FCC PART 22, 74, 80 and 90

TEST REPORT

For

Hytera Communications Corporation Limited

Hytera Tower, Hi-Tech Industrial Park North, 9108# Beihuan Road, Nanshan District, Shenzhen, 518057 China

FCC ID: YAMPDC760UXB1

Report Type:	**Product Type:**
Original Report	Multi-mode Advanced Radio

Report Number:	RDG170313007-00E
Report Date:	2017-10-16
Reviewed By:	Oscar Ye Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan) No.248 Chenghu Road, Kunshan, Jiangsu province, China Tel: +86-0512-86175000 Fax: +86-0512-88934268 www.baclcorp.com.cn

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Hytera Communications Corporation Limited's* product, model number: *PDC760 UxB1 (FCC ID: YAMPDC760UXB1)* in this report is a *Multi-mode Advanced Radio* which was measured approximately: 24 cm (L) * 7.0 cm (W) * 2.5 cm (H), rated with input voltage: DC 7.4 V battery or DC 12.0V from adapter.

Adapter Information:
Model: S024WM1200200
Input: AC 100-240V, 50/60Hz, 600 mA
Output: DC 12.0V, 2000mA

Notes: This series products model: PDC760 U1B1, PDC760 U2B1 and PDC760 UxB1 are identical; they have the identical schematics, only named and frequency differently. Model PDC760 UxB1 was selected for fully testing, the detailed information can be referred to the declaration which was stated and guaranteed by the applicant.

** All measurement and test data in this report was gathered from production sample serial number: 170313007 (Assigned by BACL, Kunshan). The EUT supplied by the applicant was received on 2017-03-13.*

Objective

This test report is prepared on behalf of *Hytera Communications Corporation Limited* in accordance with Part 2, and Part 22,74,80,90 of the Federal Communication Commissions rules.

Related Submittal(s)/Grant(s)

FCC Part 22H & 24E&27& 90 PCE, FCC Part 15.225 DXX and FCC Part 15.247 DTS/DSS submissions with FCC ID: YAMPDC760UXB1.

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of federal Regulations Title 47 Part 2, Sub-part J as well as the following individual parts:

Part 22 – Public Mobile Service
Part 74 – Experimental Radio, Auxiliary, Special Broadcast and other Program Distributonal Service
Part 80 – Stantions in the Maritme Service
Part 90 – Private Land Mobile Radio Service

Applicable Standards: TIA 603-D.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Item		Uncertainty
RF conducted test with spectrum		±0.9dB
Radiated emission	30MHz~1GHz	±5.91dB
	Above 1G	±4.92dB
Occupied Bandwidth		±0.5kHz
Temperature		±1.0℃
Humidity		±6%

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China

Bay Area Compliance Laboratories Corp. (Kunshan) has been accredited to ISO/IEC 17025 by CNAS(Lab code: L9963). And accredited to ISO/IEC 17025 by A2LA(Lab code: 4323.01), the FCC Designation No. CN1185 under the KDB 974614 D01.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 815570. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Bay Area Compliance Laboratories Corp. (Kunshan) was registered with ISED Canada under ISED Canada Registration Number 3062E.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a test mode which has been done in the factory.

EUT Exercise Software

No exercise software was used.

Special Accessories

No special accessory was used.

Equipment Modifications

No modification was made to the EUT tested.

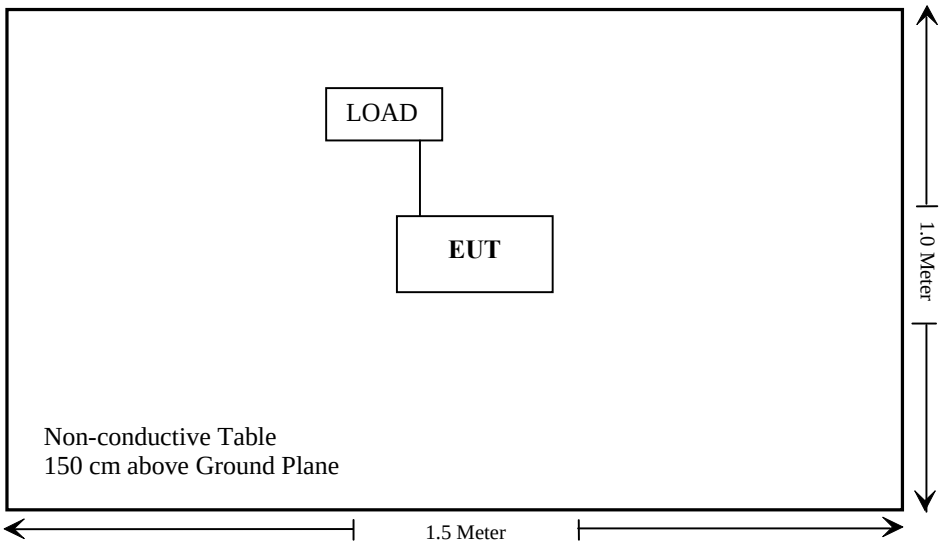
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
N/A	Load	N/A	N/A

External I/O Cable

Cable Description	Length (m)	From Port	To
Shileding Detachable RF Cable	0.5	EUT	Load

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§1.1307(b), §2.1093	RF Exposure	Compliance
§2.1046; § 22.727; §74.461; § 80.215; §90.205	RF Output Power	Compliance
§2.1047; §74.463; §80.213;§90.207	Modulation Characteristic	Compliance
§2.1049;§22.357;§ 22.731; §74.462; § 80.205; § 80.207;§90.209; §90.210	Occupied Bandwidth & Emission Mask	Compliance
§2.1051; §22.861; §74.462; § 80.211;§90.210	Spurious Emission at Antenna Terminal	Compliance
§2.1053; §22.861; §74.462; § 80.211;§90.210	Spurious Radiated Emissions	Compliance
§2.1055; § 22.355; §74.464; § 80.209;§90.213	Frequency Stability	Compliance
§90.214	Transient Frequency Behavior	Compliance

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
Sonoma Instrunent	Amplifier	330	171377	2016-12-12	2017-12-12
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2016-11-25	2017-11-25
Sunol Sciences	Broadband Antenna	JB3	A090314-2	2016-01-09	2019-01-08
Sunol Sciences	Broadband Antenna	JB3	A090314-1	2016-01-09	2019-01-08
Narda	Pre-amplifier	AFS42-00101800	2001270	2016-09-08	2017-09-08
EMCO	Horn Antenna	3116	00084159	2016-10-18	2019-10-17
Rohde & Schwarz	Signal Analyzer	FSIQ26	100048	2016-11-25	2017-11-25
ETS	Horn Antenna	3115	6229	2017-01-10	2018-01-09
ETS	Horn Antenna	3115	9311-4159	2017-01-10	2018-01-09
R&S	Auto test Software	EMC32	V 09.10.0	NCR	NCR
haojintech	Coaxial Cable	Cable-1	001	2016-12-12	2017-12-12
haojintech	Coaxial Cable	Cable-2	002	2016-12-12	2017-12-12
haojintech	Coaxial Cable	Cable-3	003	2016-12-12	2017-12-12
MICRO-COAX	Coaxial Cable	Cable-4	004	2016-12-12	2017-12-12
MICRO-COAX	Coaxial Cable	Cable-5	005	2016-12-12	2017-12-12
MICRO-COAX	Coaxial Cable	Cable-7	007	2016-12-12	2017-12-12
HP	Signal Generator	8341B	2624A00116	2016-08-29	2017-08-29
RF Conducted test					
BACL	TS 8997 Cable-01	T-KS-EMC086	T-KS-EMC086	2016-12-09	2017-12-08
BACL	RF cable	KS-LAB-012	KS-LAB-012	2016-12-15	2017-12-14
Rohde & Schwarz	Signal Analyzer	FSIQ26	836131/009	2016-09-21	2017-09-21
Rohde & Schwarz	Signal Analyzer	FSIQ26	10048	2016-11-25	2017-11-25
Rohde & Schwarz	Universal Radio Communication Tester	CMU200	110605	2016-11-25	2017-11-25
HONOVA	Power Splitter	ZFRSC-14-S+	019411452	2016-06-12	2017-06-12
HONOVA	Power Splitter	ZFRSC-14-S+	019411452	2017-06-08	2018-06-08
WEINSCHEL	10dB Attenuator	5328	N/A	2016-06-18	2017-06-18
WEINSCHEL	10dB Attenuator	5328	N/A	2017-06-08	2018-06-08

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §1.1307 & §2.1093 - RF EXPOSURE

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliance, please refer to the SAR report: RDG170313007-20A & RDG170313007-20B.

FCC §2.1046 & § 22.727 & §74.461 & §80.215 & §90.205 - RF OUTPUT POWER

Applicable Standard

FCC §2.1046, § 22.727, §74.461, § 80.215 and §90.205

Test Procedure

Conducted RF Output Power:

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

Spectrum Analyzer Setting:

R B/W	Video B/W
100 kHz	300 kHz

Test Data

Environmental Conditions

Temperature:	24~26 ℃
Relative Humidity:	51~56 %
ATM Pressure:	100.9~101.0 kPa

The testing was performed by Phil Zhu on 2017-03-26 and 2017-10-14.

Test Mode: Transmitting

Test Result: Compliance. Please refer to following table.

Mode	Frequency Spacing (kHz)	Frequency (MHz)	Power level	Output (dBm)	Output Power(W)	Note
Analog	12.5	350.025	High	36.58	4.55	For Federal
			Low	30.46	1.11	
		453.2125	High	36.79	4.78	For Part 90 & For Part 74
			Low	30.34	1.08	
		454.0125	High	36.59	4.56	For Part 22
			Low	30.18	1.04	
		455.0125	High	36.69	4.67	For Part 74
			Low	30.20	1.05	
		511.975	High	36.70	4.68	For Part 90
			Low	30.60	1.15	
	25	453.2125	High	35.55	3.59	For Part 74
			Low	30.71	1.18	
		454.0125	High	35.52	3.56	For Part 22
			Low	30.61	1.15	
		455.0125	High	35.50	3.55	For Part 74
			Low	30.60	1.15	
		458.2125	High	35.49	3.54	For Part 80
			Low	30.45	1.11	

Mode	Frequency Spacing (kHz)	Frequency (MHz)	Power level	Output (dBm)	Output Power(W)	Note
Digital	12.5	350.025	High	36.65	4.62	For Federal
			Low	30.20	1.05	
		453.2125	High	36.76	4.74	For Part 90 & For Part 74
			Low	30.35	1.08	
		454.0125	High	36.65	4.62	For Part 22
			Low	30.29	1.07	
		455.0125	High	36.69	4.67	For Part 74
			Low	30.20	1.05	
		511.975	High	36.73	4.71	For Part 90
			Low	30.24	1.06	

Note: The high rated power is 4W.
The low rated power is 1W.

FCC §2.1047 & §74.463 & §80.213 & §90.207 - MODULATION CHARACTERISTIC

Applicable Standard

FCC§2.1047, §74.463, §80.213 and §90.207:

(a) Equipment which utilizes voice modulated communication shall show the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz. for equipment which is required to have a low pass filter, the frequency response of the filter, or all of the circuitry installed between the modulation limited and the modulated stage shall be supplied.
(b) Equipment which employs modulation limiting, a curve showing the percentage of modulation versus the modulation input voltage shall be supplied.

Test Procedure

Test Method: TIA/EIA-603 2.2.3

Test Data

Environmental Conditions

Temperature:	24~26 ℃
Relative Humidity:	51~56 %
ATM Pressure:	100.9~101.0 kPa

The testing was performed by Phil Zhu on 2017-03-21 and 2017-10-13.

Test Mode: Transmitting

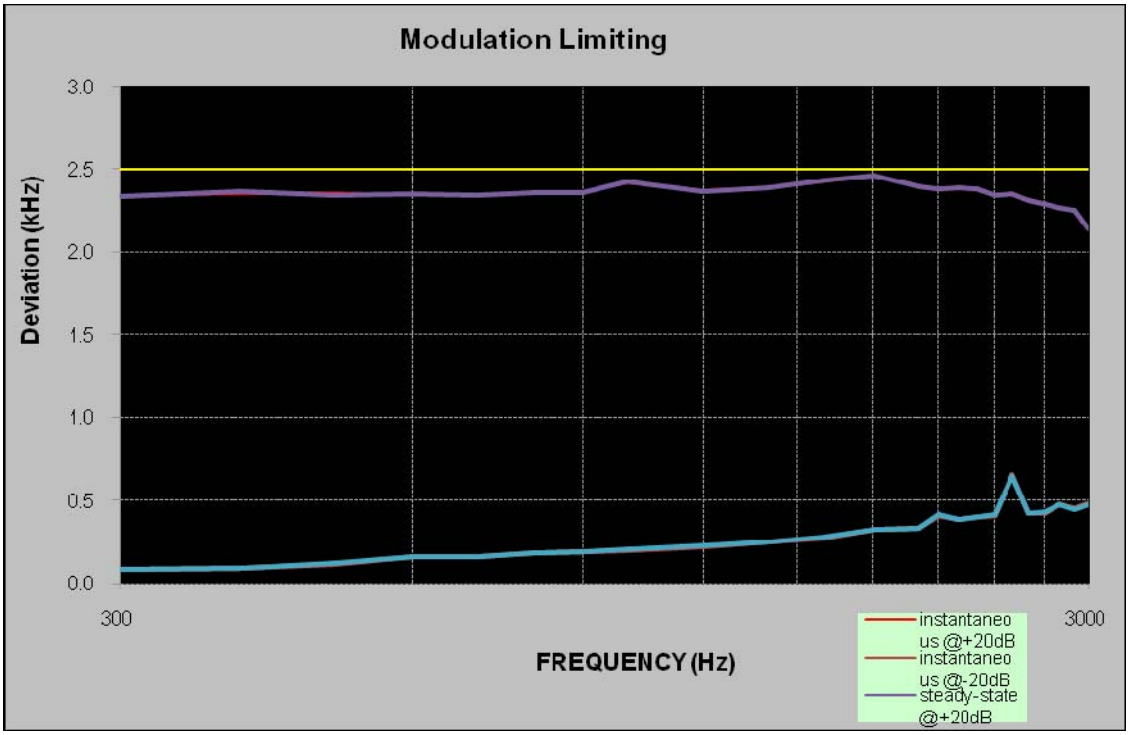
Result: Compliance.

Analog Modulation:

MODULATION LIMITING

Carrier Frequency: 453.2125 MHz, Channel Separation=12.5 kHz

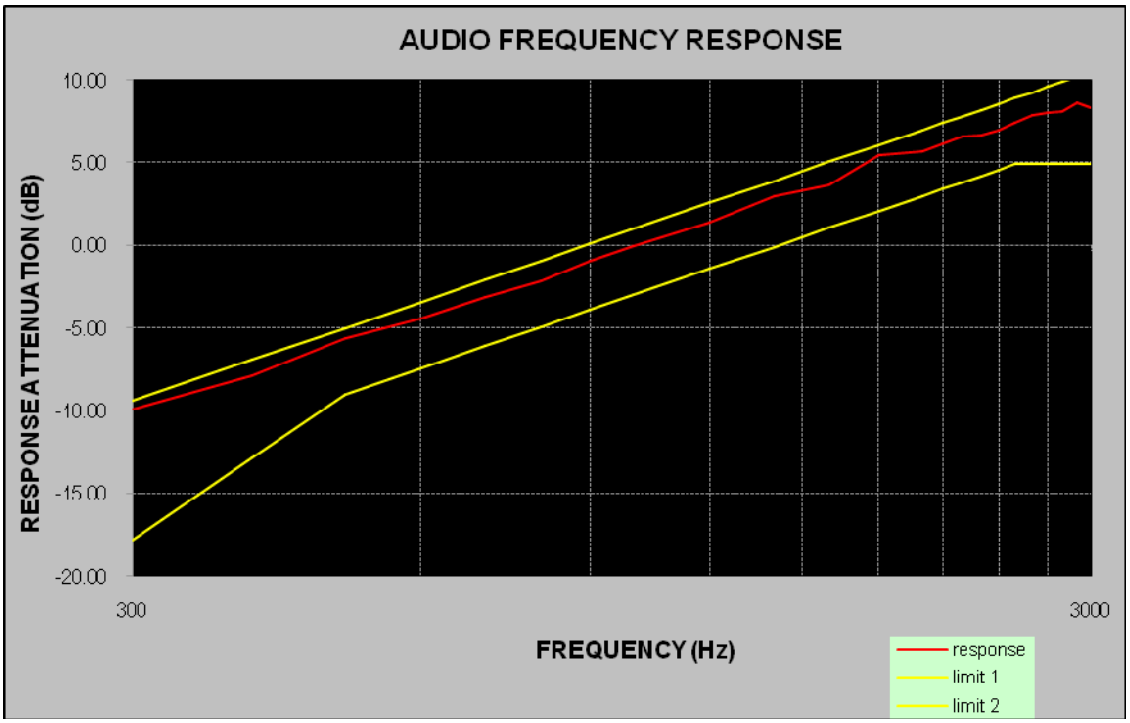
Audio Frequency (Hz)	Instantaneous		Steady-state		FCC Limit [kHz]
	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	
300	2.344	0.085	2.334	0.088	2.5
400	2.352	0.097	2.363	0.091	2.5
500	2.356	0.116	2.345	0.124	2.5
600	2.342	0.159	2.350	0.162	2.5
700	2.343	0.160	2.346	0.165	2.5
800	2.355	0.187	2.360	0.182	2.5
900	2.355	0.195	2.358	0.194	2.5
1000	2.421	0.202	2.424	0.204	2.5
1200	2.371	0.224	2.367	0.226	2.5
1400	2.391	0.249	2.389	0.252	2.5
1600	2.429	0.277	2.430	0.284	2.5
1800	2.462	0.325	2.460	0.330	2.5
2000	2.401	0.332	2.399	0.334	2.5
2100	2.381	0.410	2.384	0.417	2.5
2200	2.390	0.384	2.391	0.384	2.5
2300	2.376	0.403	2.377	0.401	2.5
2400	2.342	0.413	2.342	0.416	2.5
2500	2.348	0.659	2.349	0.654	2.5
2600	2.308	0.425	2.312	0.423	2.5
2700	2.289	0.427	2.290	0.430	2.5
2800	2.272	0.478	2.269	0.481	2.5
2900	2.247	0.456	2.250	0.451	2.5
3000	2.149	0.483	2.143	0.478	2.5


Modulation Limiting
Deviation (kHz)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
300
3000
FREQUENCY (Hz)
instantaneous @+20dB
instantaneous @-20dB
steady-state @+20dB

Audio Frequency Response

Carrier Frequency: 453.2125 MHz, Channel Separation=12.5 kHz

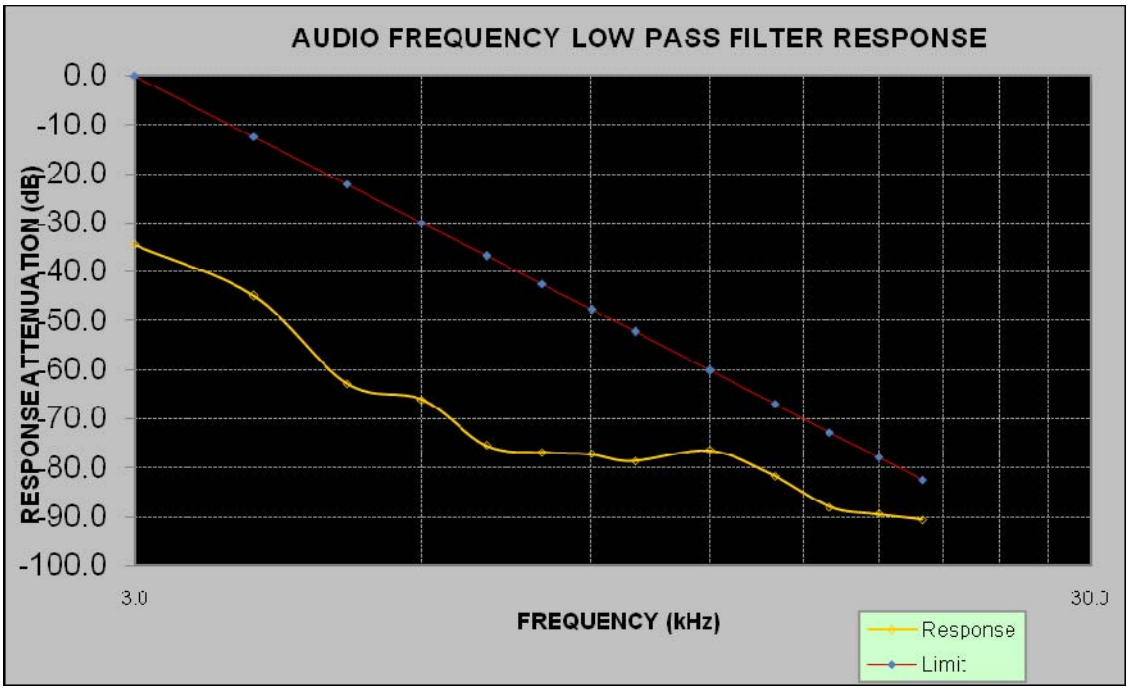
Audio Frequency (Hz)	Response Attenuation (dB)
300	-9.95
400	-7.87
500	-5.65
600	-4.38
700	-3.10
800	-2.14
900	-0.92
1000	0.00
1200	1.42
1400	2.98
1600	3.67
1800	5.48
2000	5.68
2100	6.18
2200	6.62
2300	6.70
2400	6.97
2500	7.41
2600	7.85
2700	8.00
2800	8.10
2900	8.60
3000	8.32


AUDIO FREQUENCY RESPONSE
10.00
5.00
0.00
-5.00
-10.00
-15.00
-20.00
RESPONSE ATTENUATION (dB)
300
3000
FREQUENCY (Hz)
response
limit 1
limit 2

Audio frequency lows pass filter response

Carrier Frequency: 453.2125 MHz, Channel Separation=12.5 kHz

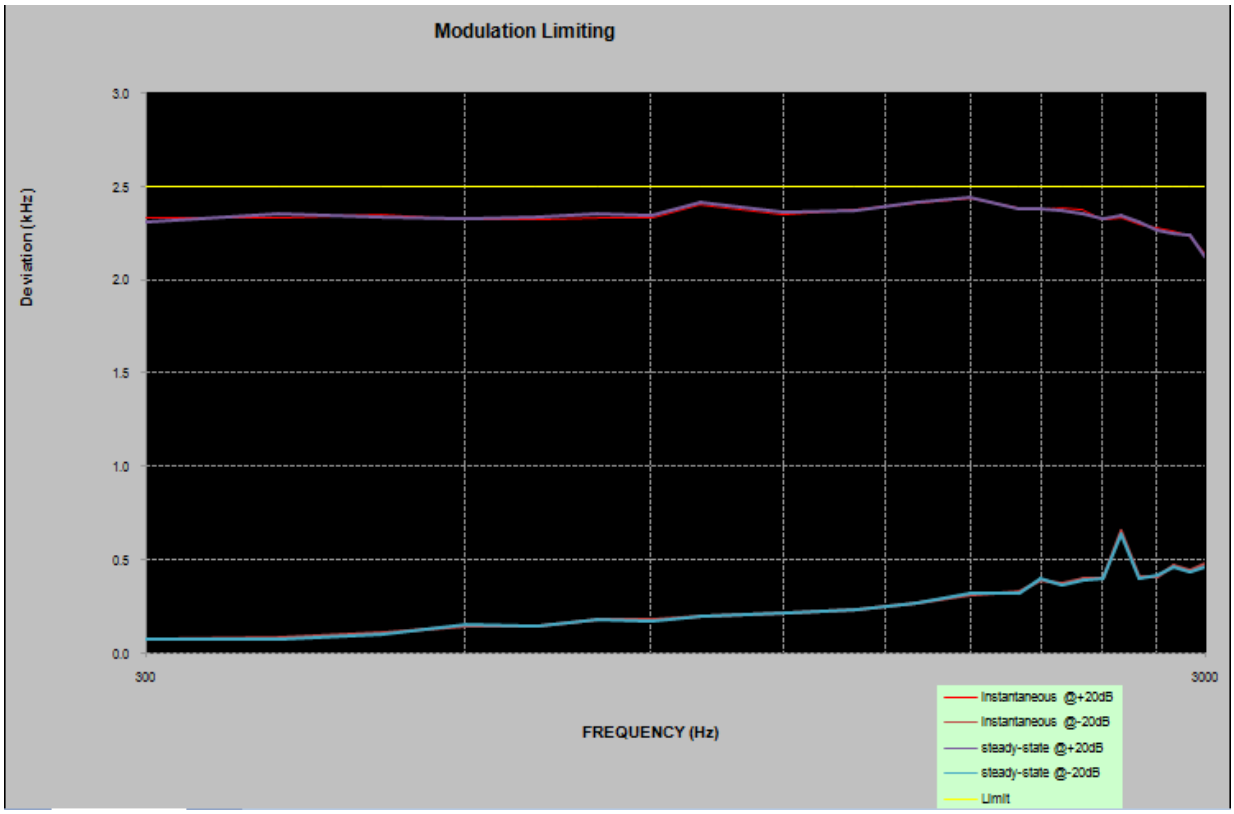
Audio Frequency (kHz)	Response Attenuation (dB)	Limit (dB)
1.0	0.0	/
3.0	-34.4	0
4.0	-44.9	-12.5
5.0	-62.8	-22.2
6.0	-66.1	-30.1
7.0	-75.4	-36.8
8.0	-76.8	-42.6
9.0	-77.2	-47.7
10.0	-78.6	-52.3
12.0	-76.4	-60.2
14.0	-81.7	-66.9
16.0	-88.0	-72.7
18.0	-89.4	-77.8
20.0	-90.6	-82.5



MODULATION LIMITING

Carrier Frequency: 454.0125 MHz, Channel Separation=12.5 kHz

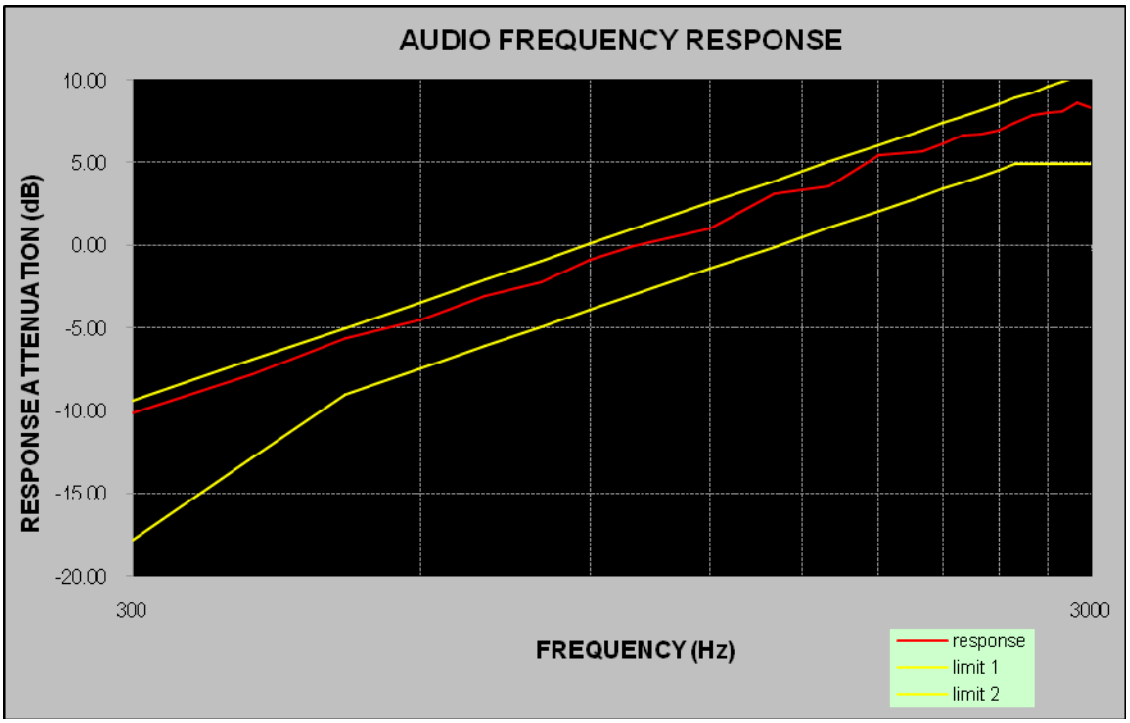
Audio Frequency (Hz)	Instantaneous		Steady-state		FCC Limit [kHz]
	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	
300	2.334	0.081	2.314	0.079	2.5
400	2.337	0.088	2.360	0.079	2.5
500	2.353	0.111	2.340	0.107	2.5
600	2.325	0.147	2.333	0.159	2.5
700	2.325	0.148	2.335	0.149	2.5
800	2.338	0.184	2.357	0.181	2.5
900	2.339	0.187	2.352	0.175	2.5
1000	2.406	0.200	2.415	0.200	2.5
1200	2.352	0.219	2.365	0.222	2.5
1400	2.379	0.235	2.373	0.233	2.5
1600	2.414	0.268	2.422	0.275	2.5
1800	2.445	0.316	2.446	0.321	2.5
2000	2.390	0.328	2.382	0.324	2.5
2100	2.379	0.396	2.383	0.403	2.5
2200	2.384	0.374	2.374	0.368	2.5
2300	2.376	0.399	2.360	0.390	2.5
2400	2.328	0.402	2.332	0.399	2.5
2500	2.338	0.657	2.347	0.638	2.5
2600	2.296	0.410	2.310	0.406	2.5
2700	2.281	0.412	2.270	0.420	2.5
2800	2.268	0.477	2.250	0.463	2.5
2900	2.237	0.443	2.241	0.442	2.5
3000	2.145	0.480	2.125	0.464	2.5


Modulation Limiting
Deviation (kHz)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
300
3000
FREQUENCY (Hz)
Instantaneous @+20dB
Instantaneous @-20dB
steady-state @+20dB
steady-state @-20dB
Limit

Audio Frequency Response

Carrier Frequency: 454.0125 MHz, Channel Separation=12.5 kHz

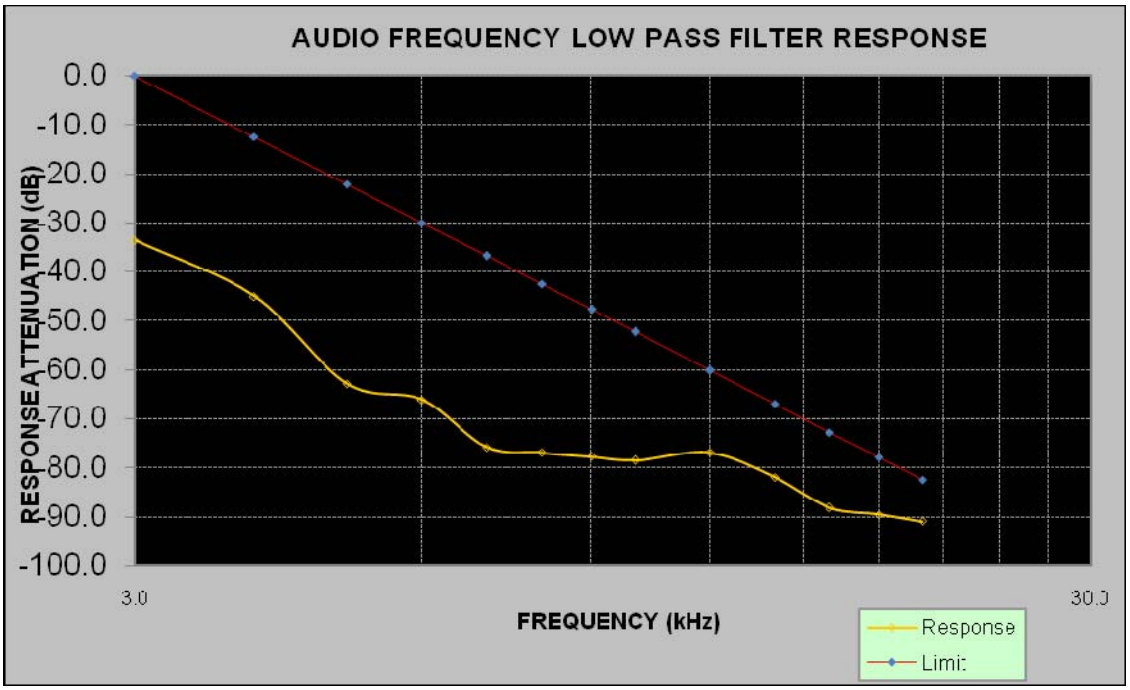
Audio Frequency (Hz)	Response Attenuation (dB)
300	-10.17
400	-7.83
500	-5.61
600	-4.47
700	-3.02
800	-2.25
900	-0.90
1000	0.00
1200	1.03
1400	3.09
1600	3.58
1800	5.50
2000	5.71
2100	6.16
2200	6.66
2300	6.75
2400	6.96
2500	7.43
2600	7.88
2700	8.04
2800	8.08
2900	8.63
3000	8.31


AUDIO FREQUENCY RESPONSE
10.00
5.00
0.00
-5.00
-10.00
-15.00
-20.00
RESPONSE ATTENUATION (dB)
300
3000
FREQUENCY (Hz)
response
limit 1
limit 2

Audio frequency lows pass filter response

Carrier Frequency: 454.0125 MHz, Channel Separation=12.5 kHz

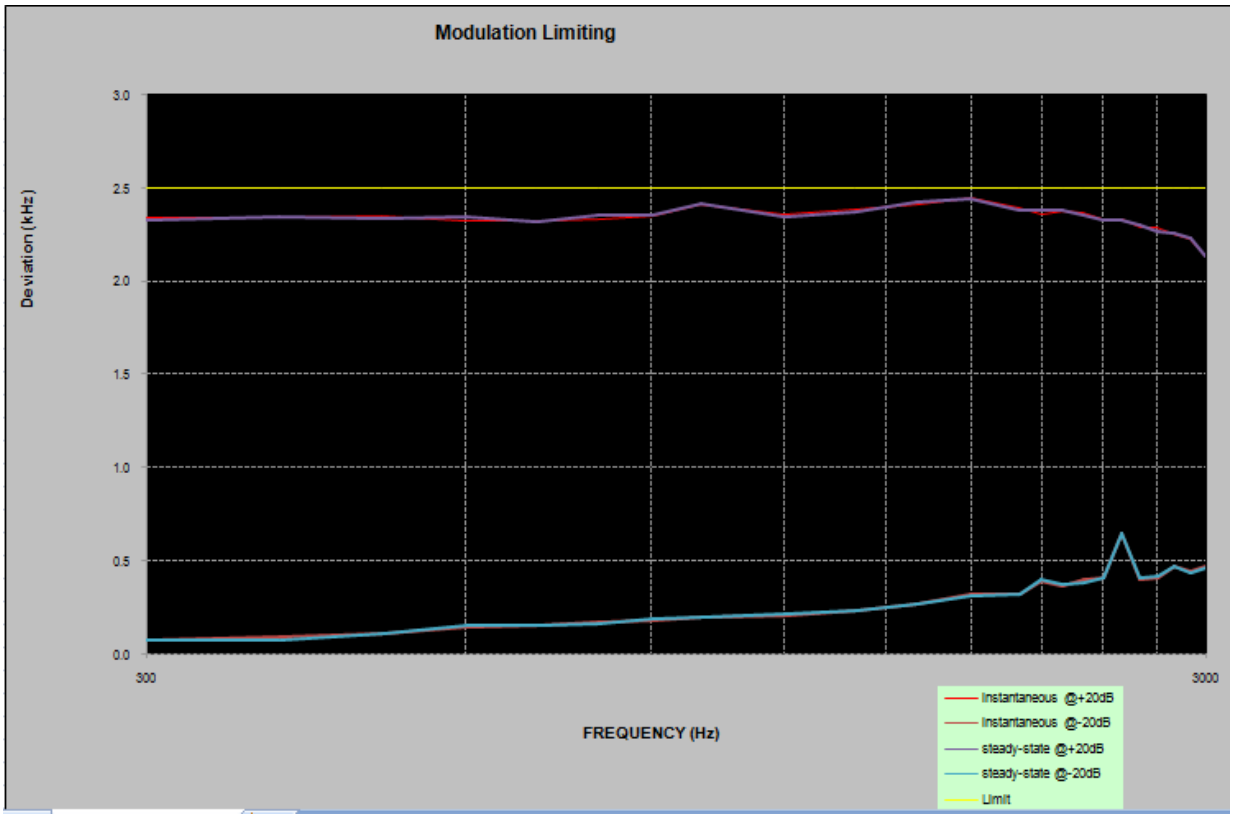
Audio Frequency (kHz)	Response Attenuation (dB)	Limit (dB)
1.0	0.0	/
3.0	-33.6	0.0
4.0	-45.0	-12.5
5.0	-62.9	-22.2
6.0	-66.2	-30.1
7.0	-75.8	-36.8
8.0	-76.9	-42.6
9.0	-77.7	-47.7
10.0	-78.5	-52.3
12.0	-76.9	-60.2
14.0	-81.9	-66.9
16.0	-88.2	-72.7
18.0	-89.6	-77.8
20.0	-90.9	-82.5



