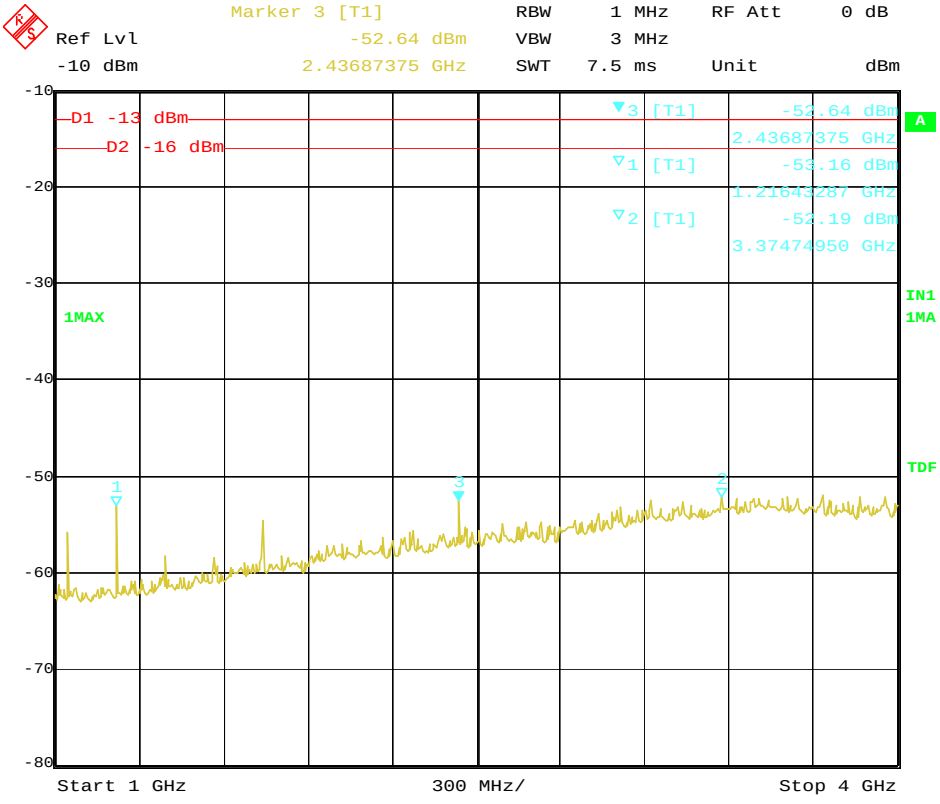

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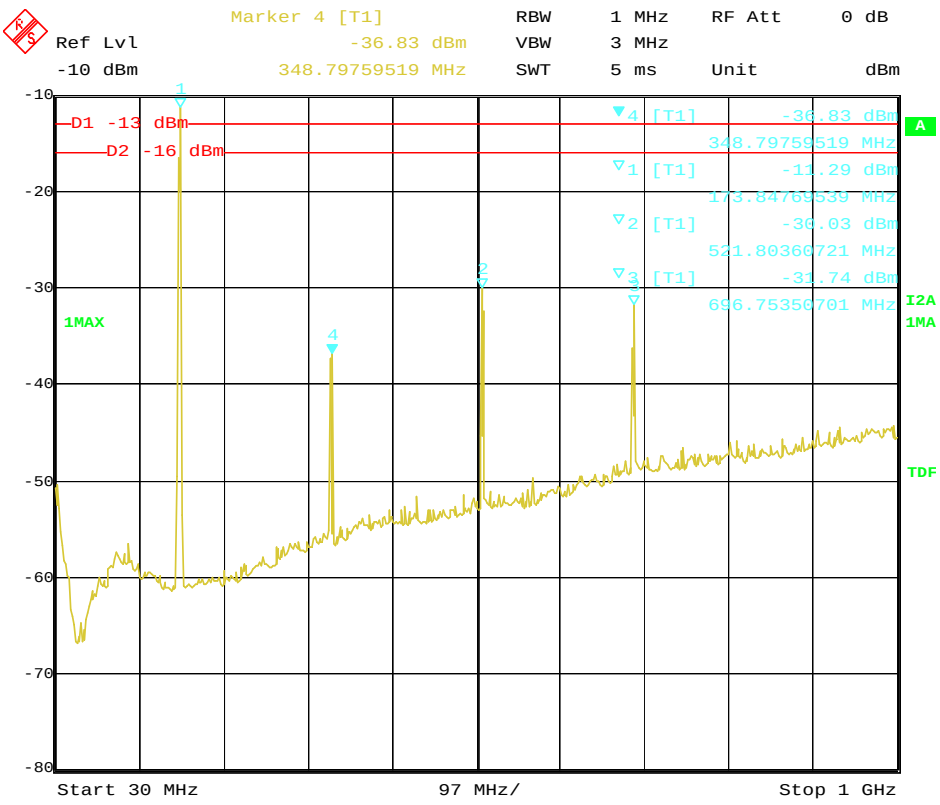
The High channel for 25 KHz Channel Separation@ Vertical



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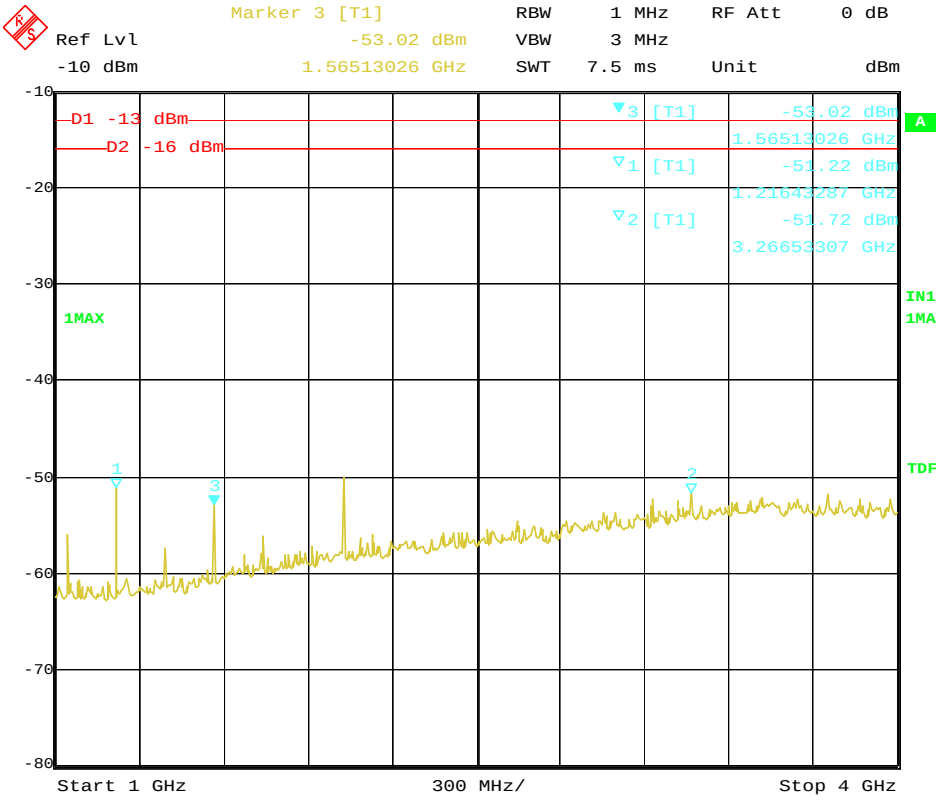

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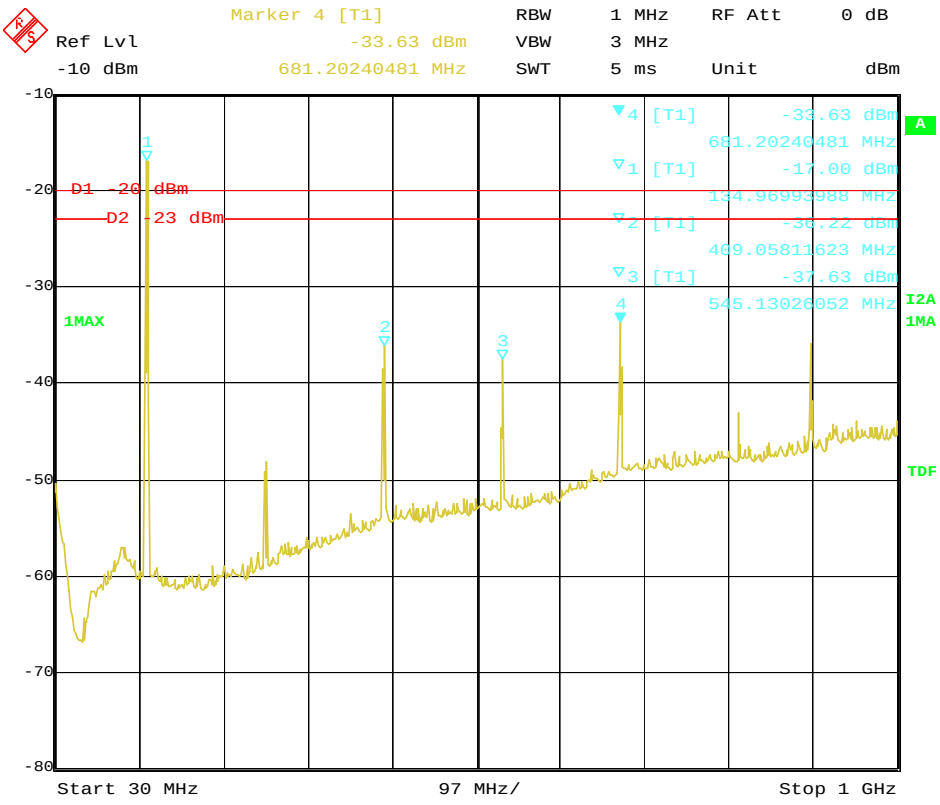

