ACCREDITED
TESTING LABORATORY
CERTIFICATE #4820.01

BACL
Bay Area Compliance Labs Corp.

FCC PART 22, 74, 80 and 90

TEST REPORT

For

Hytera Communications Corporation Limited

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

FCC ID: YAMBD61XVHFS

Report Type:	**Product Type:**
Original Report	DIGITAL PORTABLE RADIO

Report Number:	RDG210330017-00A
Report Date:	2021-05-22
Reviewed By:	Gavin Xu RF Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Dongguan) No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		DIGITAL PORTABLE RADIO
Test Model:		BD615 VHF
Multiple Models:		BD610 VHF, BD612 VHF, BD616 VHF, BD618 VHF
Model Difference:		Refer to the DOS letter
Adapter Information	**Model:**	HKA01212010-XQ
	Input:	AC 100-240V 50/60Hz, 0.5A
	Output:	DC 12.0V 1.0A, 12.0W
Rated Input Voltage:		DC 7.2V from Battery or DC 12V from adapter
Serial Number:		RDG210330017-RF-S1
EUT Received Date:		2021.03.31
EUT Received Status:		Good

Technical Specification

Operation Frequency Range (MHz):	136-174
Rated RF Output Power (Conducted) (W):	High power level: 5 Low power level: 1
Modulation Type:	FM, 4FSK
Channel Spacing (kHz):	12.5/25

Objective

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

Related Submittal(s)/Grant(s)

No related submittal(s)/grant(s).

Test Methodology

All tests and measurements indicated in this document were performed in accordance with:

the Code of federal Regulations Title 47, Part 2, Part 22, Part 74, Part 80 and Part 90

ANSI C63.26-2015, American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

TIA-603-E-2016, Land Mobile FM or PM Communications Equipment Measurement and Performance Standards

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

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Unwanted Emissions, radiated	30MHz ~ 1GHz:5.85 dB 1G~26.5GHz: 5.23 dB
Unwanted Emissions, conducted	±1.5 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol "▲". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

Equipment Modifications

No modification was made to the EUT.

EUT Exercise Software

No software was tested in test.

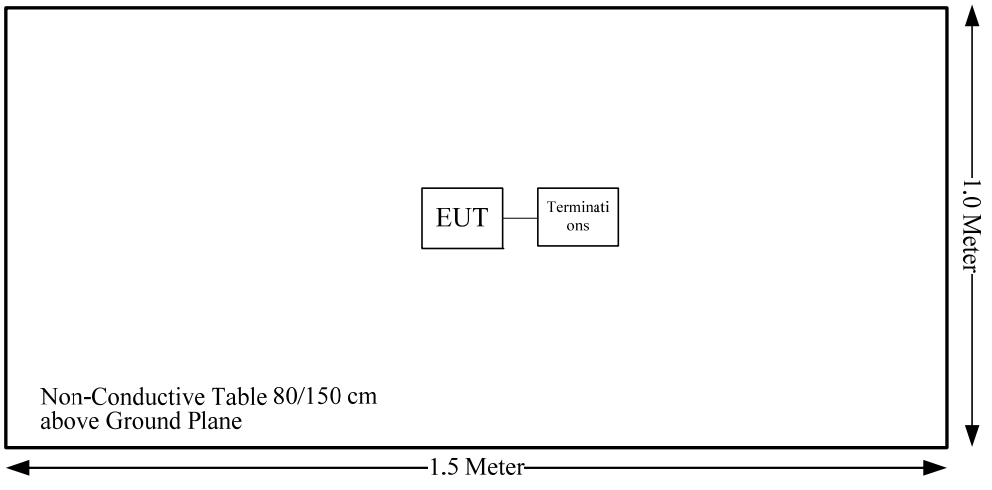
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Wenschel	Terminations	1440	MD477

Support Cable List and Details

Cable Description	Shielding Cable	Ferrite Core	Length (m)	From Port	To
/	/	/	/	/	/

Block Diagram of Test Setup



Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated emissions below 1GHz					
Sunol Sciences	Antenna	JB3	A060611-2	2020-08-25	2023-08-25
R&S	EMI Test Receiver	ESCI	100224	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2020-09-24	2021-09-24
Sonoma	Amplifier	310N	185914	2020-10-13	2021-10-13
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2020-09-05	2021-09-05
Agilent	Signal Generator	E8247C	MY43321350	2020-12-09	2021-12-08
Radiated emissions above 1GHz					
ETS-Lindgren	Horn Antenna	3115	9912-5985	2020-10-13	2023-10-12
R&S	Spectrum Analyzer	FSP 38	100478	2020-07-07	2021-07-07
HUBER+SUHNER	Coaxial Cable	SUCOFLEX 126EA	MY369/26/26EA	2020-09-25	2021-09-25
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2020-09-05	2021-09-05
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2020-09-05	2021-09-05
Agilent	Signal Generator	E8247C	MY43321350	2020-12-09	2021-12-08
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSEB 7	8463211015	2020-04-25	2021-04-24
Rohde & Schwarz	Spectrum Analyzer	FSEB 7	8463211015	2021-04-25	2022-04-24
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2020-09-12	2021-09-12
R&S	EMI Test Receiver	ESR3	102726	2020-06-22	2021-06-21
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	2020-09-05	2021-09-05
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005012	2020-09-05	2021-09-05
E-Microwave	Blocking Control	EMDCB-00036	0E01201048	2021-01-06	2022-05-06
Weinschel	Coaxial Attenuators	53-20-34	LN749	2020-09-06	2021-09-06
E-Microwave	Coaxial Attenuators	EMCA30-200SN-6	OE00803029	2020-09-06	2021-09-06
HP	RF Communications Test Set	8920A	3438A05201	2020-07-07	2021-07-07
ESPEC	Constant temperature and humidity Tester	ESX-4CA	018 463	2021-03-10	2022-03-09
UNI-T	Multimeter	UT39A	M130199938	2020-07-01	2021-07-01
Pro instrument	DC Power Supply	pps3300	3300012	N/A	N/A