MODULATION LIMITING

Carrier Frequency: 455.0125 MHz, Channel Separation=12.5 kHz

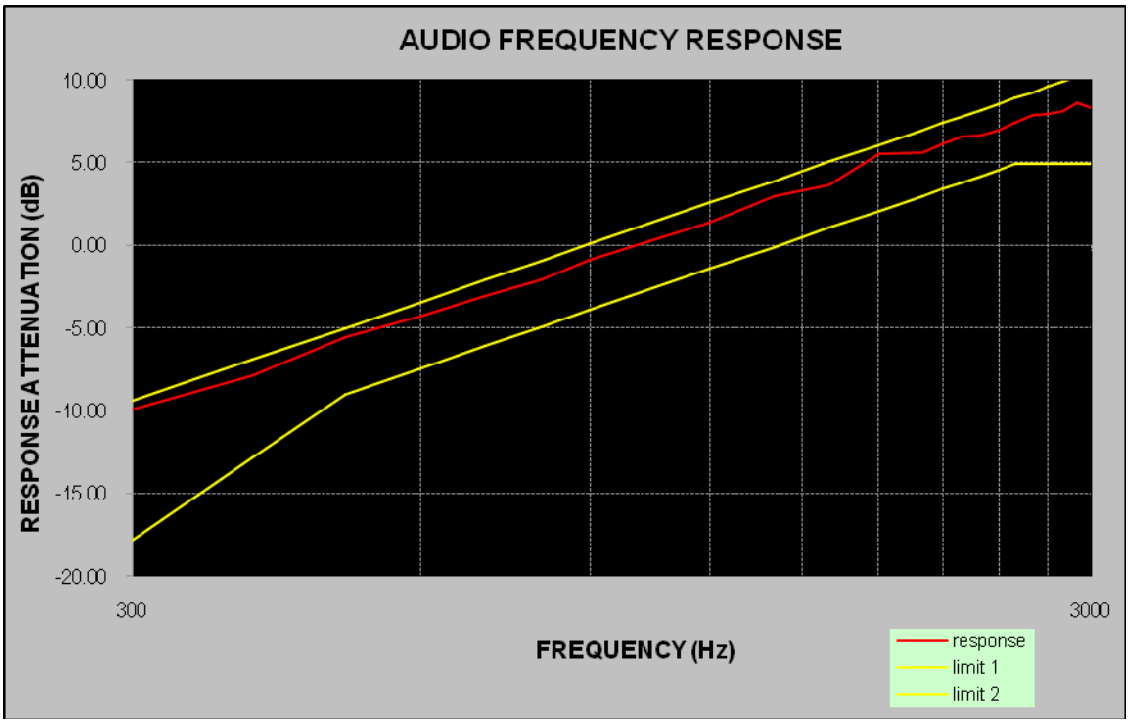
Audio Frequency (Hz)	Instantaneous		Steady-state		FCC Limit [kHz]
	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	
300	2.342	0.077	2.333	0.080	2.5
400	2.347	0.091	2.346	0.077	2.5
500	2.349	0.108	2.342	0.108	2.5
600	2.330	0.146	2.349	0.154	2.5
700	2.325	0.156	2.326	0.154	2.5
800	2.336	0.173	2.356	0.168	2.5
900	2.352	0.179	2.356	0.192	2.5
1000	2.414	0.196	2.416	0.198	2.5
1200	2.359	0.213	2.348	0.219	2.5
1400	2.385	0.239	2.376	0.235	2.5
1600	2.417	0.272	2.426	0.268	2.5
1800	2.450	0.324	2.442	0.313	2.5
2000	2.397	0.323	2.387	0.323	2.5
2100	2.361	0.392	2.382	0.404	2.5
2200	2.376	0.371	2.380	0.373	2.5
2300	2.369	0.400	2.357	0.387	2.5
2400	2.334	0.408	2.333	0.408	2.5
2500	2.334	0.648	2.331	0.650	2.5
2600	2.293	0.406	2.300	0.408	2.5
2700	2.288	0.410	2.271	0.420	2.5
2800	2.256	0.474	2.263	0.471	2.5
2900	2.229	0.443	2.235	0.440	2.5
3000	2.135	0.469	2.141	0.463	2.5


Modulation Limiting
Deviation (kHz)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
300
3000
FREQUENCY (Hz)
Instantaneous @+20dB
Instantaneous @-20dB
steady-state @+20dB
steady-state @-20dB
Limit

Audio Frequency Response

Carrier Frequency: 455.0125 MHz, Channel Separation=12.5 kHz

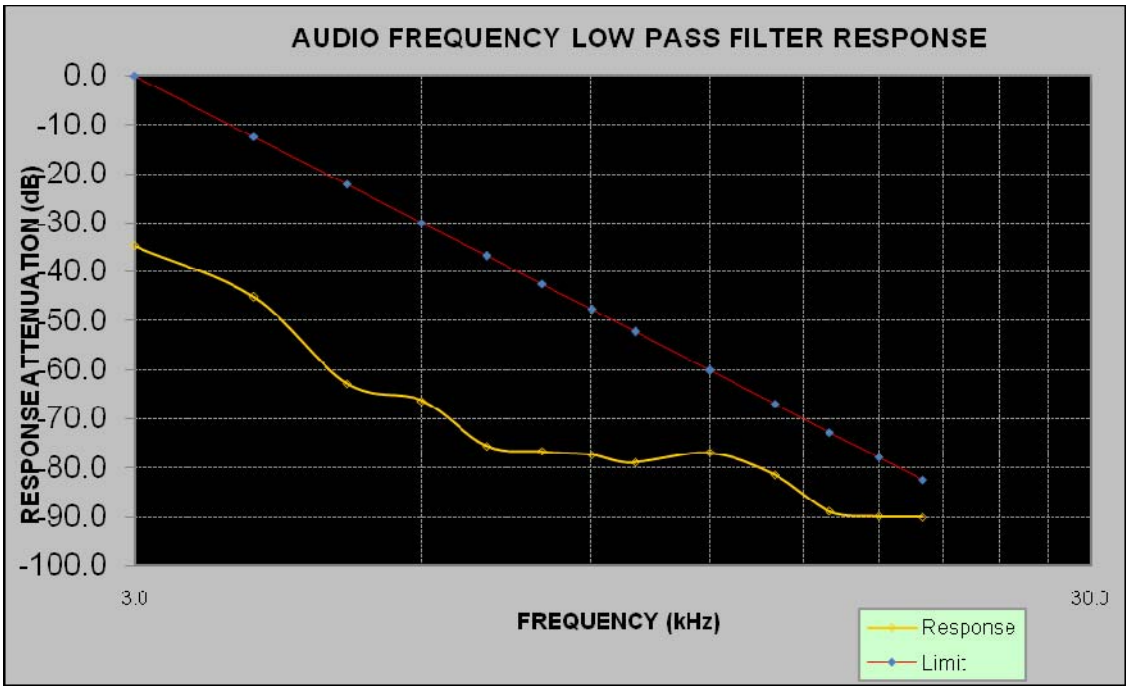
Audio Frequency (Hz)	Response Attenuation (dB)
300	-9.90
400	-7.92
500	-5.58
600	-4.29
700	-3.05
800	-2.09
900	-0.84
1000	0.00
1200	1.39
1400	2.95
1600	3.65
1800	5.54
2000	5.65
2100	6.14
2200	6.63
2300	6.71
2400	6.94
2500	7.43
2600	7.88
2700	7.99
2800	8.14
2900	8.63
3000	8.31


AUDIO FREQUENCY RESPONSE
10.00
5.00
0.00
-5.00
-10.00
-15.00
-20.00
RESPONSE ATTENUATION (dB)
300
3000
FREQUENCY (Hz)
response
limit 1
limit 2

Audio frequency lows pass filter response

Carrier Frequency: 455.0125 MHz, Channel Separation=12.5 kHz

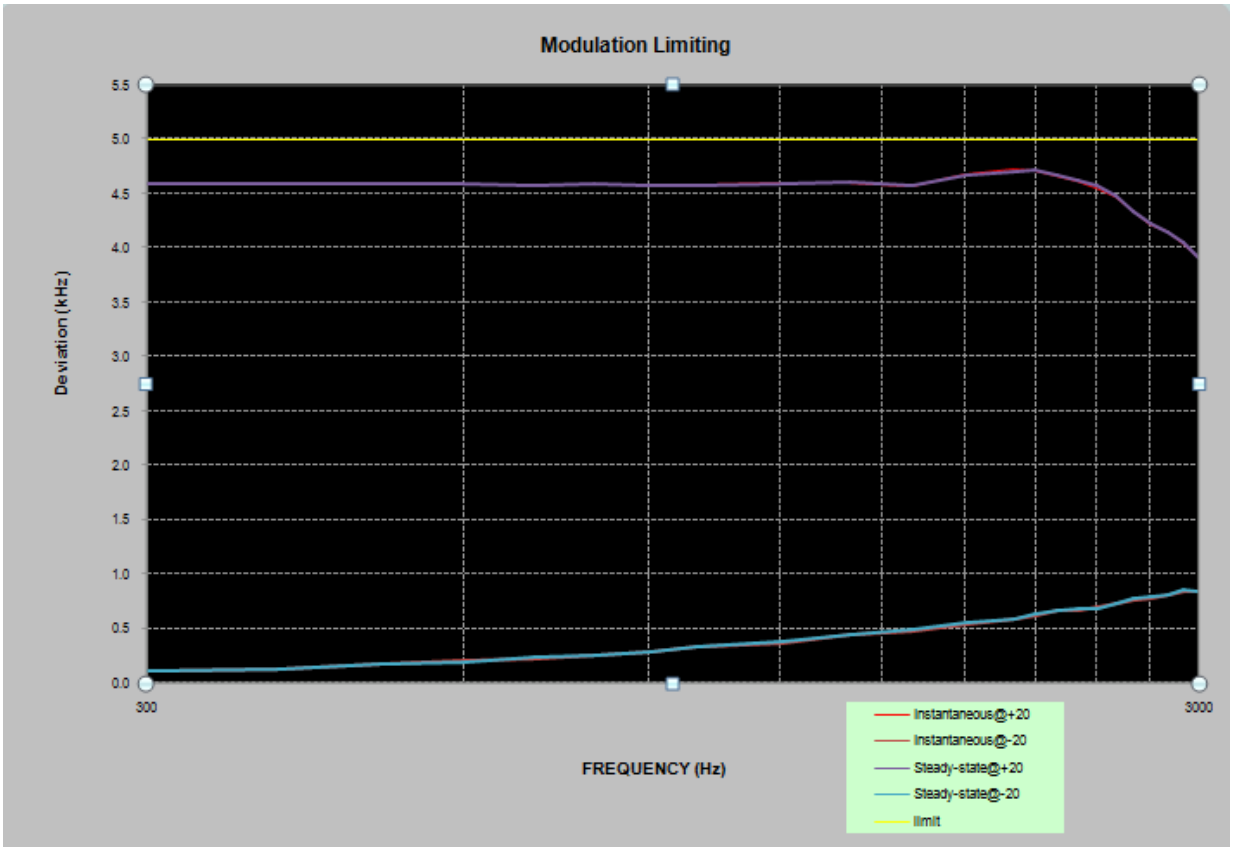
Audio Frequency (kHz)	Response Attenuation (dB)	Limit (dB)
1.0	0.0	/
3.0	-34.7	0.0
4.0	-45.2	-12.5
5.0	-62.9	-22.2
6.0	-66.4	-30.1
7.0	-75.6	-36.8
8.0	-76.7	-42.6
9.0	-77.3	-47.7
10.0	-78.9	-52.3
12.0	-76.9	-60.2
14.0	-81.4	-66.9
16.0	-88.9	-72.7
18.0	-89.9	-77.8
20.0	-90.1	-82.5



MODULATION LIMITING

Carrier Frequency: 453.2125 MHz, Channel Separation=25 kHz

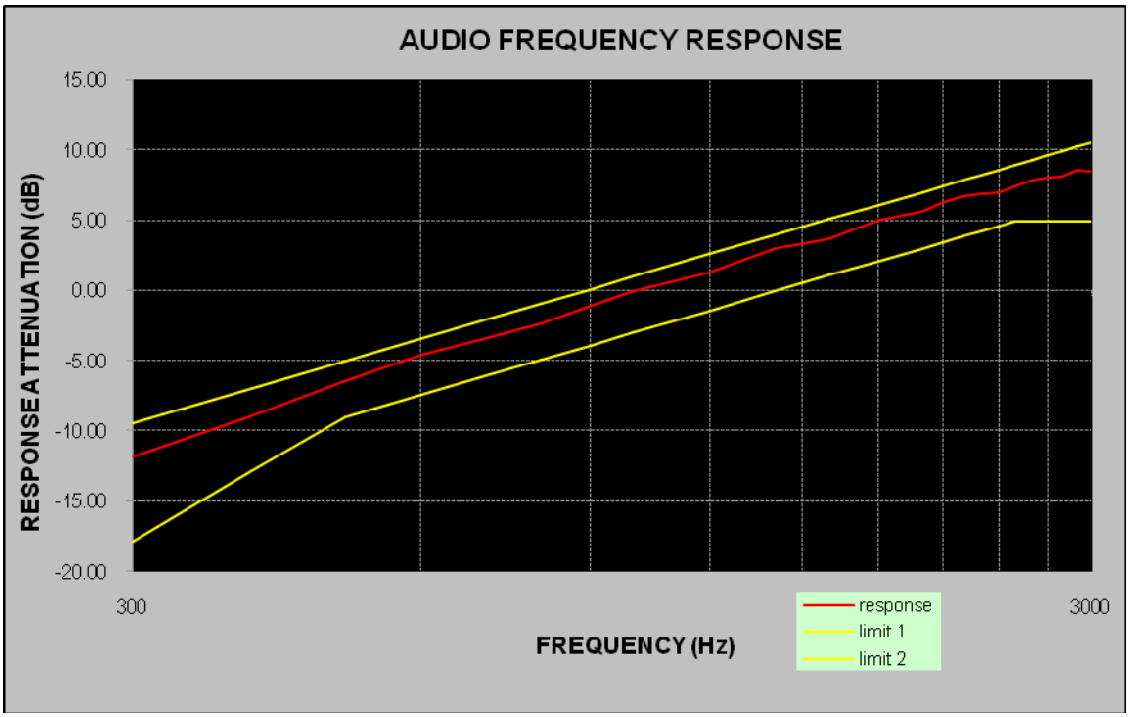
Audio Frequency (Hz)	Instantaneous		Steady-state		FCC Limit [kHz]
	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	
300	4.581	0.105	4.592	0.110	5
400	4.585	0.127	4.591	0.134	5
500	4.584	0.168	4.590	0.171	5
600	4.588	0.202	4.596	0.197	5
700	4.581	0.226	4.577	0.231	5
800	4.586	0.250	4.597	0.260	5
900	4.591	0.287	4.583	0.293	5
1000	4.589	0.325	4.574	0.331	5
1200	4.597	0.371	4.601	0.378	5
1400	4.600	0.438	4.613	0.445	5
1600	4.574	0.476	4.580	0.485	5
1800	4.676	0.547	4.679	0.551	5
2000	4.721	0.584	4.711	0.592	5
2100	4.712	0.623	4.718	0.630	5
2200	4.665	0.662	4.672	0.671	5
2300	4.618	0.674	4.625	0.675	5
2400	4.552	0.691	4.572	0.686	5
2500	4.468	0.727	4.481	0.731	5
2600	4.343	0.767	4.344	0.771	5
2700	4.218	0.784	4.226	0.791	5
2800	4.155	0.804	4.142	0.811	5
2900	4.043	0.849	4.050	0.852	5
3000	3.921	0.838	3.914	0.842	5


Modulation Limiting
Deviation (kHz)
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
300
3000
FREQUENCY (Hz)
Instantaneous@+20
Instantaneous@-20
Steady-state@+20
Steady-state@-20
limit

Audio Frequency Response

Carrier Frequency: 453.2125 MHz, Channel Separation=25 kHz

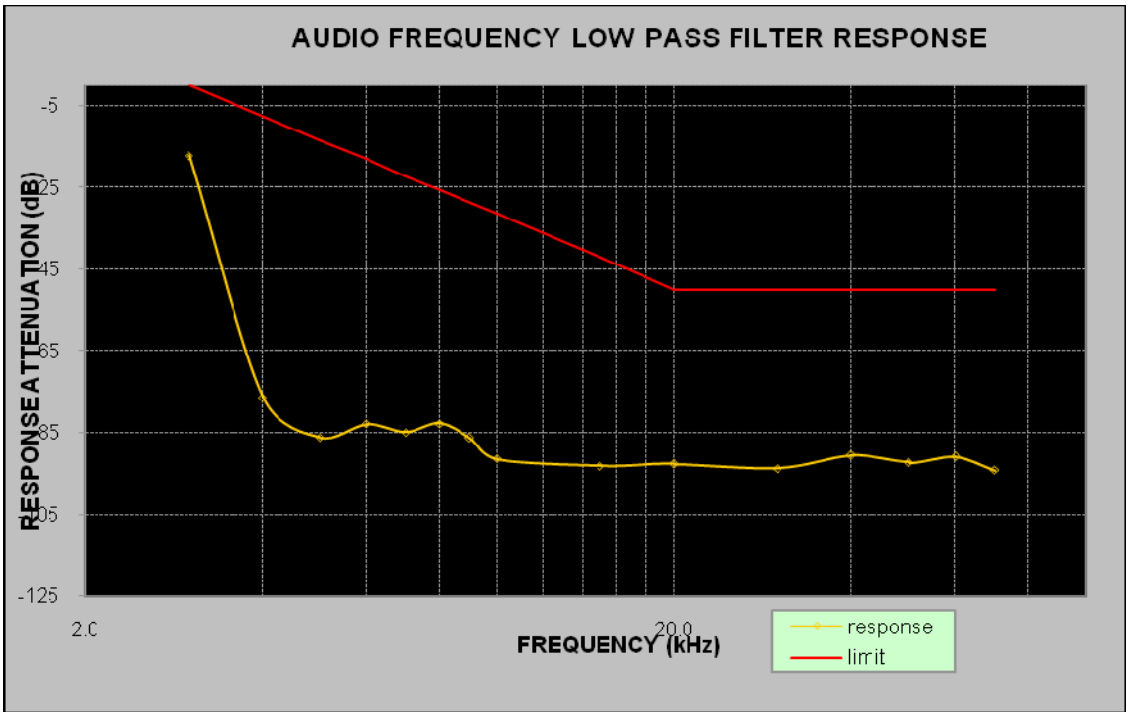
Audio Frequency (Hz)	Response Attenuation (dB)
300	-11.84
400	-8.90
500	-6.45
600	-4.61
700	-3.45
800	-2.40
900	-1.10
1000	0.00
1200	1.33
1400	2.95
1600	3.71
1800	4.99
2000	5.61
2100	6.21
2200	6.71
2300	6.86
2400	6.99
2500	7.42
2600	7.89
2700	8.02
2800	8.16
2900	8.57
3000	8.46


AUDIO FREQUENCY RESPONSE
15.00
10.00
5.00
0.00
-5.00
-10.00
-15.00
-20.00
RESPONSE ATTENUATION (dB)
300
3000
FREQUENCY (Hz)
response
limit 1
limit 2

Audio frequency lows pass filter response

Carrier Frequency: 453.2125 MHz, Channel Separation=25 kHz

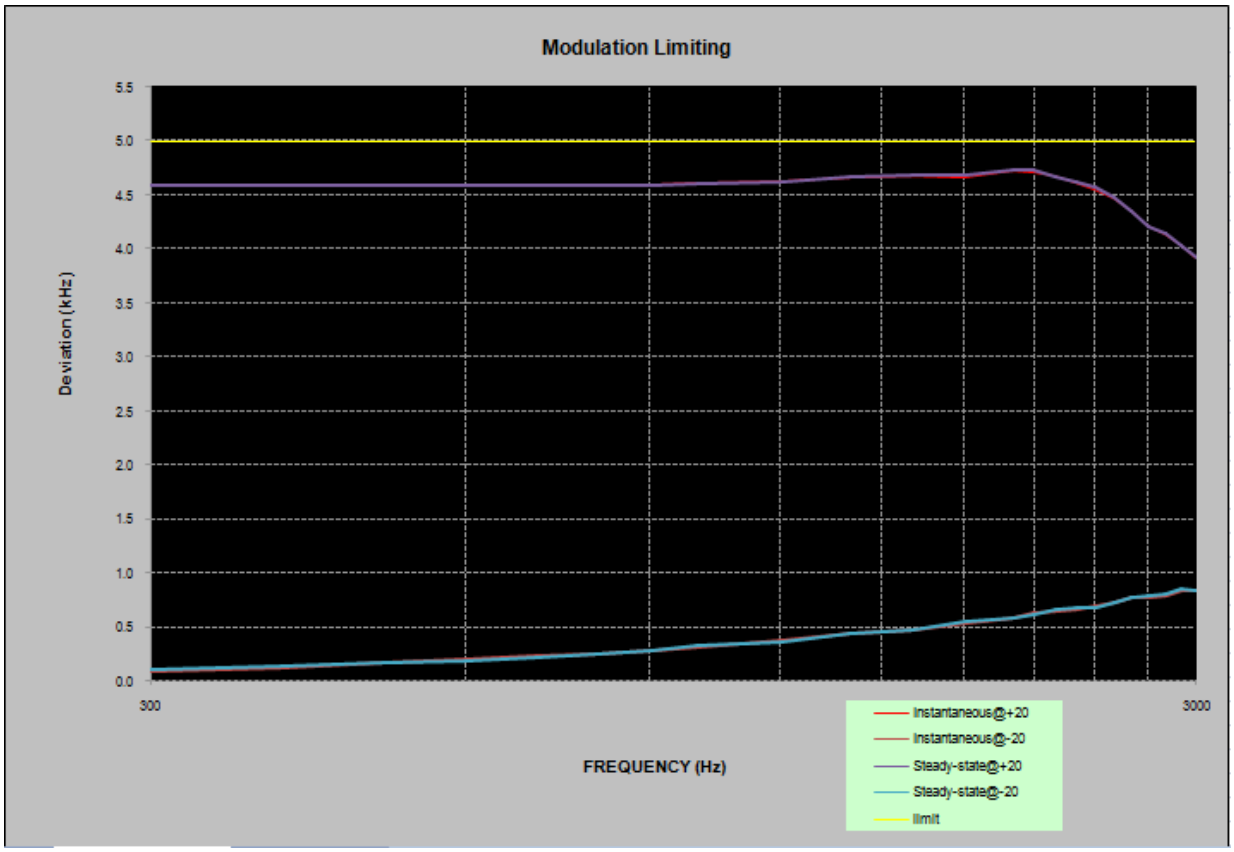
Audio Frequency (kHz)	Response Attenuation (dB)	Limit (dB)
1.0	0.0	/
3.0	-17.1	0.0
4.0	-76.4	-7.5
5.0	-86.1	-13.3
6.0	-82.9	-18.1
7.0	-84.9	-22.1
8.0	-82.7	-25.6
9.0	-86.3	-28.6
10.0	-91.4	-31.4
12.0	-93.1	-41.9
14.0	-92.7	-50.0
16.0	-93.7	-50.0
18.0	-90.6	-50.0
20.0	-92.3	-50.0



MODULATION LIMITING

Carrier Frequency: 454.0125 MHz, Channel Separation=25 kHz

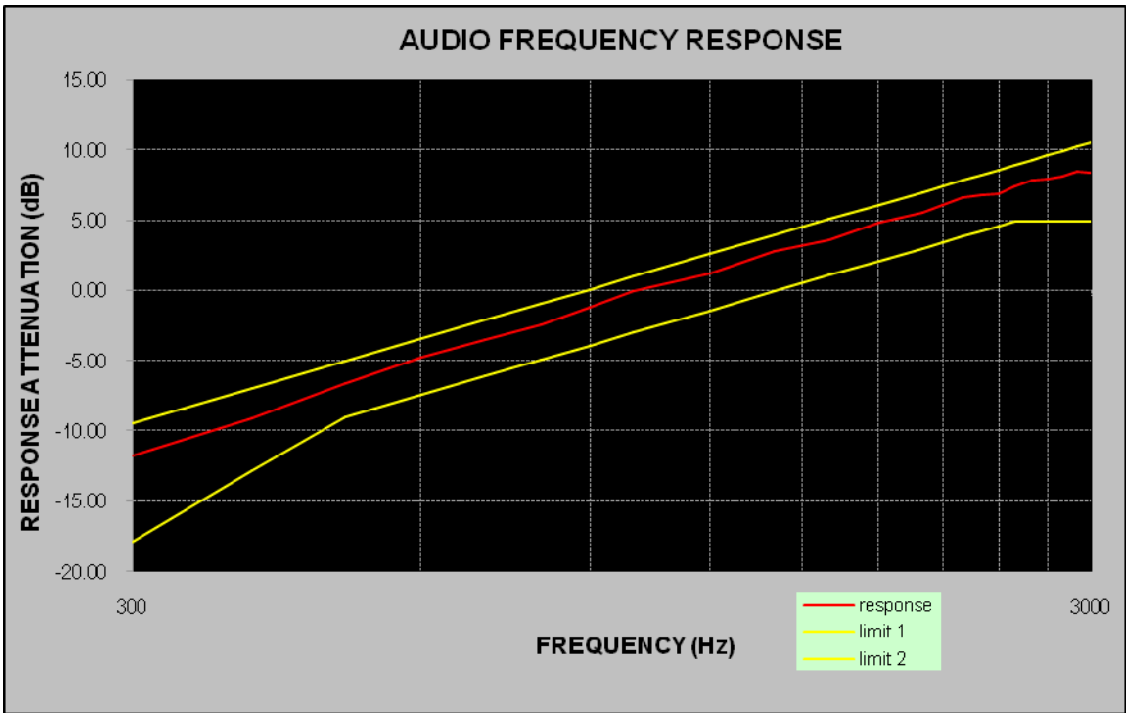
Audio Frequency (Hz)	Instantaneous		Steady-state		FCC Limit [kHz]
	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	
300	4.581	0.101	4.592	0.112	5
400	4.587	0.132	4.596	0.137	5
500	4.593	0.171	4.589	0.169	5
600	4.591	0.205	4.586	0.197	5
700	4.584	0.232	4.595	0.224	5
800	4.590	0.256	4.594	0.249	5
900	4.601	0.291	4.595	0.286	5
1000	4.610	0.321	4.603	0.332	5
1200	4.634	0.377	4.621	0.368	5
1400	4.667	0.441	4.672	0.438	5
1600	4.687	0.478	4.693	0.482	5
1800	4.671	0.547	4.682	0.551	5
2000	4.728	0.589	4.733	0.591	5
2100	4.719	0.629	4.729	0.622	5
2200	4.675	0.651	4.668	0.665	5
2300	4.622	0.670	4.631	0.681	5
2400	4.561	0.691	4.574	0.687	5
2500	4.477	0.729	4.484	0.737	5
2600	4.366	0.771	4.351	0.779	5
2700	4.223	0.785	4.219	0.790	5
2800	4.145	0.801	4.150	0.810	5
2900	4.042	0.844	4.035	0.850	5
3000	3.918	0.837	3.927	0.844	5


Modulation Limiting
Deviation (kHz)
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
300
3000
FREQUENCY (Hz)
Instantaneous@+20
Instantaneous@-20
Steady-state@+20
Steady-state@-20
limit

Audio Frequency Response

Carrier Frequency: 454.0125 MHz, Channel Separation=25 kHz

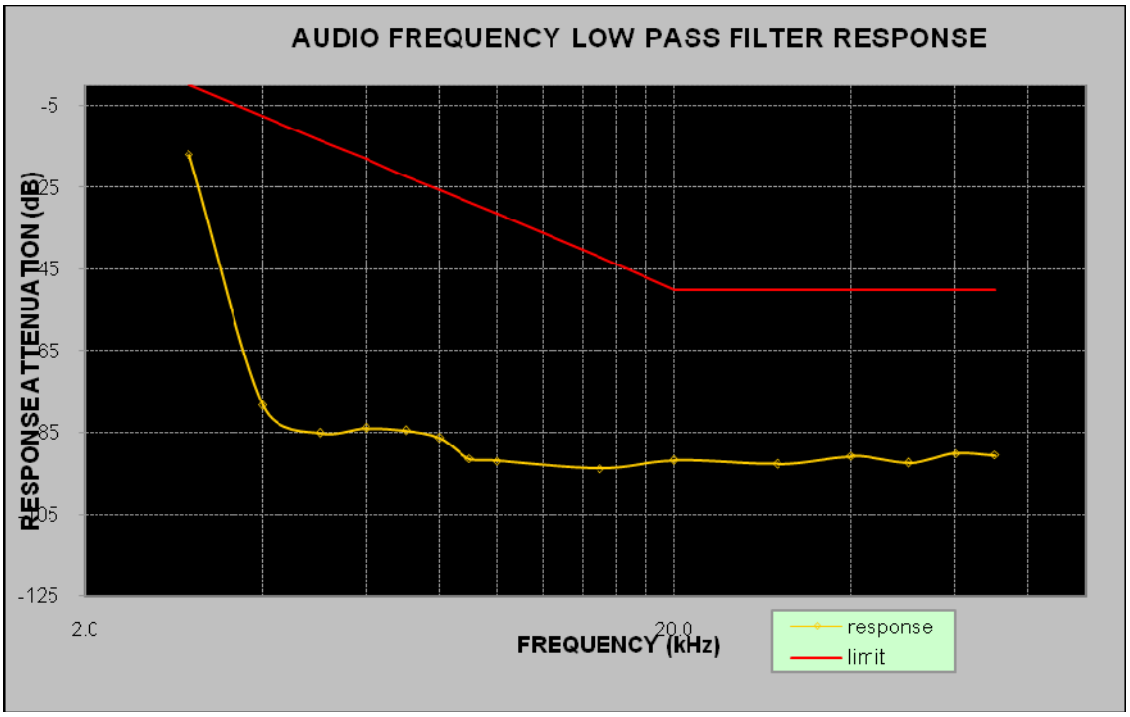
Audio Frequency (Hz)	Response Attenuation (dB)
300	-11.77
400	-9.09
500	-6.61
600	-4.72
700	-3.53
800	-2.48
900	-1.19
1000	0.00
1200	1.18
1400	2.81
1600	3.59
1800	4.88
2000	5.54
2100	6.11
2200	6.62
2300	6.78
2400	6.92
2500	7.37
2600	7.82
2700	7.94
2800	8.08
2900	8.51
3000	8.39


AUDIO FREQUENCY RESPONSE
15.00
10.00
5.00
0.00
-5.00
-10.00
-15.00
-20.00
RESPONSE ATTENUATION (dB)
300
3000
FREQUENCY (Hz)
response
limit 1
limit 2

Audio frequency lows pass filter response

Carrier Frequency: 454.0125 MHz, Channel Separation=25 kHz

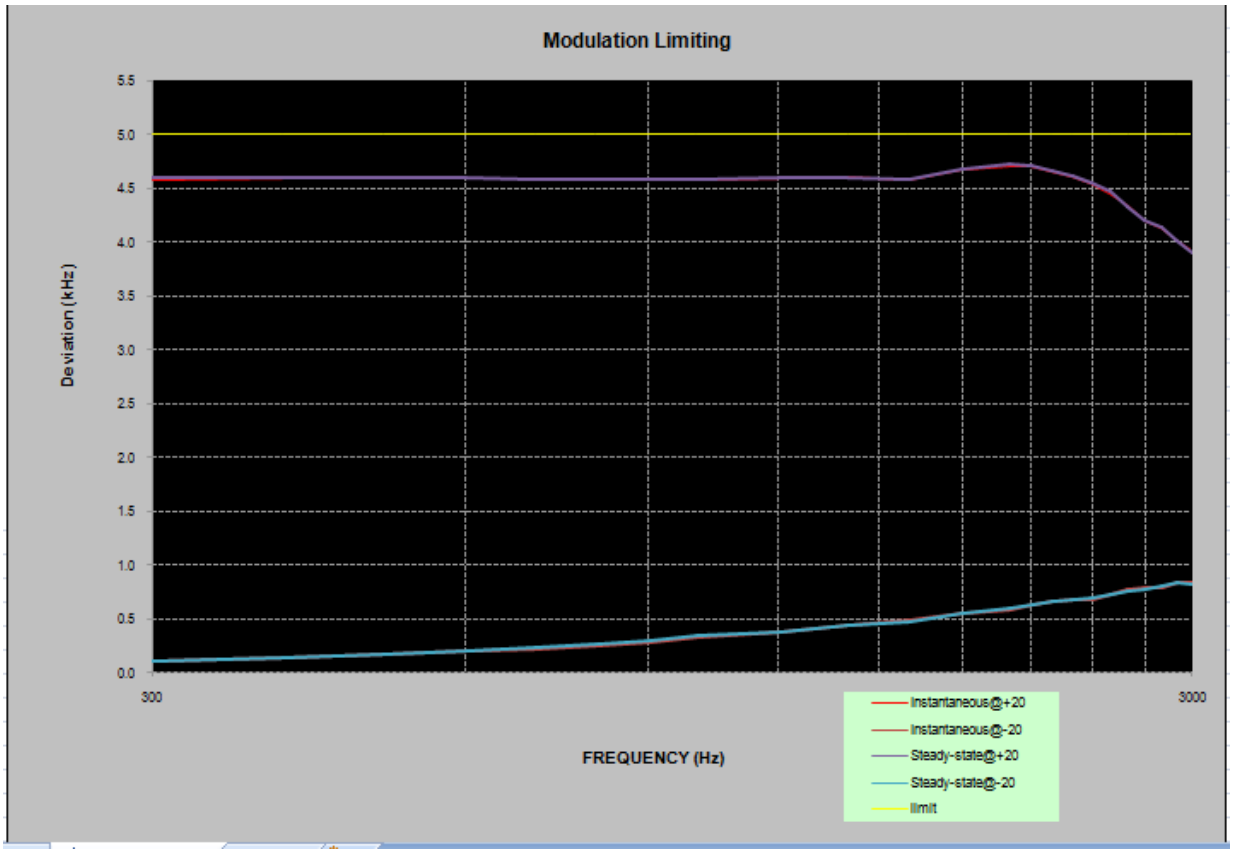
Audio Frequency (kHz)	Response Attenuation (dB)	Limit (dB)
1.0	0.0	/
3.0	-16.9	0.0
4.0	-78.4	-7.5
5.0	-85.1	-13.3
6.0	-83.9	-18.1
7.0	-84.5	-22.1
8.0	-86.3	-25.6
9.0	-91.4	-28.6
10.0	-91.9	-31.4
12.0	-93.7	-41.9
14.0	-91.8	-50.0
16.0	-92.7	-50.0
18.0	-90.8	-50.0
20.0	-92.4	-50.0