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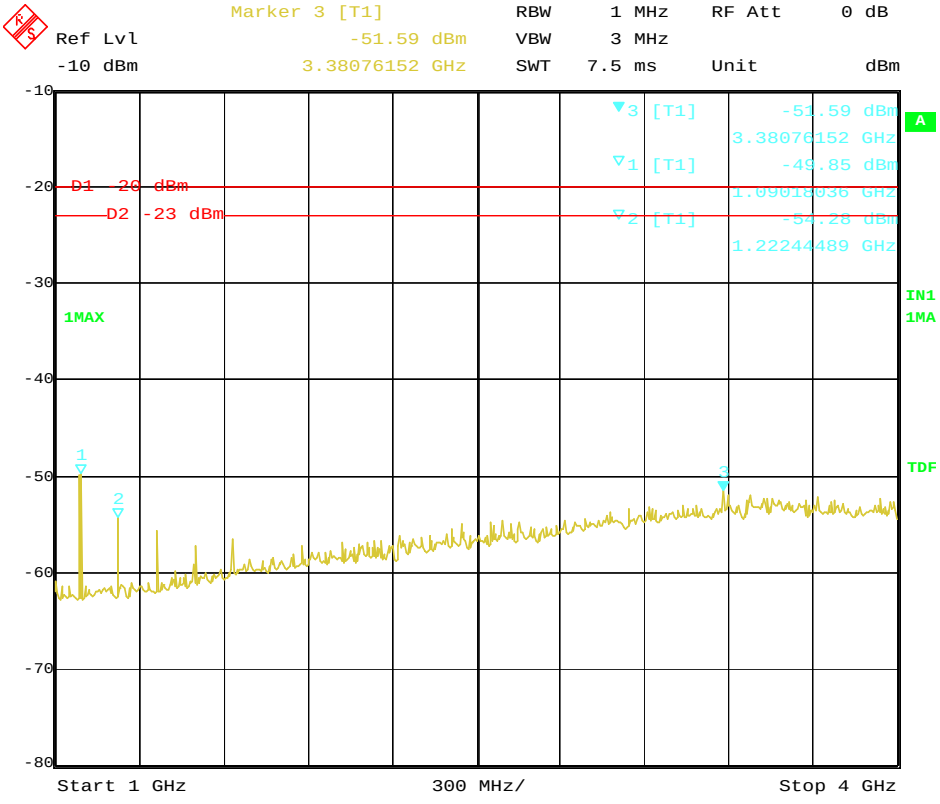
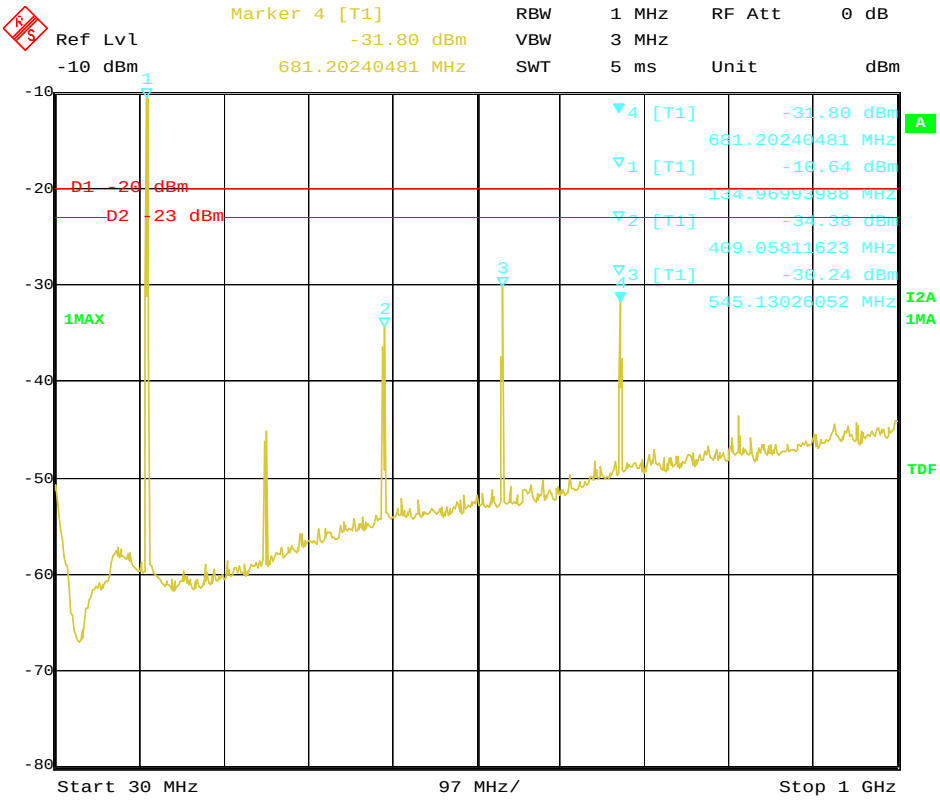
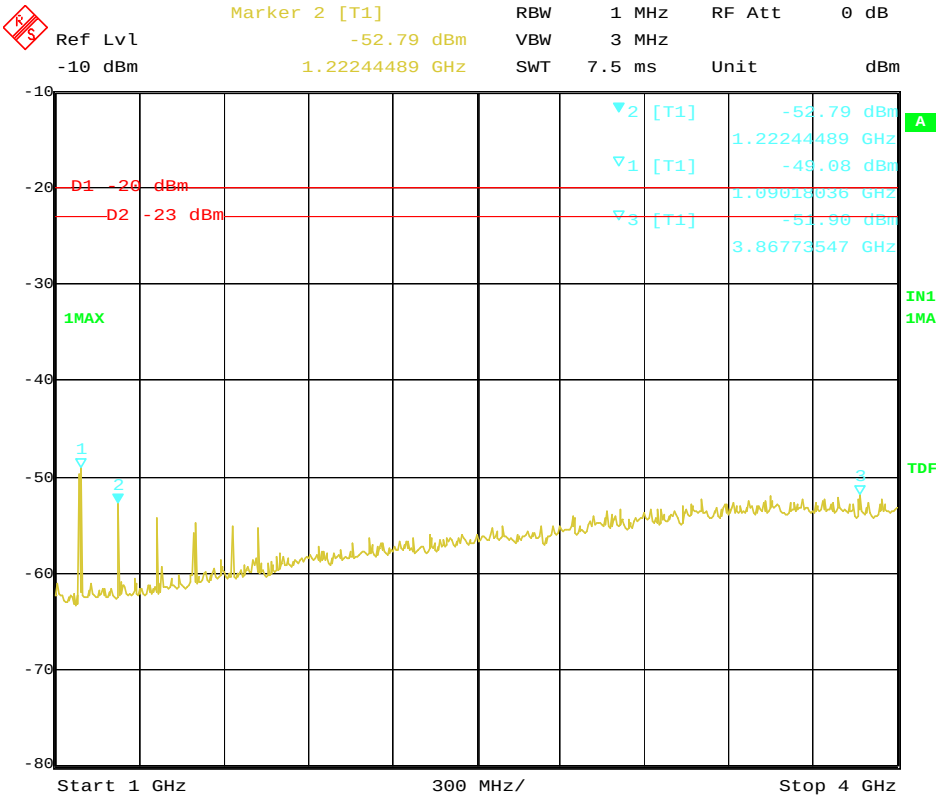