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

Environmental Conditions

Test Item:	RF Conducted	Radiated emissions
Temperature:	22.9~26.8℃	25.9~26.6℃
Relative Humidity:	52 ~69 %	46~47 %
ATM Pressure:	100.3~101.9 kPa	101.3~101.8 kPa
Tester:	Levi Shi	Asa Chen, Joker Chen
Test Date:	2021-04-08~2021-05-22	2021-04-06~2021-04-13

SUMMARY OF TEST RESULTS

S/N	FCC Rules	Description of Test	Results
1	§1.1310 and §2.1093	RF Exposure	Compliance*
2	§2.1046; § 22.727; §80.215; §74.461; §90.205	RF Output Power	Compliance
3	§2.1047	Modulation Characteristic	Compliance
4	§2.1049;§22.357;§ 22.731; §74.462;§80.205; §80.207 §90.209; §90.210	Occupied Bandwidth & Emission Mask	Compliance
5	§2.1051; §22.861; §74.462; §80.211;§90.210	Spurious Emission at Antenna Terminal	Compliance
6	§2.1053;§22.861; §74.462;§80.211;§90.210	Spurious Radiated Emissions	Compliance
7	§2.1055; § 22.355; §74.464; §80.209; §90.213	Frequency Stability	Compliance
8	§90.214	Transient Frequency Behavior	Compliance

Note:
Compliance*: Please refer to the SAR report: RDG210330017-20A.

2 - 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

Test Mode: Transmitting

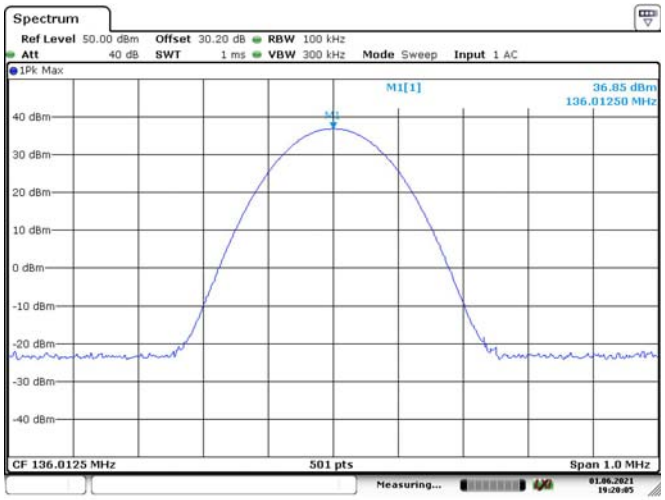
Test Result: Compliance. *Please refer to following table.*

Channel Separation	Test Modulation	Test Channel	Test Frequency (MHz)	Conducted Output Power (dBm)		Limit (dBm)		Note
				High Power Level	Low Power Level	High Power Level	Low Power Level	
12.5kHz	FM	Low	136.0125	36.85	30.76	37.78	30.79	FCC
		Middle	155.7525	37.13	30.54	37.78	30.79	FCC Part 90
		High	173.9875	36.67	30.52	37.78	30.79	FCC
		Additional	150.8125	37.10	30.56	37.78	30.79	FCC Part 22
		Additional	161.1000	37.14	30.16	37.78	30.79	FCC Part 74
	4FSK	Low	136.0125	37.03	30.53	37.78	30.79	FCC
		Middle	155.7525	37.13	30.64	37.78	30.79	FCC Part 90
		High	173.9875	36.89	30.21	37.78	30.79	FCC
		Additional	150.8125	37.07	29.56	37.78	30.79	FCC Part 22
		Additional	161.1000	37.08	29.92	37.78	30.79	FCC Part 74
25kHz	FM	Additional	150.8125	37.13	30.46	37.78	30.79	FCC Part 22
		Additional	154.0125	36.74	30.64	37.78	30.79	FCC Part 80
		Additional	161.1000	37.07	30.05	37.78	30.79	FCC Part 74

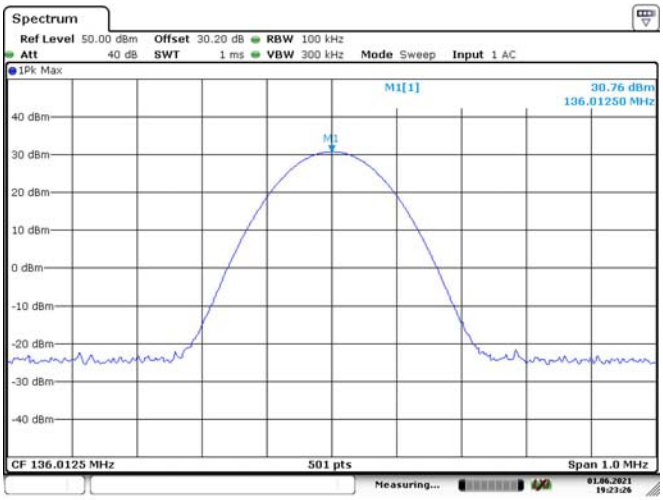
Note: The high rated power level is 5W(37dBm), and low rated power level is 1 W(30dBm).
The output power shall not exceed by more than 20 percent the manufacturer's rated output power for the particular transmitter specifically listed on the authorization.