MODULATION LIMITING

Carrier Frequency: 455.0125 MHz, Channel Separation=25 kHz

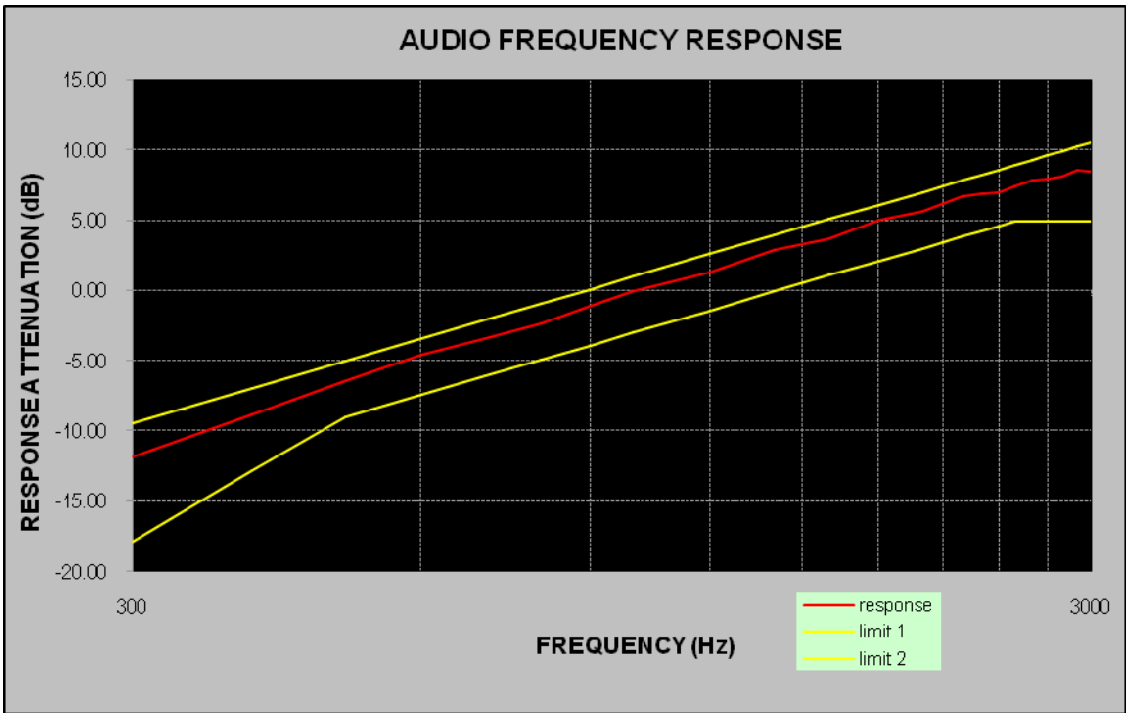
Audio Frequency (Hz)	Instantaneous		Steady-state		FCC Limit [kHz]
	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	
300	4.582	0.103	4.597	0.113	5
400	4.592	0.131	4.601	0.137	5
500	4.594	0.166	4.598	0.176	5
600	4.591	0.198	4.600	0.205	5
700	4.589	0.222	4.591	0.236	5
800	4.595	0.251	4.582	0.261	5
900	4.597	0.281	4.589	0.296	5
1000	4.584	0.330	4.591	0.339	5
1200	4.597	0.376	4.607	0.381	5
1400	4.602	0.446	4.608	0.438	5
1600	4.576	0.481	4.587	0.477	5
1800	4.672	0.547	4.684	0.552	5
2000	4.712	0.587	4.722	0.593	5
2100	4.704	0.627	4.715	0.633	5
2200	4.657	0.668	4.667	0.657	5
2300	4.616	0.672	4.620	0.679	5
2400	4.548	0.685	4.561	0.691	5
2500	4.453	0.720	4.469	0.730	5
2600	4.331	0.769	4.327	0.763	5
2700	4.198	0.782	4.201	0.778	5
2800	4.127	0.795	4.134	0.802	5
2900	4.023	0.844	4.015	0.838	5
3000	3.918	0.831	3.904	0.827	5


Modulation Limiting
Deviation (kHz)
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
300
3000
FREQUENCY (Hz)
Instantaneous@+20
Instantaneous@-20
Steady-state@+20
Steady-state@-20
limit

Audio Frequency Response

Carrier Frequency: 455.0125 MHz, Channel Separation=25 kHz

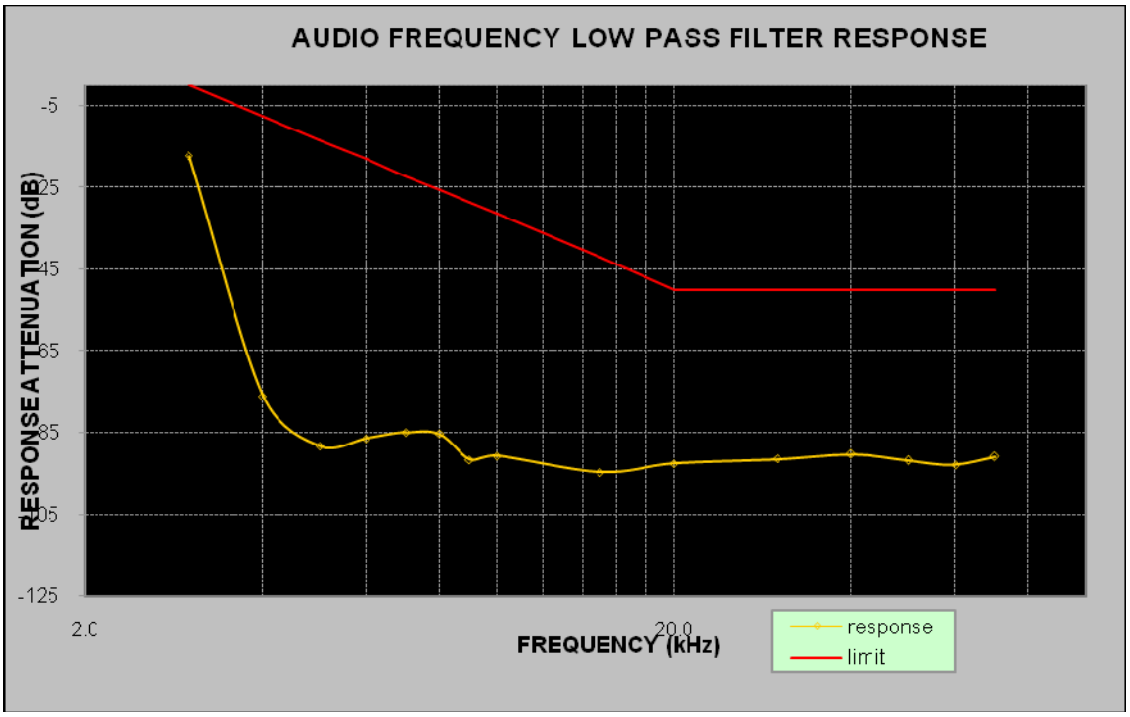
Audio Frequency (Hz)	Response Attenuation (dB)
300	-11.80
400	-8.85
500	-6.41
600	-4.55
700	-3.39
800	-2.36
900	-1.10
1000	0.00
1200	1.29
1400	2.92
1600	3.68
1800	5.03
2000	5.63
2100	6.20
2200	6.72
2300	6.84
2400	6.98
2500	7.41
2600	7.85
2700	7.96
2800	8.13
2900	8.55
3000	8.43


AUDIO FREQUENCY RESPONSE
15.00
10.00
5.00
0.00
-5.00
-10.00
-15.00
-20.00
RESPONSE ATTENUATION (dB)
300
3000
FREQUENCY (Hz)
response
limit 1
limit 2

Audio frequency lows pass filter response

Carrier Frequency: 455.0125 MHz, Channel Separation=25 kHz

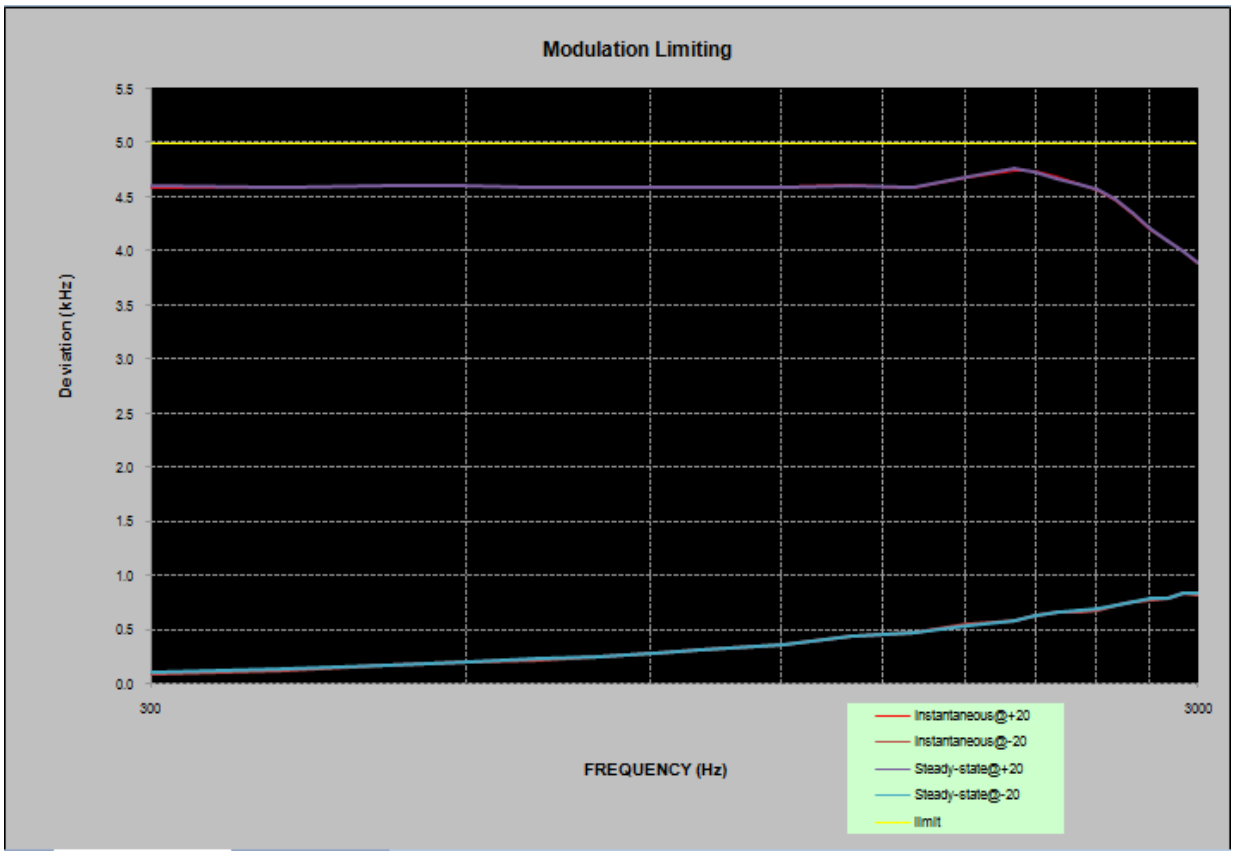
Audio Frequency (kHz)	Response Attenuation (dB)	Limit (dB)
1.0	0.0	/
3.0	-17.2	0.0
4.0	-76.1	-7.5
5.0	-88.3	-13.3
6.0	-86.4	-18.1
7.0	-84.9	-22.1
8.0	-85.3	-25.6
9.0	-91.6	-28.6
10.0	-90.7	-31.4
12.0	-94.6	-41.9
14.0	-92.6	-50.0
16.0	-91.4	-50.0
18.0	-90.3	-50.0
20.0	-91.8	-50.0



MODULATION LIMITING

Carrier Frequency: 458.2125 MHz, Channel Separation=25 kHz

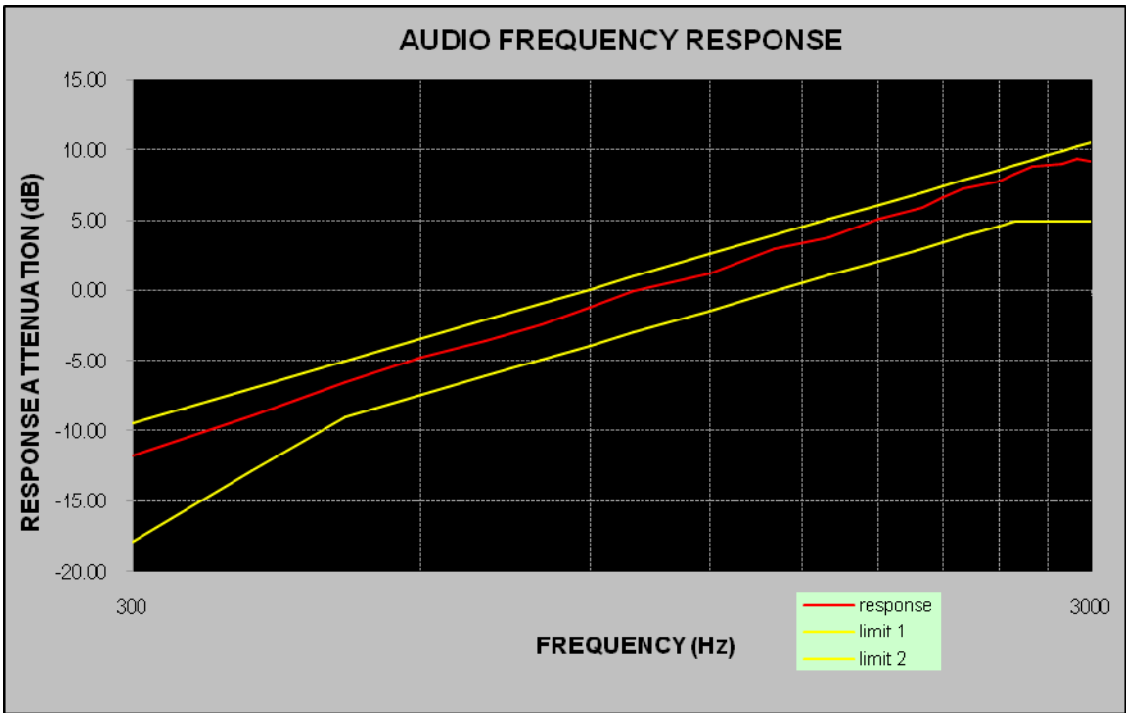
Audio Frequency (Hz)	Instantaneous		Steady-state		FCC Limit [kHz]
	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	
300	4.588	0.102	4.602	0.114	5
400	4.598	0.130	4.601	0.137	5
500	4.599	0.167	4.609	0.177	5
600	4.601	0.202	4.607	0.198	5
700	4.595	0.223	4.588	0.231	5
800	4.602	0.255	4.598	0.260	5
900	4.597	0.286	4.601	0.292	5
1000	4.587	0.322	4.591	0.321	5
1200	4.606	0.368	4.599	0.371	5
1400	4.612	0.441	4.617	0.438	5
1600	4.592	0.479	4.599	0.472	5
1800	4.681	0.551	4.686	0.546	5
2000	4.752	0.591	4.766	0.586	5
2100	4.742	0.629	4.735	0.631	5
2200	4.691	0.666	4.671	0.667	5
2300	4.631	0.673	4.624	0.680	5
2400	4.568	0.681	4.581	0.692	5
2500	4.471	0.723	4.484	0.728	5
2600	4.350	0.770	4.347	0.762	5
2700	4.203	0.781	4.210	0.786	5
2800	4.112	0.801	4.108	0.789	5
2900	4.014	0.841	4.008	0.839	5
3000	3.887	0.831	3.891	0.835	5


Modulation Limiting
Deviation (kHz)
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
300
3000
FREQUENCY (Hz)
Instantaneous@+20
Instantaneous@-20
Steady-state@+20
Steady-state@-20
limit

Audio Frequency Response

Carrier Frequency: 458.2125 MHz, Channel Separation=25 kHz

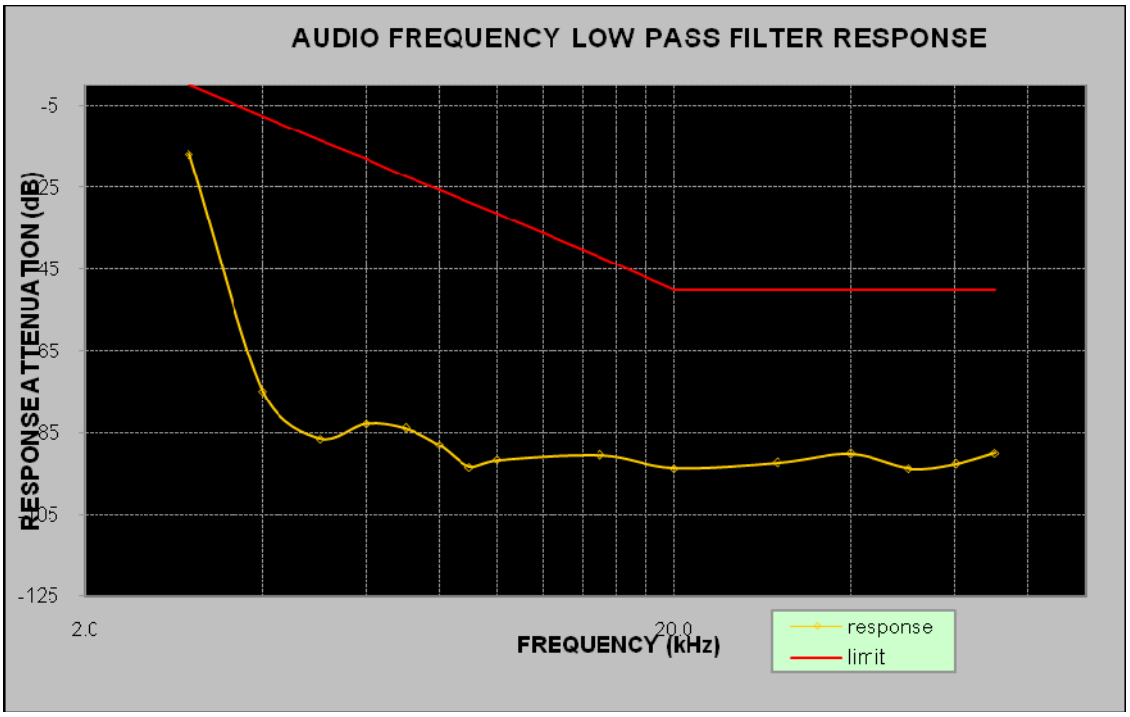
Audio Frequency (Hz)	Response Attenuation (dB)
300	-11.77
400	-8.95
500	-6.52
600	-4.72
700	-3.56
800	-2.45
900	-1.18
1000	0.00
1200	1.21
1400	2.93
1600	3.73
1800	5.13
2000	5.94
2100	6.62
2200	7.24
2300	7.51
2400	7.78
2500	8.31
2600	8.79
2700	8.91
2800	9.01
2900	9.35
3000	9.16


AUDIO FREQUENCY RESPONSE
15.00
10.00
5.00
0.00
-5.00
-10.00
-15.00
-20.00
RESPONSE ATTENUATION (dB)
300
3000
FREQUENCY (Hz)
response
limit 1
limit 2

Audio frequency lows pass filter response

Carrier Frequency: 458.2125 MHz, Channel Separation=25 kHz

Audio Frequency (kHz)	Response Attenuation (dB)	Limit (dB)
1.0	0.0	/
3.0	-16.8	0.0
4.0	-74.9	-7.5
5.0	-86.4	-13.3
6.0	-82.7	-18.1
7.0	-83.9	-22.1
8.0	-88.1	-25.6
9.0	-93.4	-28.6
10.0	-91.7	-31.4
12.0	-90.6	-41.9
14.0	-93.7	-50.0
16.0	-92.4	-50.0
18.0	-90.3	-50.0
20.0	-93.8	-50.0



FCC §2.1049 & §22.357 & § 22.731 & §74.462 & § 80.205 & § 80.207 & §90.209 & §90.210 – OCCUPIED BANDWIDTH & EMISSION MASK

Applicable Standard

FCC §2.1049, §22.357, § 22.731, §74.462, § 80.205, § 80.207, §90.209 and §90.210

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 100 Hz and the spectrum was recorded in the frequency band ±50 kHz from the carrier frequency.

Test Data

Environmental Conditions

Temperature:	24~27 ℃
Relative Humidity:	50~57 %
ATM Pressure:	100.9~101.0 kPa

The testing was performed by Phil Zhu from 2017-04-25 to 2017-10-14.

Modulation	Channel Separation (kHz)	Frequency (MHz)	Power Level	99% Occupied Bandwidth (kHz)	26 dB Emissions Bandwidth (kHz)	Note
Analog	12.5	350.025	High	10.02	10.32	For Federal
	12.5		Low	10.02	10.32	
	12.5	453.2125	High	10.02	10.32	For Part 90
	12.5		Low	10.02	10.32	
	12.5	454.0125	High	10.02	10.32	For Part 22
	12.5		Low	10.02	10.32	
	12.5	455.2125	High	10.02	10.32	For Part 74
	12.5		Low	10.02	10.32	
	12.5	511.975	High	10.02	15.23	For Part 90
	12.5		Low	10.02	10.32	
Digital	12.5	350.025	High	7.11	8.72	For Federal
	12.5		Low	7.01	8.32	
	12.5	453.2125	High	7.11	8.72	For Part 90
	12.5		Low	7.11	8.72	
	12.5	454.0125	High	7.01	8.72	For Part 22
	12.5		Low	7.21	8.72	
	12.5	455.2125	High	7.21	8.72	For Part 74
	12.5		Low	7.01	8.92	
	12.5	511.975	High	7.01	8.72	For Part 90
	12.5		Low	6.71	8.72	

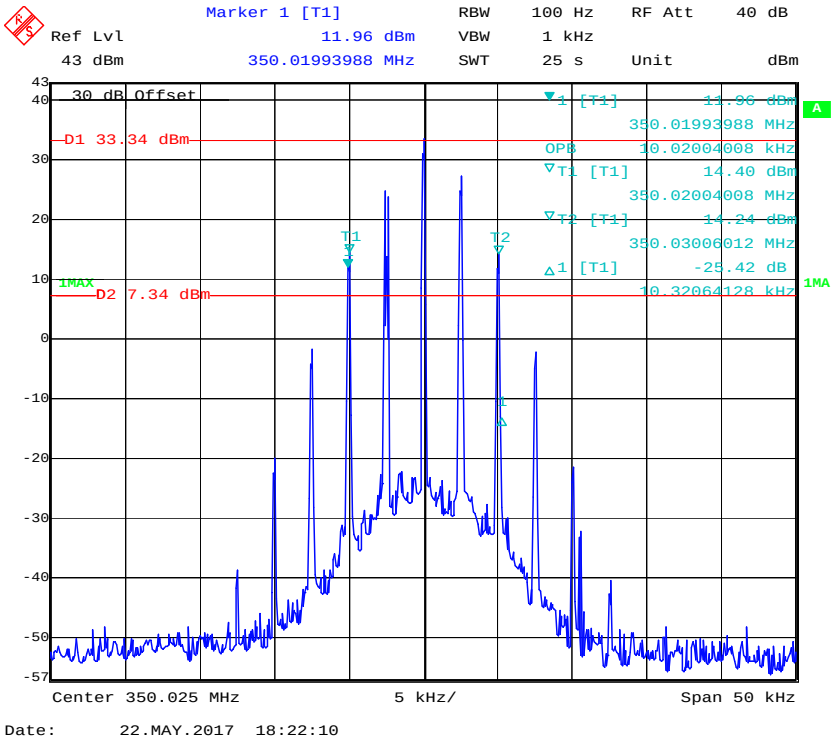
Emission Designator Per CFR 47 §2.201& §2.202&, Bn = 2M + 2D

For FM Mode (Channel Spacing: 12.5 kHz)
Emission Designator 11K0F3E In this case, the maximum modulating frequency is 3.0 kHz with a 2.5 kHz deviation. BW = 2(M+D) = 2(3.0 kHz + 2.5 kHz) = 11 kHz → 11K0*
F3E portion of the designator represents an FM voice transmission Therefore, the entire designator for 12.5 kHz channel spacing FM mode is 11K0F3E.

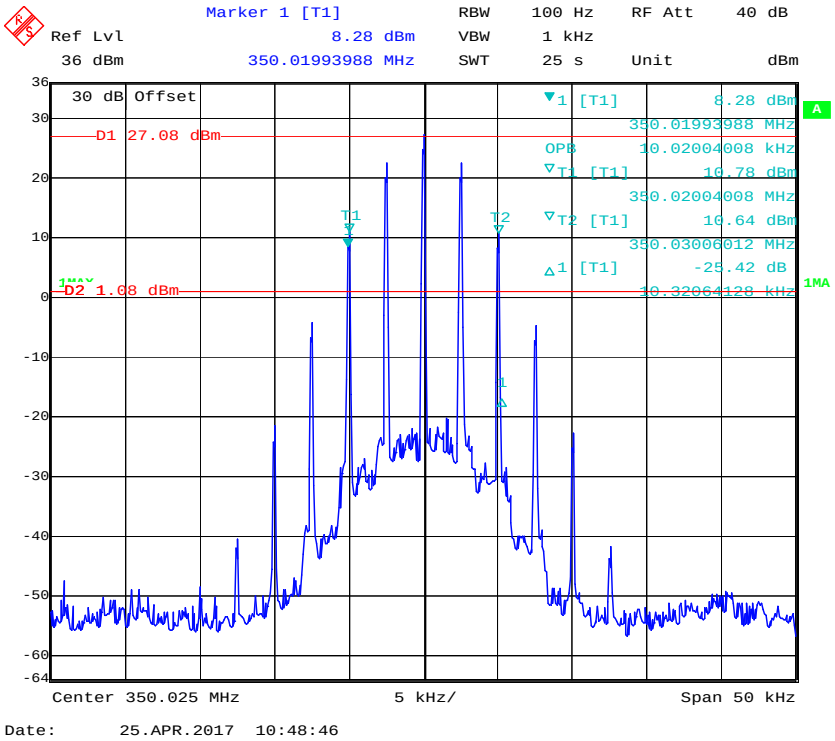
For Digital Mode (Channel Spacing: 12.5 kHz)
Emission Designator 7K60F1D and 7K60F1E
The 99% energy rule (title 47CFR 2.1049) was used for digital mode. It basically states that 99% of the modulation energy falls within X kHz, in this case, 7.11 kHz. The emission mask was obtained from 47CFR 90.210(d).
F1D and F1E portion of the designator indicates digital information.
Therefore, the entire designator for 12.5 kHz channel spacing digital mode is 7K60F1D and 7K60F1E.

Analog Modulation:

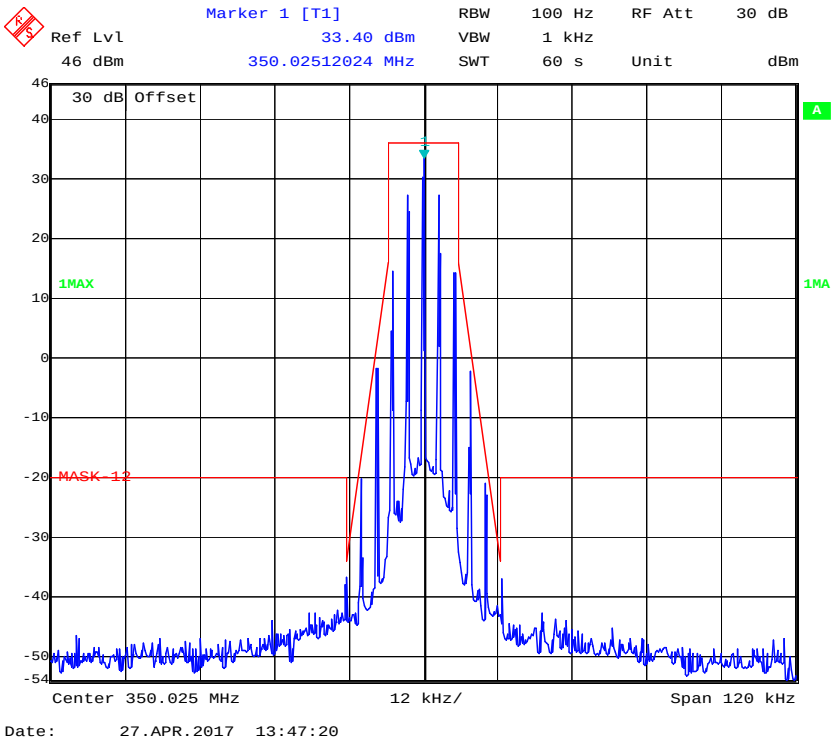
Frequency 350.025 MHz: 99% Occupied & 26 dB Bandwidth, High Power



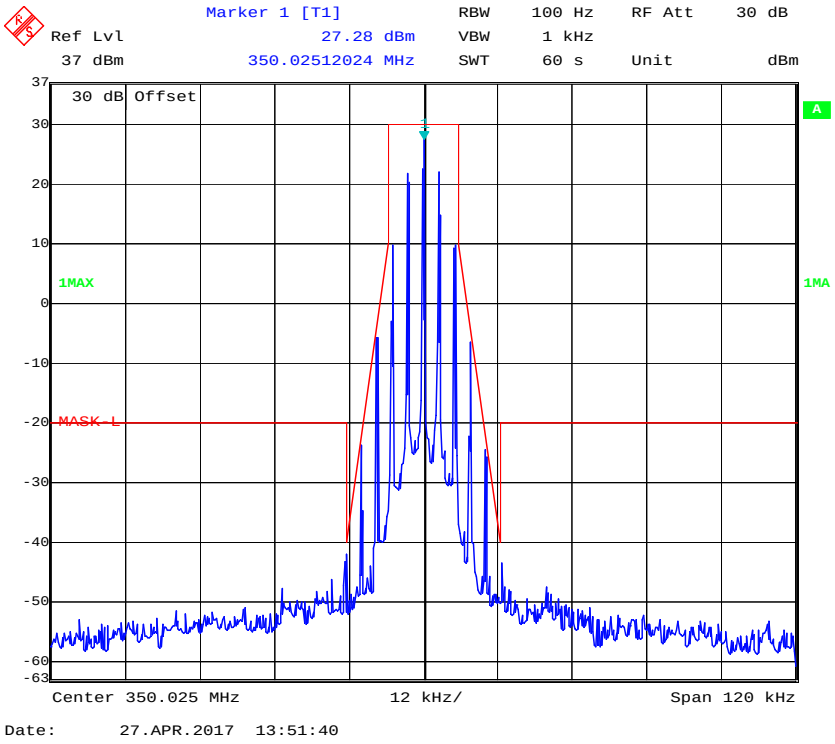
Frequency 350.025 MHz: 99% Occupied & 26 dB Bandwidth, Low Power



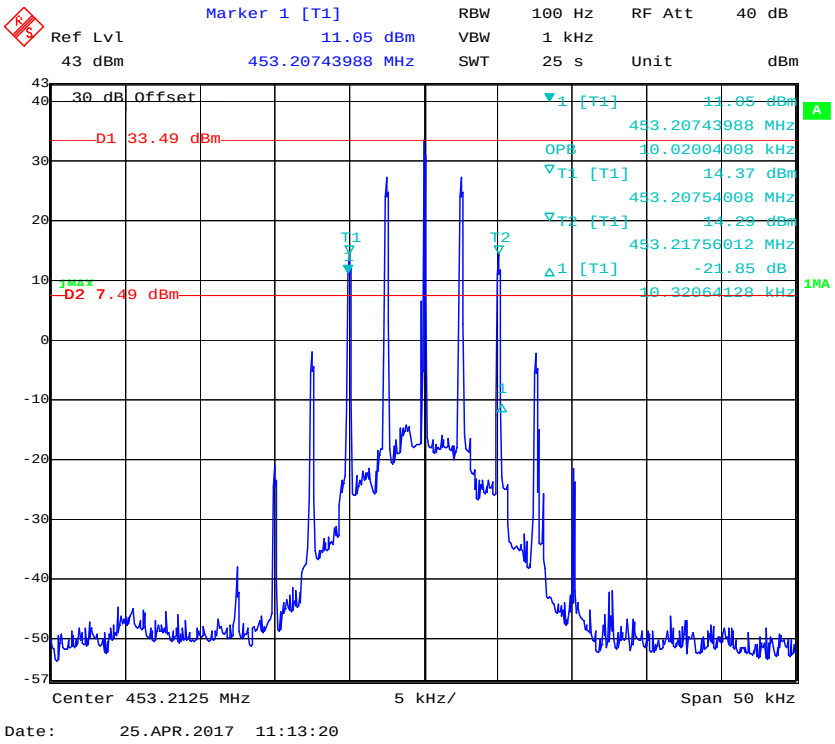
Frequency 350.025 MHz: Emission Mask D, High Power



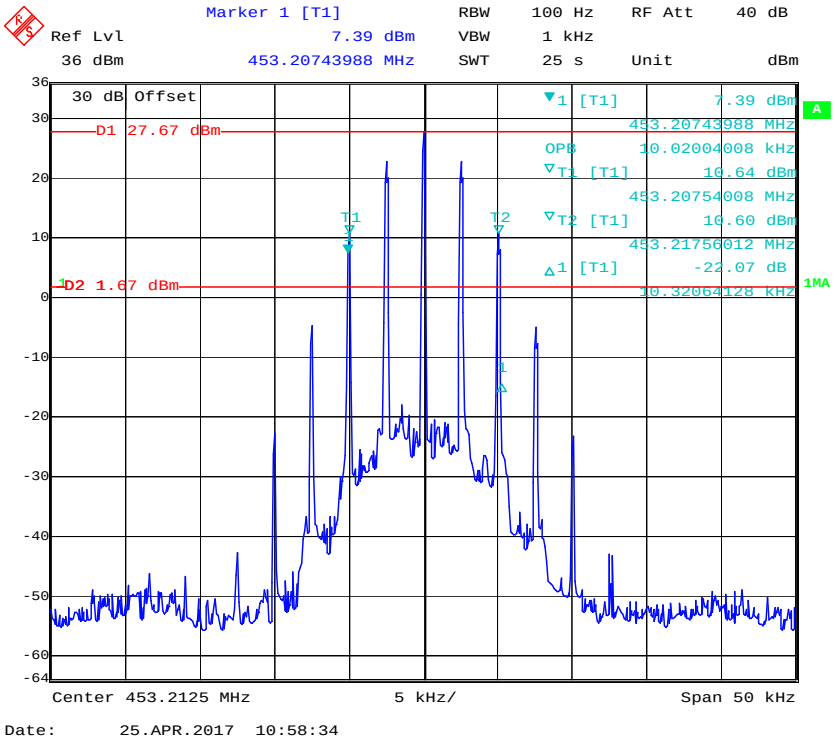
Frequency 350.025 MHz: Emission Mask D, Low Power



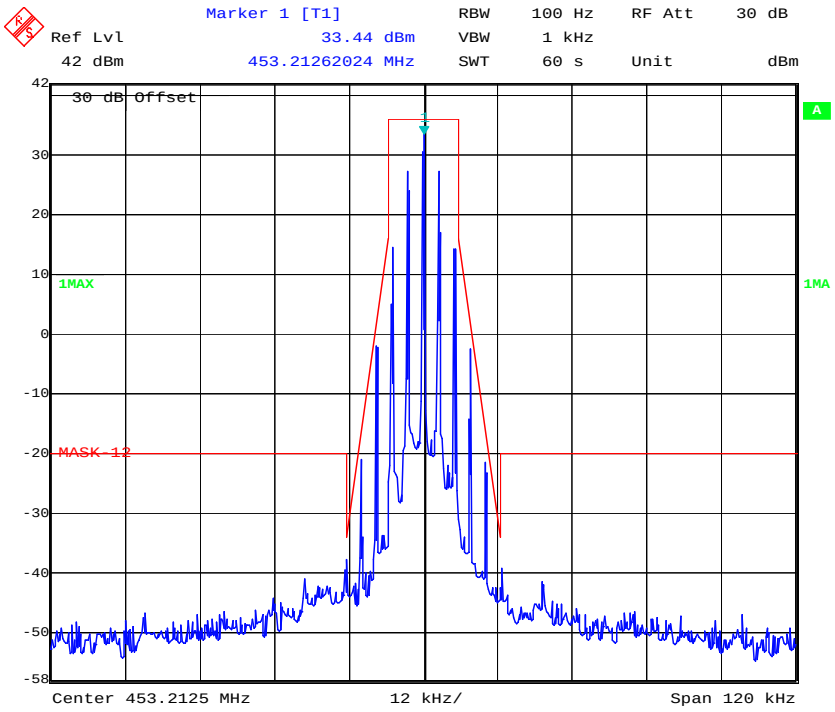
Frequency 453.2125 MHz: 99% Occupied & 26 dB Bandwidth, High Power