Date: 24.NOV.2010 01:37:42

The Low channel for 12.5 KHz Channel Separation@ Vertical

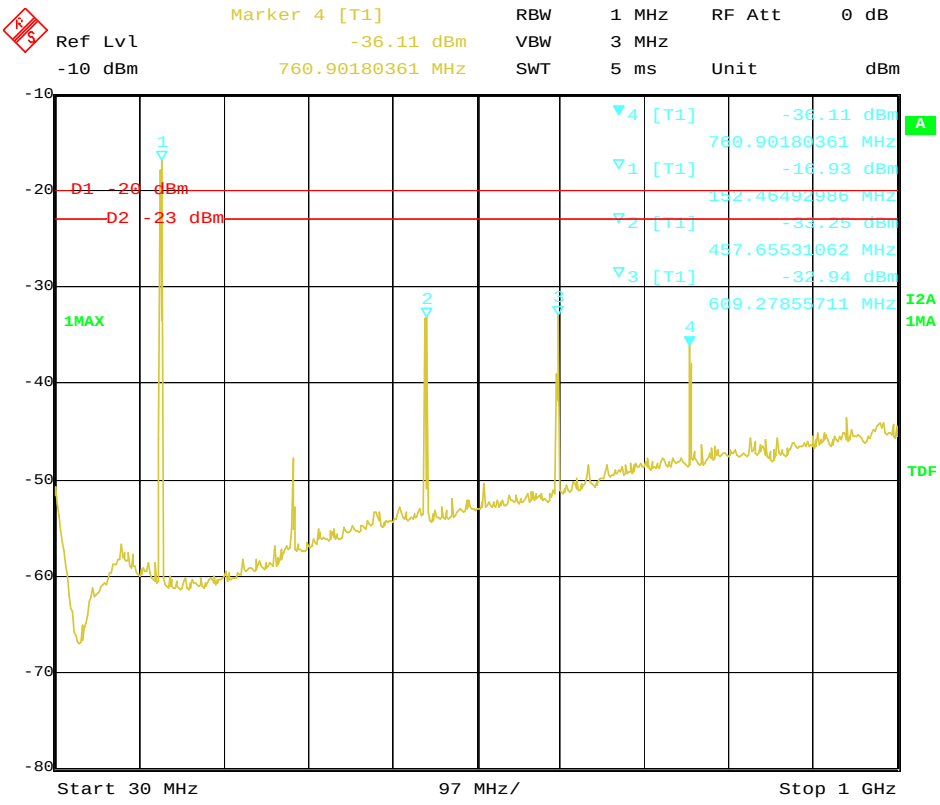


Date: 24.NOV.2010 02:07:24

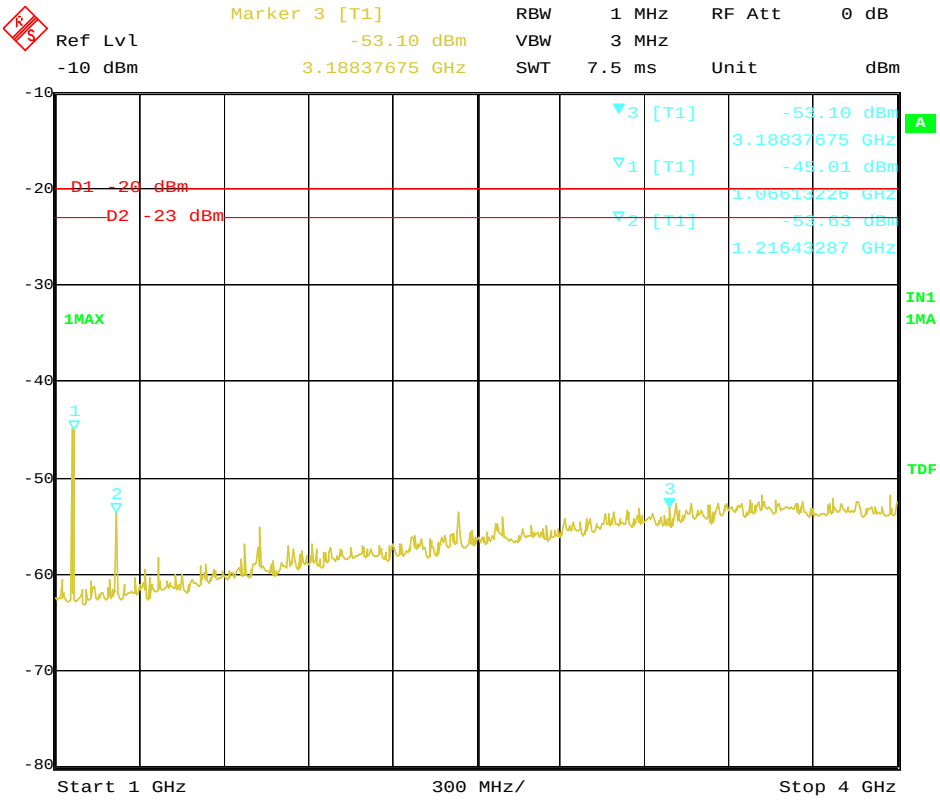


Date: 24.NOV.2010 01:38:58

The Middle channel for 12.5 KHz Channel Separation @ Horizontal

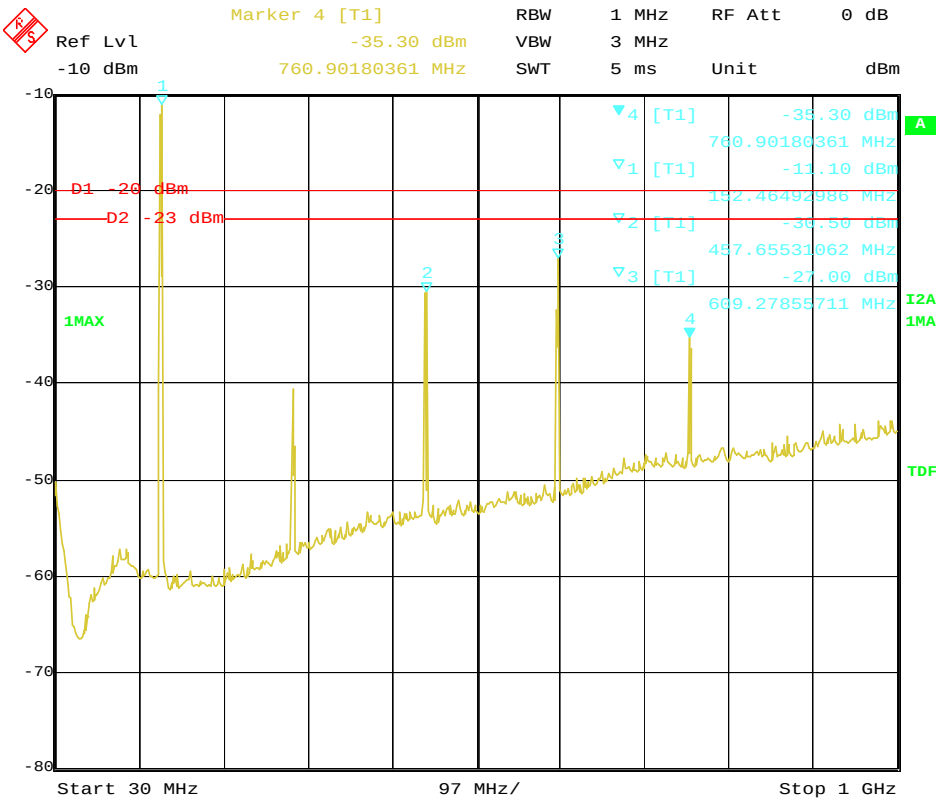


Date: 24.NOV.2010 02:10:00

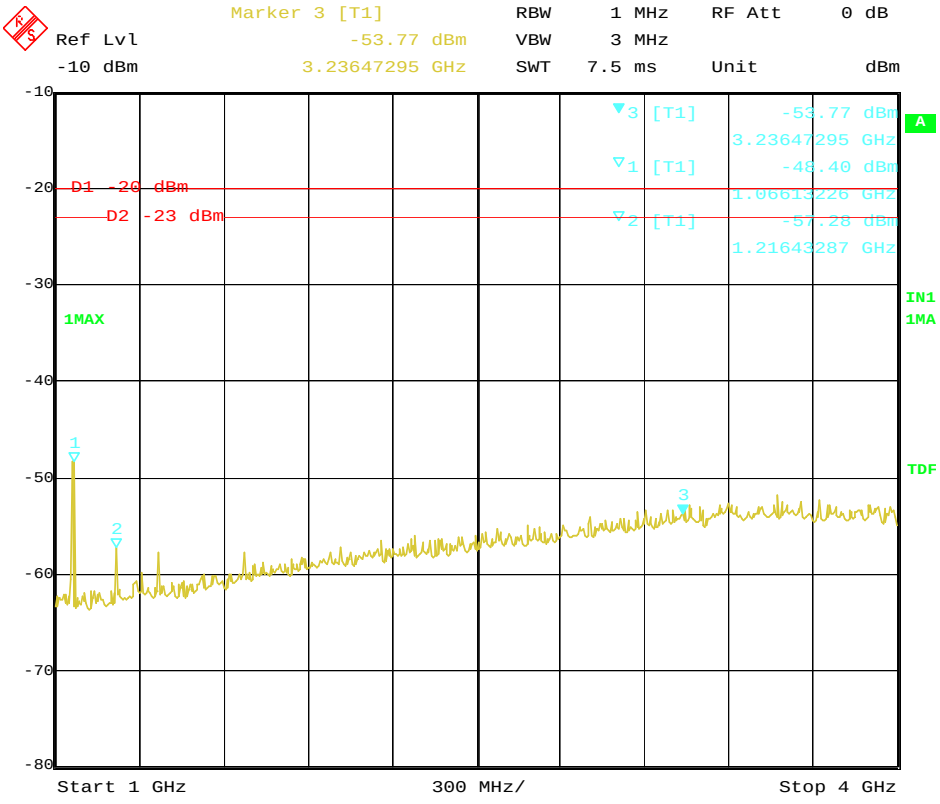


Date: 24.NOV.2010 01:42:20

The Middle channel for 12.5 KHz Channel Separation@ Vertical