FM, 12.5kHz:

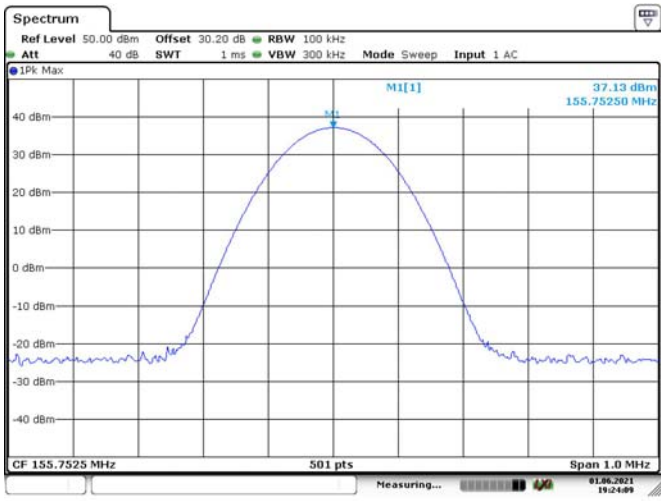
Low Channel, 136.0125 MHz High Power



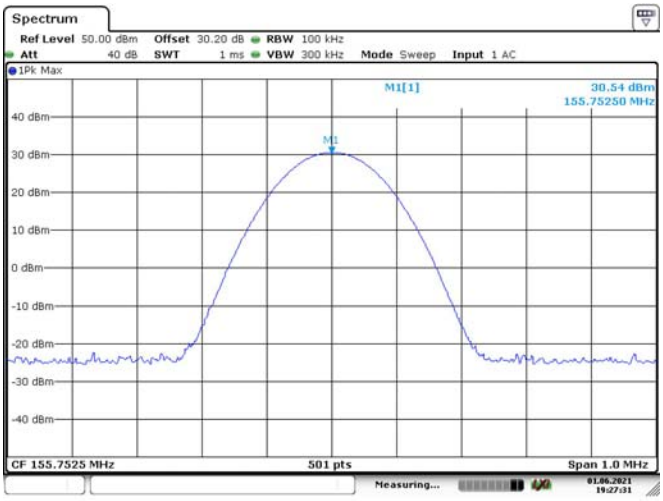
Low Channel, 136.0125 MHz Low Power



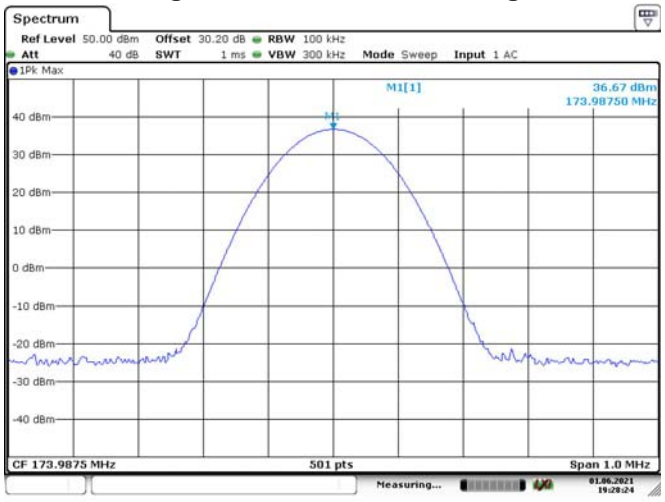
Part 90, Middle Channel,155.7525 MHz High Power



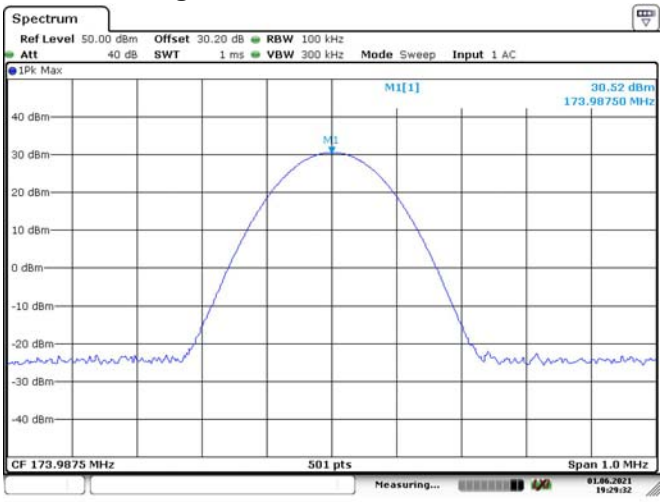
Part 90, Middle Channel, 155.7525 MHz Low Power



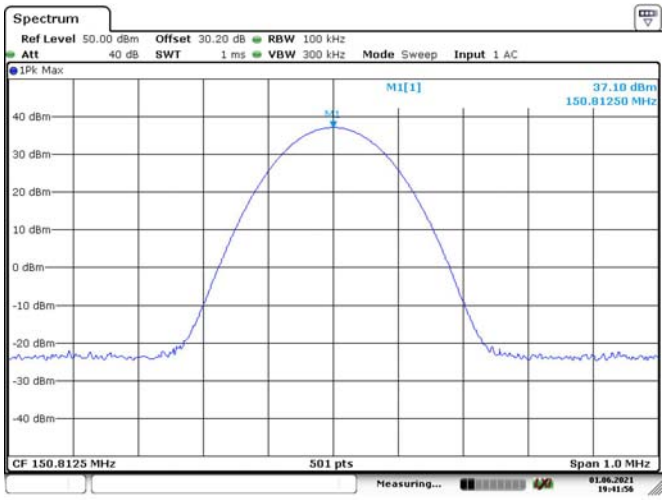
Part 90,High Channel, 173.9875MHz High Power