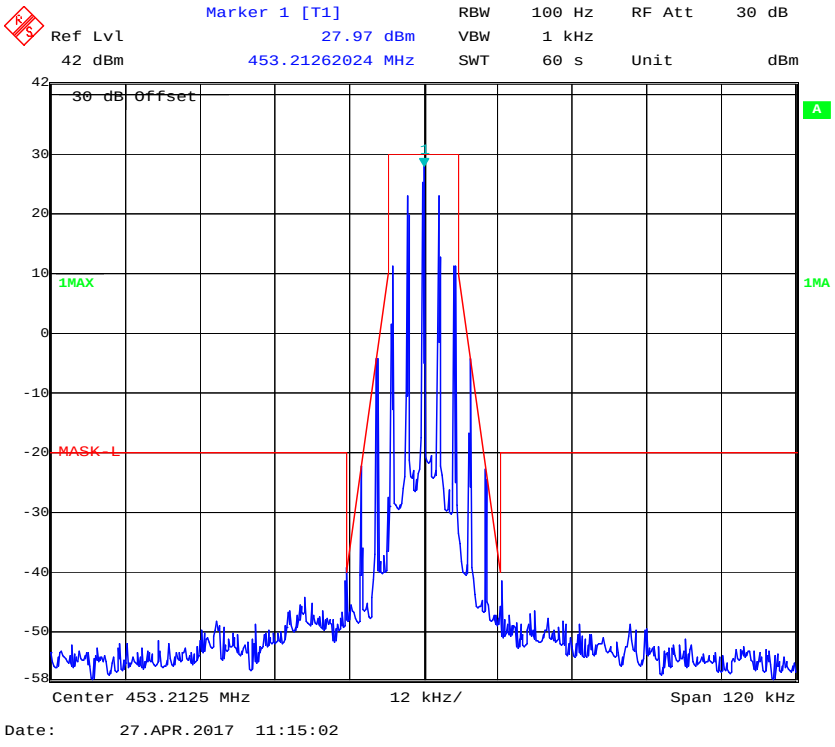
Frequency 453.2125 MHz: 99% Occupied & 26 dB Bandwidth, Low Power



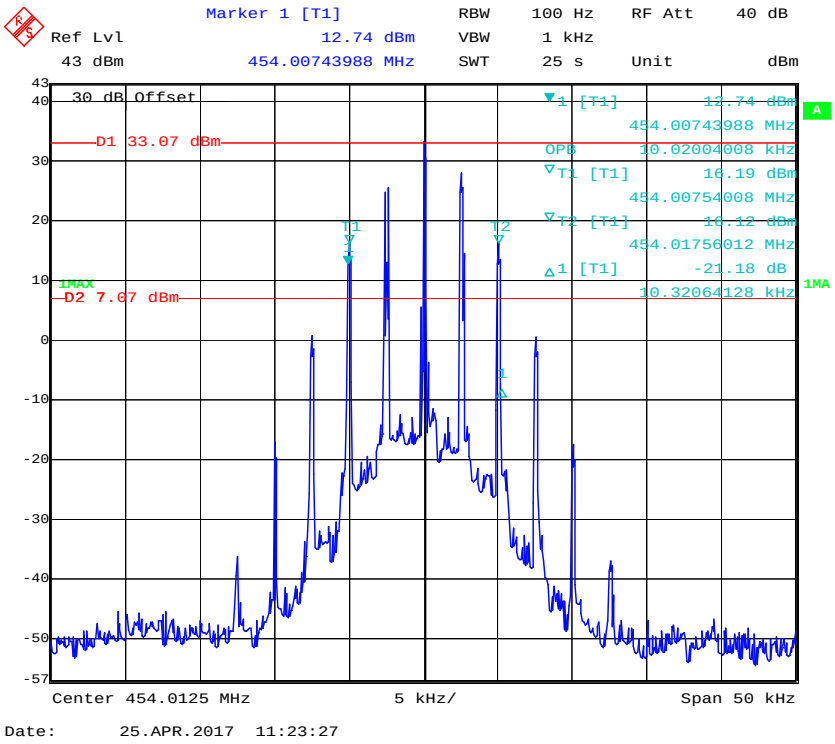
Frequency 453.2125 MHz: Emission Mask D, High Power



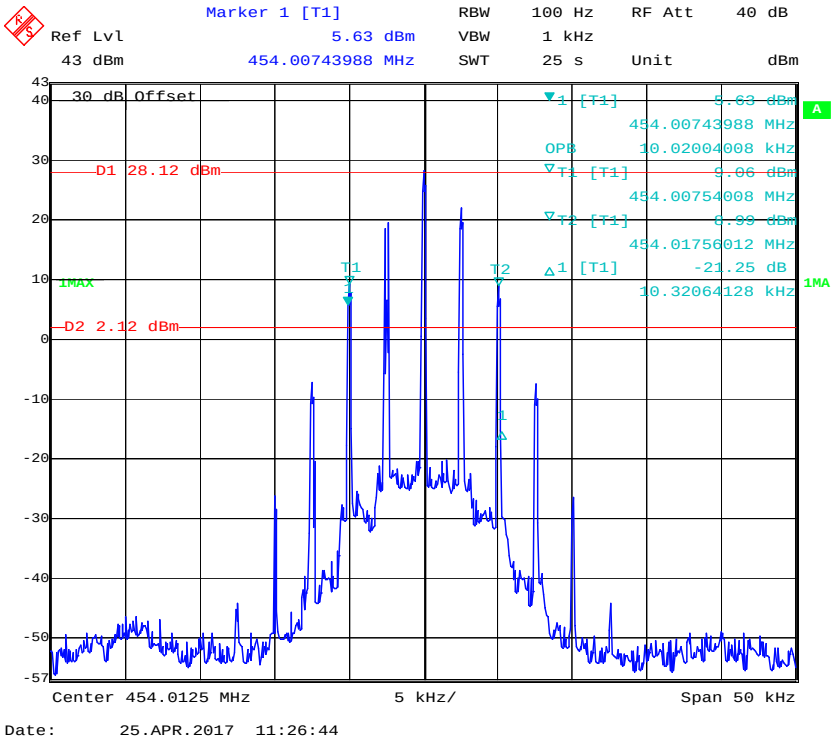
Frequency 453.2125 MHz: Emission Mask D, Low Power



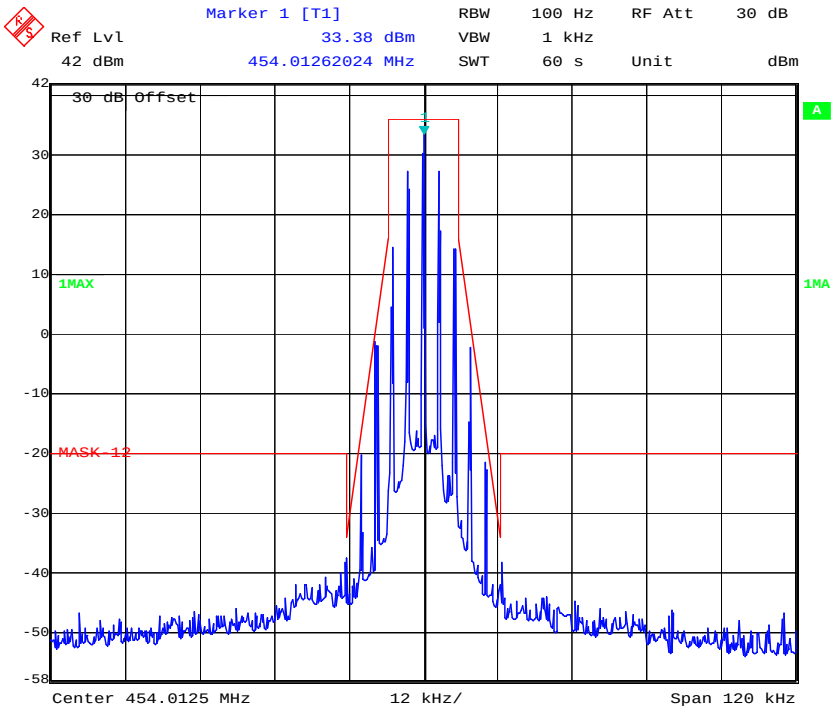
Frequency 454.0125 MHz: 99% Occupied & 26 dB Bandwidth, High Power



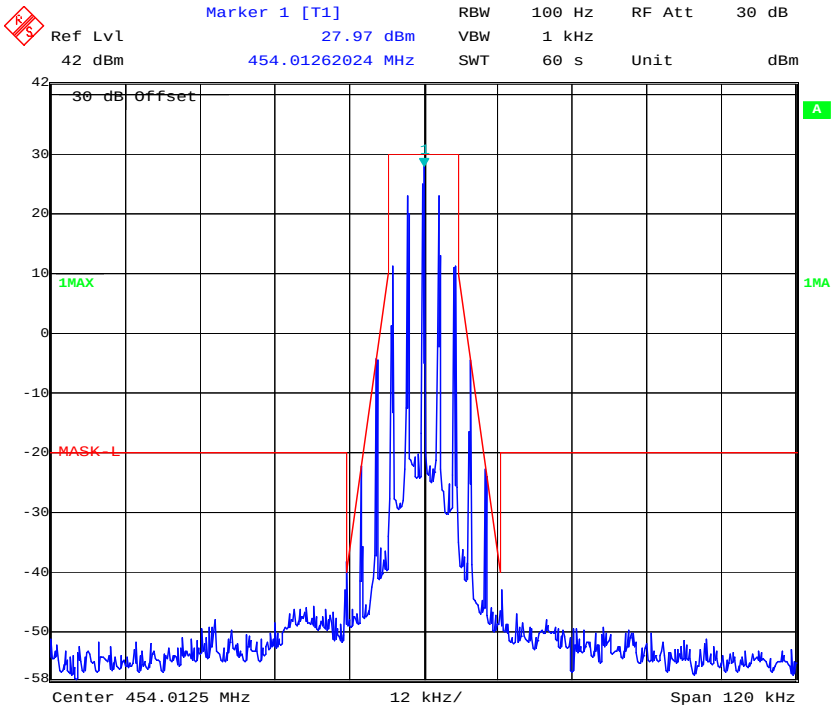
Frequency 454.0125 MHz: 99% Occupied & 26 dB Bandwidth, Low Power



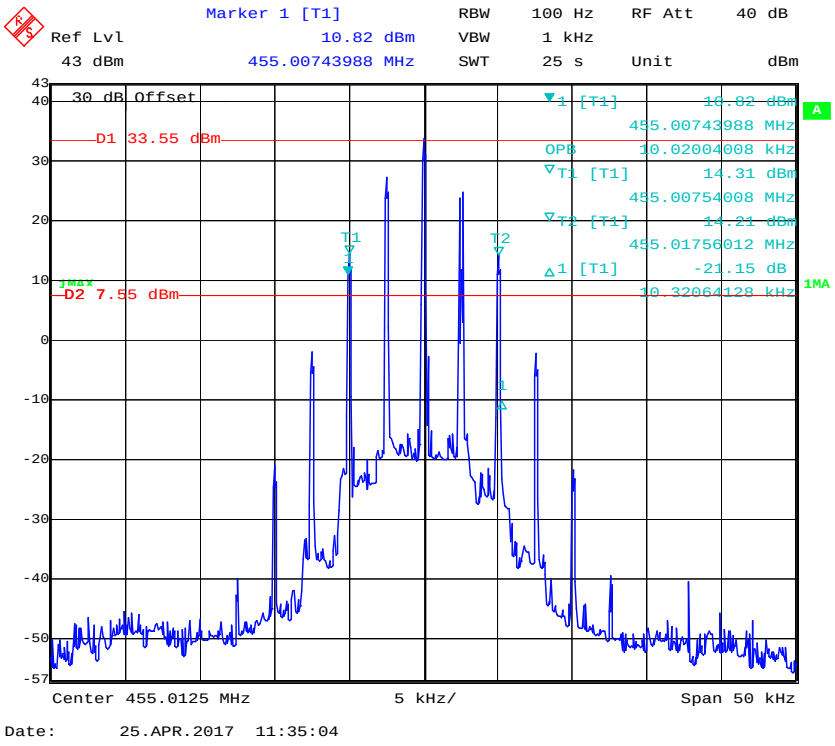
Frequency 454.0125 MHz: Emission Mask D, High Power



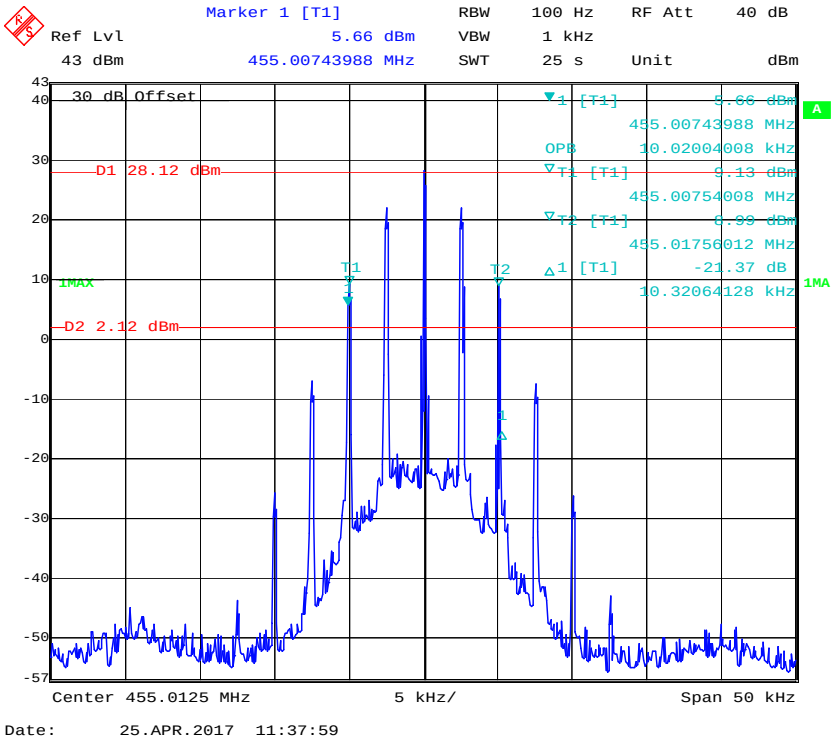
Frequency 454.0125 MHz: Emission Mask D, Low Power



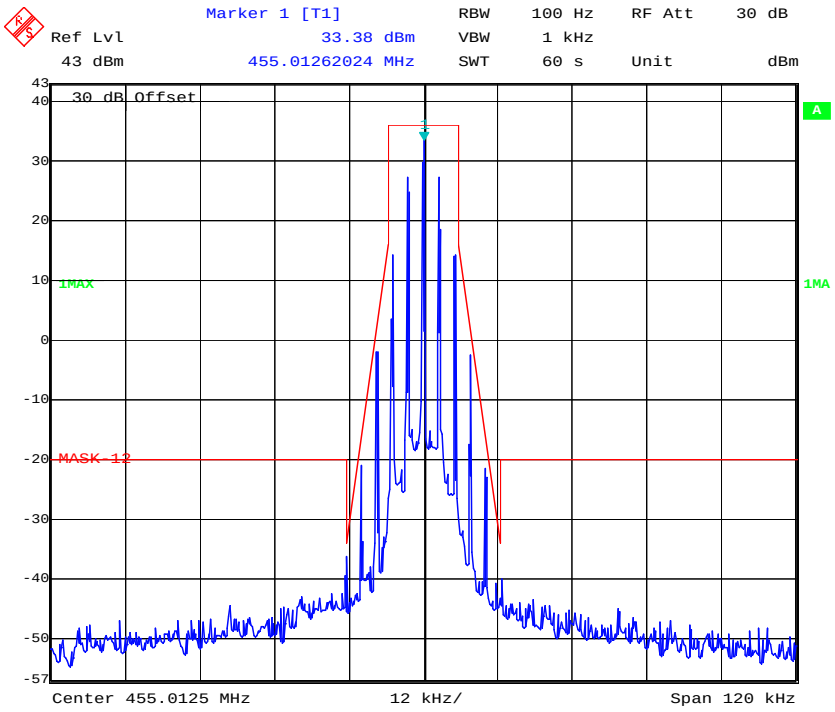
Frequency 455.0125 MHz: 99% Occupied & 26 dB Bandwidth, High Power



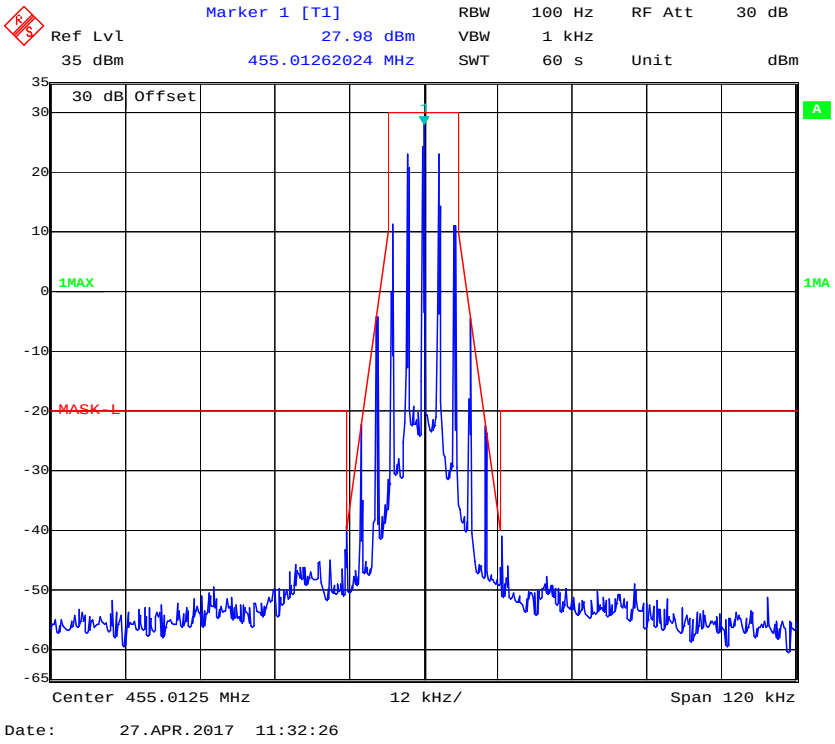
Frequency 455.0125 MHz: 99% Occupied & 26 dB Bandwidth, Low Power



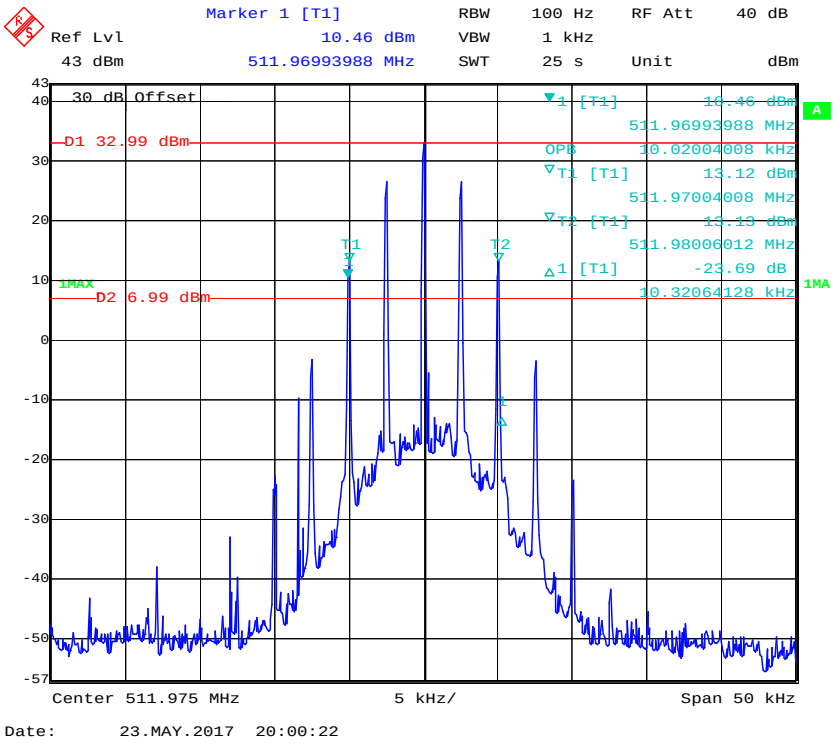
Frequency 455.0125 MHz: Emission Mask D, High Power



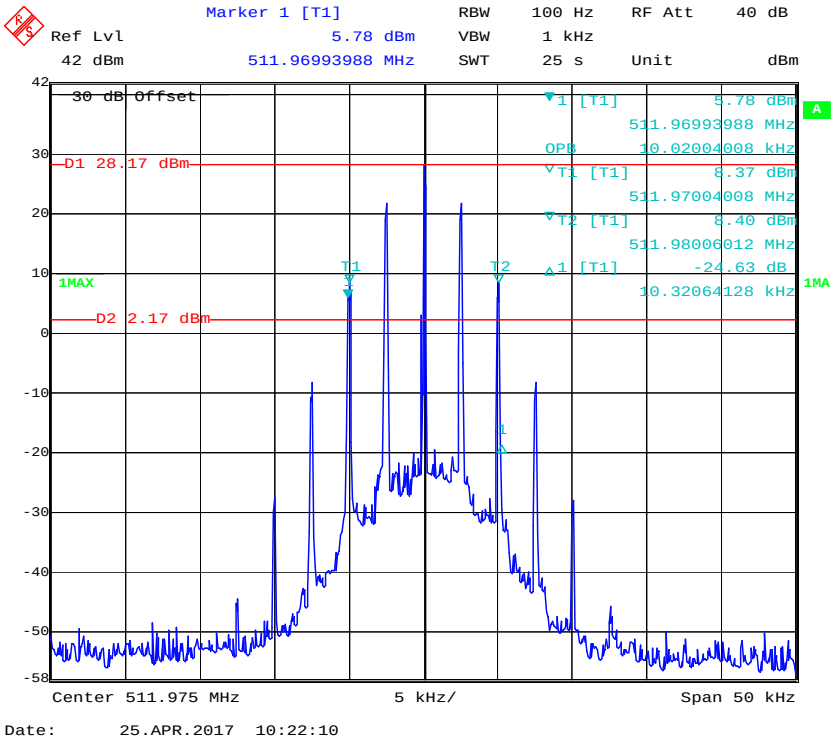
Frequency 455.0125 MHz: Emission Mask D, Low Power



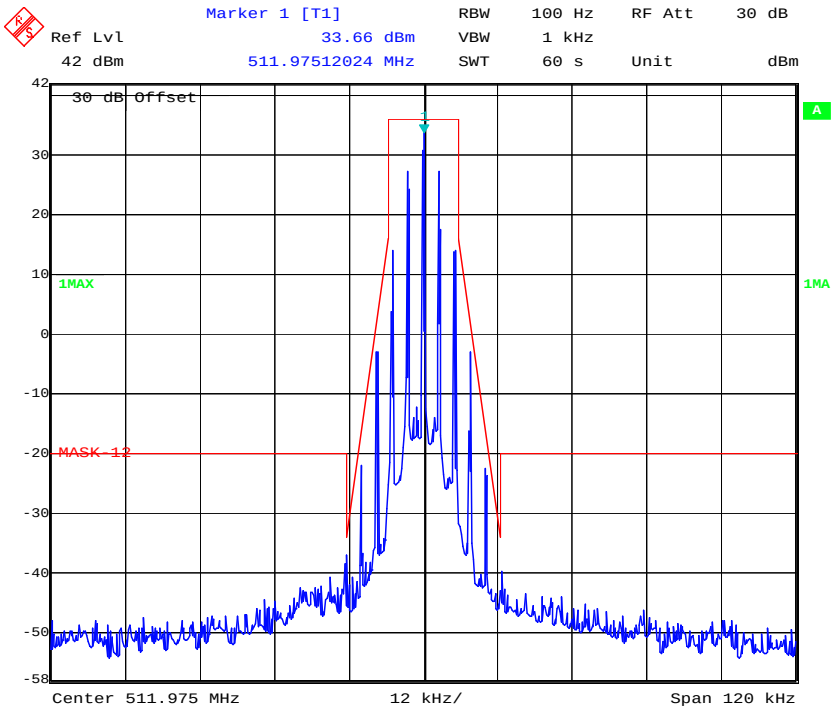
Frequency 511.975 MHz: 99% Occupied & 26 dB Bandwidth, High Power



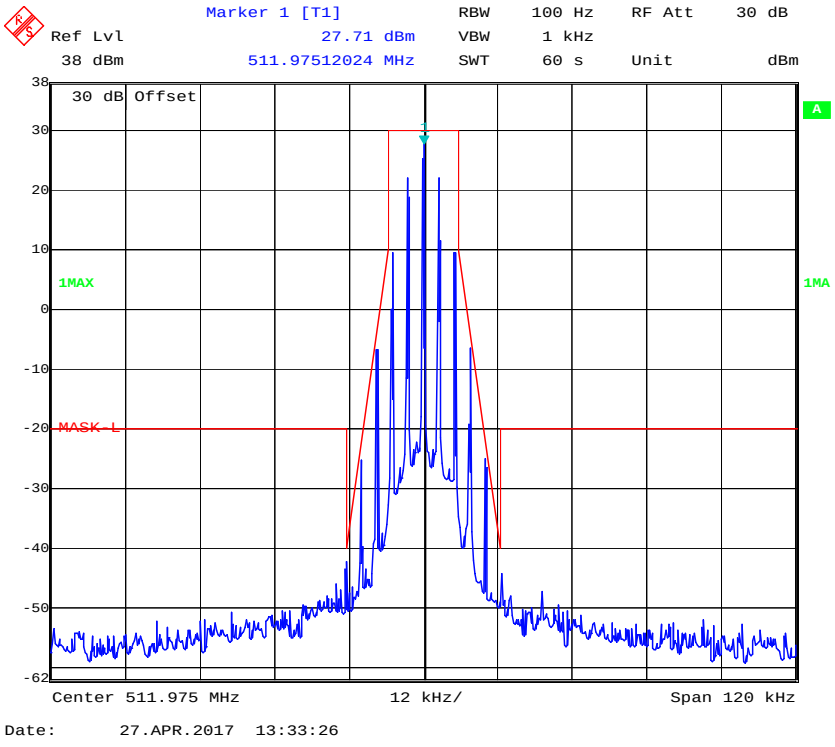
Frequency 511.975 MHz: 99% Occupied & 26 dB Bandwidth, Low Power



Frequency 511.975 MHz: Emission Mask D, High Power

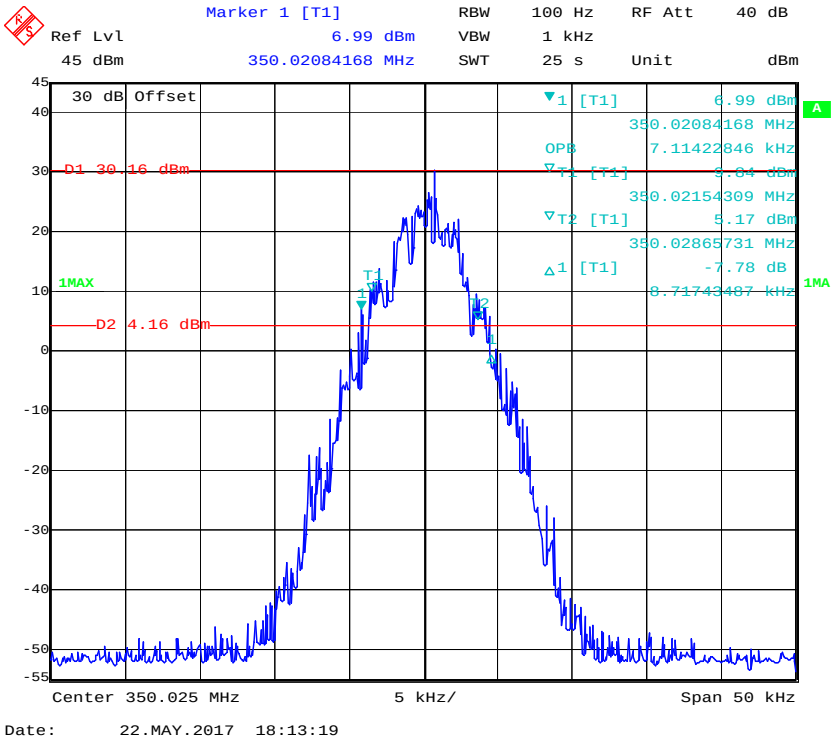


Frequency 511.975 MHz: Emission Mask D, Low Power

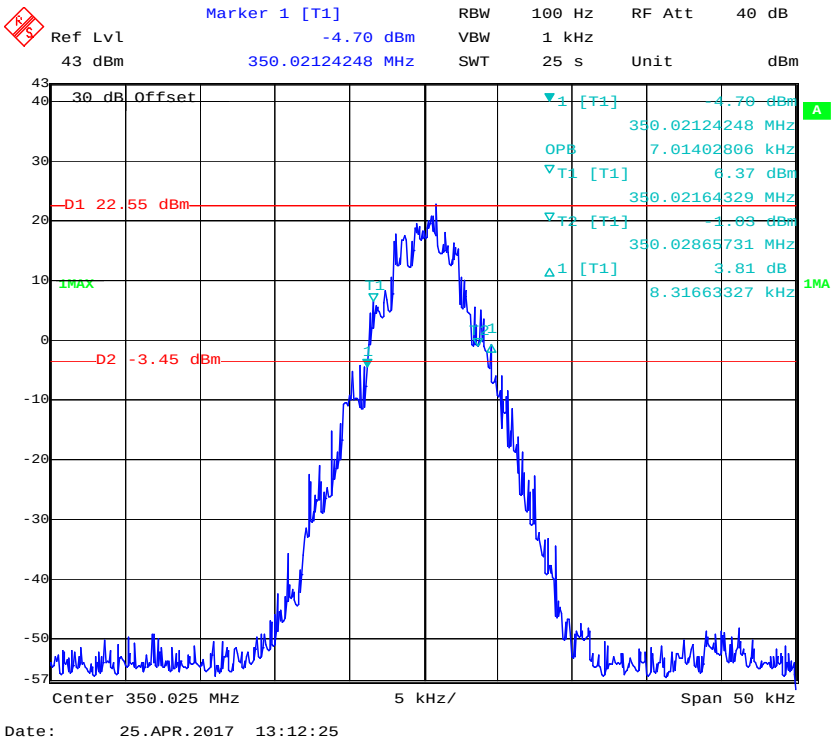


Digital Modulation:

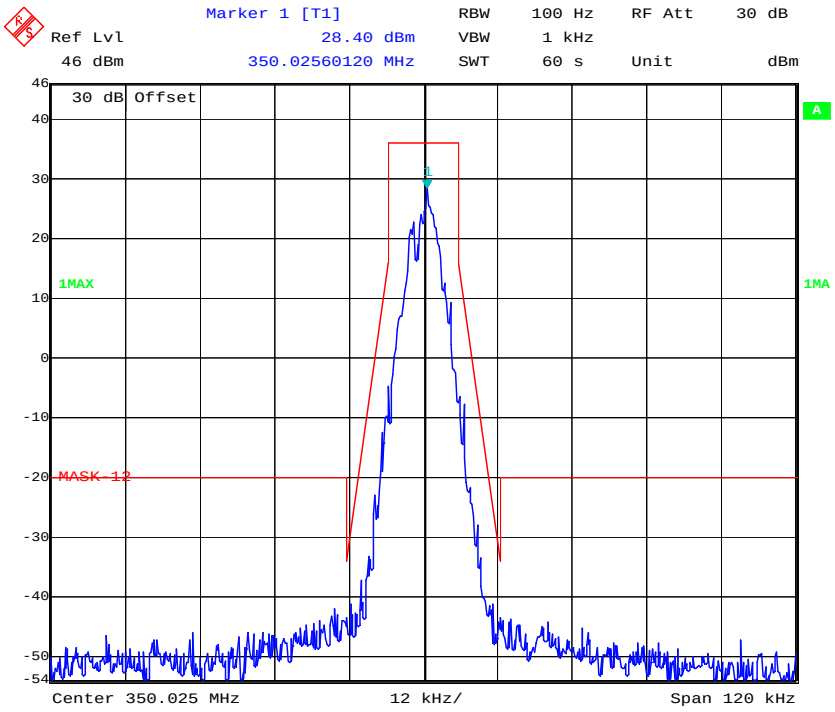
Frequency 350.025 MHz: 99% Occupied & 26 dB Bandwidth, High Power



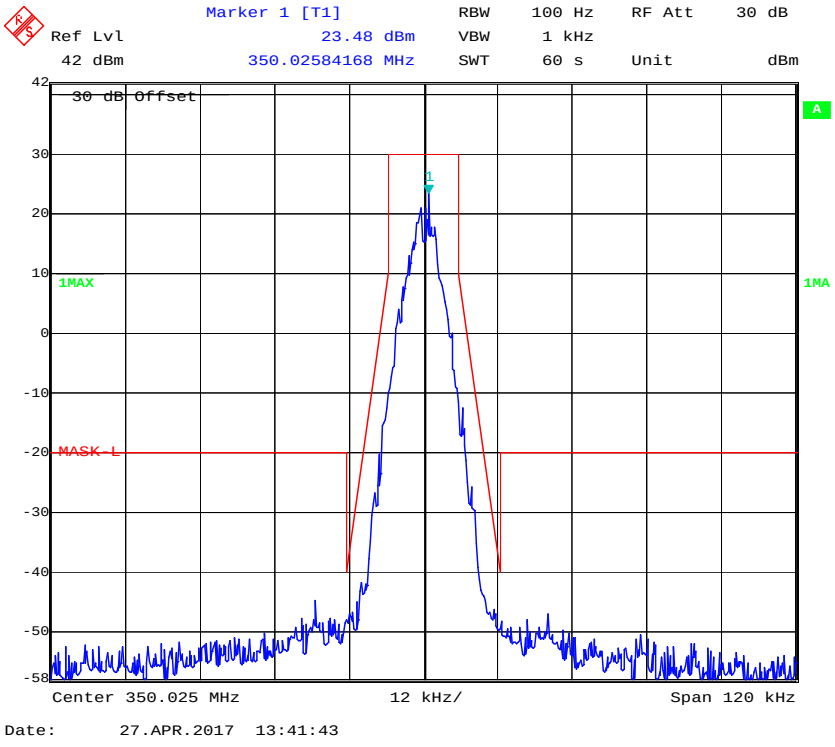
Frequency 350.025 MHz: 99% Occupied & 26 dB Bandwidth, Low Power



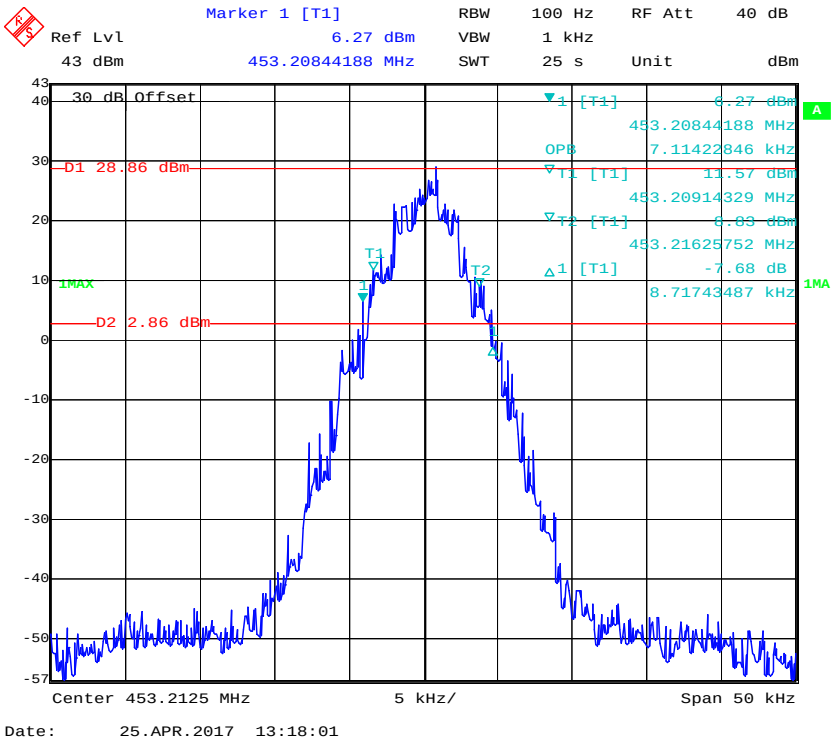
Frequency 350.025 MHz: Emission Mask D, High Power