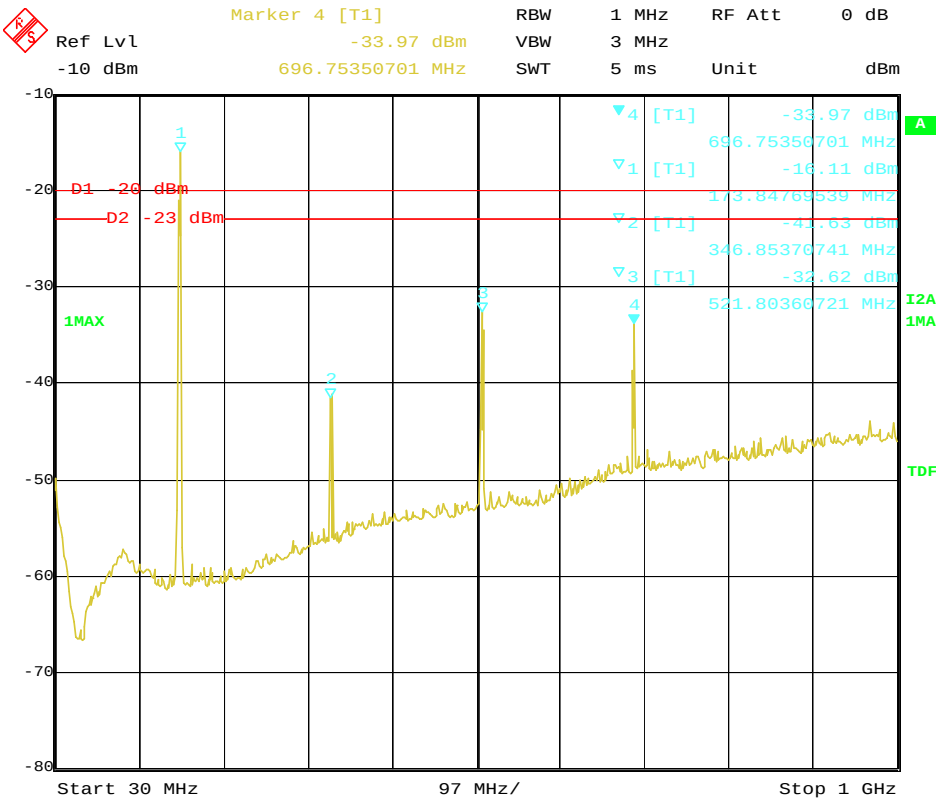


Date: 24.NOV.2010 02:11:08

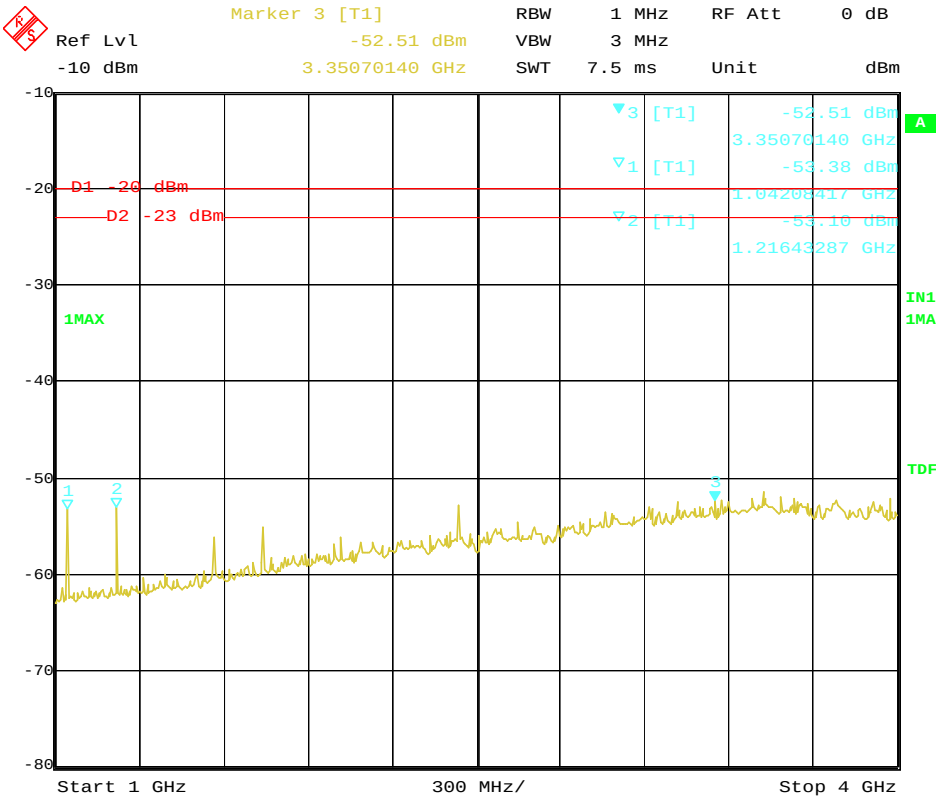


Date: 24.NOV.2010 01:40:31

The High channel for 12.5 KHz Channel Separation @ Horizontal

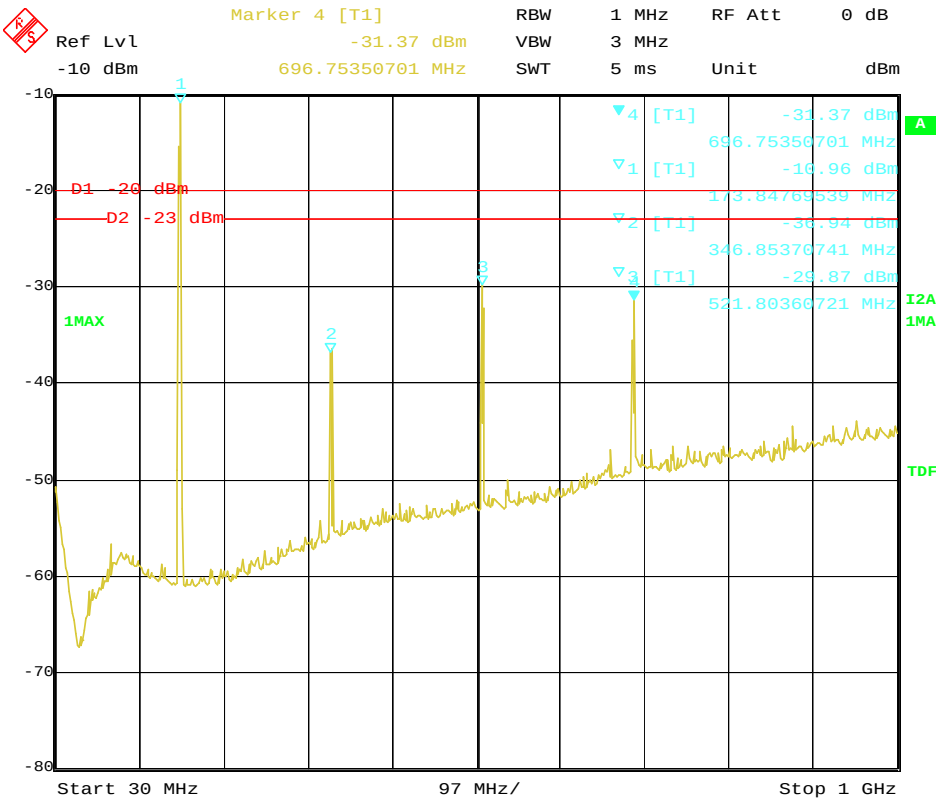


Date: 24.NOV.2010 02:14:01

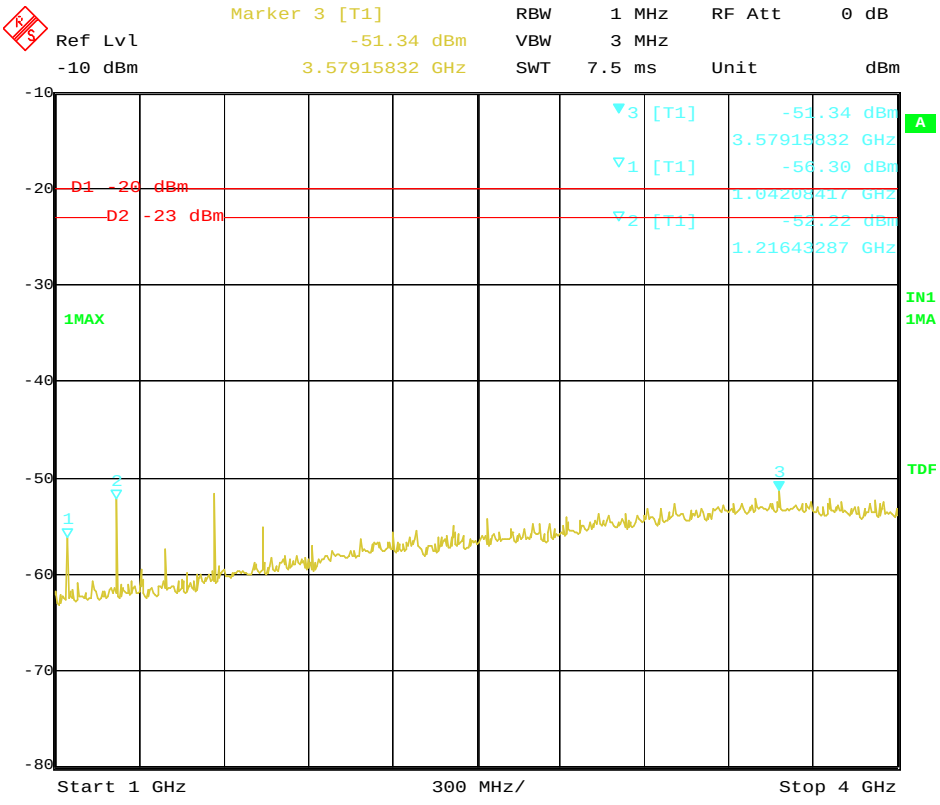


Date: 24.NOV.2010 01:43:41

The High channel for 12.5 KHz Channel Separation @ Vertical



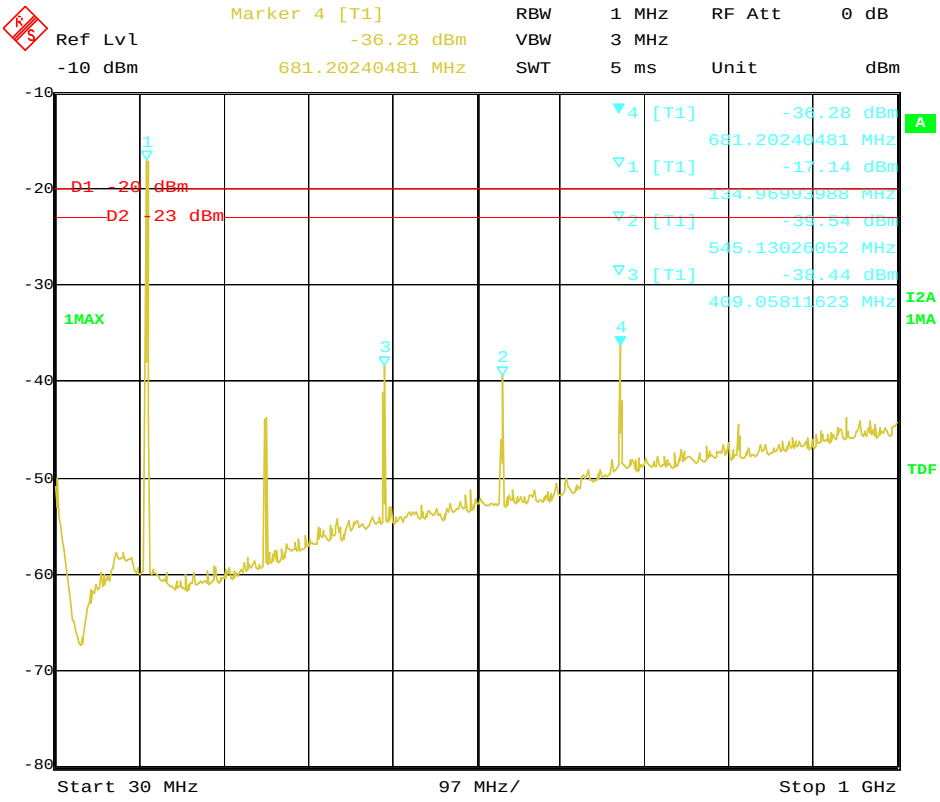
Date: 24.NOV.2010 02:12:55



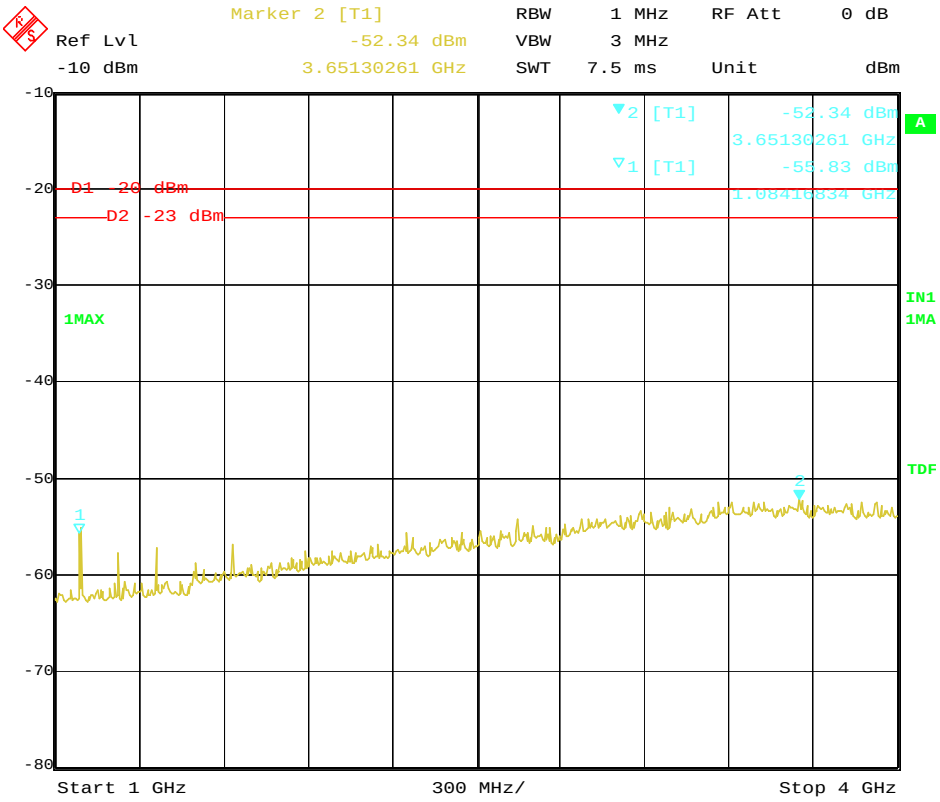