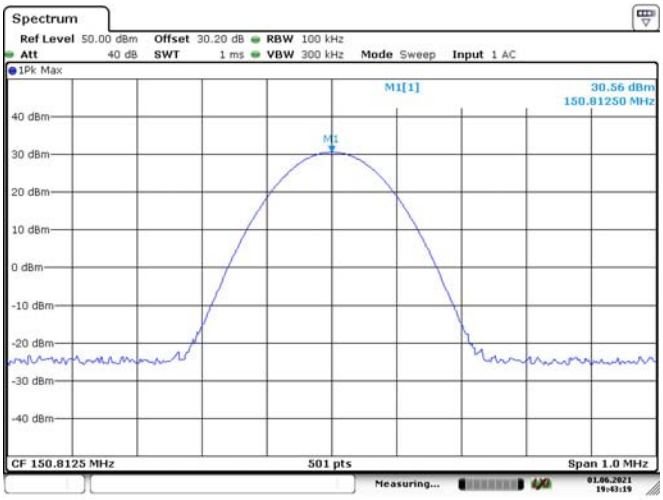
Part 90, High Channel,173.9875 MHz Low Power



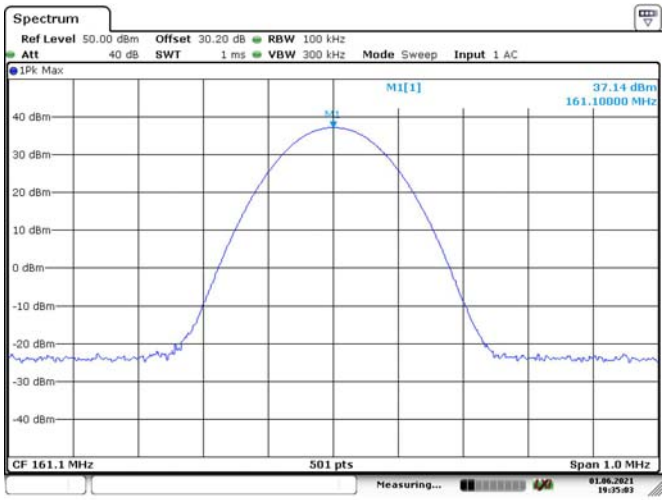
Part 22, Additional Channel,150.8125 MHz High Power



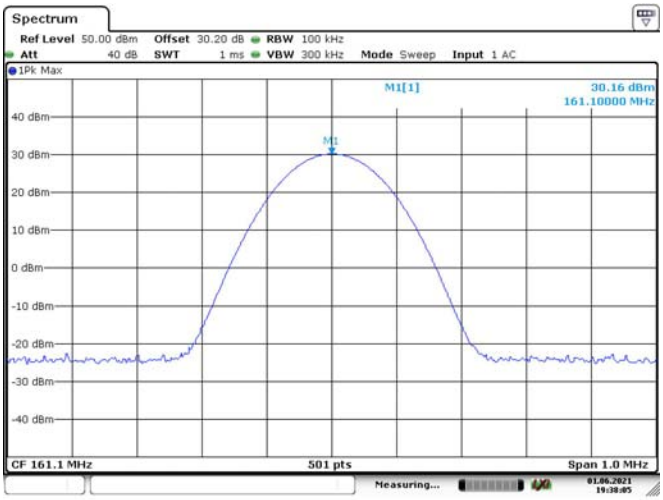
Part 22, Additional Channel, 150.8125 MHz Low Power



Part 74, Additional Channel, 161.1 MHz High Power

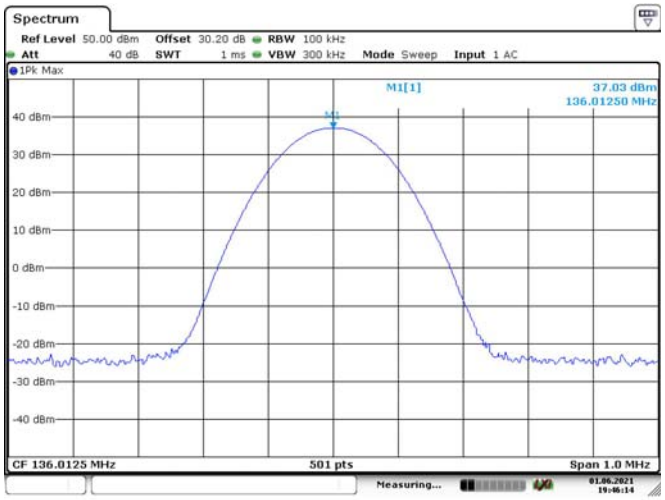


Part 74, Additional Channel, 161.1 MHz Low Power

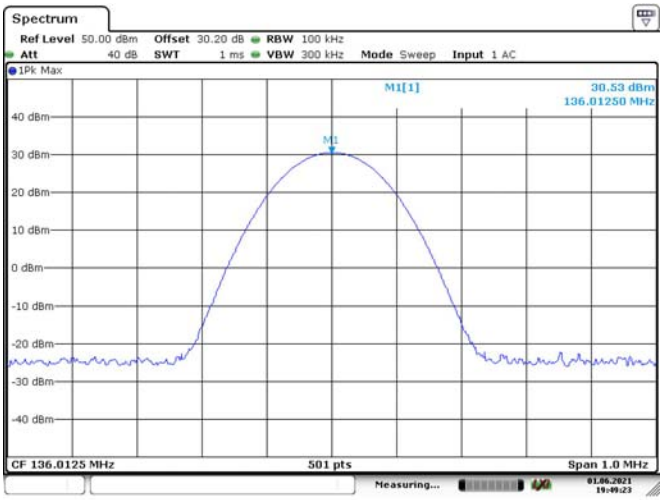


4FSK, 12.5kHz:

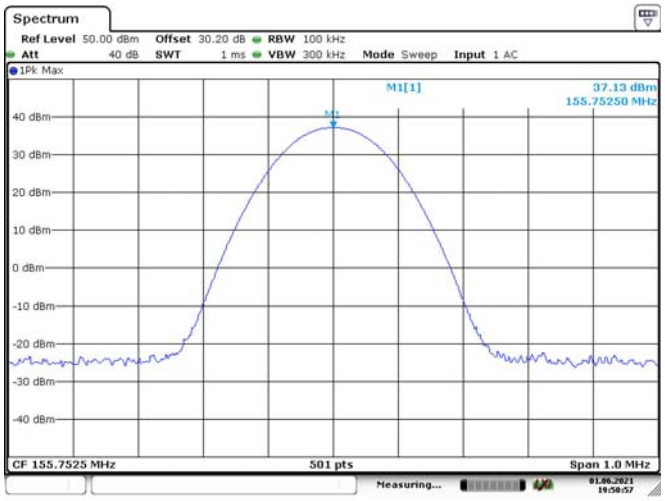
Low Channel, 136.0125 MHz High Power



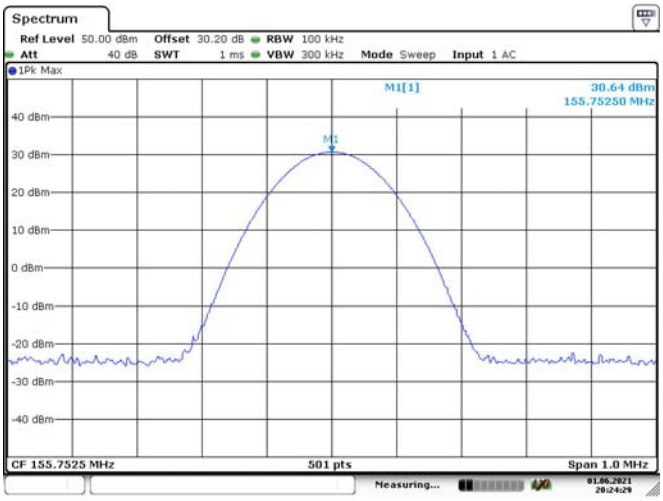
Low Channel, 136.0125 MHz Low Power



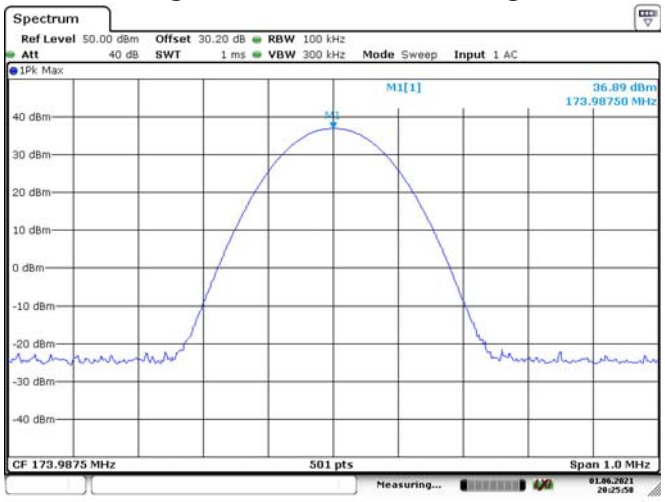
Part 90, Middle Channel,155.7525 MHz High Power



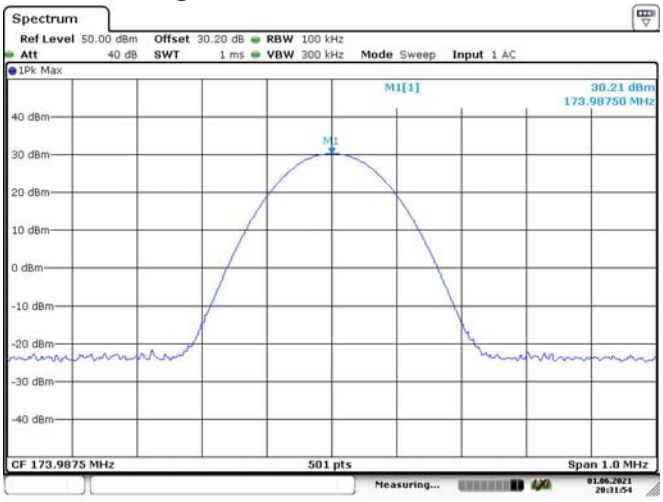
Part 90, Middle Channel, 155.7525 MHz Low Power



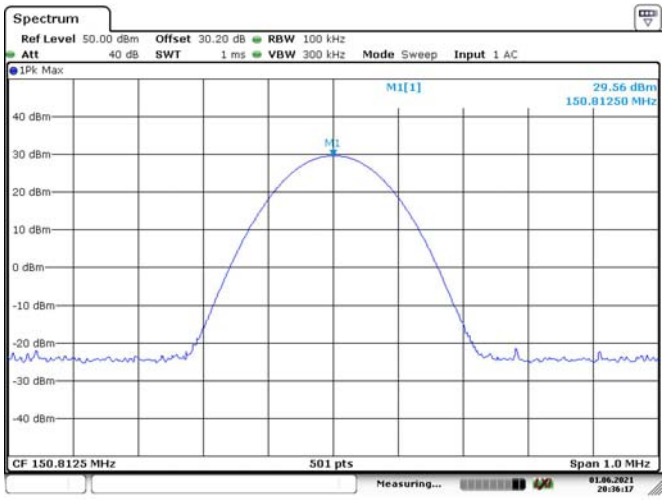
Part 90,High Channel, 173.9875MHz High Power