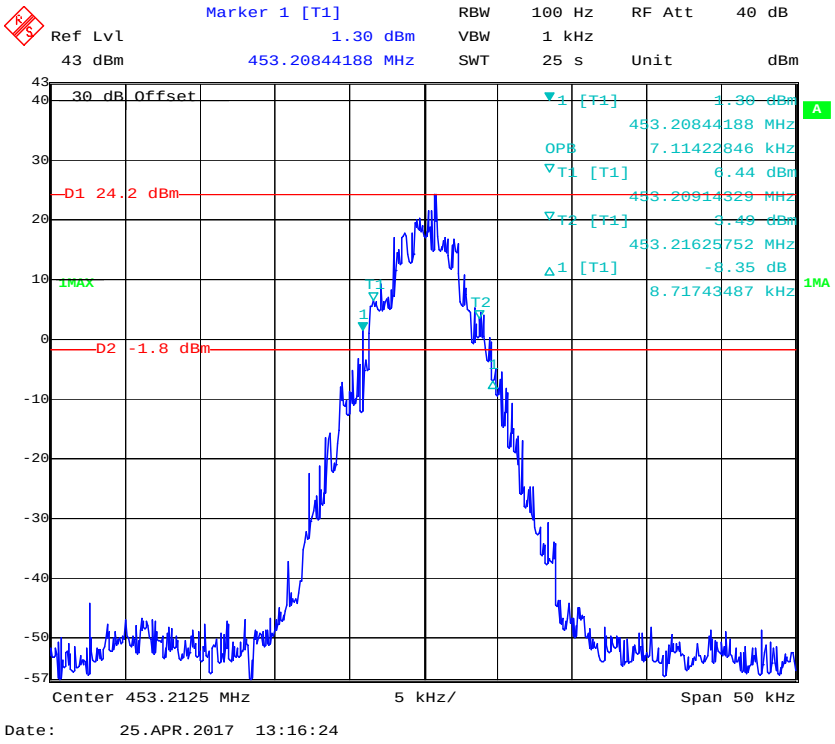
Frequency 350.025 MHz: Emission Mask D, Low Power



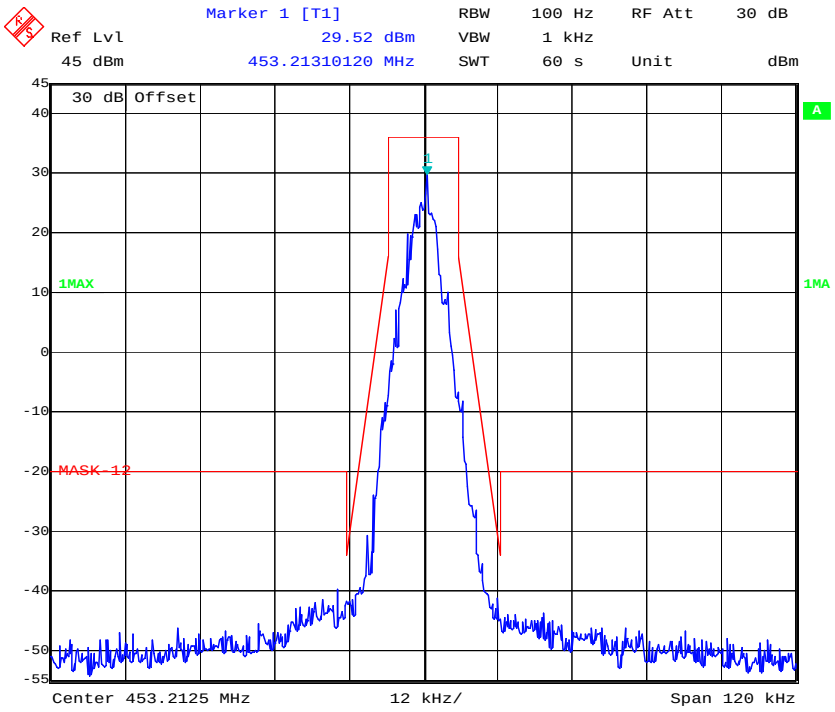
Frequency 453.2125 MHz: 99% Occupied & 26 dB Bandwidth, High Power



Frequency 453.2125 MHz: 99% Occupied & 26 dB Bandwidth, Low Power

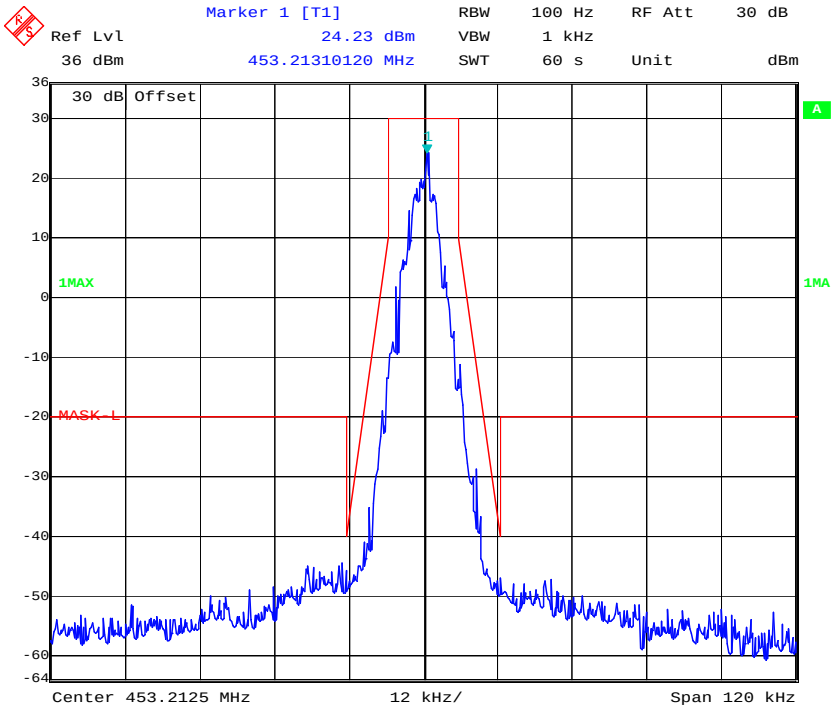


Frequency 453.2125 MHz: Emission Mask D, High Power



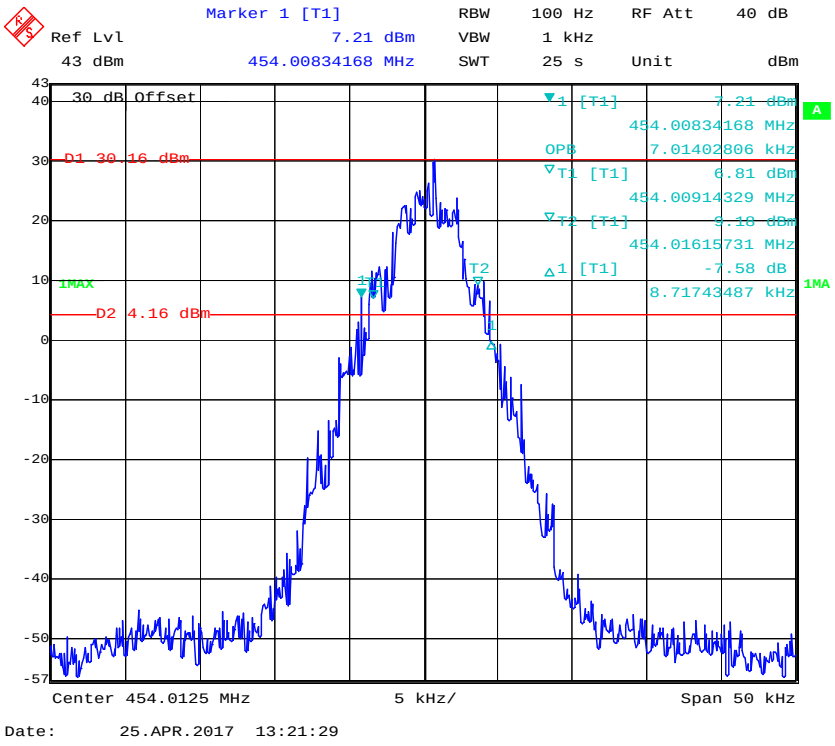
Date: 27.APR.2017 10:52:23

Frequency 453.2125 MHz: Emission Mask D, Low Power

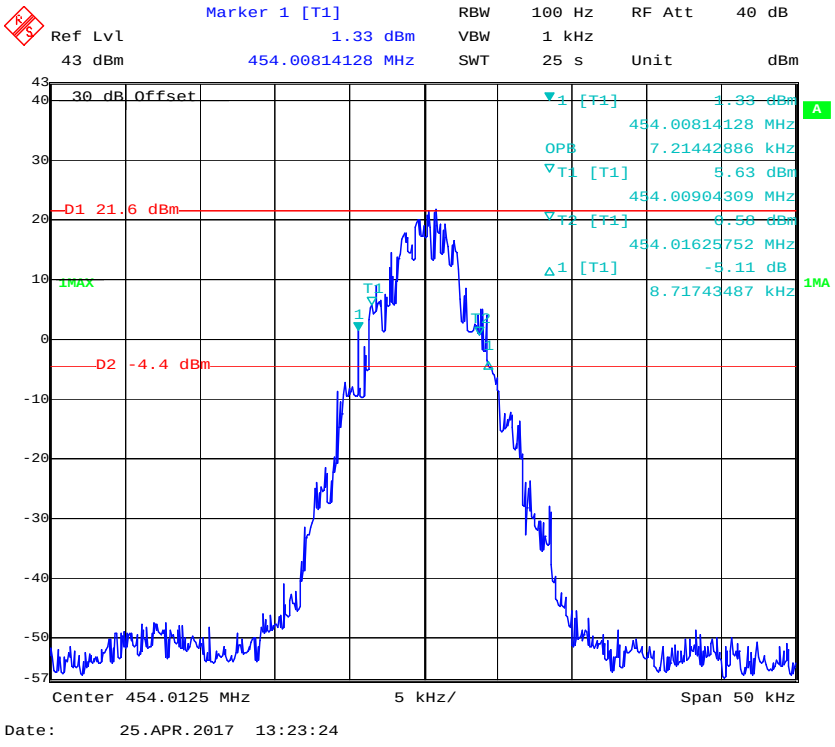


Date: 27.APR.2017 11:01:42

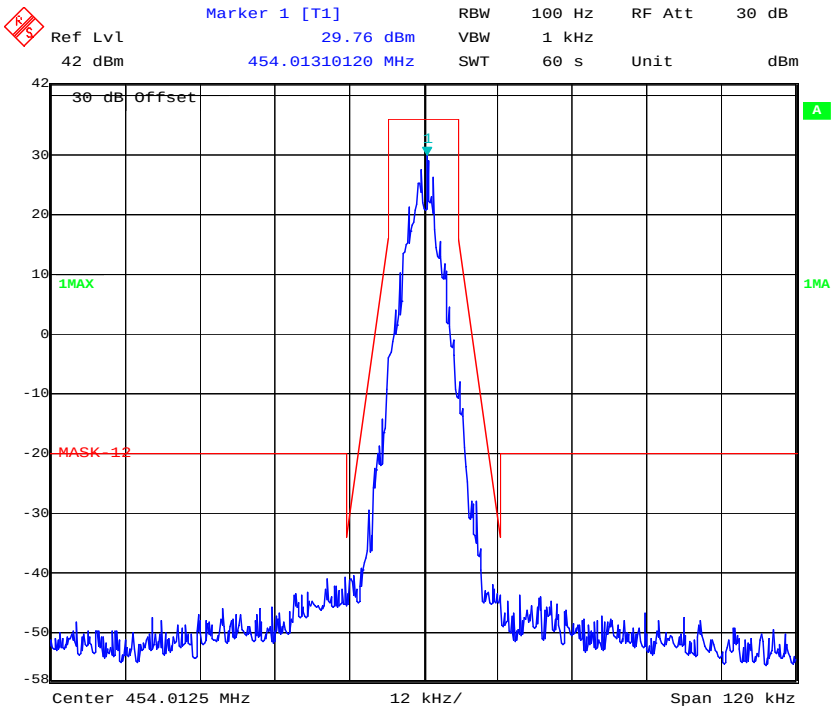
Frequency 454.0125 MHz: 99% Occupied & 26 dB Bandwidth, High Power



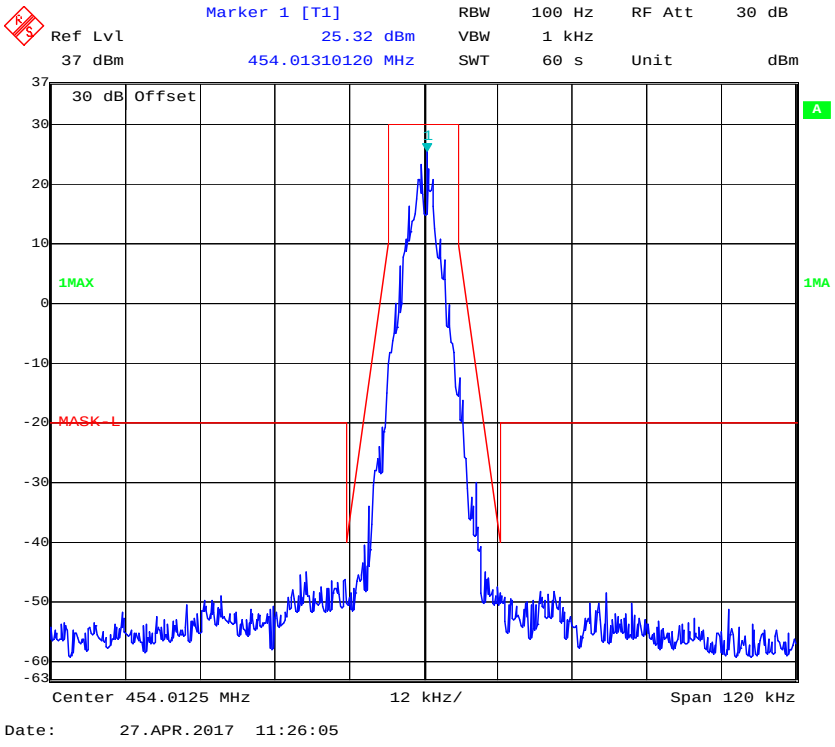
Frequency 454.0125 MHz: 99% Occupied & 26 dB Bandwidth, Low Power



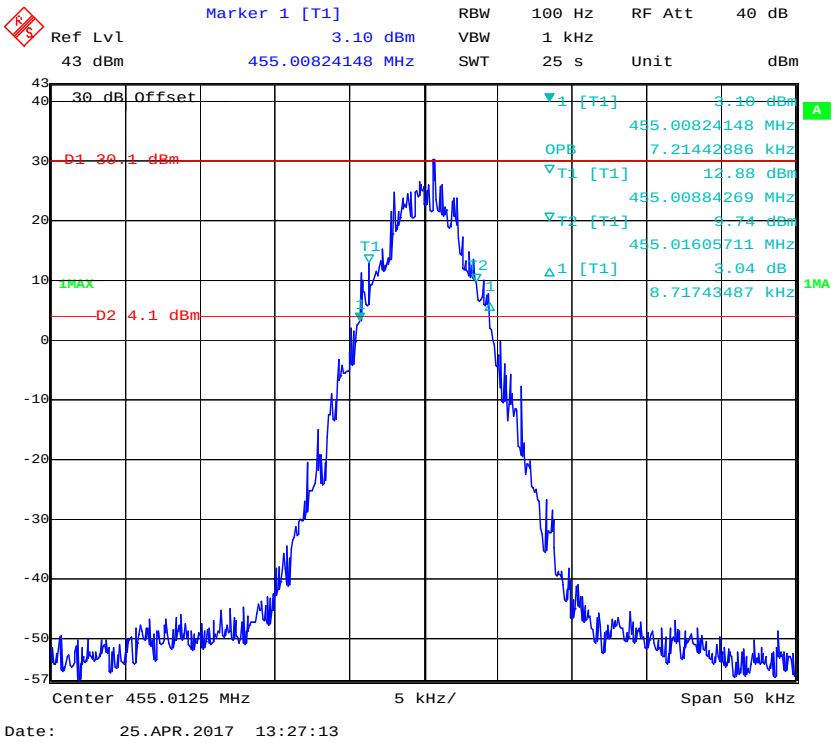
Frequency 454.0125 MHz: Emission Mask D, High Power



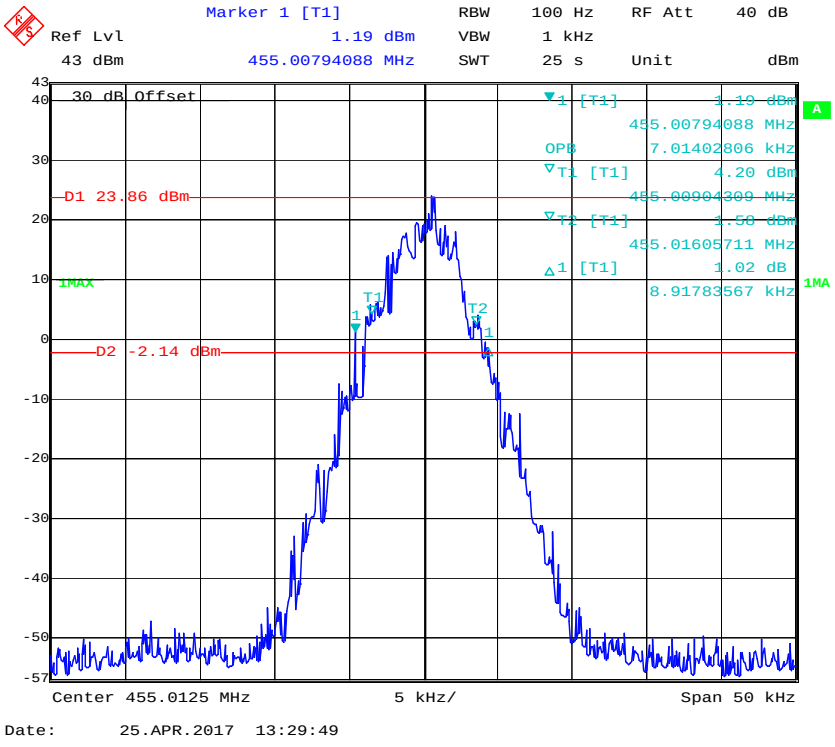
Frequency 454.0125 MHz: Emission Mask D, Low Power



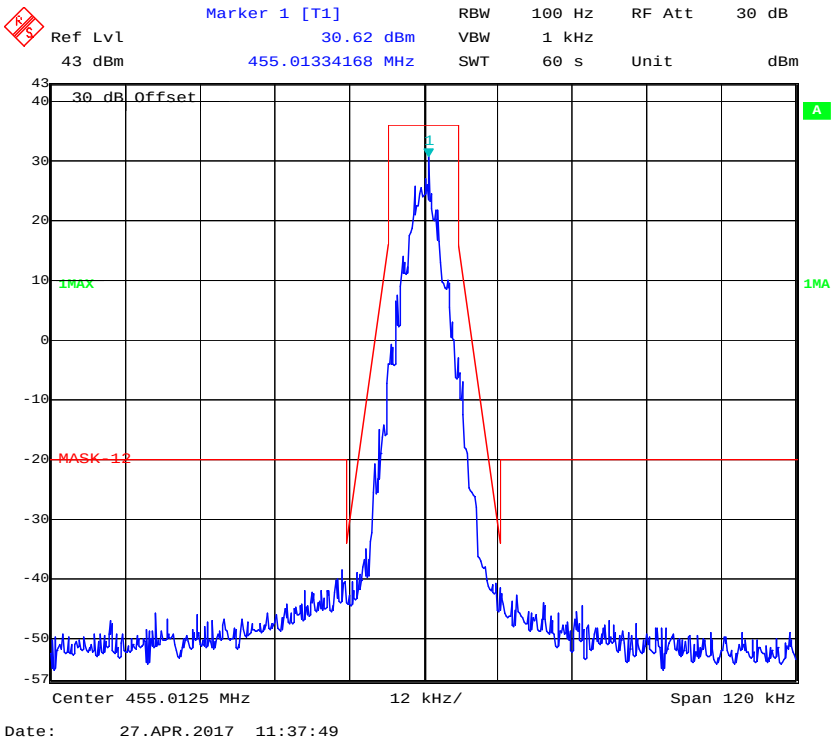
Frequency 455.0125 MHz: 99% Occupied & 26 dB Bandwidth, High Power



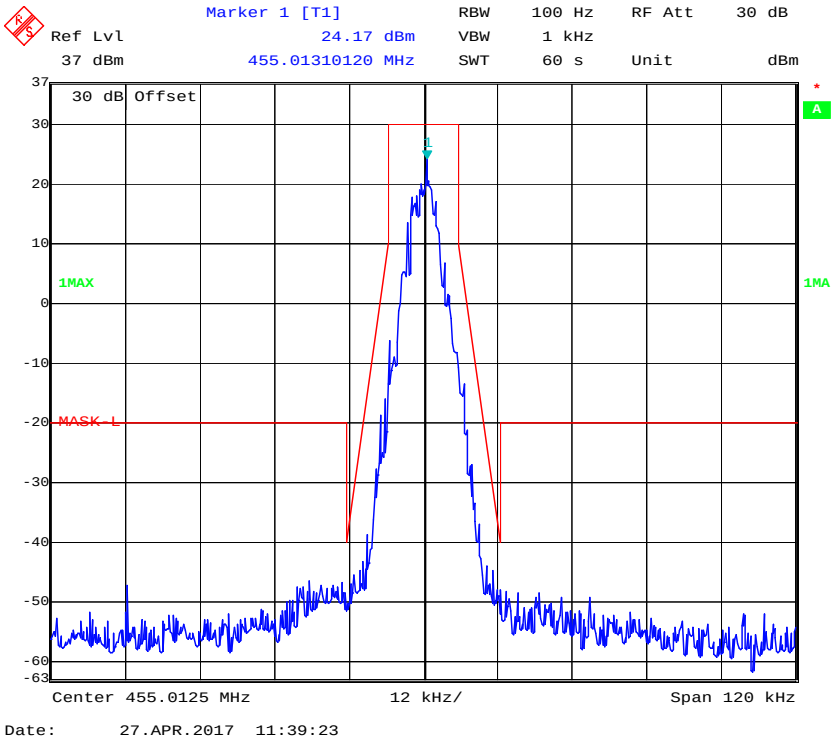
Frequency 455.0125 MHz: 99% Occupied & 26 dB Bandwidth, Low Power



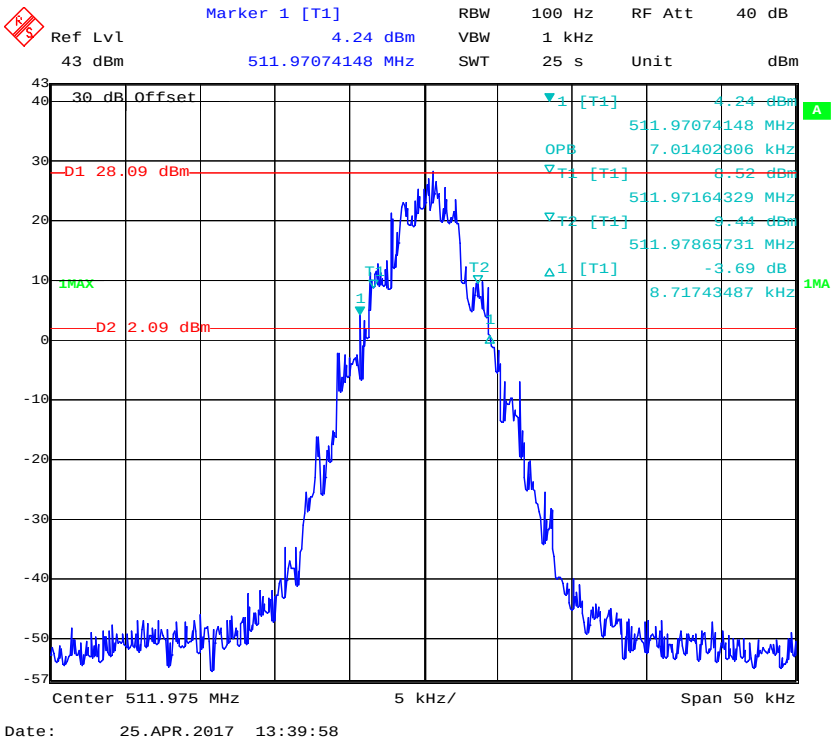
Frequency 455.0125 MHz: Emission Mask D, High Power



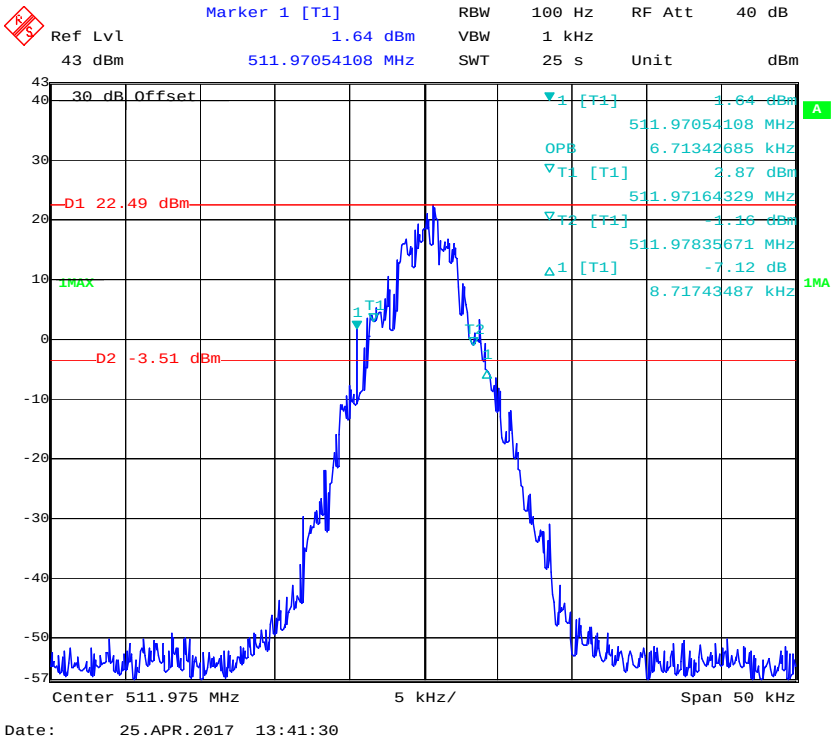
Frequency 455.0125 MHz: Emission Mask D, Low Power



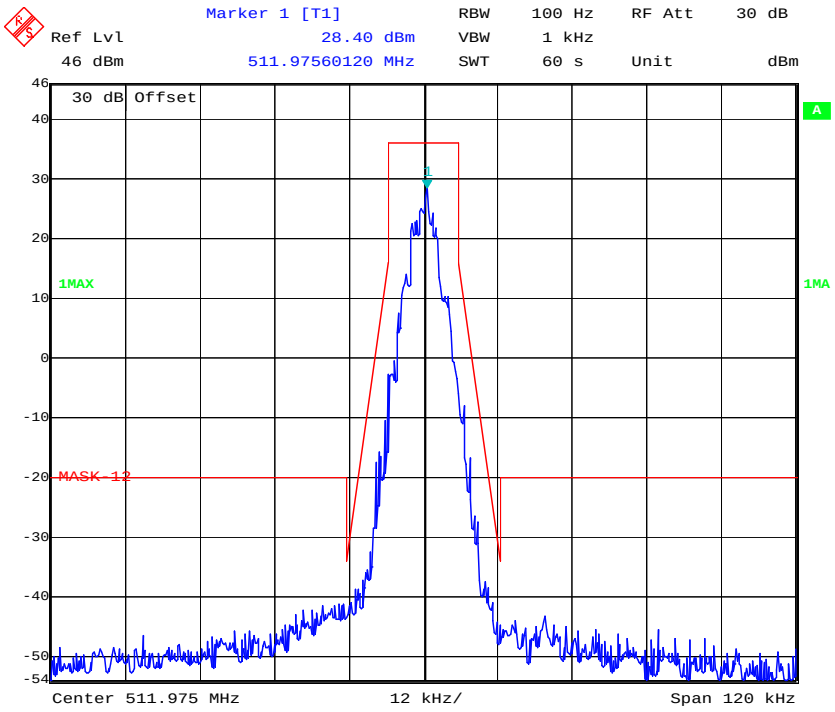
Frequency 511.975 MHz: 99% Occupied & 26 dB Bandwidth, High Power



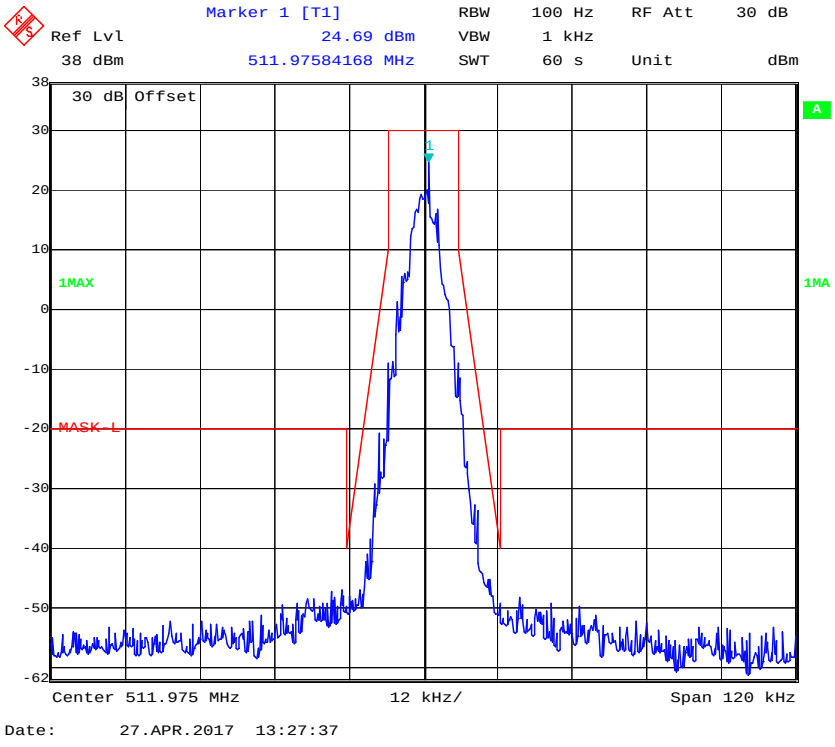
Frequency 511.975 MHz: 99% Occupied & 26 dB Bandwidth, Low Power



Frequency 511.975 MHz: Emission Mask D, High Power



Frequency 511.975 MHz: Emission Mask D, Low Power



Modulation	Channel Separation (kHz)	Frequency (MHz)	Power Level	99% Occupied Bandwidth (kHz)	26 dB Emissions Bandwidth (kHz)	Note
Analog	25	453.2125	High	14.62	15.77	For Part 74
	25		Low	14.81	15.77	
	25	454.0125	High	14.81	15.77	For Part 22
	25		Low	14.62	15.77	
	25	455.2125	High	14.62	15.77	For Part 74
	25		Low	14.62	15.96	
	25	458.2125	High	14.81	15.77	For Part 80
	25		Low	14.81	15.77	

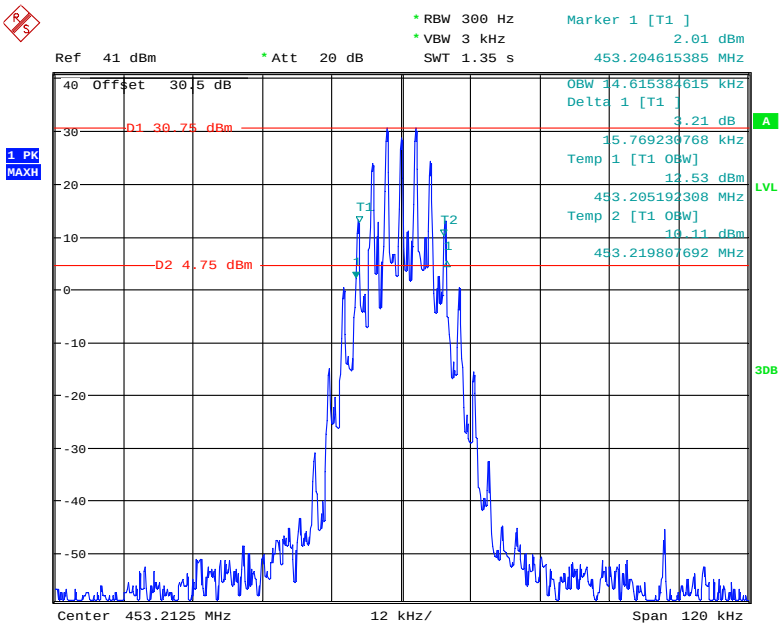
Emission Designator Per CFR 47 §2.201& §2.202&, Bn = 2M + 2D

For FM Mode (Channel Spacing: 25 kHz)

Emission Designator 16K0F3E In this case, the maximum modulating frequency is 5.0 kHz with a 3 kHz deviation. BW = 2(M+D) = 2(5 kHz + 3 kHz) = 16 kHz → 16K0*
F3E portion of the designator represents an FM voice transmission Therefore, the entire designator for 25 kHz channel spacing FM mode is 16K0F3E.