Date: 24.NOV.2010 01:45:13

Modulation Type: 4FSK

The Low channel for 12.5 KHz Channel Separation @ Horizontal

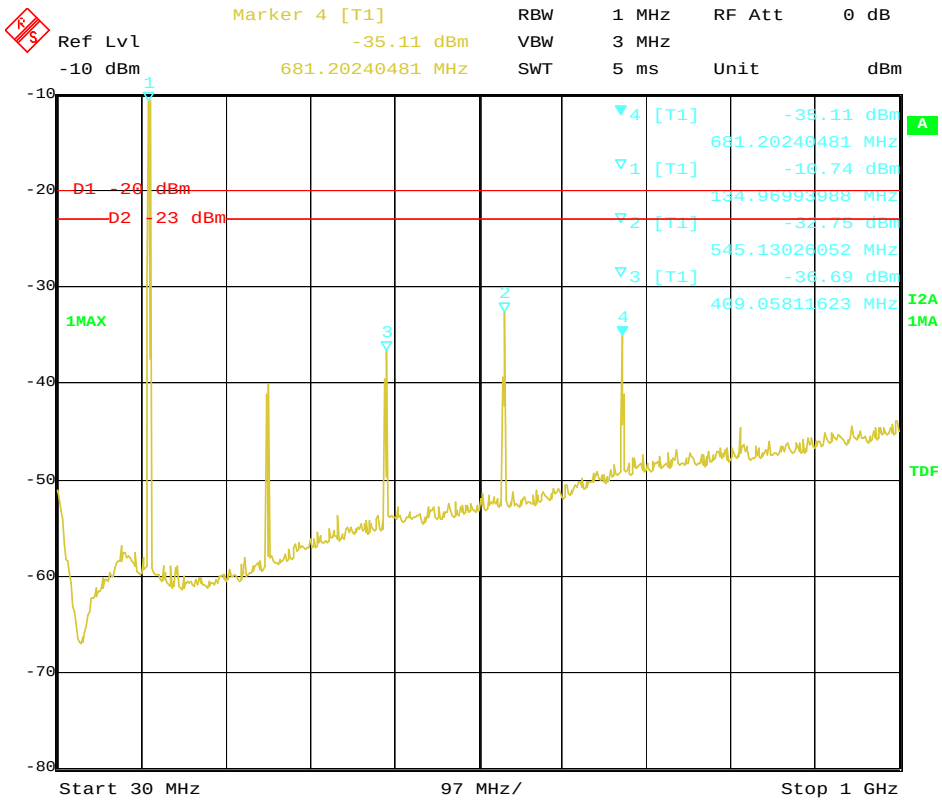


Date: 24.NOV.2010 01:52:11

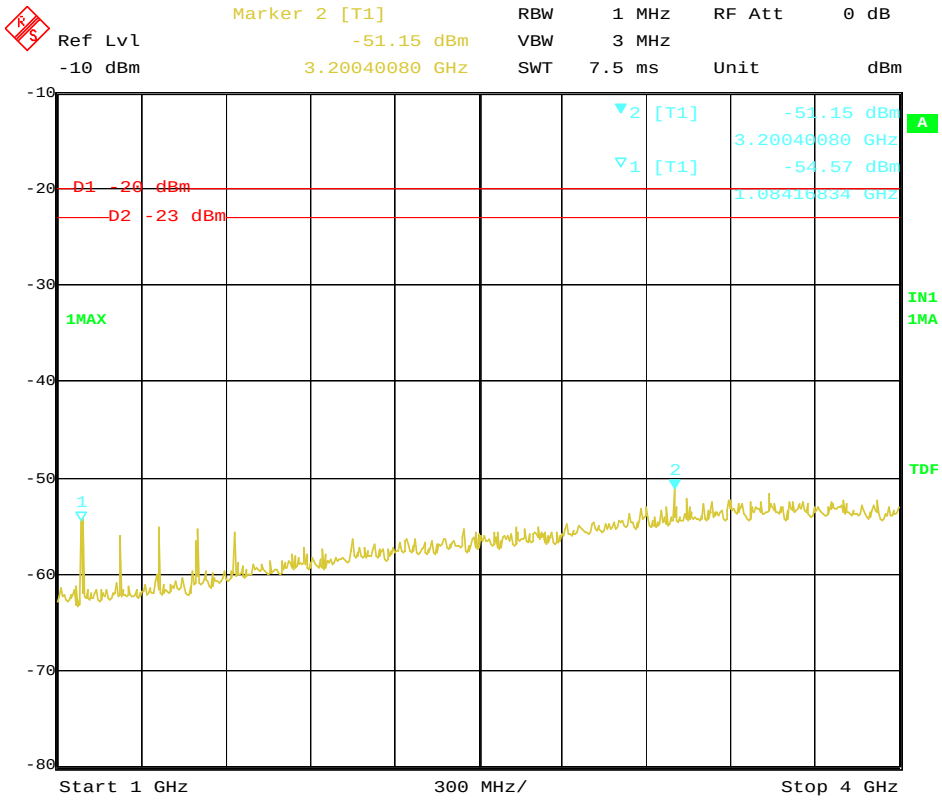


Date: 24.NOV.2010 01:20:51

The Low channel for 12.5 KHz Channel Separation@ Vertical

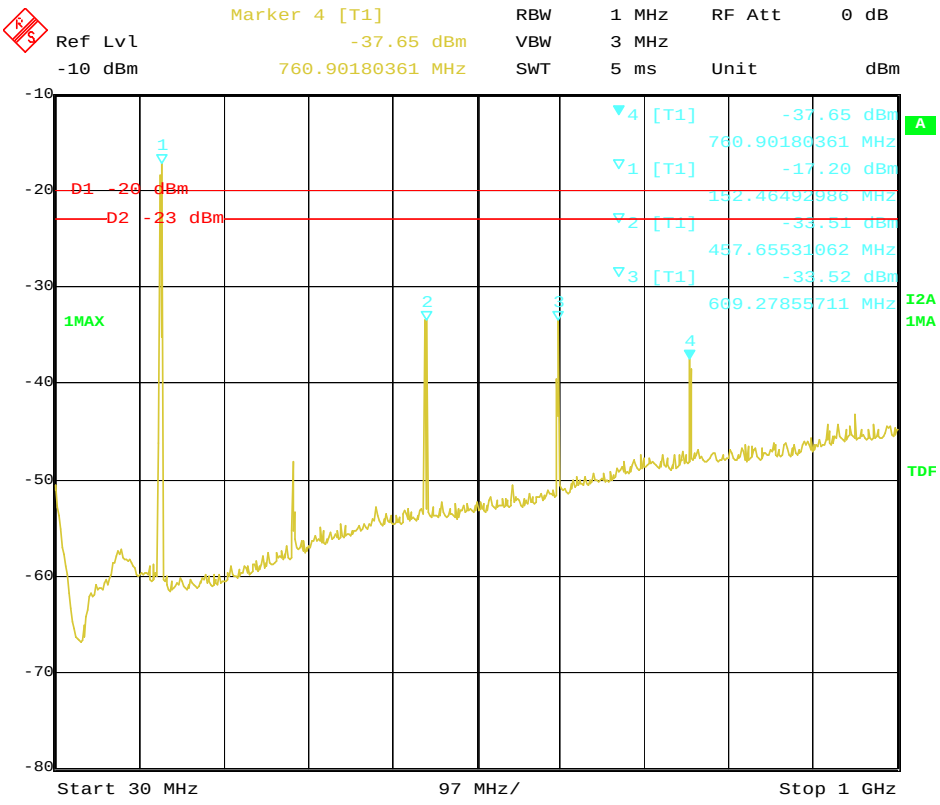


Date: 24.NOV.2010 01:51:04

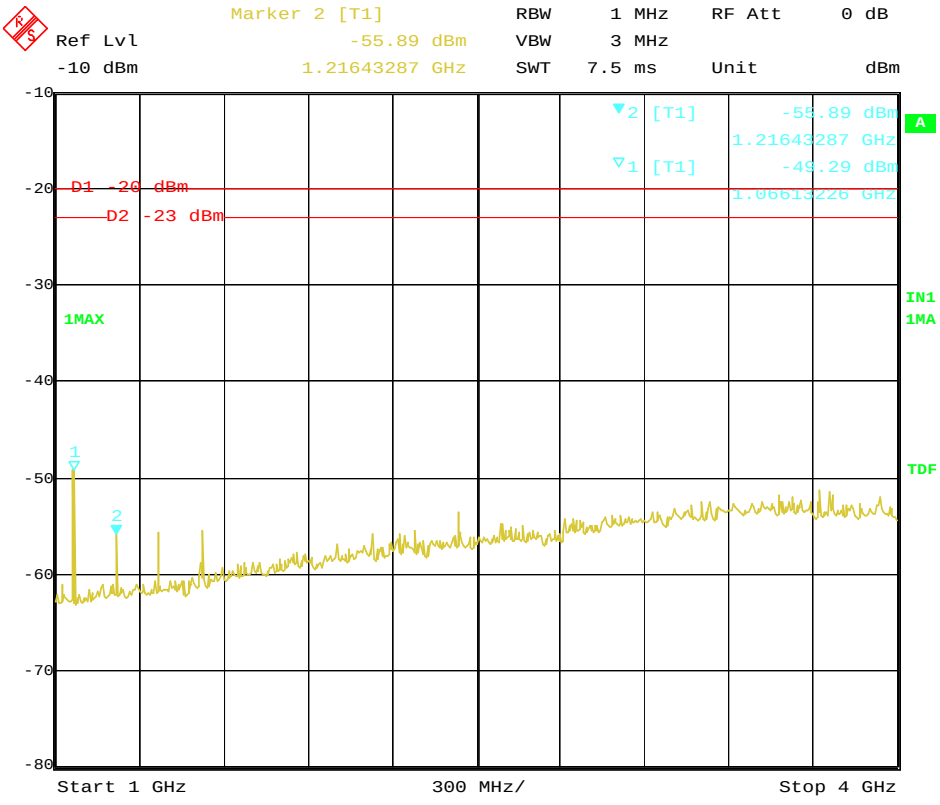


Date: 24.NOV.2010 01:22:14

The Middle channel for 12.5 KHz Channel Separation @ Horizontal