Part 90, High Channel,173.9875 MHz Low Power



Part 22, Additional Channel,150.8125 MHz High Power



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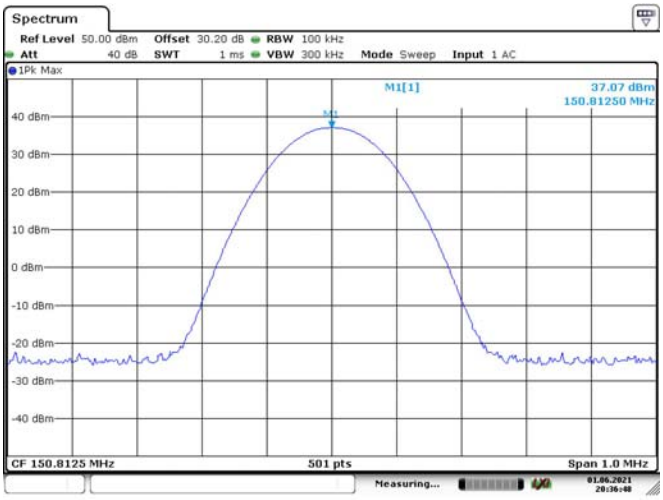
Part 22, Additional Channel, 150.8125 MHz Low Power



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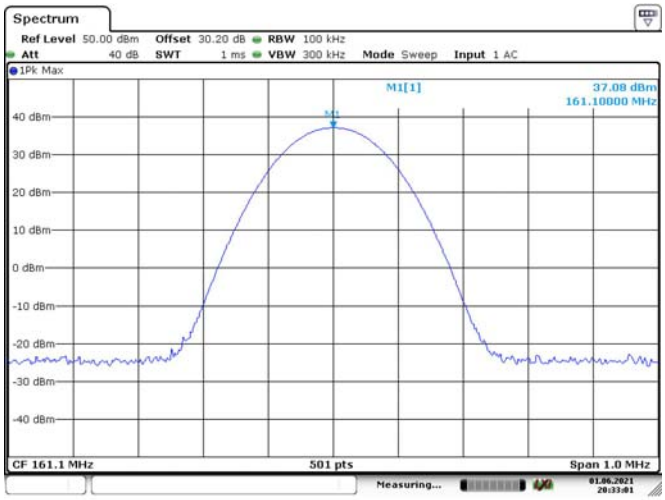
Part 74, Additional Channel, 161.1 MHz High Power



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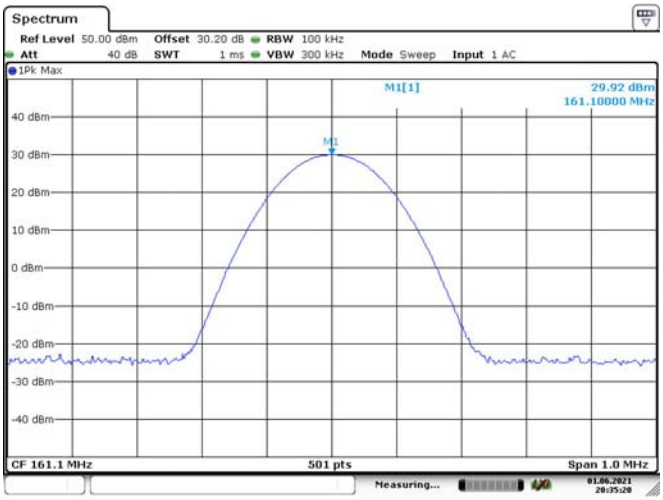

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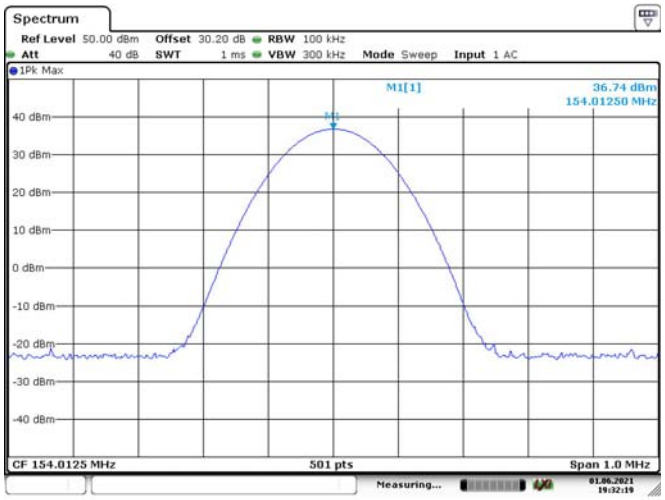
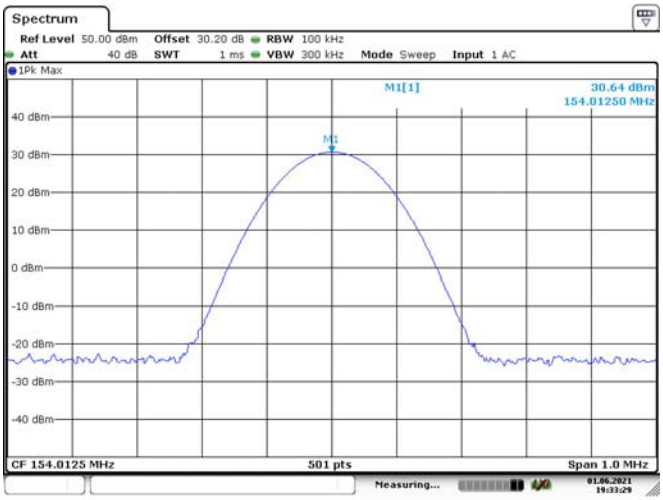
FM, 25kHz:

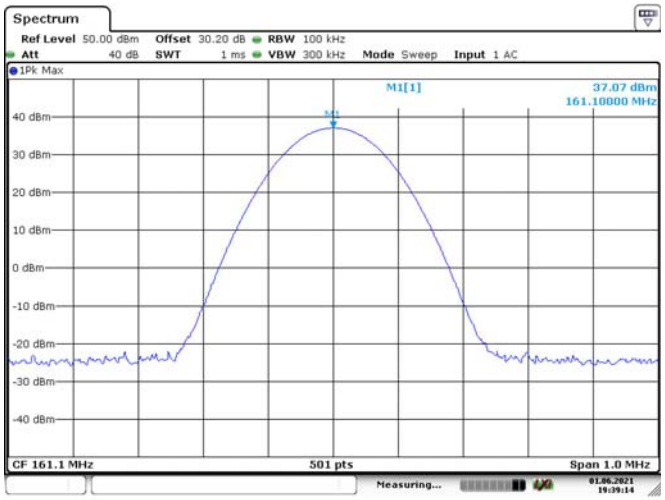
Part 80, Additional Channel,154.0125 MHz High Power