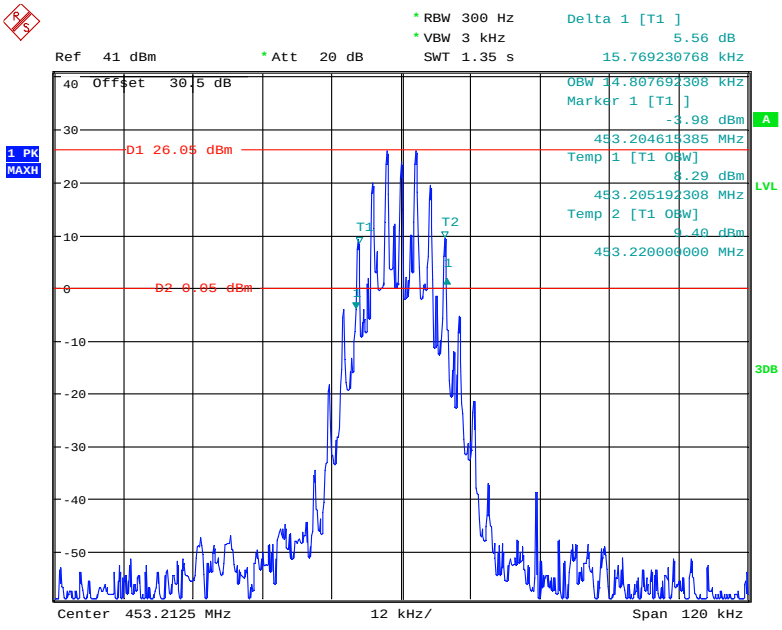
Analog Modulation

Frequency 453.2125 MHz: 99% Occupied & 26 dB Bandwidth, High Power



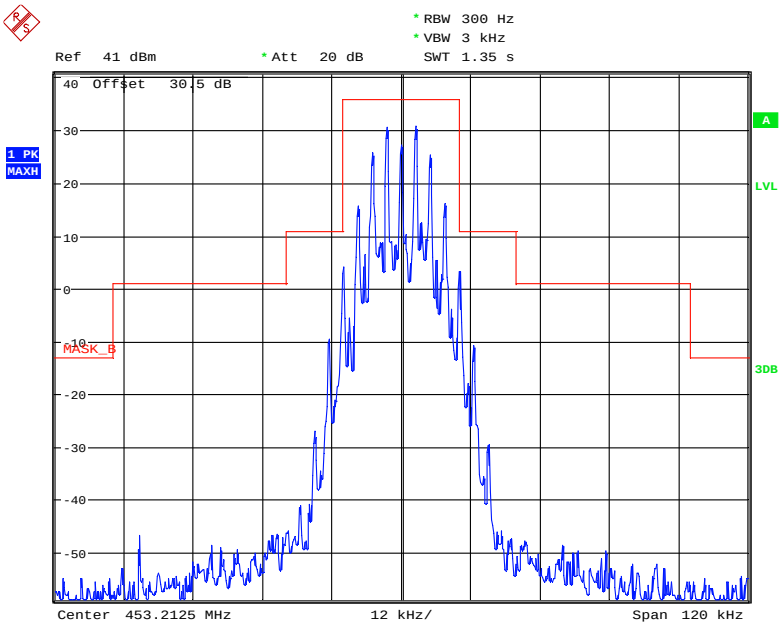
Date: 14.OCT.2017 13:15:32

Frequency 453.2125 MHz: 99% Occupied & 26 dB Bandwidth, Low Power



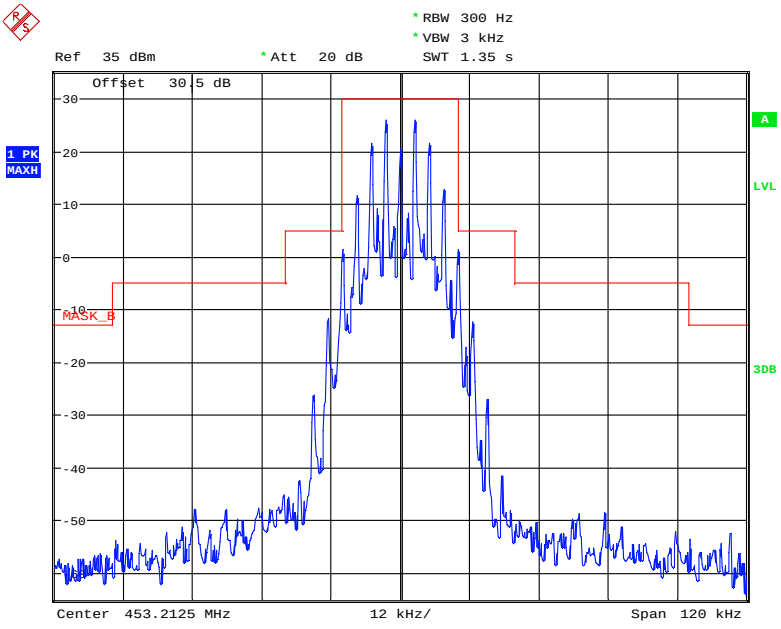
Date: 14.OCT.2017 13:16:31

Frequency 453.2125 MHz: Emission Mask B, High Power



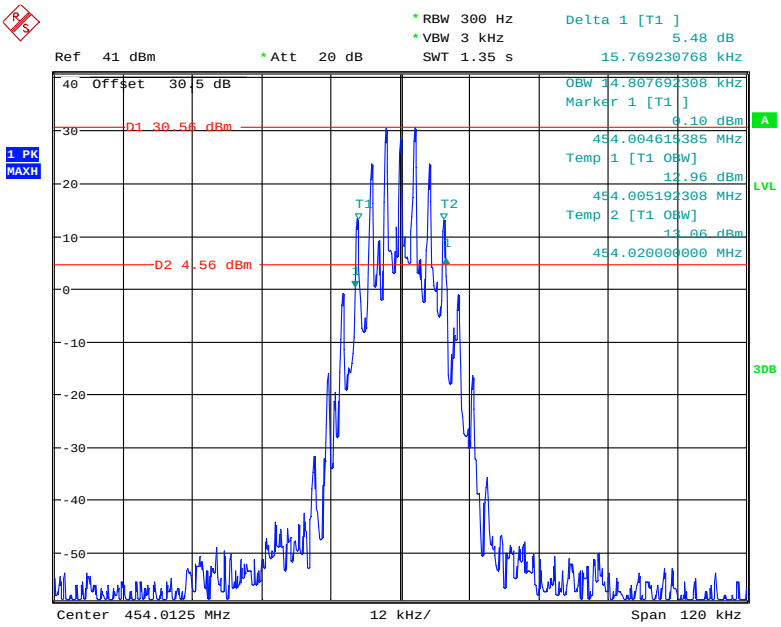
Date: 14.OCT.2017 11:33:15

Frequency 453.2125 MHz: Emission Mask B, Low Power



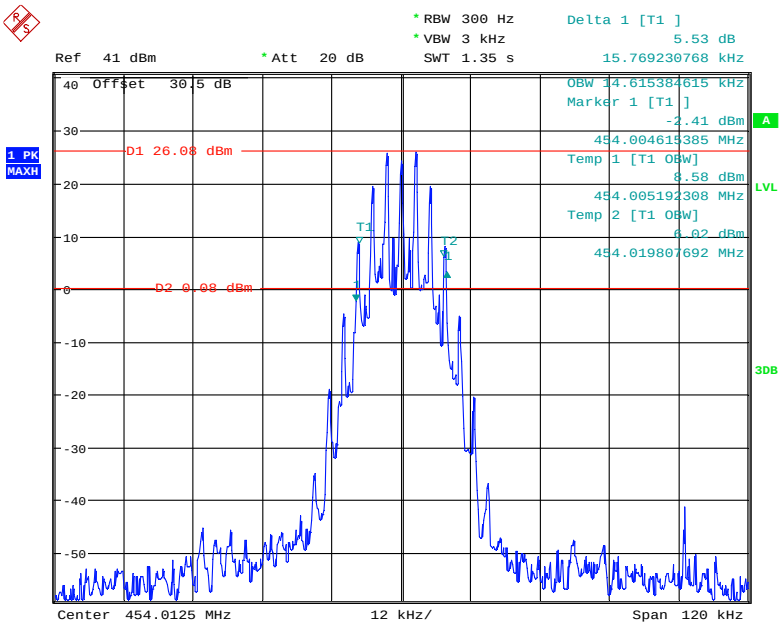
Date: 14.OCT.2017 11:32:04

Frequency 454.0125 MHz: 99% Occupied & 26 dB Bandwidth, High Power



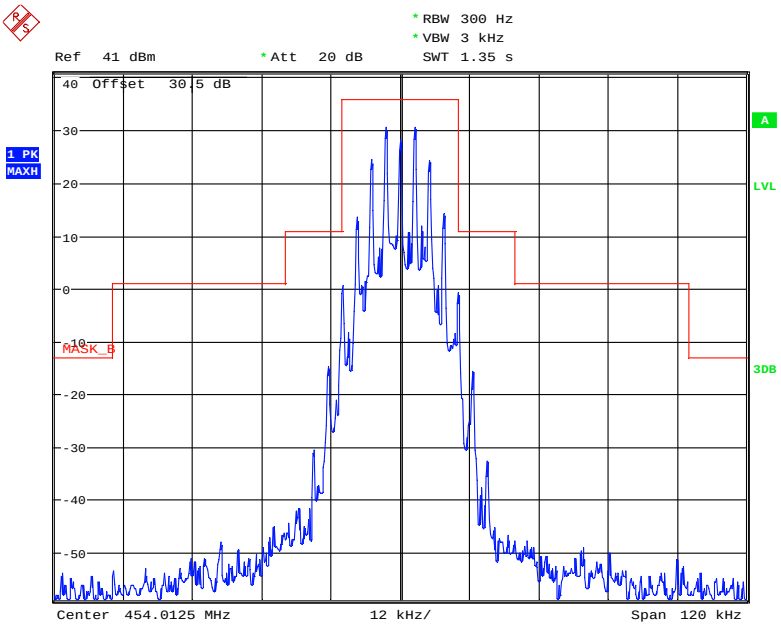
Date: 14.OCT.2017 13:10:34

Frequency 454.0125 MHz: 99% Occupied & 26 dB Bandwidth, Low Power



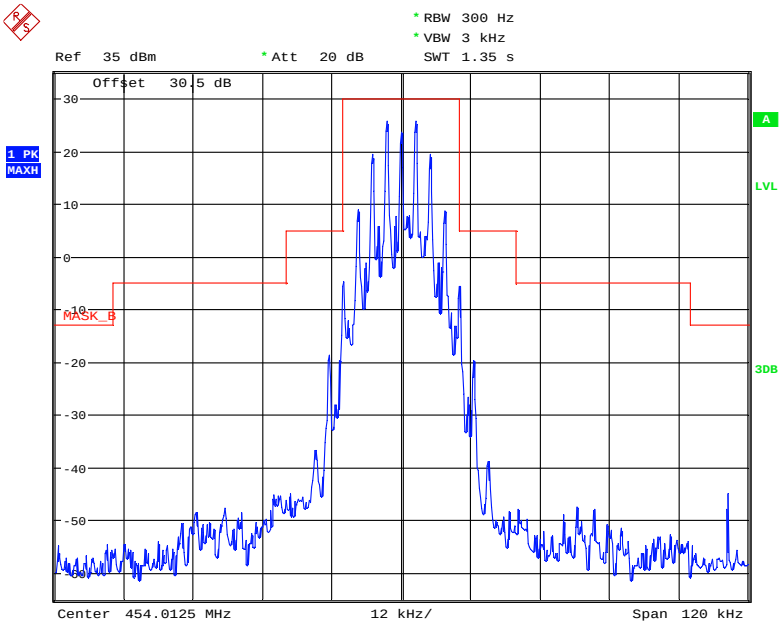
Date: 14.OCT.2017 13:12:16

Frequency 454.0125 MHz: Emission Mask B, High Power



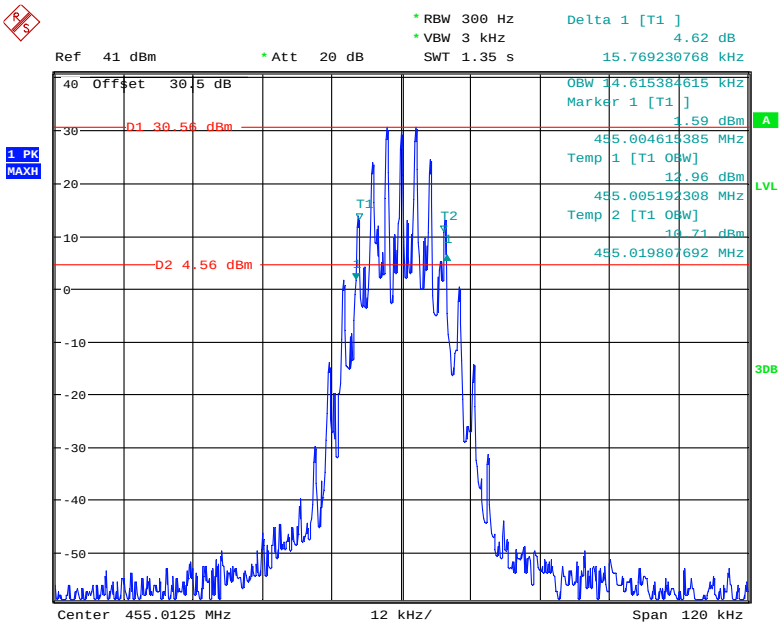
Date: 14.OCT.2017 11:37:31

Frequency 454.0125 MHz: Emission Mask B, Low Power



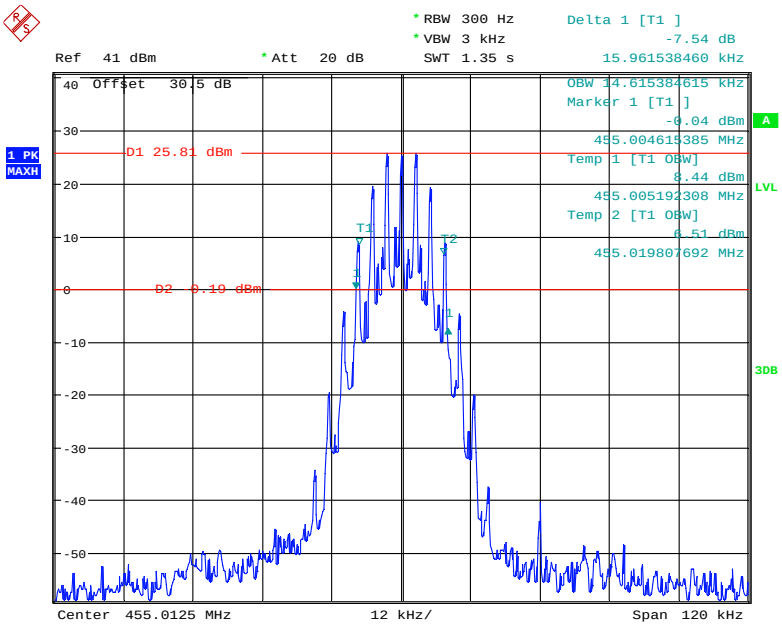
Date: 14.OCT.2017 11:28:25

Frequency 455.0125 MHz: 99% Occupied & 26 dB Bandwidth, High Power



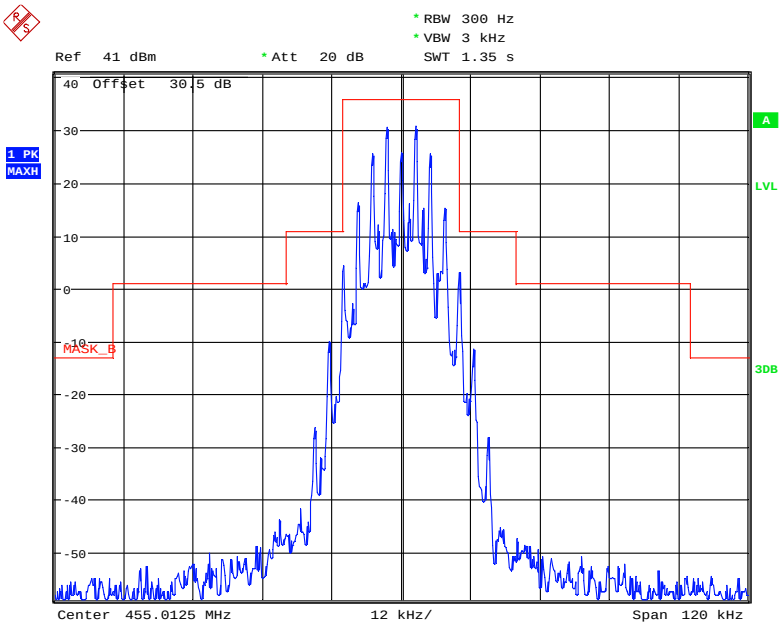
Date: 14.OCT.2017 11:48:39

Frequency 455.0125 MHz: 99% Occupied & 26 dB Bandwidth, Low Power



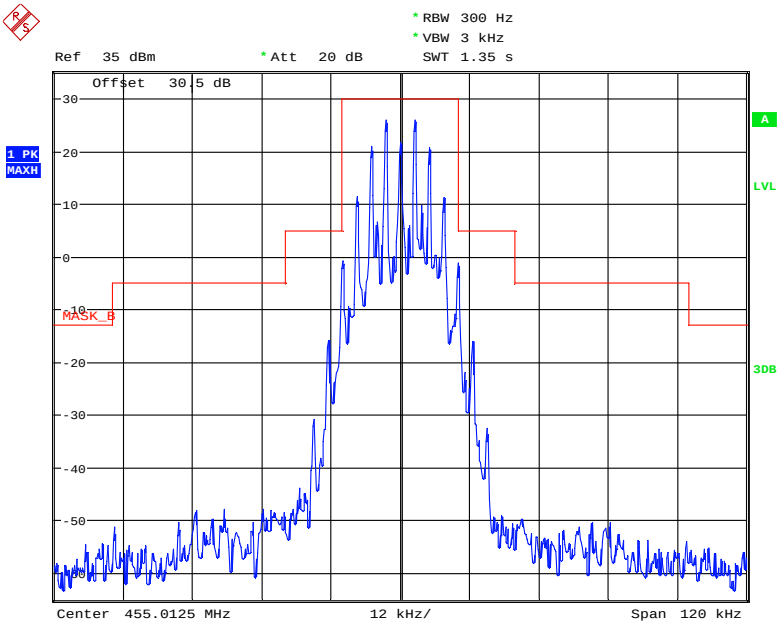
Date: 14.OCT.2017 11:52:08

Frequency 455.0125 MHz: Emission Mask B, High Power



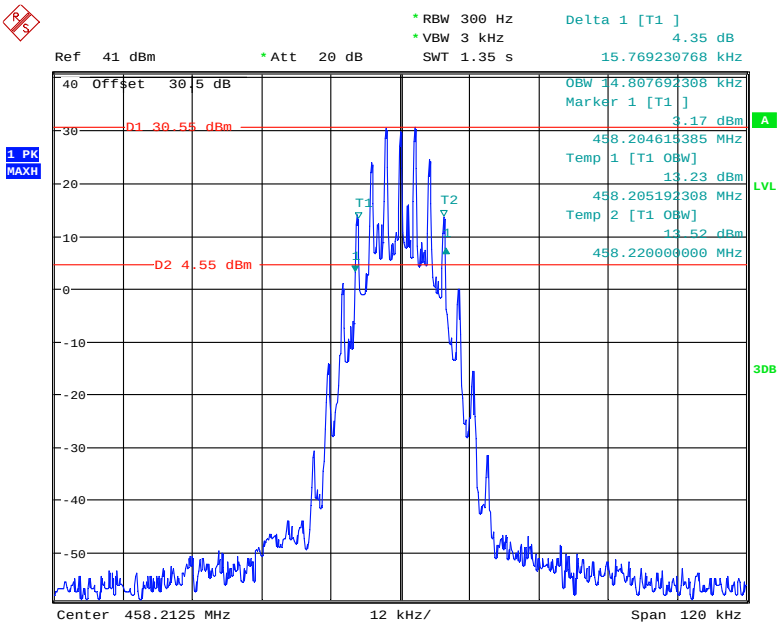
Date: 14.OCT.2017 11:36:27

Frequency 455.0125 MHz: Emission Mask B, Low Power



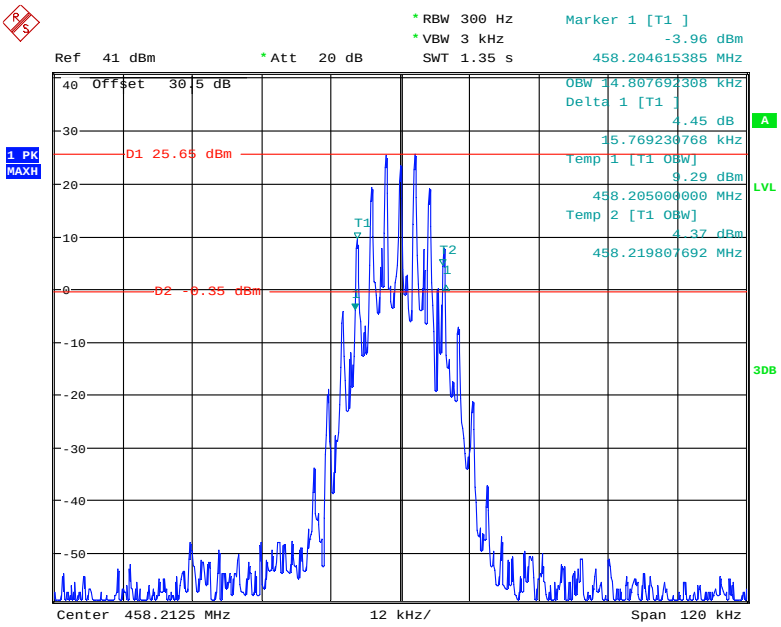
Date: 14.OCT.2017 11:27:24

Frequency 458.2125 MHz: 99% Occupied & 26 dB Bandwidth, High Power



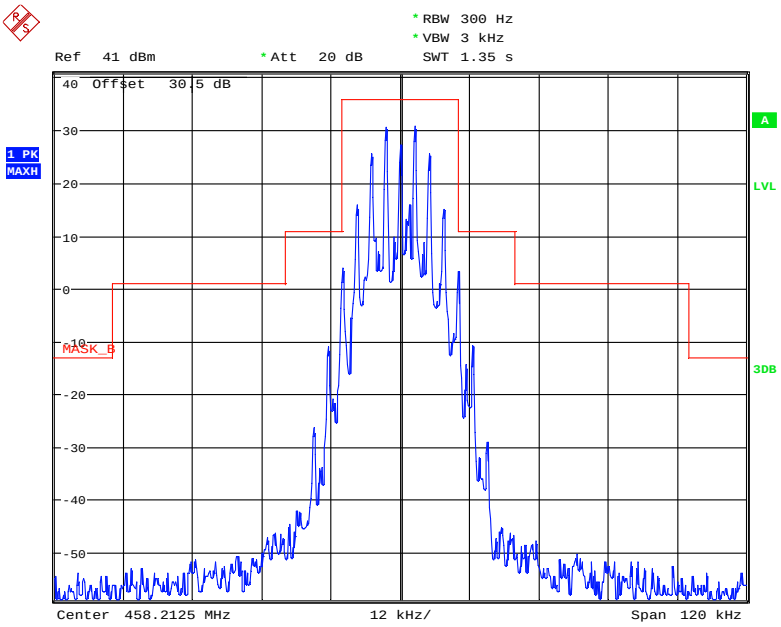
Date: 14.OCT.2017 11:44:03

Frequency 458.2125 MHz: 99% Occupied & 26 dB Bandwidth, Low Power



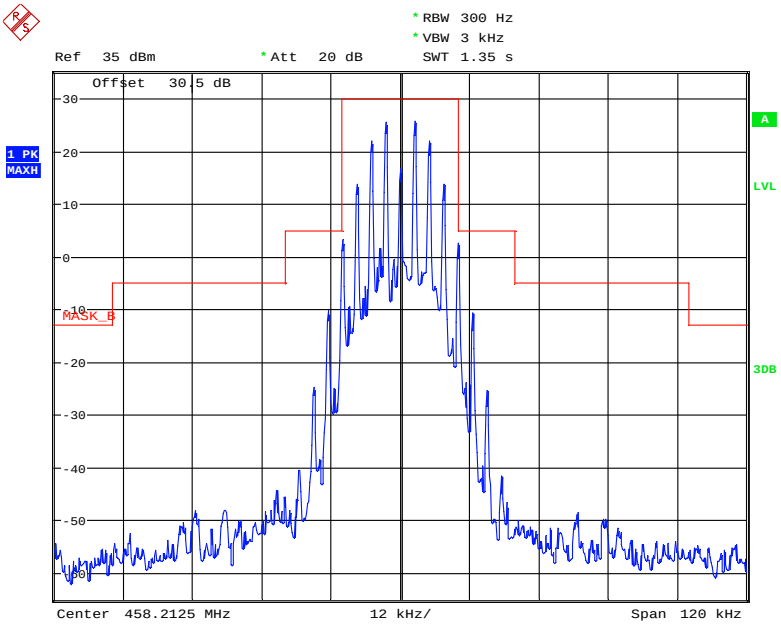
Date: 14.OCT.2017 11:46:05

Frequency 458.2125 MHz: Emission Mask B, High Power



Date: 14.OCT.2017 11:41:13

Frequency 458.2125 MHz: Emission Mask B, Low Power



Date: 14.OCT.2017 11:24:23

FCC §2.1051 & §22.861 & §74.462 & § 80.211 & §90.210 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard

Emission Mask D—12.5 kHz channel bandwidth equipment. For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

1) For any frequency removed from the center of the authorized bandwidth f_0 to 5.625 kHz removed from f_0, 0 dB.

2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.626 kHz but no more than 12.5 kHz, at least 7.27 (f_d –2.88 kHz) dB.

3) 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 50 + 10 log (P) dB or 70 dB, whichever is the lesser attenuation.

Test Procedure

The RF output of the EUT was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100kHz for below 1GHz, and 1MHz for above 1GHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.

Test Data

Environmental Conditions

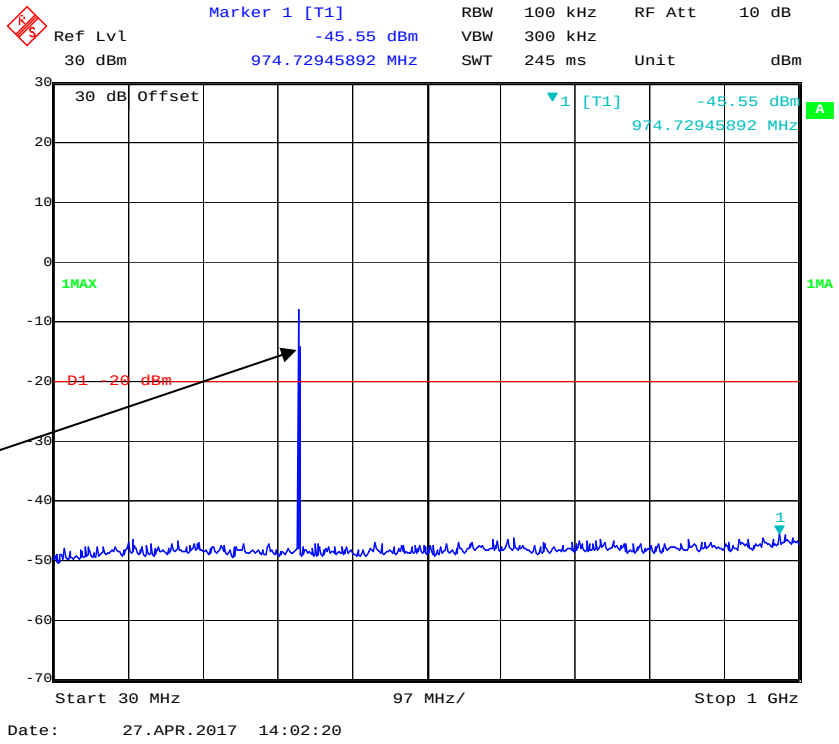
Temperature:	24~26 ℃
Relative Humidity:	50~56 %
ATM Pressure:	100.9~101.0 kPa

The testing was performed by Phil Zhu on 2017-04-27 and 2017-10-14.

Test Mode: Transmitting, please refer to the following plots.

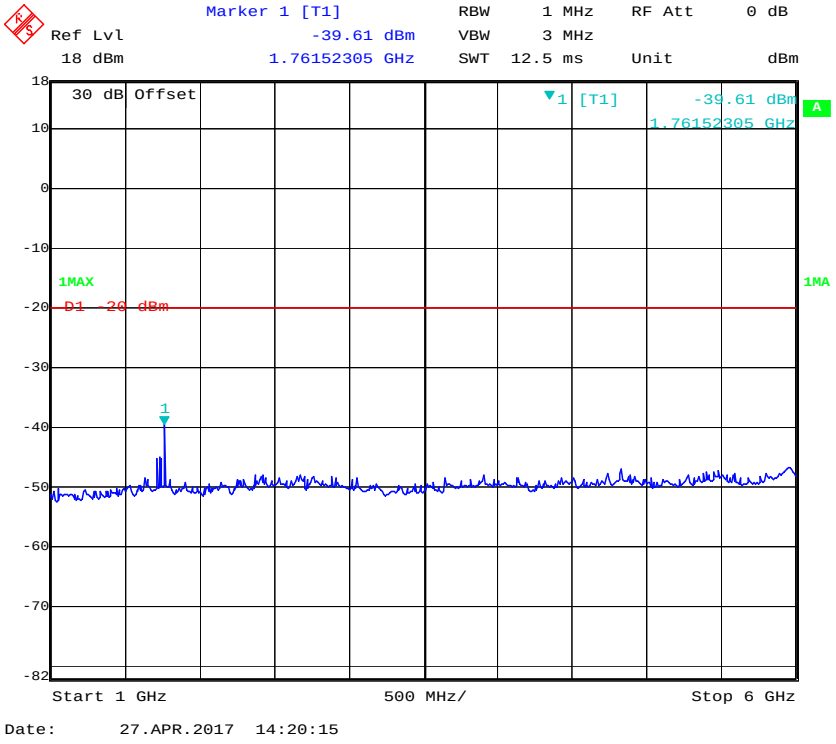
Analog Modulation:

30MHz – 1 GHz, Channel Spacing 12.5 kHz, 350.025 MHz

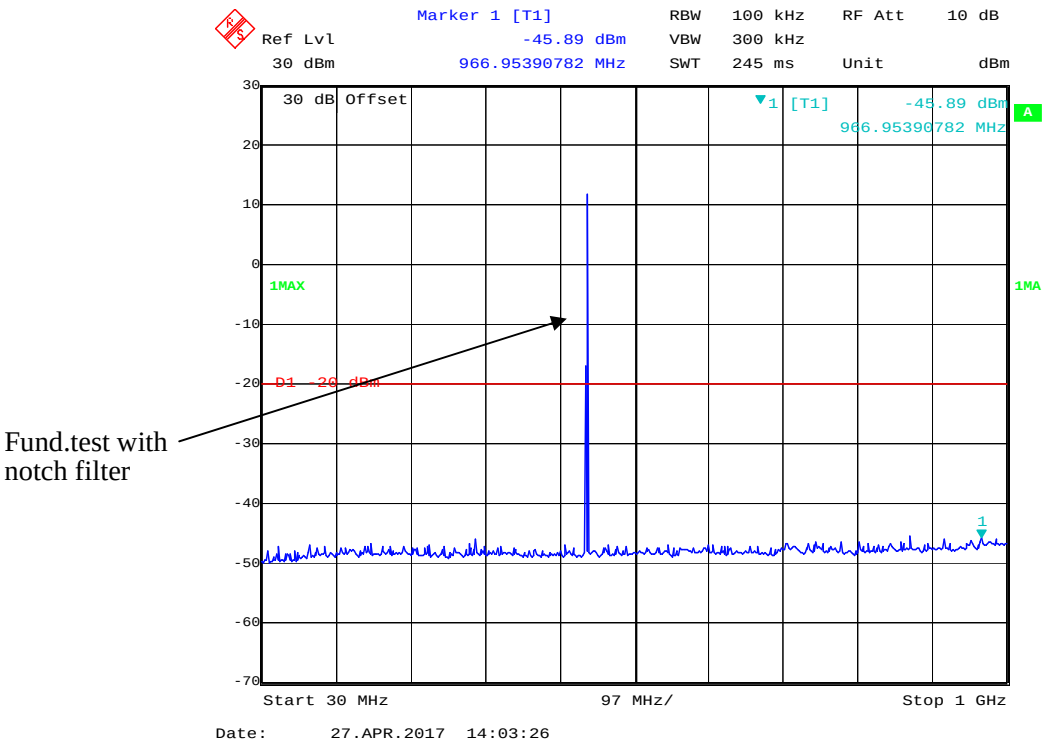


Fund.test with notch filter

1 GHz – 6 GHz, Channel Spacing 12.5 kHz, 350.025 MHz

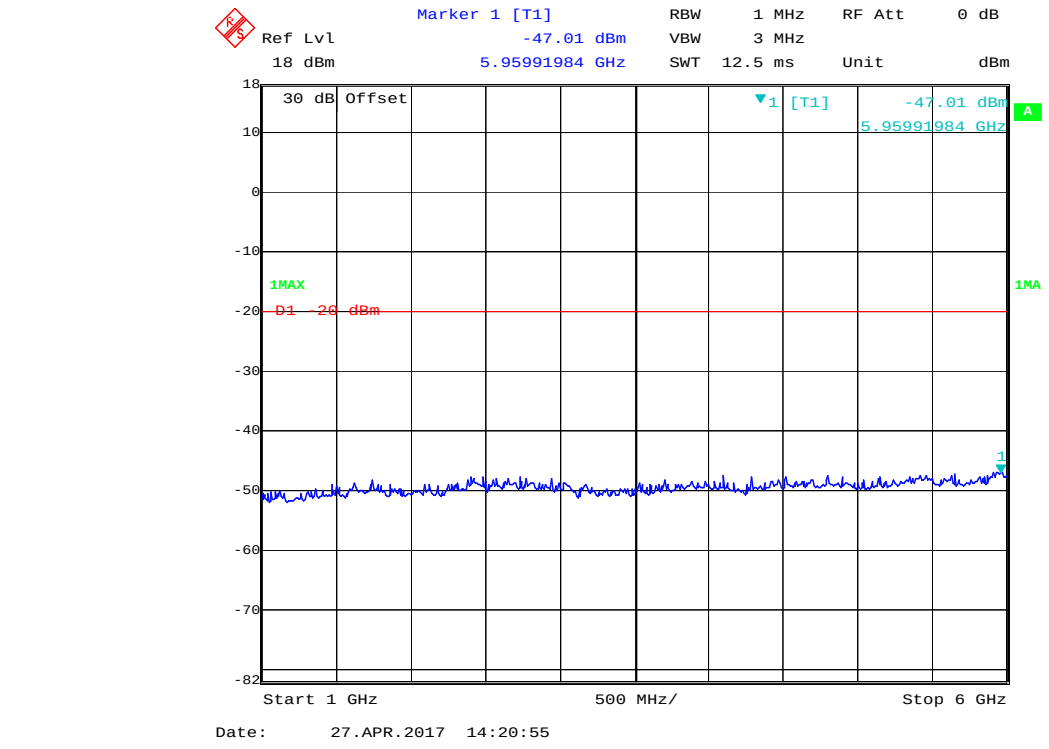


30MHz – 1 GHz, Channel Spacing 12.5 kHz, 453.2125 MHz

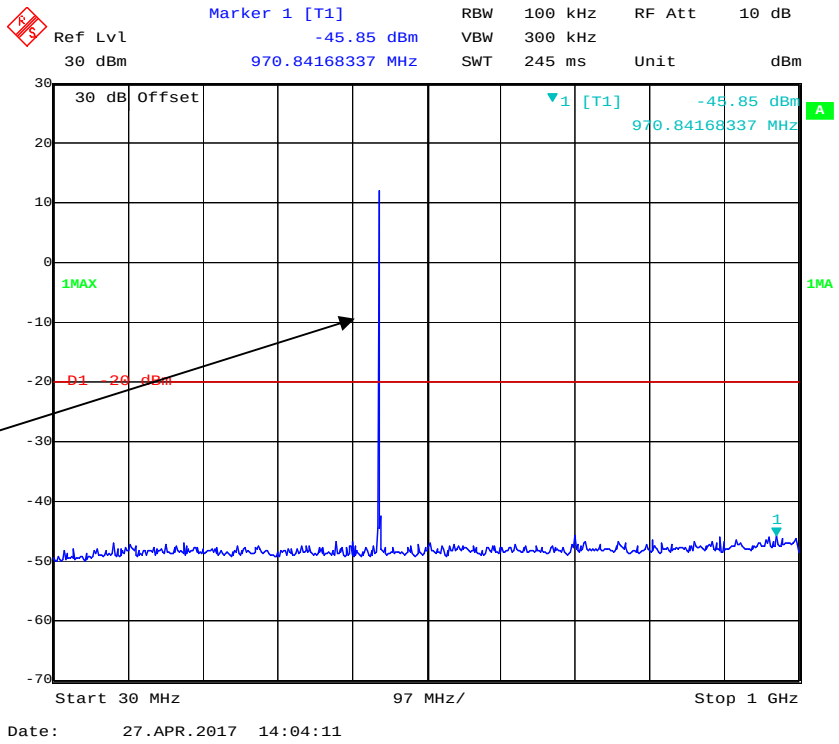


Fund.test with notch filter

1 GHz – 6 GHz, Channel Spacing 12.5 kHz, 453.2125 MHz

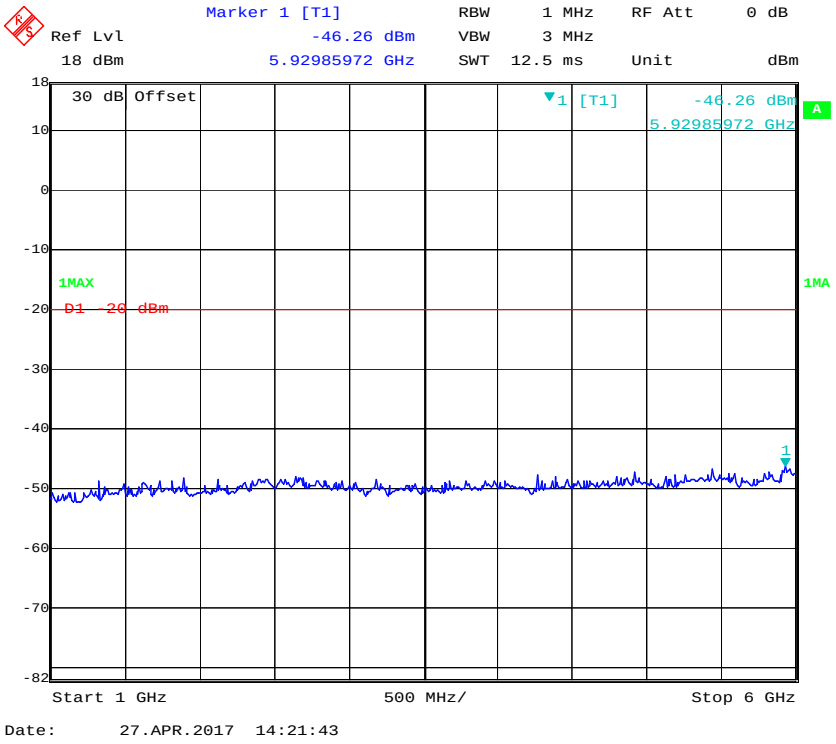


30MHz – 1 GHz, Channel Spacing 12.5 kHz, 454.0125 MHz

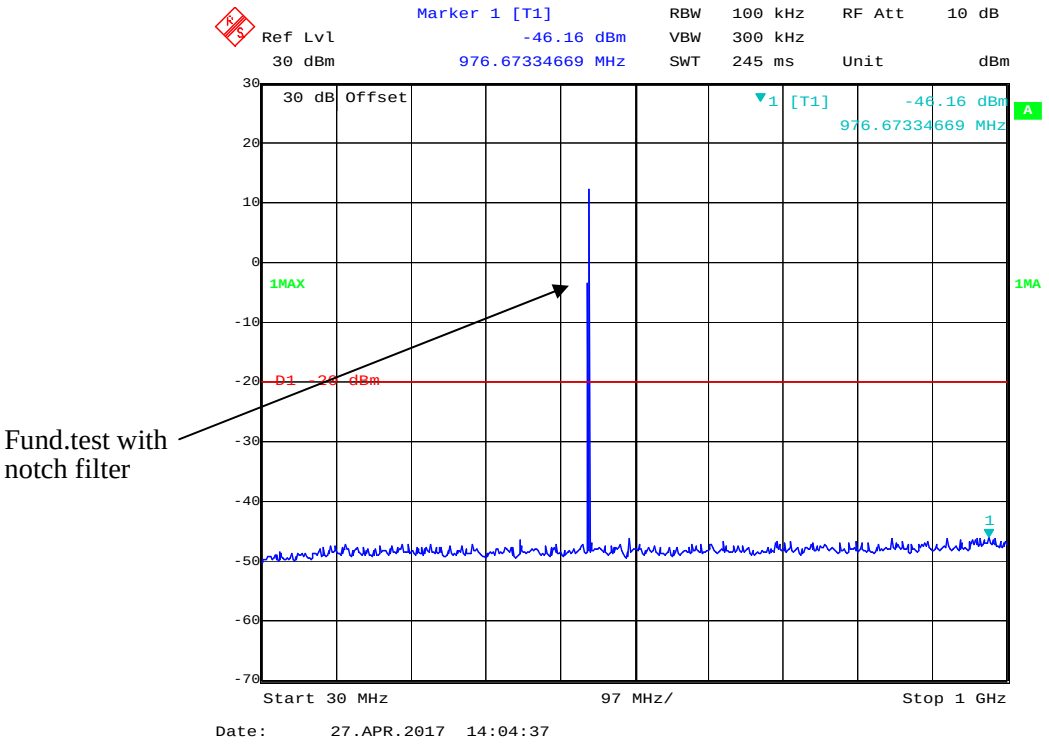


Fund.test with notch filter

1 GHz – 6 GHz, Channel Spacing 12.5 kHz, 454.0125 MHz

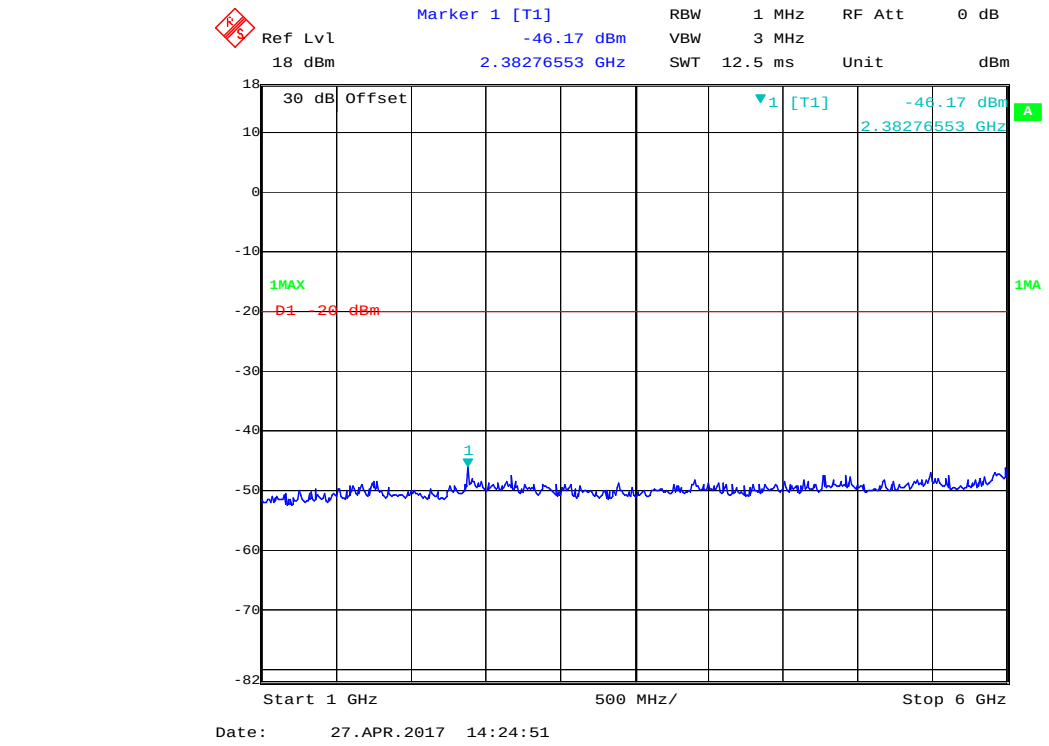


30MHz – 1 GHz, Channel Spacing 12.5 kHz, 455.0125 MHz

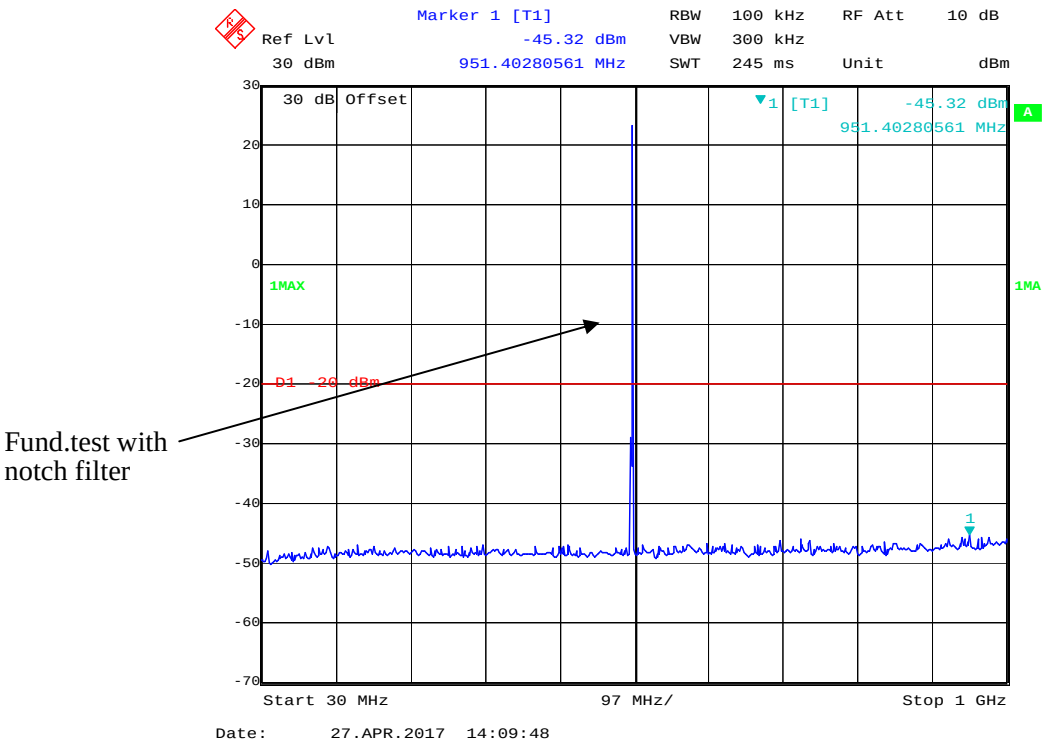


Fund.test with notch filter

1 GHz – 6 GHz, Channel Spacing 12.5 kHz, 455.0125 MHz

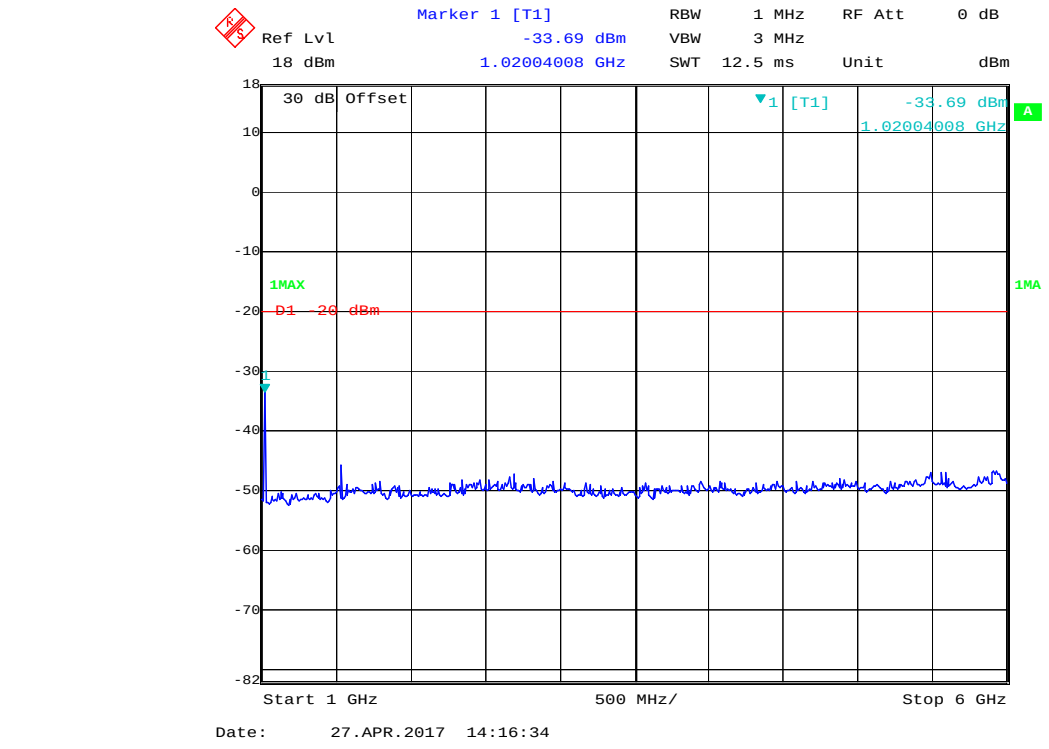


30MHz – 1 GHz, Channel Spacing 12.5 kHz, 511.975 MHz

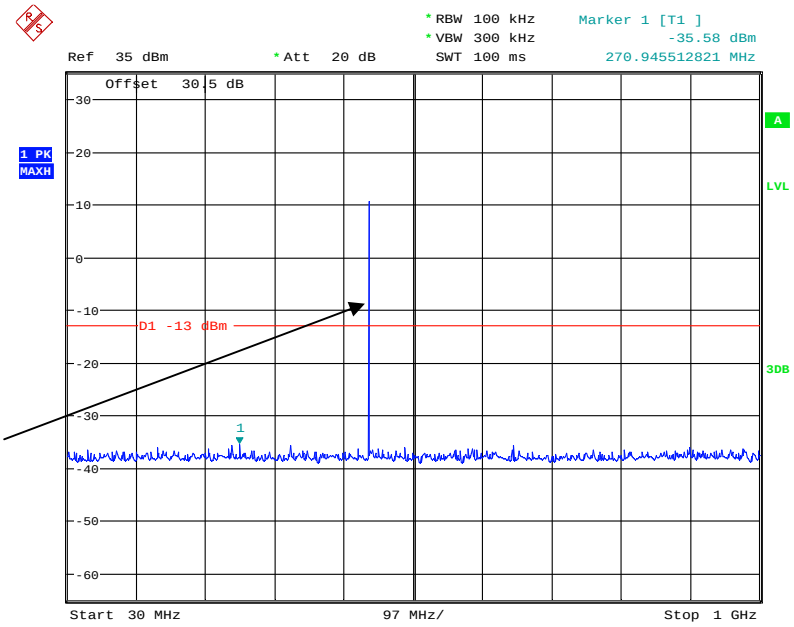


Fund.test with notch filter

1 GHz – 6 GHz, Channel Spacing 12.5 kHz, 511.975 MHz



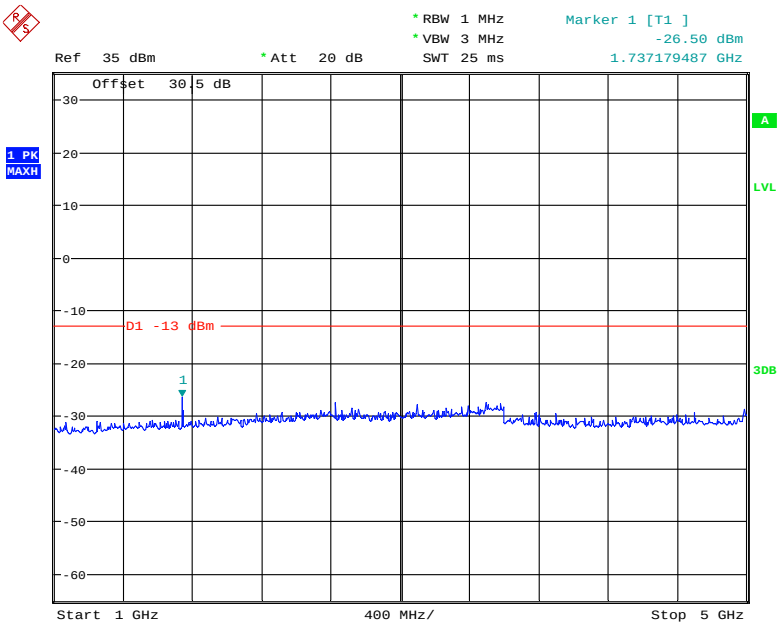
30MHz – 1 GHz, Channel Spacing 25 kHz, 453.2125 MHz



Fund.test with notch filter

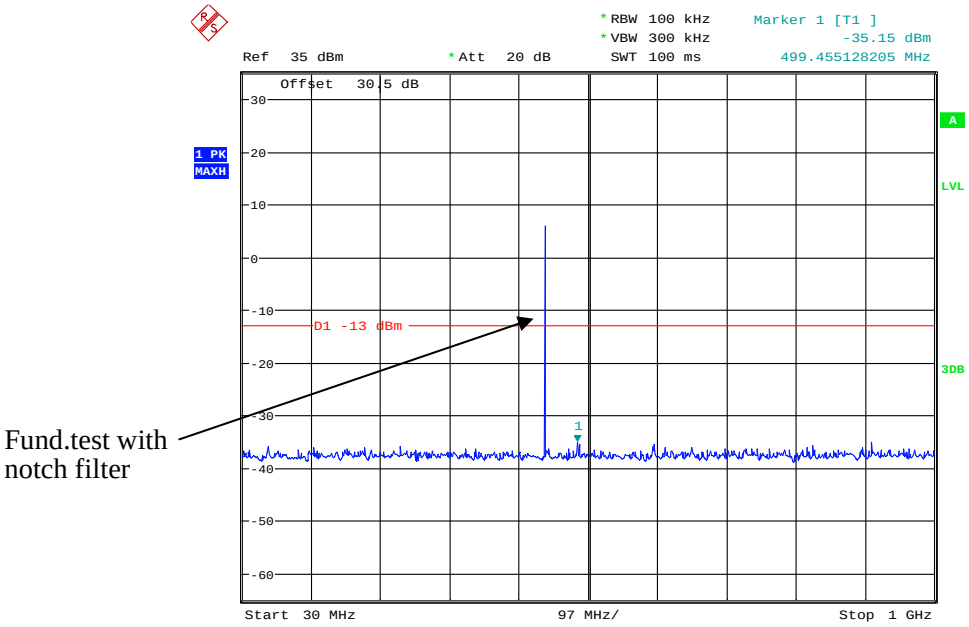
Date: 14.OCT.2017 10:39:52

1 GHz – 5 GHz, Channel Spacing 25 kHz, 453.2125 MHz



Date: 14.OCT.2017 10:41:22

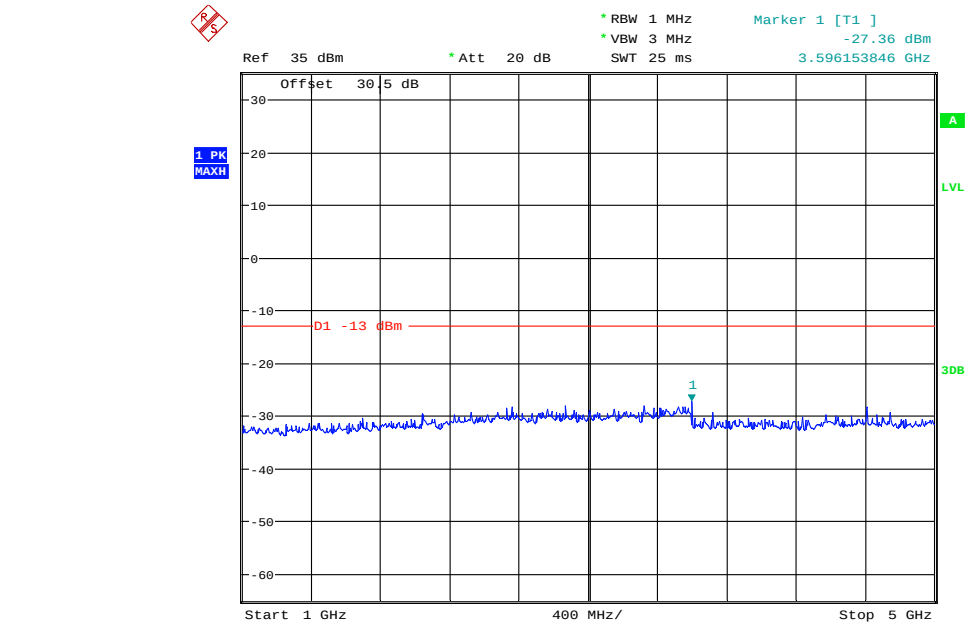
30MHz – 1 GHz, Channel Spacing 25 kHz, 454.0125 MHz



Fund.test with notch filter

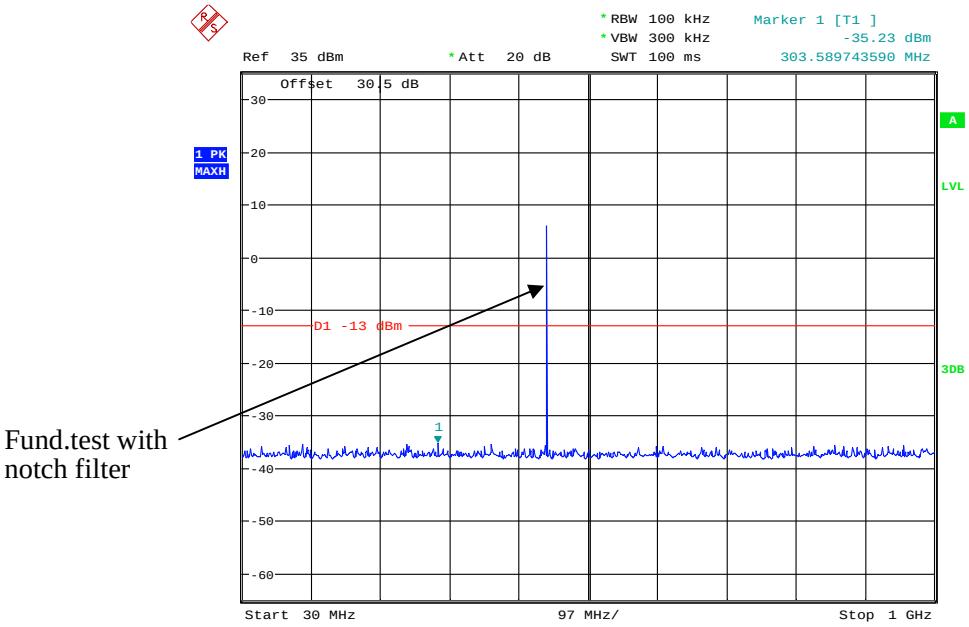
Date: 14.OCT.2017 10:39:07

1 GHz – 5 GHz, Channel Spacing 25 kHz, 454.0125 MHz



Date: 14.OCT.2017 10:44:34

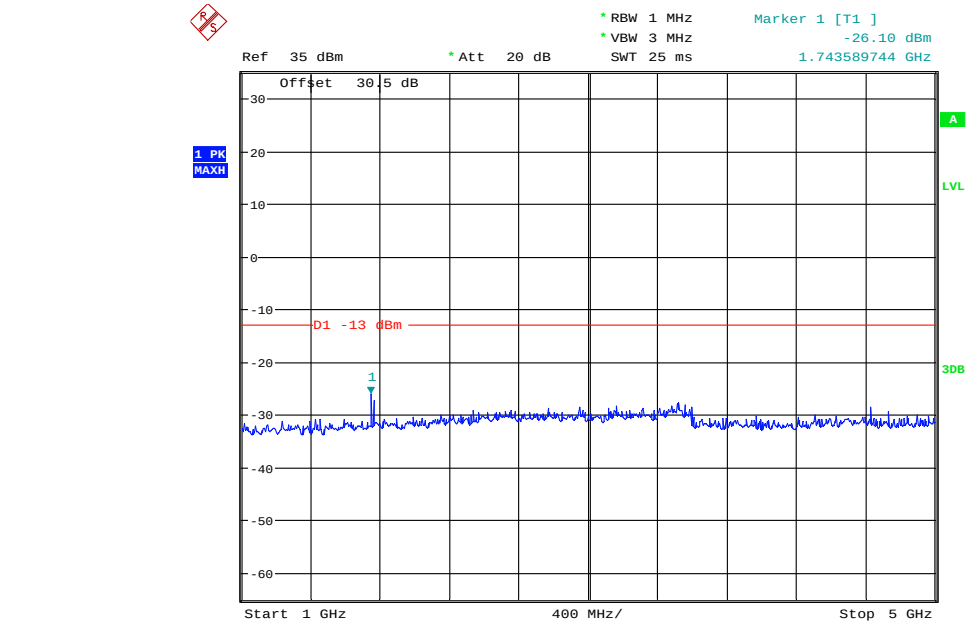
30MHz – 1 GHz, Channel Spacing 25 kHz, 455.0125 MHz



Fund.test with notch filter

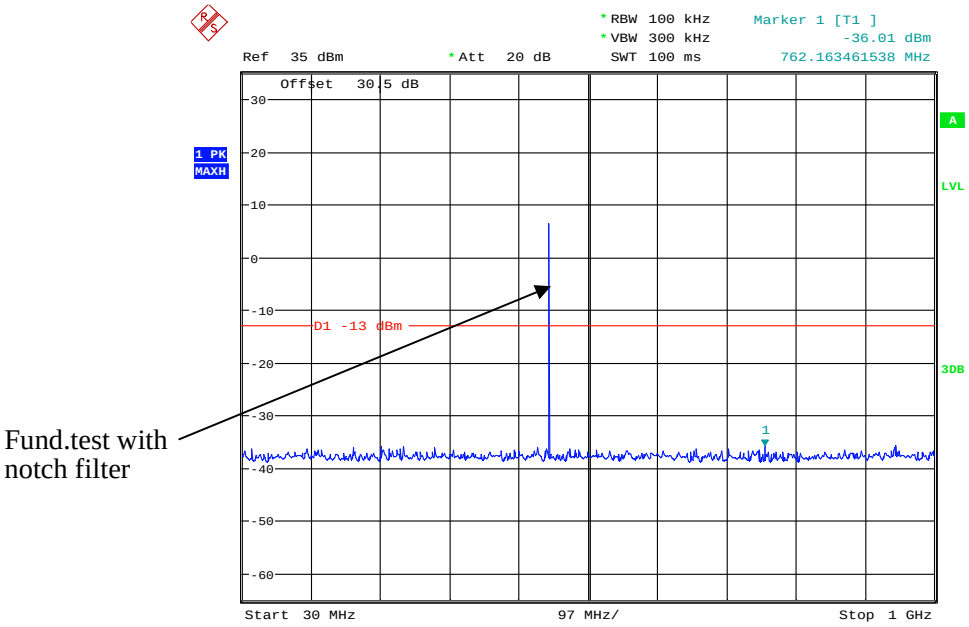
Date: 14.OCT.2017 10:38:00

1 GHz – 5 GHz, Channel Spacing 25 kHz, 455.0125 MHz



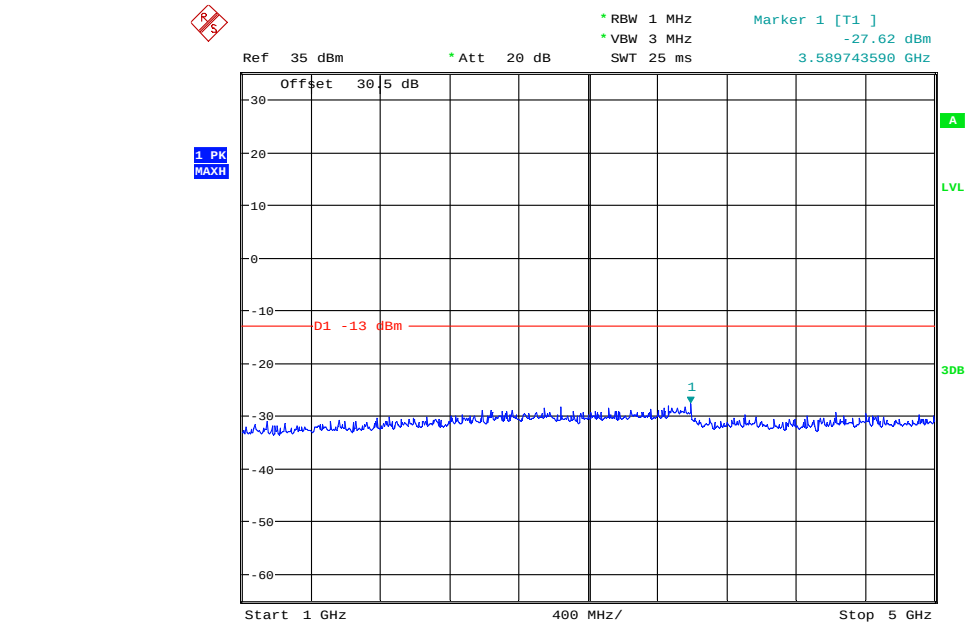
Date: 14.OCT.2017 10:45:00

30MHz – 1 GHz, Channel Spacing 25 kHz, 458.2125 MHz



Date: 14.OCT.2017 10:28:55

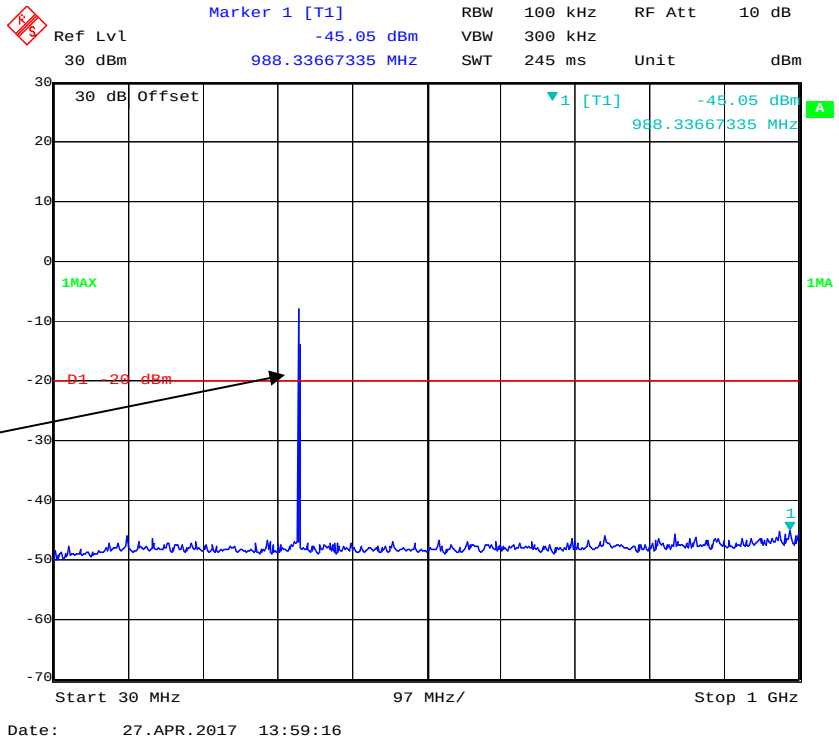
1 GHz – 5 GHz, Channel Spacing 25 kHz, 458.2125 MHz



Date: 14.OCT.2017 10:45:26

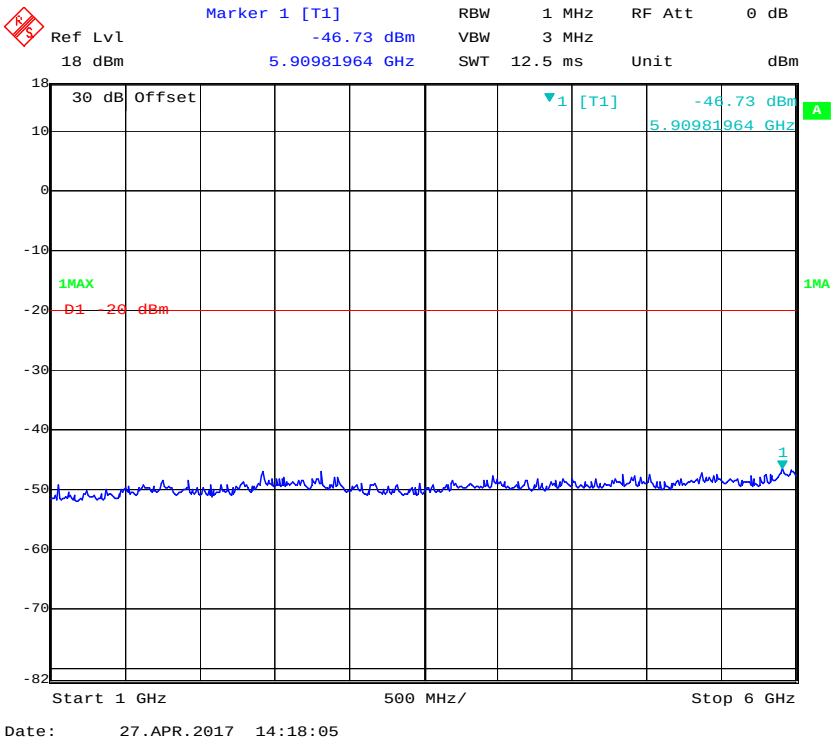
Digital Modulation:

30MHz – 1 GHz, 350.025 MHz

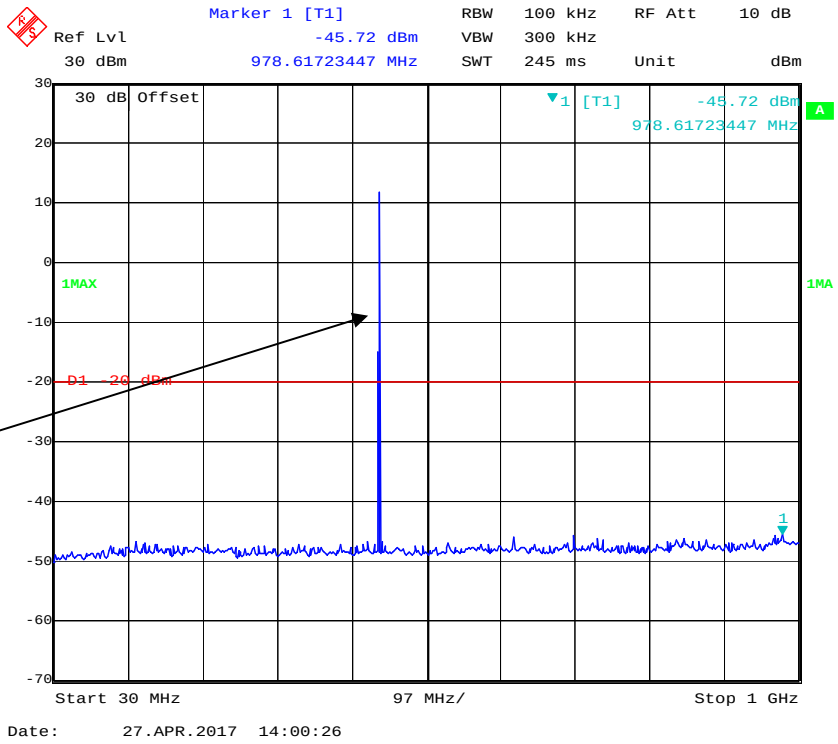


Fund.test with notch filter

1 GHz – 6 GHz, 350.025 MHz

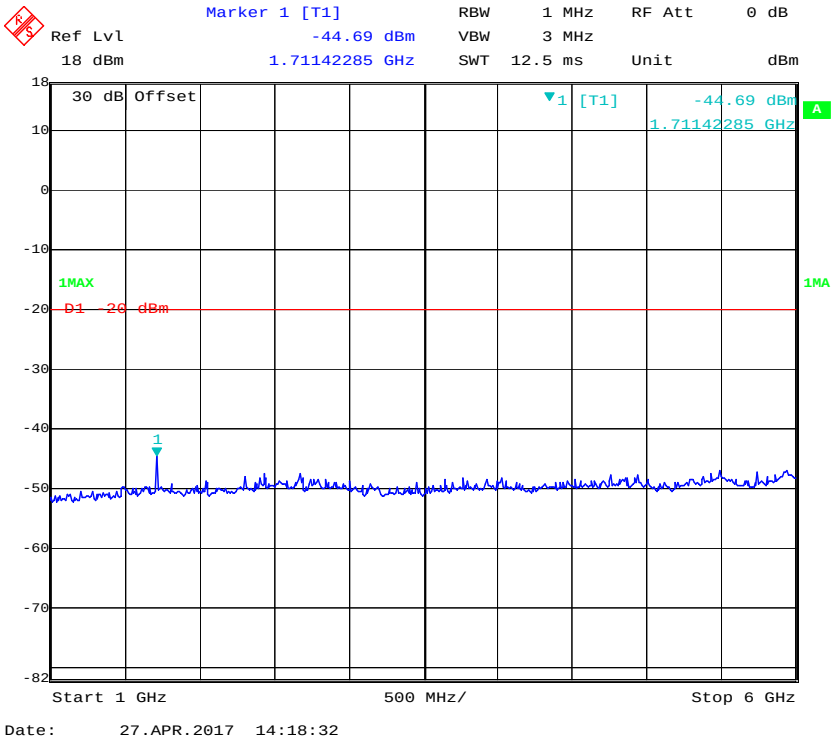


30MHz – 1 GHz, 453.2125 MHz

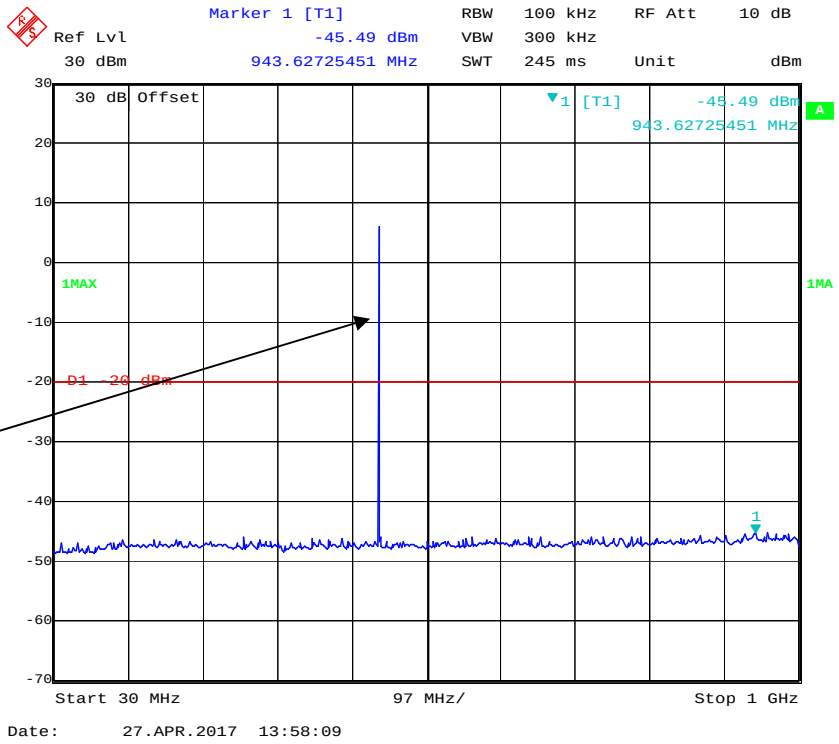


Fund.test with notch filter

1 GHz – 6 GHz, 453.2125 MHz

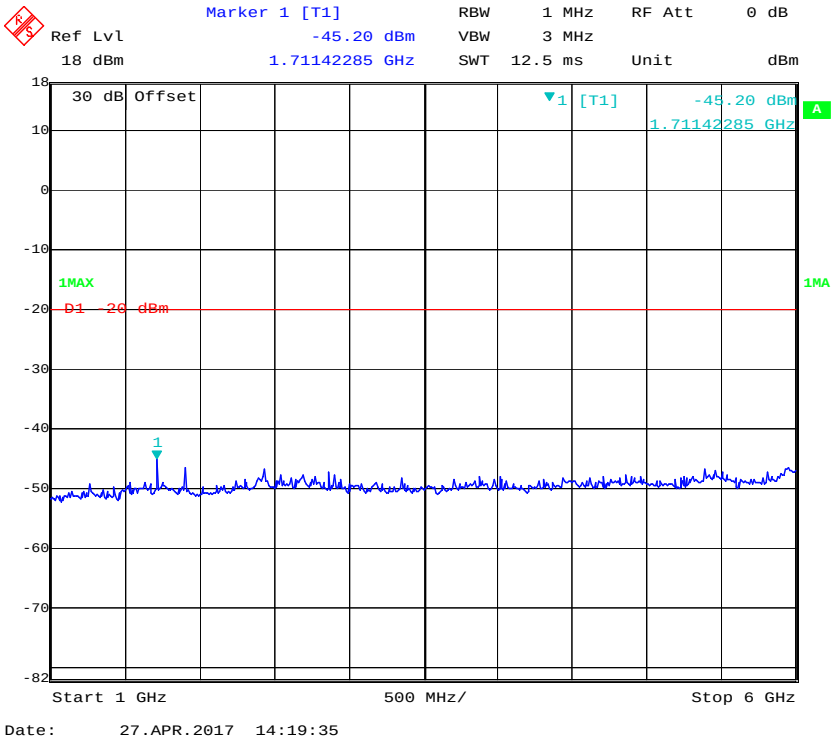


30MHz – 1 GHz, 454.0125 MHz

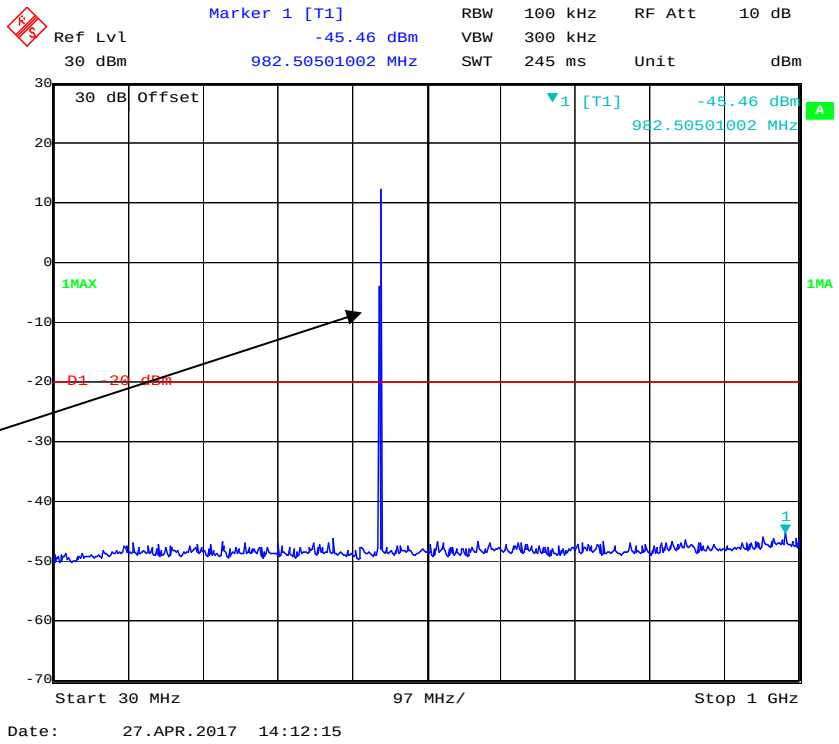


Fund.test with notch filter

1 GHz – 6 GHz, 454.0125 MHz

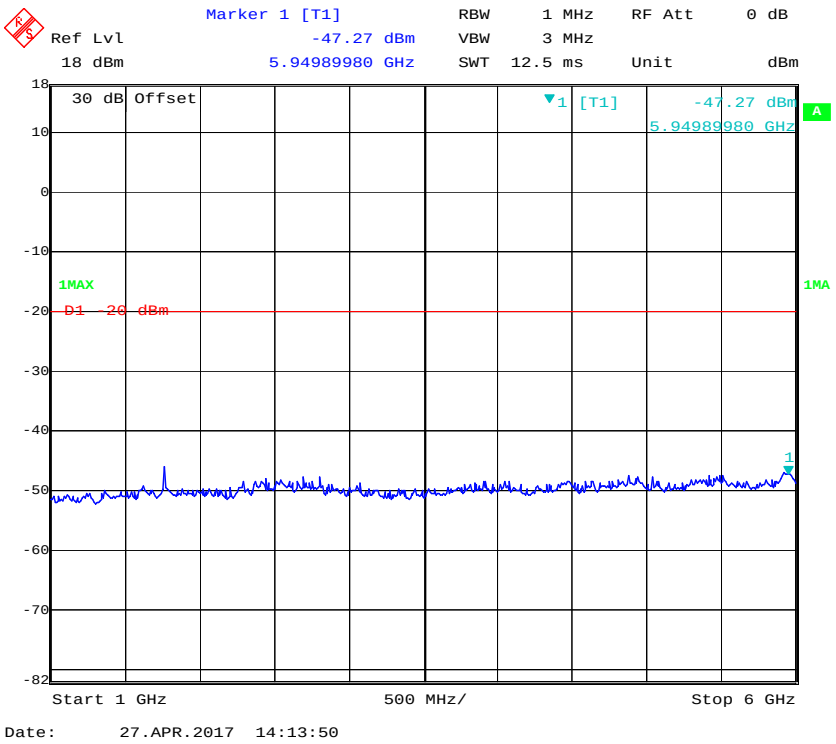


30MHz – 1 GHz, 455.0125 MHz

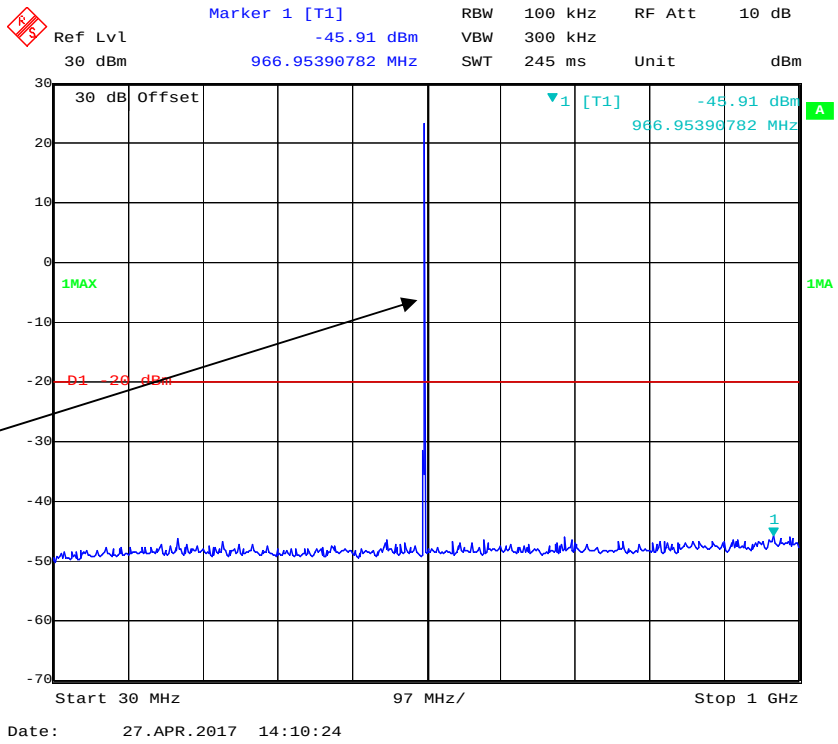


Fund.test with notch filter

1 GHz – 6 GHz, 455.0125 MHz

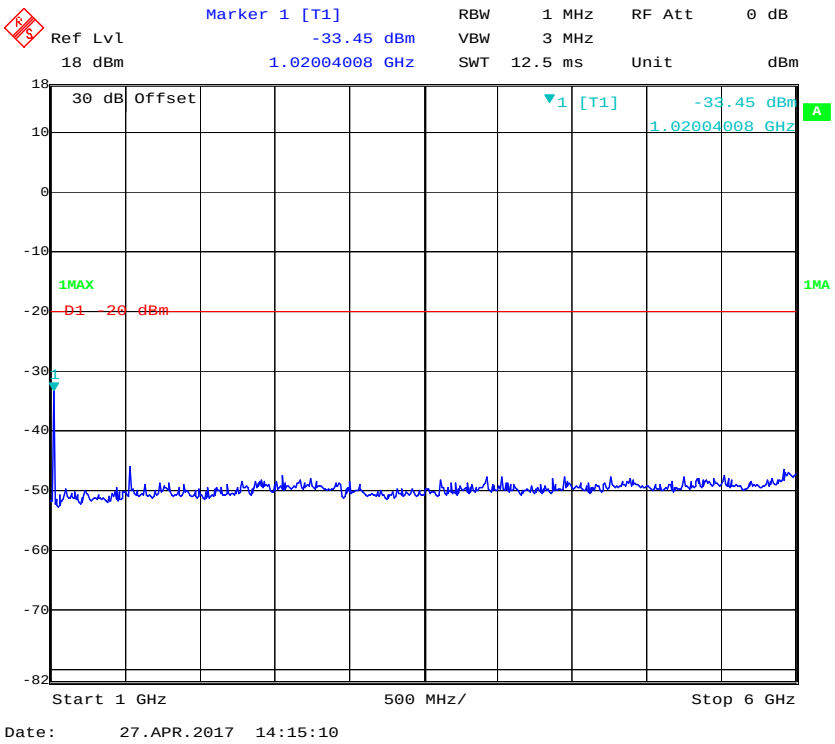


30MHz – 1 GHz, 511.975 MHz



Fund.test with notch filter

1 GHz – 6 GHz, 511.975 MHz



FCC §2.1053 & §22.861 & §74.462 & § 80.211 & §90.210 - RADIATED SPURIOUS EMISSIONS

Applicable Standard

FCC §2.1053, §22.861, §74.462, § 80.211 and §90.210

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT .The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to teeth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB =10 1g (TXpwr in Watts/0.001)-the absolute level

Spurious attenuation limit in dB =50+10 Log_{10} (power out in Watts) for EUT with a 12.5 kHz channel bandwidth.

Test Data

Environmental Conditions

Temperature:	24~26 ℃
Relative Humidity:	51~55 %
ATM Pressure:	100.9~101.0 kPa

The testing was performed by Layne Li on 2017-05-05

Test Mode: Transmitting

30MHz - 2GHz:

Frequency (MHz)	Receiver Reading (dBμV)	Turn Table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
Analog Modulation 350.025MHz-12.5 kHz										
700.05	43.18	242	2.3	H	-60.1	0.26	4.25	-56.11	-20	36.11
700.05	39.04	209	1.7	V	-61.2	0.26	4.25	-57.21	-20	37.21
1050.08	49.07	46	2.2	H	-55.9	0.29	7.08	-49.11	-20	29.11
1050.08	49.99	144	1.3	V	-56.8	0.29	7.08	-50.01	-20	30.01
Digital Modulation 350.025MHz-12.5 kHz										
700.05	42.18	201	1.5	H	-61.1	0.26	4.25	-57.11	-20	37.11
700.05	39.74	160	1.6	V	-60.5	0.26	4.25	-56.51	-20	36.51
1050.08	48.67	155	1.1	H	-56.3	0.29	7.08	-49.51	-20	29.51
1050.08	50.89	39	1.9	V	-55.9	0.29	7.08	-49.11	-20	29.11
Analog Modulation 453.2125MHz-12.5 kHz										
906.425	38.95	43	1.7	H	-61.2	0.27	5.05	-56.42	-20	36.42
906.425	34.80	189	1.3	V	-61.9	0.27	5.05	-57.12	-20	37.12
1359.64	40.77	85	1.9	H	-63.3	0.34	7.92	-55.72	-20	35.72
1359.64	42.30	119	2.5	V	-63.5	0.34	7.92	-55.92	-20	35.92
Digital Modulation 453.2125MHz-12.5 kHz										
906.425	39.15	250	1.4	H	-61.0	0.27	5.05	-56.22	-20	36.22
906.425	34.90	150	1.5	V	-61.8	0.27	5.05	-57.02	-20	37.02
1359.64	40.97	348	1.4	H	-63.1	0.34	7.92	-55.52	-20	35.52
1359.64	42.50	139	1.2	V	-63.3	0.34	7.92	-55.72	-20	35.72
Analog Modulation 454.0125MHz-12.5 kHz										
908.03	37.65	69	1.2	H	-62.5	0.27	5.05	-57.72	-20	37.72
908.03	35.50	12	1.8	V	-61.2	0.27	5.05	-56.42	-20	36.42
1362.04	41.17	242	2.1	H	-62.9	0.34	7.92	-55.32	-20	35.32
1362.04	42.40	286	1.8	V	-63.4	0.34	7.92	-55.82	-20	35.82
Digital Modulation 454.0125MHz-12.5 kHz										
908.03	38.15	109	1.6	H	-62.0	0.27	5.05	-57.22	-20	37.22
908.03	35.20	217	1.4	V	-61.5	0.27	5.05	-56.72	-20	36.72
1362.04	40.57	270	1.6	H	-63.5	0.34	7.92	-55.92	-20	35.92
1362.04	42.50	233	2.3	V	-63.3	0.34	7.92	-55.72	-20	35.72
Analog Modulation 455.0125MHz-12.5 kHz										
910.03	39.05	356	1.8	H	-61.1	0.27	5.05	-56.32	-20	36.32
910.03	35.70	172	1.9	V	-61.0	0.27	5.05	-56.22	-20	36.22
1365.04	40.67	209	2.1	H	-63.4	0.34	7.92	-55.82	-20	35.82
1365.04	41.30	168	2.0	V	-64.5	0.34	7.92	-56.92	-20	36.92

Frequency (MHz)	Receiver Reading (dBμV)	Turn Table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
Digital Modulation 455.0125MHz-12.5 kHz										
910.03	38.75	239	1.2	H	-61.4	0.27	5.05	-56.62	-20	36.62
910.03	34.00	206	1.9	V	-62.7	0.27	5.05	-57.92	-20	37.92
1365.04	40.17	85	1.5	H	-63.9	0.34	7.92	-56.32	-20	36.32
1365.04	41.80	248	1.2	V	-64.0	0.34	7.92	-56.42	-20	36.42
Analog Modulation 511.9875MHz-12.5 kHz										
423.95	41.63	327	1.8	H	-61.0	0.23	4.65	-56.58	-20	36.58
423.95	43.67	296	1.4	V	-62.1	0.23	4.65	-57.68	-20	37.68
1023.95	41.85	213	2.4	H	-63.4	0.28	6.80	-56.88	-20	36.88
1023.95	44.19	94	2.1	V	-62.9	0.28	6.80	-56.38	-20	36.38
Digital Modulation 511.9875MHz-12.5 kHz										
423.95	41.83	225	1.5	H	-60.8	0.23	4.65	-56.38	-20	36.38
423.95	43.47	126	1.0	V	-62.3	0.23	4.65	-57.88	-20	37.88
1023.95	42.15	179	1.2	H	-63.1	0.28	6.80	-56.58	-20	36.58
1023.95	44.29	83	1.6	V	-62.8	0.28	6.80	-56.28	-20	36.28

Frequency (MHz)	Receiver Reading (dBμV)	Turn Table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
Analog Modulation 453.2125MHz-25 kHz										
906.43	38.73	43	1.7	H	-61.2	0.27	5.05	-56.42	-13	43.42
906.43	34.58	189	1.3	V	-61.9	0.27	5.05	-57.12	-13	44.12
1359.64	53.17	177	1.1	H	-50.9	0.34	7.92	-43.32	-13	30.32
1359.64	56.20	229	1.4	V	-49.6	0.34	7.92	-42.02	-13	29.02
Analog Modulation 454.0125MHz-25 kHz										
908.03	38.33	43	1.7	H	-61.6	0.27	5.05	-56.82	-13	43.82
908.03	35.58	189	1.3	V	-60.9	0.27	5.05	-56.12	-13	43.12
1362.04	53.17	22	2.2	H	-50.9	0.34	7.92	-43.32	-13	30.32
1362.04	55.70	234	1.9	V	-50.1	0.34	7.92	-42.52	-13	29.52
Analog Modulation 455.0125MHz-25 kHz										
910.03	40.03	43	1.7	H	-59.9	0.27	5.05	-55.12	-13	42.12
910.03	35.38	189	1.3	V	-61.1	0.27	5.05	-56.32	-13	43.32
1365.04	54.47	167	1.7	H	-49.6	0.34	7.92	-42.02	-13	29.02
1365.04	55.20	171	1.2	V	-50.6	0.34	7.92	-43.02	-13	30.02
Analog Modulation 458.2125MHz-25 kHz										
916.43	39.03	43	1.7	H	-60.9	0.27	5.05	-56.12	-13	43.12
916.43	34.98	189	1.3	V	-61.5	0.27	5.05	-56.72	-13	43.72
1374.64	53.27	196	1.6	H	-50.8	0.34	7.92	-43.22	-13	30.22
1374.64	54.30	356	1.1	V	-51.5	0.34	7.92	-43.92	-13	30.92

Note:
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

FCC §2.1055 & § 22.355 & §74.464 & § 80.209 & §90.213 - FREQUENCY STABILITY

Applicable Standard

FCC §2.1055, § 22.355, §74.464, § 80.209 and §90.213

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the counter.

Test Data

Environmental Conditions

Temperature:	24~26 ℃
Relative Humidity:	50~56 %
ATM Pressure:	100.9~101.0 kPa

The testing was performed by Phil Zhu on 2017-04-27 and 2017-10-14.

Test Mode: Transmitting

For 12.5kHz:

Analog Modulation, Reference Frequency: 350.025MHz, Limit: ±2.5 ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (℃)	Voltage Supplied (V_{DC})	Measured Frequency (MHz)	Frequency Error (ppm)
Frequency Stability versus Input Temperature			
50	7.4	350.025020	0.057
40	7.4	350.025015	0.043
30	7.4	350.025024	0.069
20	7.4	350.025019	0.054
10	7.4	350.025025	0.071
0	7.4	350.025017	0.049
-10	7.4	350.025014	0.040
-20	7.4	350.025030	0.086
-30	7.4	350.025039	0.111
Frequency Stability versus Input Voltage			
20	6.4	350.025027	0.077

Digital Modulation, Reference Frequency: 350.025 MHz, Limit: ±2.5 ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (℃)	Voltage Supplied (V_{DC})	Measured Frequency (MHz)	Frequency Error (ppm)
Frequency Stability versus Input Temperature			
50	7.4	350.025012	0.034
40	7.4	350.025008	0.023
30	7.4	350.025007	0.020
20	7.4	350.025013	0.037
10	7.4	350.025015	0.043
0	7.4	350.025005	0.014
-10	7.4	350.025006	0.017
-20	7.4	350.025011	0.031
-30	7.4	350.025016	0.046
Frequency Stability versus Input Voltage			
20	6.4	350.025013	0.037

Analog Modulation, Reference Frequency: 453.2125MHz, Limit: ±5 ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (℃)	Voltage Supplied (V_{DC})	Measured Frequency (MHz)	Frequency Error (ppm)
Frequency Stability versus Input Temperature			
50	7.4	453.212518	0.040
40	7.4	453.212501	0.002
30	7.4	453.212503	0.007
20	7.4	453.212511	0.024
10	7.4	453.212520	0.044
0	7.4	453.212515	0.033
-10	7.4	453.212506	0.013
-20	7.4	453.212521	0.046
-30	7.4	453.212523	0.051
Frequency Stability versus Input Voltage			
20	6.4	453.212504	0.009

Digital Modulation, Reference Frequency: 453.2125 MHz, Limit: ±5 ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (℃)	Voltage Supplied (V_{DC})	Measured Frequency (MHz)	Frequency Error (ppm)
Frequency Stability versus Input Temperature			
50	7.4	453.212510	0.022
40	7.4	453.212509	0.020
30	7.4	453.212507	0.015
20	7.4	453.212508	0.018
10	7.4	453.212514	0.031
0	7.4	453.212505	0.011
-10	7.4	453.212505	0.011
-20	7.4	453.212506	0.013
-30	7.4	453.212512	0.026
Frequency Stability versus Input Voltage			
20	6.4	453.212516	0.035

Analog Modulation, Reference Frequency: 454.0125MHz, Limit: ±5 ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (℃)	Voltage Supplied (V_{DC})	Measured Frequency (MHz)	Frequency Error (ppm)
Frequency Stability versus Input Temperature			
50	7.4	454.012515	0.033
40	7.4	454.012521	0.046
30	7.4	454.012528	0.062
20	7.4	454.012534	0.075
10	7.4	454.012529	0.064
0	7.4	454.012524	0.053
-10	7.4	454.012530	0.066
-20	7.4	454.012532	0.070
-30	7.4	454.012535	0.077
Frequency Stability versus Input Voltage			
20	6.4	454.012518	0.040

Digital Modulation, Reference Frequency: 454.0125 MHz, Limit: ±5 ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (℃)	Voltage Supplied (V_{DC})	Measured Frequency (MHz)	Frequency Error (ppm)
Frequency Stability versus Input Temperature			
50	7.4	454.012512	0.026
40	7.4	454.012544	0.097
30	7.4	454.012531	0.068
20	7.4	454.012540	0.088
10	7.4	454.012513	0.029
0	7.4	454.012517	0.037
-10	7.4	454.012523	0.051
-20	7.4	454.012540	0.088
-30	7.4	454.012510	0.022
Frequency Stability versus Input Voltage			
20	6.4	454.012514	0.031

Analog Modulation, Reference Frequency: 455.0125MHz, Limit: ±5 ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (℃)	Voltage Supplied (V_{DC})	Measured Frequency (MHz)	Frequency Error (ppm)
Frequency Stability versus Input Temperature			
50	7.4	455.012509	0.020
40	7.4	455.012511	0.024
30	7.4	455.012519	0.042
20	7.4	455.012527	0.059
10	7.4	455.012540	0.088
0	7.4	455.012506	0.013
-10	7.4	455.012520	0.044
-20	7.4	455.012534	0.075
-30	7.4	455.012528	0.062
Frequency Stability versus Input Voltage			
20	6.4	455.012513	0.029

Digital Modulation, Reference Frequency: 455.0125 MHz, Limit: ±5 ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (℃)	Voltage Supplied (V_{DC})	Measured Frequency (MHz)	Frequency Error (ppm)
Frequency Stability versus Input Temperature			
50	7.4	455.012521	0.046
40	7.4	455.012514	0.031
30	7.4	455.012512	0.026
20	7.4	455.012519	0.042
10	7.4	455.012510	0.022
0	7.4	455.012520	0.044
-10	7.4	455.012525	0.055
-20	7.4	455.012532	0.070
-30	7.4	455.012530	0.066
Frequency Stability versus Input Voltage			
20	6.4	455.012531	0.068

Analog Modulation, Reference Frequency: 511.975MHz, Limit: ±2.5 ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (℃)	Voltage Supplied (V_{DC})	Measured Frequency (MHz)	Frequency Error (ppm)
Frequency Stability versus Input Temperature			
50	7.4	511.975022	0.043
40	7.4	511.975081	0.158
30	7.4	511.975060	0.117
20	7.4	511.975036	0.070
10	7.4	511.975044	0.086
0	7.4	511.975032	0.063
-10	7.4	511.975009	0.018
-20	7.4	511.975013	0.025
-30	7.4	511.975027	0.053
Frequency Stability versus Input Voltage			
20	6.4	511.975028	0.055

Digital Modulation, Reference Frequency: 511.975 MHz, Limit: ±2.5 ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (℃)	Voltage Supplied (V_{DC})	Measured Frequency (MHz)	Frequency Error (ppm)
Frequency Stability versus Input Temperature			
50	7.4	511.975021	0.041
40	7.4	511.975014	0.027
30	7.4	511.975012	0.023
20	7.4	511.975013	0.025
10	7.4	511.975018	0.035
0	7.4	511.975017	0.033
-10	7.4	511.975023	0.045
-20	7.4	511.975024	0.047
-30	7.4	511.975030	0.059
Frequency Stability versus Input Voltage			
20	6.4	511.975023	0.045

For 25kHz:

Analog Modulation, Reference Frequency: 453.2125MHz, Limit: ±5 ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (℃)	Voltage Supplied (V_{DC})	Measured Frequency (MHz)	Frequency Error (ppm)
Frequency Stability versus Input Temperature			
50	7.4	453.212445	-0.12136
40	7.4	453.212487	-0.02868
30	7.4	453.212453	-0.1037
20	7.4	453.212491	-0.01986
10	7.4	453.212477	-0.05075
0	7.4	453.212469	-0.0684
-10	7.4	453.212451	-0.10812
-20	7.4	453.212437	-0.13901
-30	7.4	453.212492	-0.01765
Frequency Stability versus Input Voltage			
20	6.4	453.212468	-0.07061

Analog Modulation, Reference Frequency: 454.0125MHz, Limit: ±5 ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (℃)	Voltage Supplied (V_{DC})	Measured Frequency (MHz)	Frequency Error (ppm)
Frequency Stability versus Input Temperature			
50	7.4	454.012484	-0.03524
40	7.4	454.012461	-0.0859
30	7.4	454.012496	-0.00881
20	7.4	454.012452	-0.10572
10	7.4	454.012437	-0.13876
0	7.4	454.012483	-0.03744
-10	7.4	454.012440	-0.13215
-20	7.4	454.012473	-0.05947
-30	7.4	454.012459	-0.09031
Frequency Stability versus Input Voltage			
20	6.4	454.012486	-0.03084

Analog Modulation, Reference Frequency: 455.0125MHz, Limit: ±5 ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (℃)	Voltage Supplied (V_{DC})	Measured Frequency (MHz)	Frequency Error (ppm)
Frequency Stability versus Input Temperature			
50	7.4	455.012461	-0.08571
40	7.4	455.012489	-0.02418
30	7.4	455.012476	-0.05275
20	7.4	455.012494	-0.01319
10	7.4	455.012466	-0.07472
0	7.4	455.012460	-0.08791
-10	7.4	455.012446	-0.11868
-20	7.4	455.012478	-0.04835
-30	7.4	455.012461	-0.08571
Frequency Stability versus Input Voltage			
20	6.4	455.012479	-0.04615

Analog Modulation, Reference Frequency: 458.2125MHz, Limit: ±5 ppm			
Test Environment		Frequency Measure with Time Elapsed	
Temperature (℃)	Voltage Supplied (V_{DC})	Measured Frequency (MHz)	Frequency Error (ppm)
Frequency Stability versus Input Temperature			
50	7.4	458.212489	-0.02401
40	7.4	458.212467	-0.07202
30	7.4	458.212456	-0.09603
20	7.4	458.212497	-0.00655
10	7.4	458.212443	-0.1244
0	7.4	458.212460	-0.0873
-10	7.4	458.212452	-0.10475
-20	7.4	458.212488	-0.02619
-30	7.4	458.212474	-0.05674
Frequency Stability versus Input Voltage			
20	6.4	458.212492	-0.01746

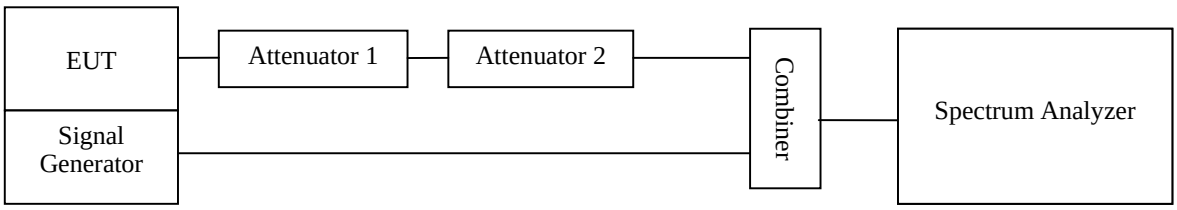
FCC §90.214 - TRANSIENT FREQUENCY BEHAVIOR

Applicable Standard

Regulations: FCC §90.214
Test method: ANSI/TIA-603-D 2010, section 2.2.19.3

Test Procedure

a) Connect the EUT and test equipment as shown on the following block diagram.
b) Set the Spectrum Analyzer to measure FM deviation, and tune the RF frequency to the transmitter assigned frequency.
c) Set the signal generator to the assigned transmitter frequency and modulate it with a 1 kHz tone at ±12.5 kHz deviation and set its output level to -100dBm.
d) Turn on the transmitter.
e) Supply sufficient attenuation via the RF attenuator to provide an input level to the Spectrum Analyzer that is 40 dB below the maximum allowed input power when the transmitter is operating at its rated power level. Note this power level on the Spectrum Analyzer as P_0.
f) Turn off the transmitter.
g) Adjust the RF level of the signal generator to provide RF power equal to P_0. This signal generator RF level shall be maintained throughout the rest of the measurement.
h) Remove the attenuation 1, so the input power to the Spectrum Analyzer is increased by 30 dB when the transmitter is turned on.
i) Adjust the vertical amplitude control of the spectrum analyzer to display the 1000 Hz at ±4 divisions vertically centered on the display. Set trigger mode of the Spectrum Analyzer to "Video", and tune the "trigger level" on suitable level. Then set the "tiger offset" to -10ms for turn on and -15ms for turn off.
j) Turn on the transmitter and the transient wave will be captured on the screen of Spectrum Analyzer. Observe the stored display. The instant when the 1 kHz test signal is completely suppressed is considered to be t_{on}. The trace should be maintained within the allowed divisions during the period t_1 and t_2.
k) Then turn off the transmitter, and another transient wave will be captured on the screen of Spectrum Analyzer. The trace should be maintained within the allowed divisions during the period t_3.



Test Data

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

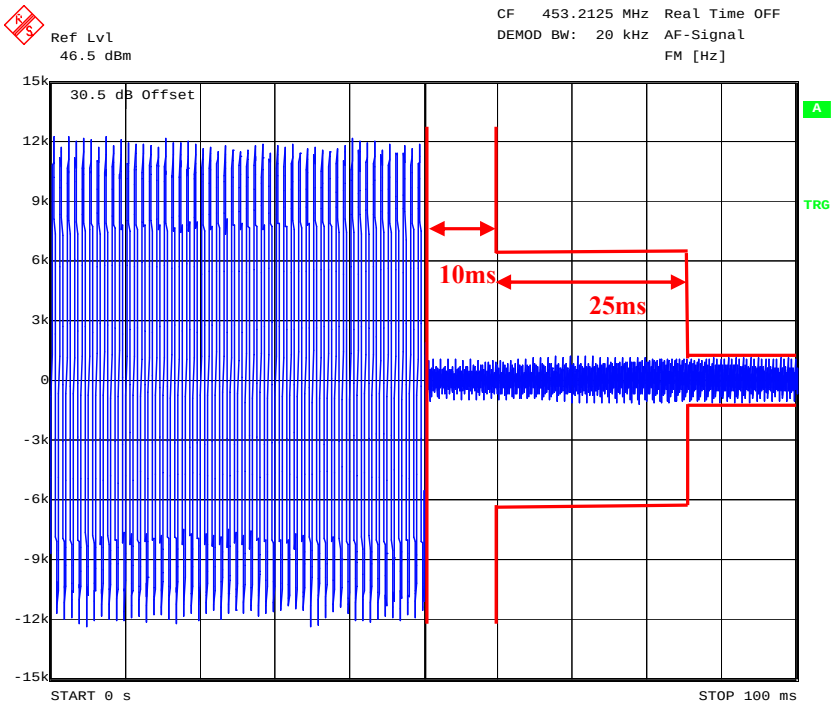
The testing was performed by Phil Zhu on 2017-05-02.

Channel Separation (kHz)	Transient Period (ms)	Transient Frequency	Result
12.5	10 (t1)	<+/-12.5 kHz	Pass
	25(t2)	<+/-6.25 kHz	
	10 (t3)	<+/-12.5 kHz	

Please refer to the following plots.

Channel: 453.2125 MHz

Turn on



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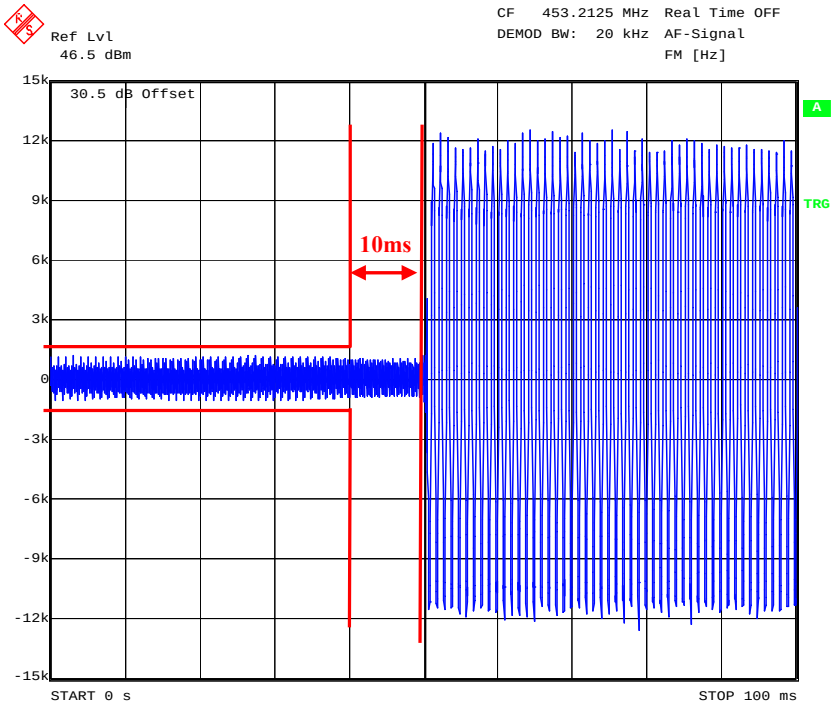
Turn off



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