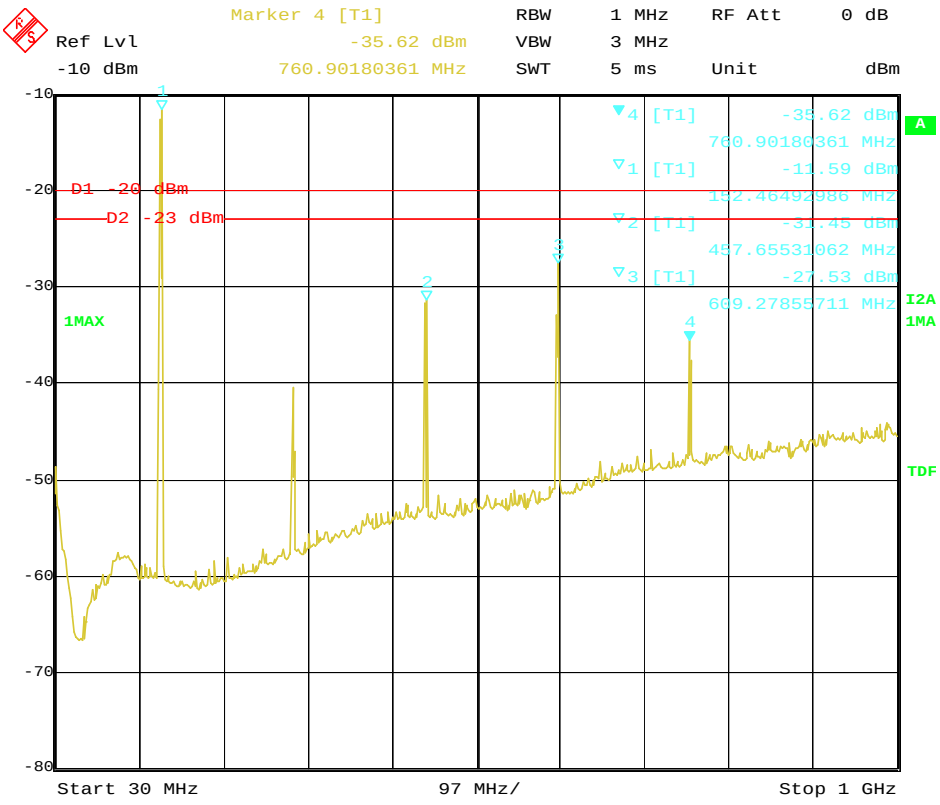


Date: 24.NOV.2010 01:53:46

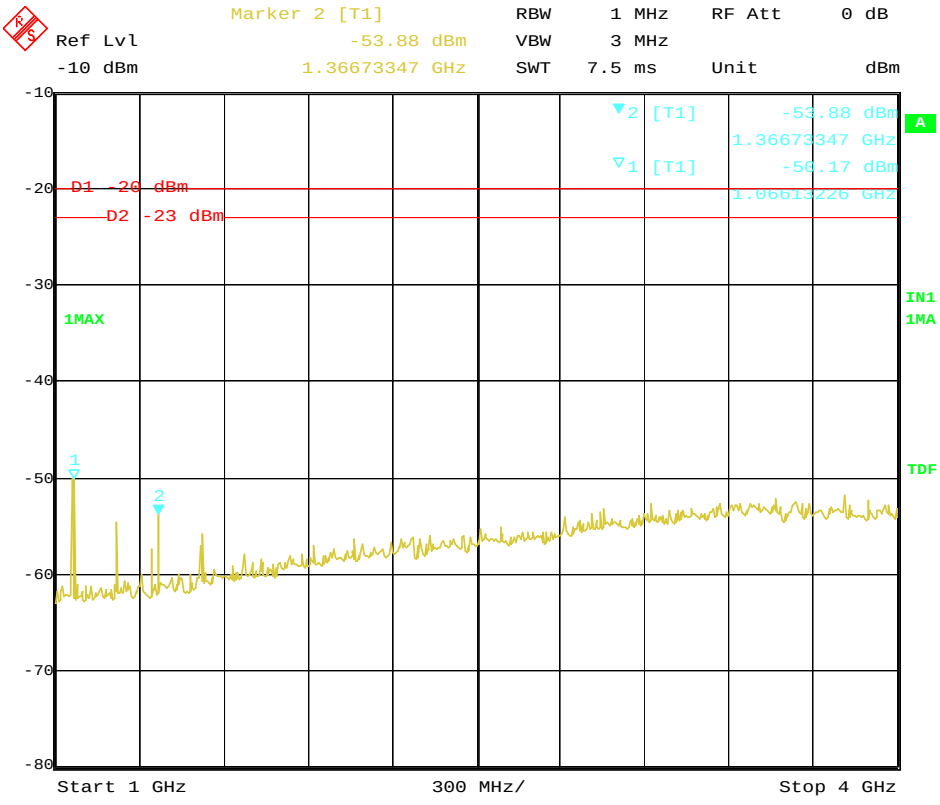


Date: 24.NOV.2010 01:24:52

The Middle channel for 12.5 KHz Channel Separation@ Vertical

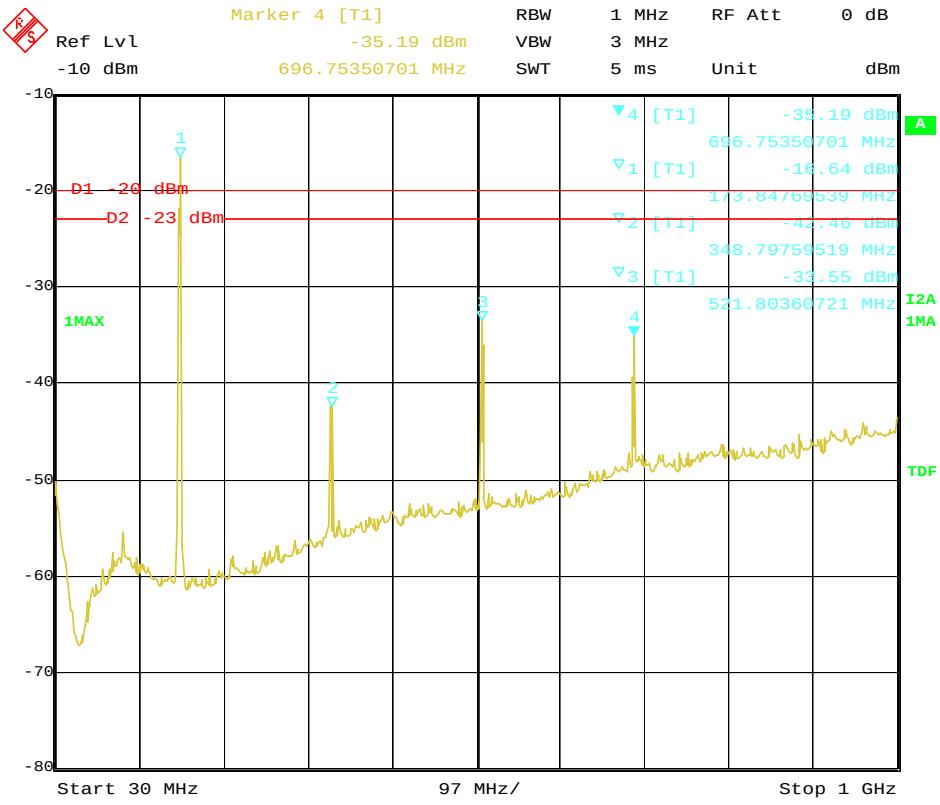


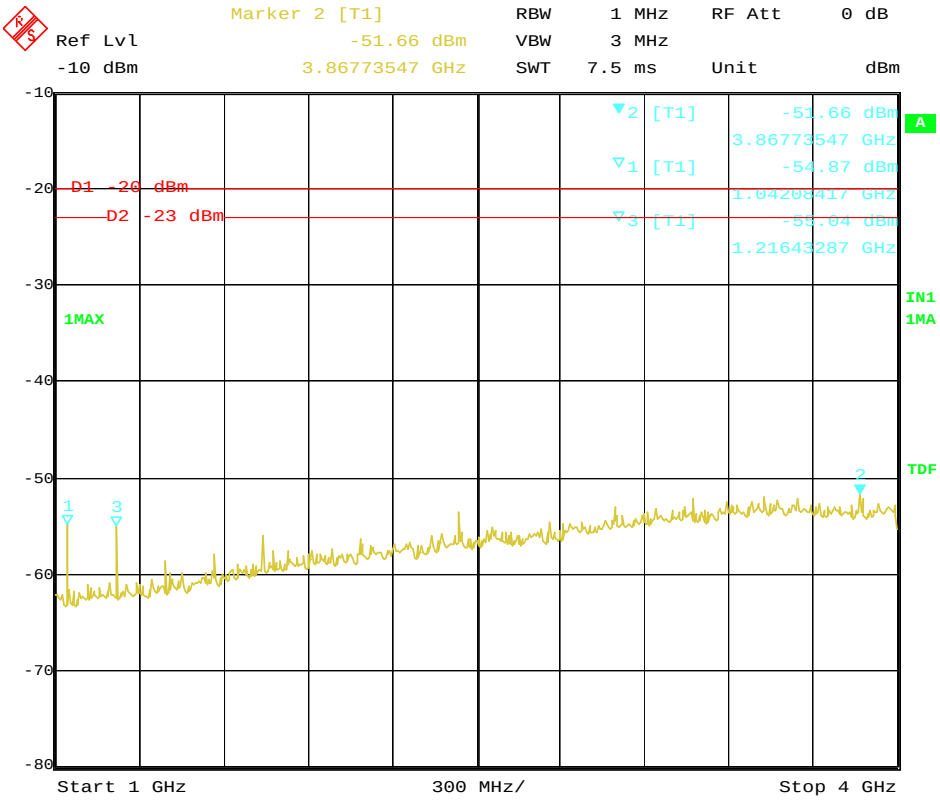
Date: 24.NOV.2010 01:54:56



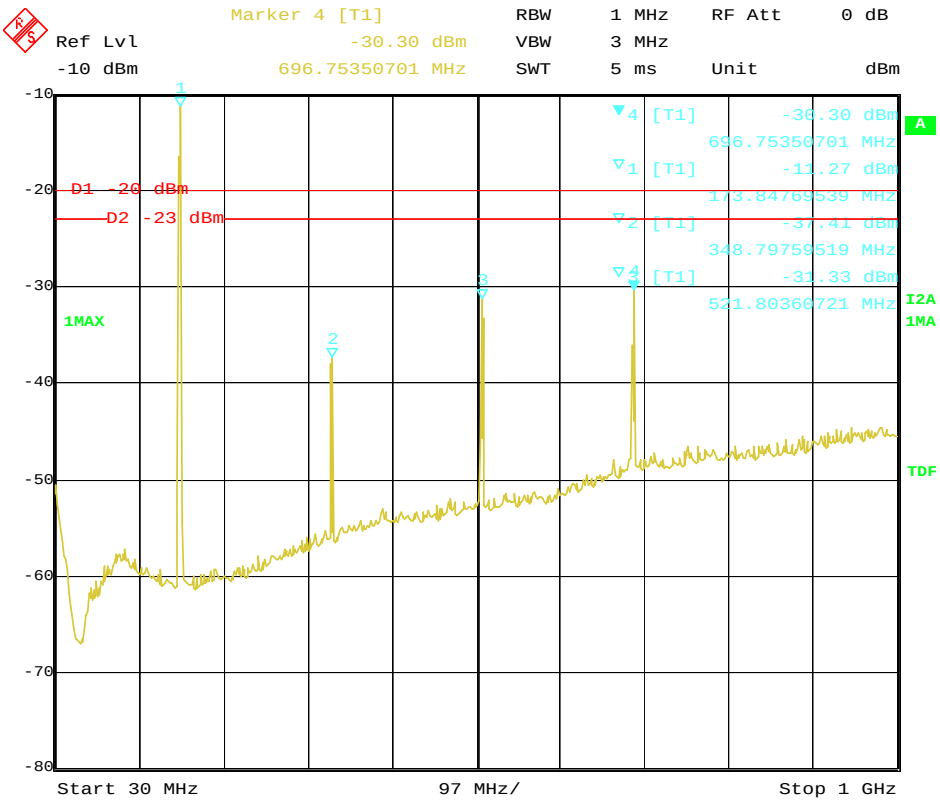
Date: 24.NOV.2010 01:23:30

The High channel for 12.5 KHz Channel Separation @ Horizontal

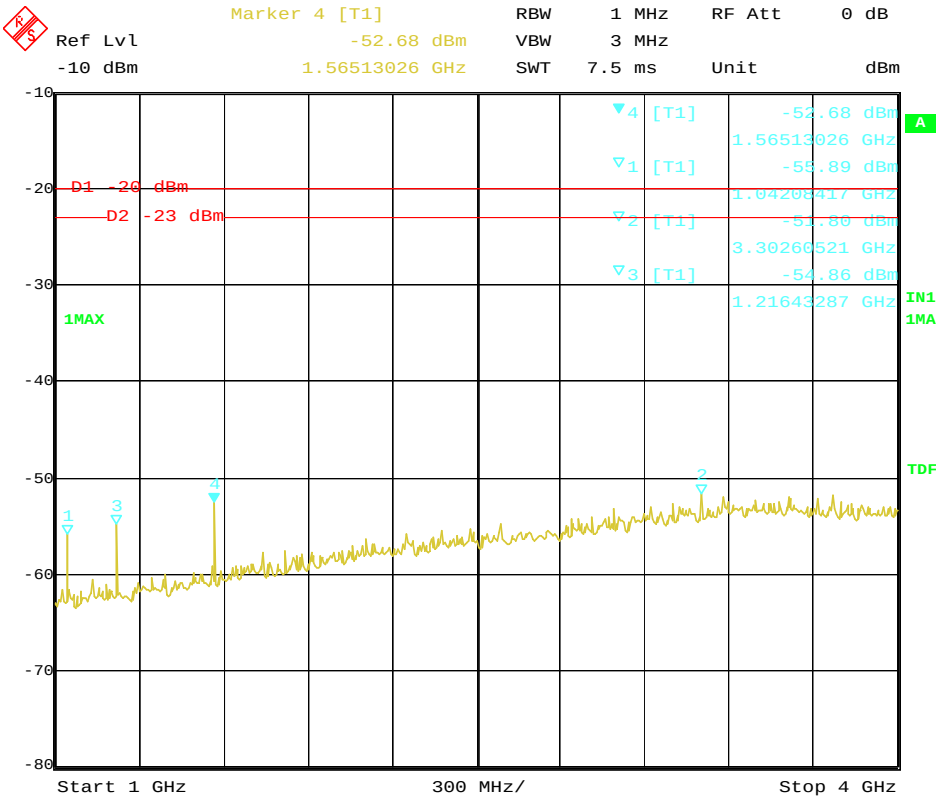