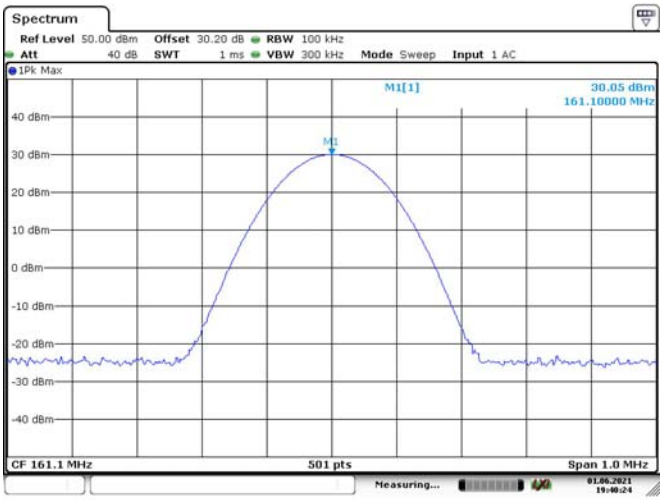
Part 80, Additional Channel, 154.0125 MHz Low Power



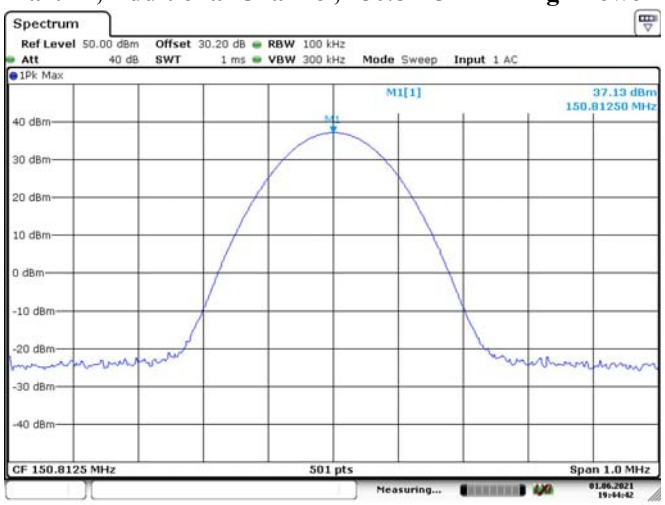
Part 74, Additional Channel, 161.1 MHz High Power



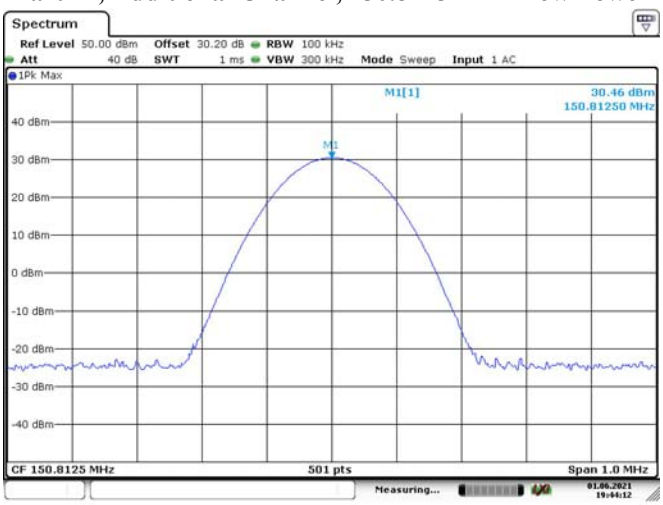
Part 74, Additional Channel, 161.1 MHz Low Power



Part 22, Additional Channel,150.8125 MHz High Power



Part 22, Additional Channel, 150.8125 MHz Low Power



3 - MODULATION CHARACTERISTIC

Applicable Standard

FCC §2.1047

(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-603-E 2.2.3

Test Data

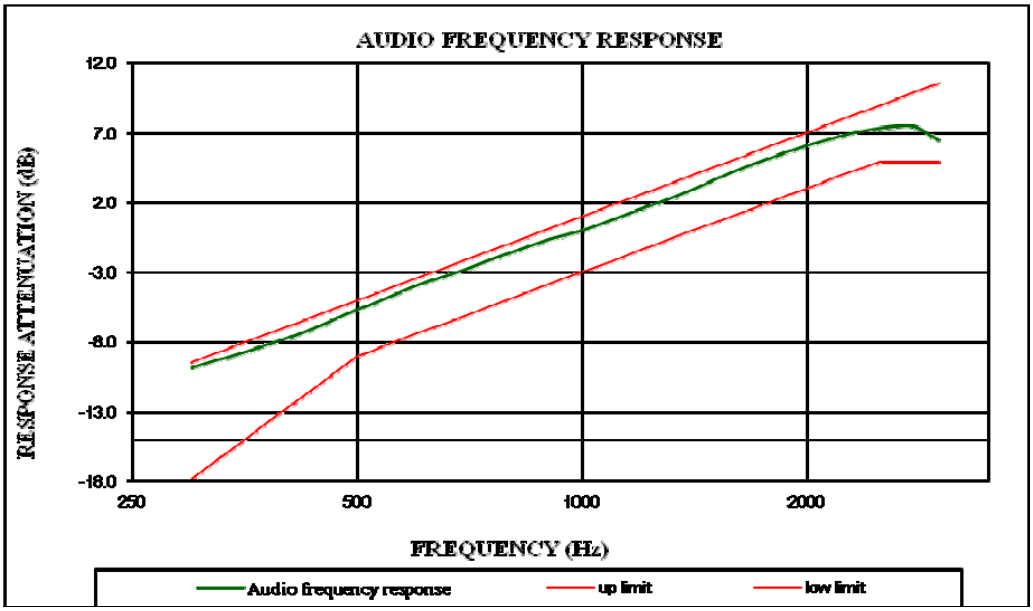
Test Mode: Transmitting

Test Result: Compliance.