The High channel for 12.5 KHz Channel Separation@Vertical

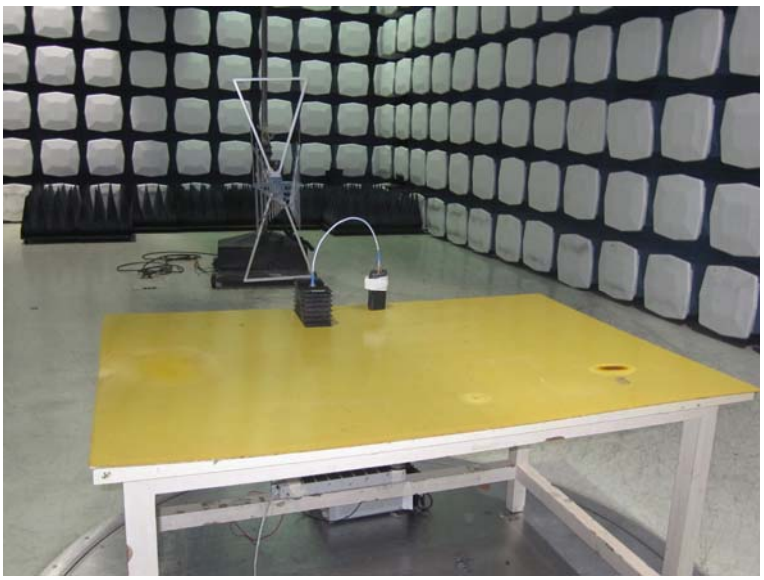


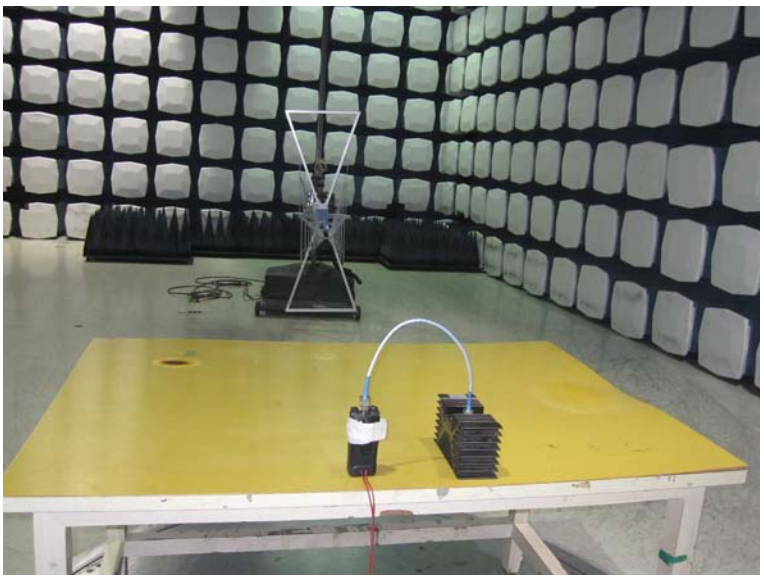
Date: 24.NOV.2010 01:56:31

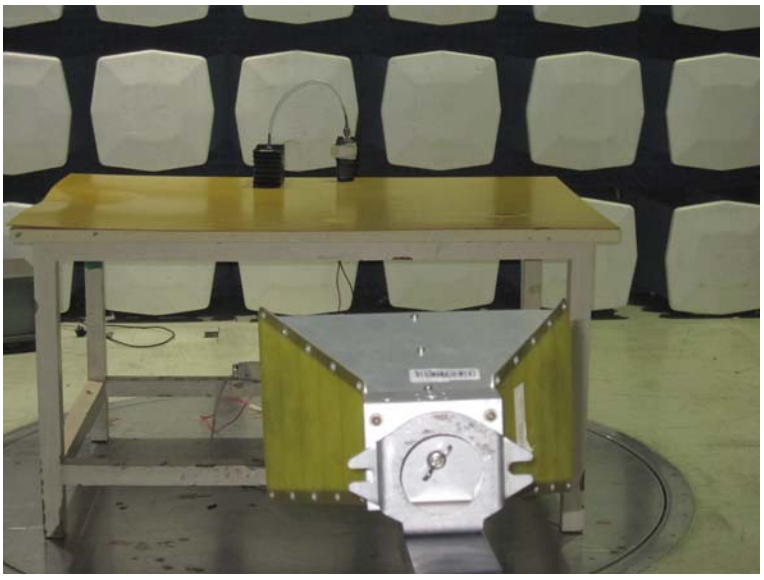


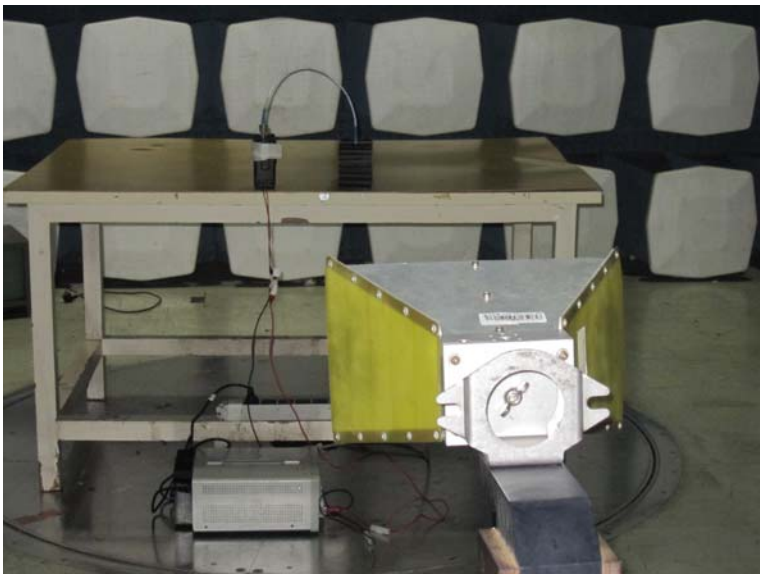
Date: 24.NOV.2010 01:27:36

5. Test Setup Photos of the EUT





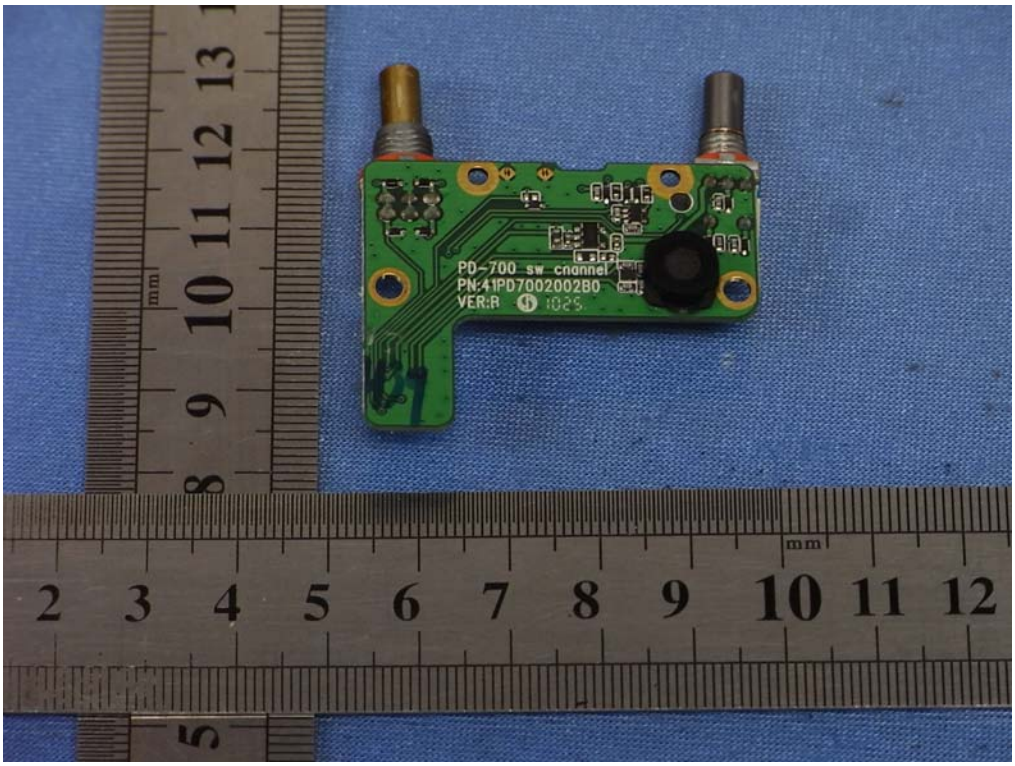


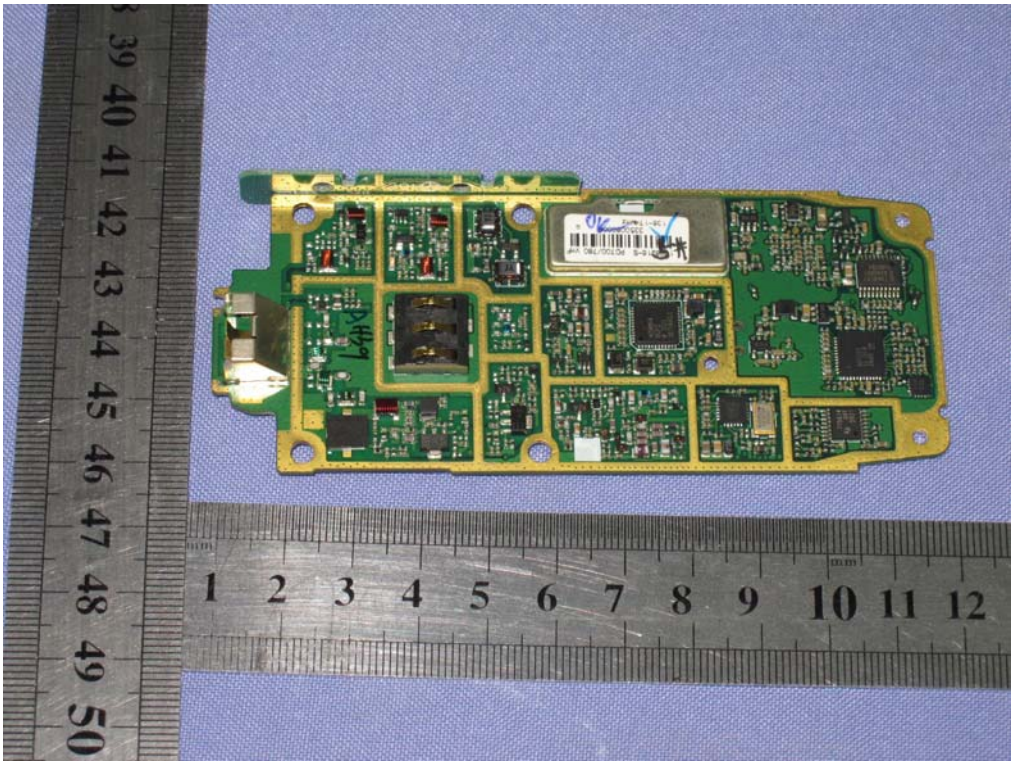


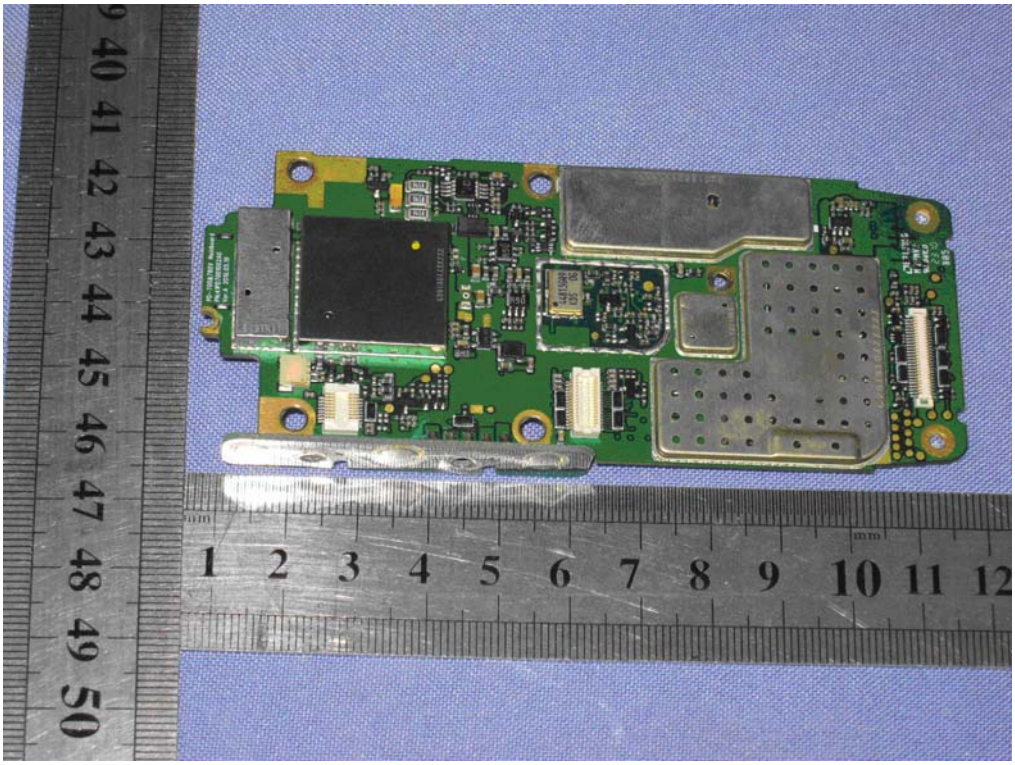
6. External and Internal Photos of the EUT

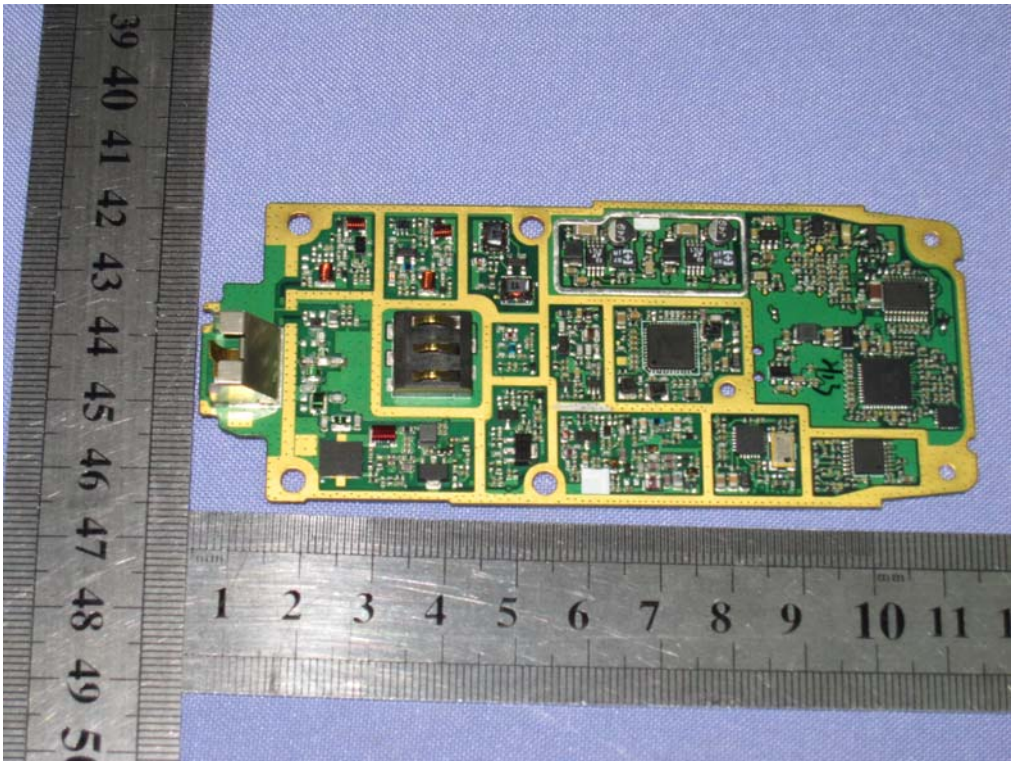
External Photos

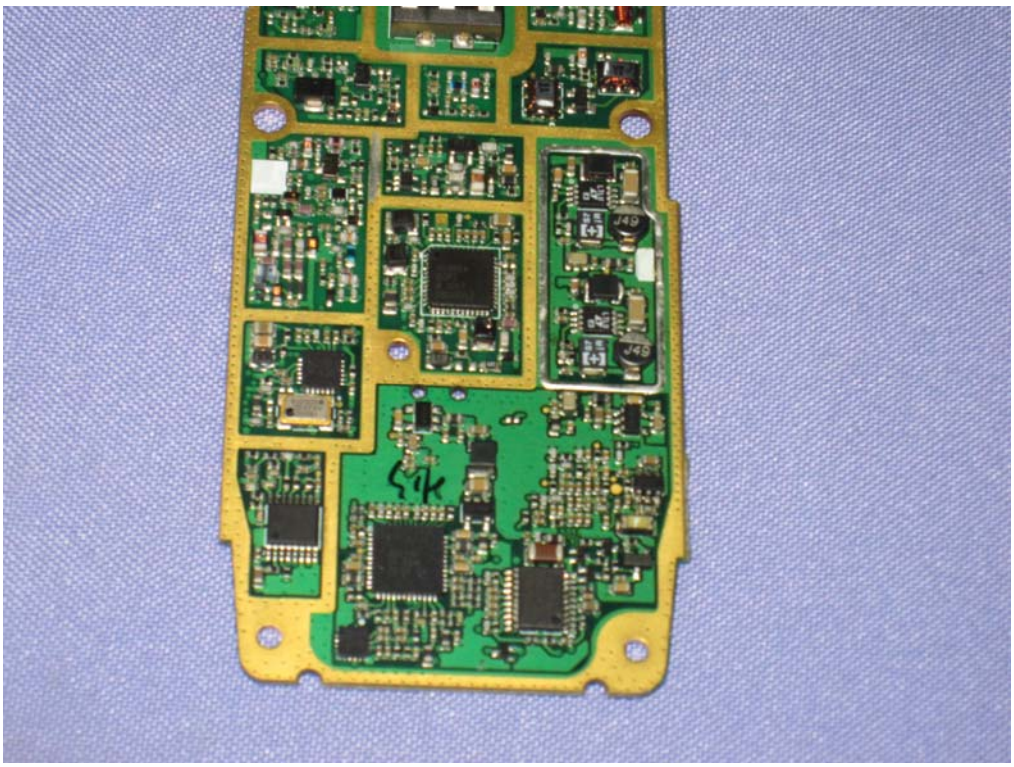
Internal photos of the EUT

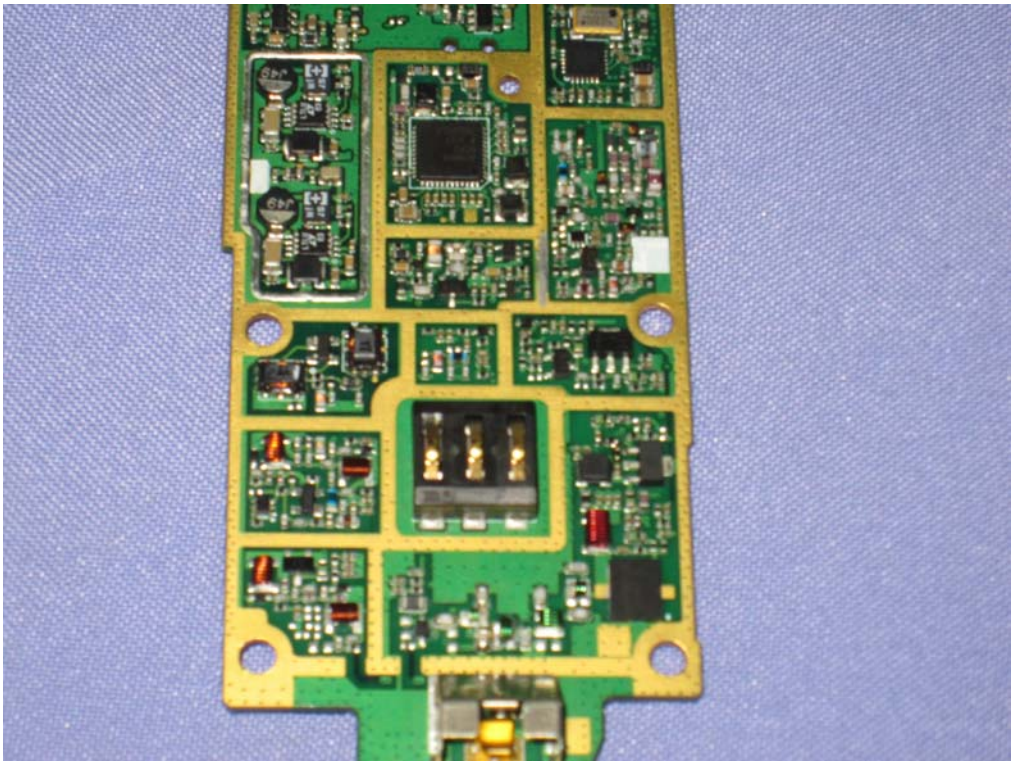

PD-700 sw cnannel
PN:41PD7002002B0
VER:B

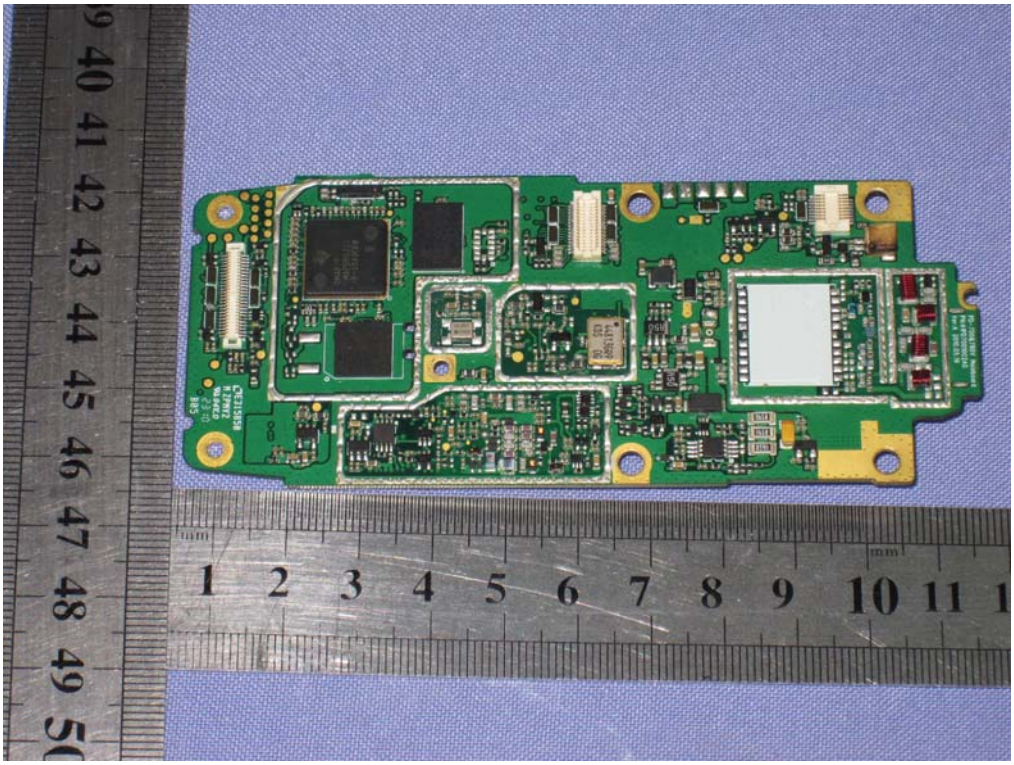


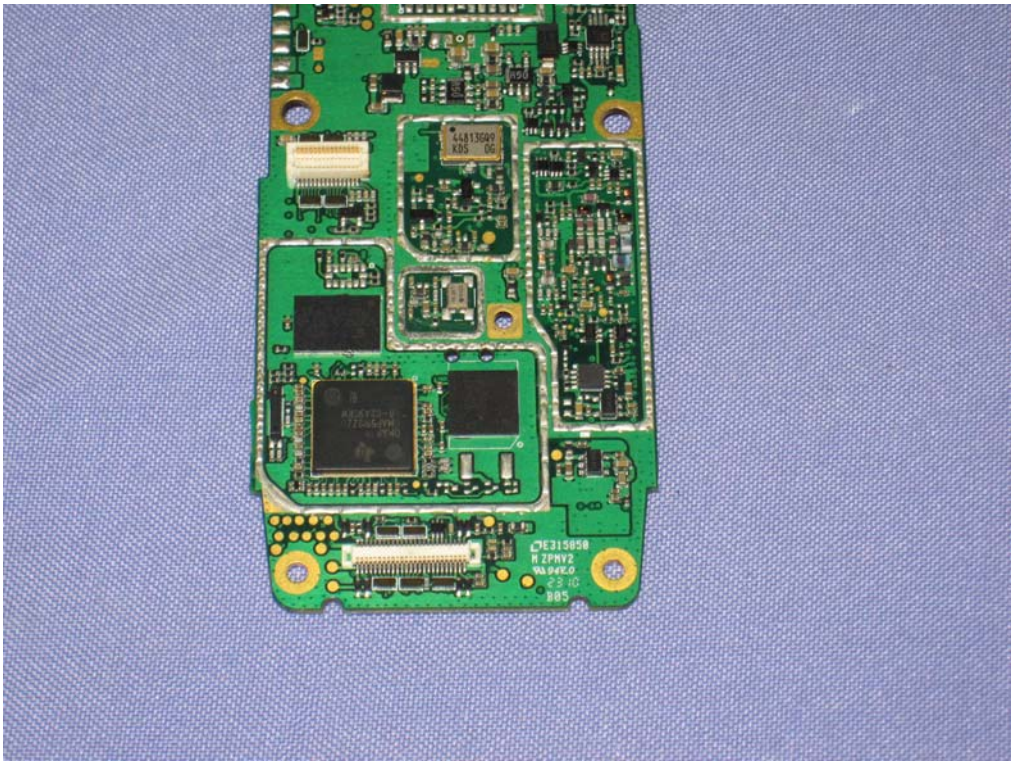


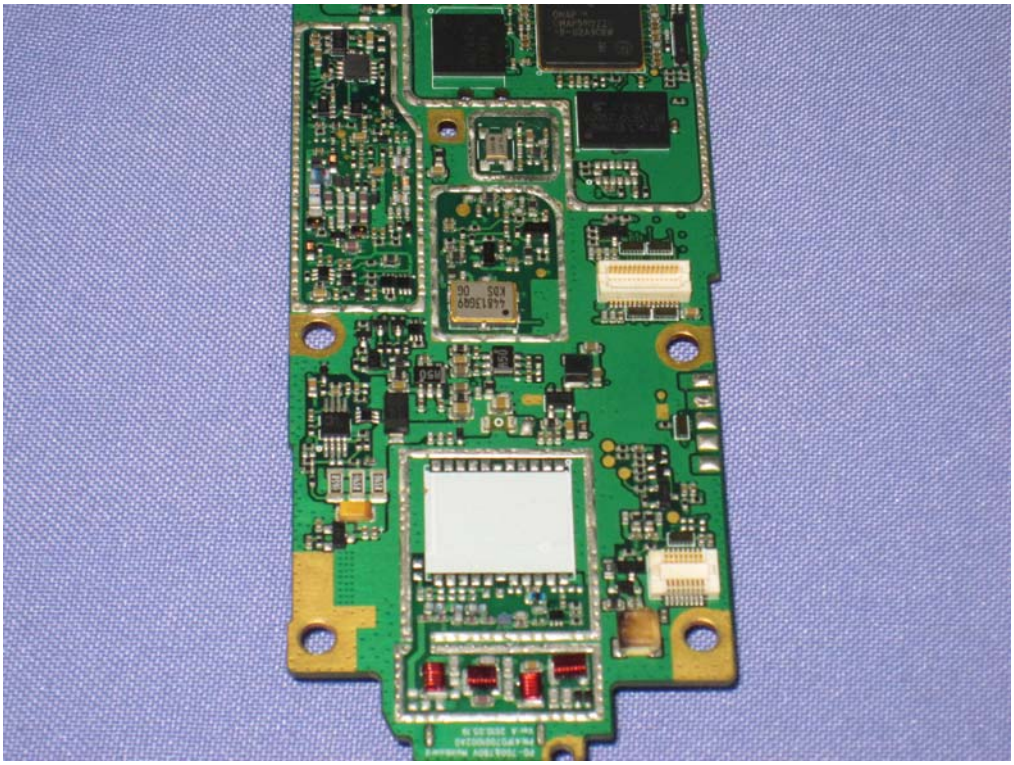

39 40 41 42 43 44 45 46 47 48 49
1 2 3 4 5 6 7 8 9 10 11






40 41 42 43 44 45 46 47 48 49
1 2 3 4 5 6 7 8 9 10 11





.....End of Report.....