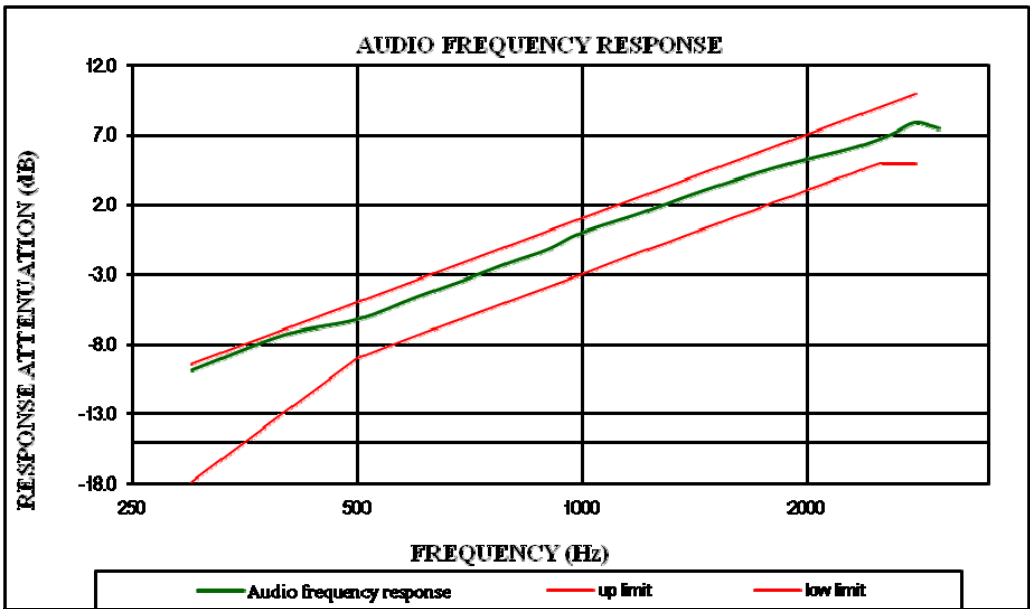
Please refer to the following tables and plots.

Audio Frequency Response – High Power

Channel Spacing: 12.5kHz	Carrier Frequency: 155.7525 MHz
Modulation Frequency (Hz)	**Response data (dB)**
300	-9.83
400	-7.77
500	-5.68
600	-3.96
700	-2.75
800	-1.60
900	-0.66
1000	0.00
1200	1.54
1400	2.89
1600	4.24
1800	5.26
2000	6.08
2200	6.71
2400	7.19
2600	7.44
2800	7.44
3000	6.49

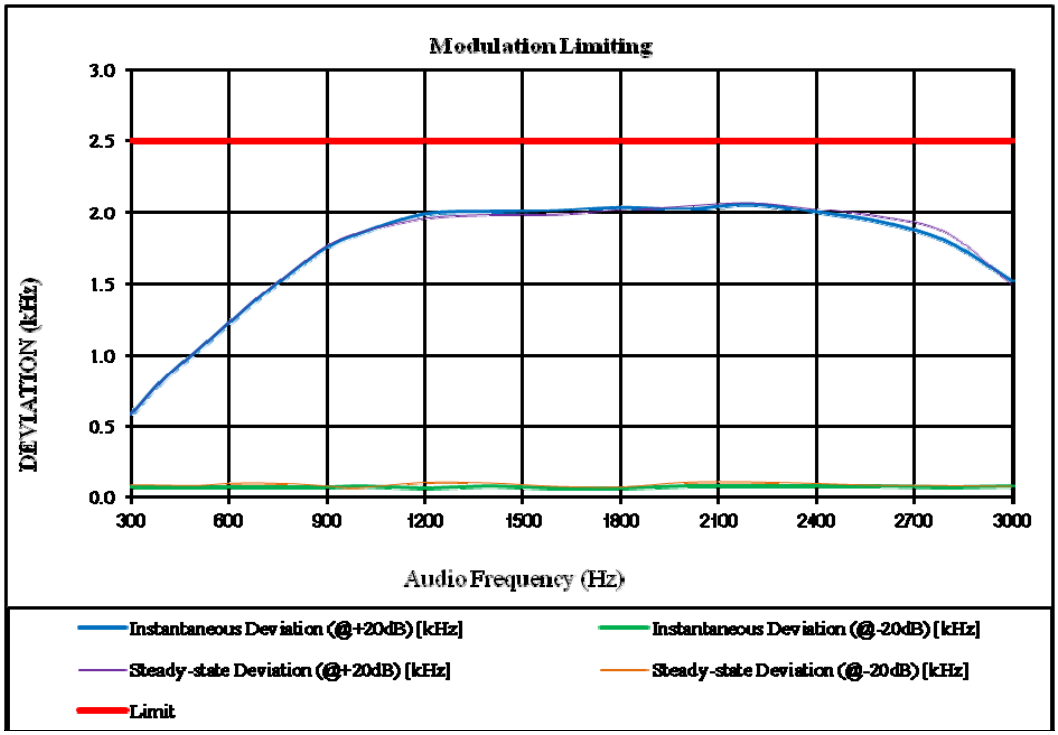


Channel Spacing: 25kHz	Carrier Frequency: 154.0125 MHz
Modulation Frequency (Hz)	**Response data (dB)**
300	-9.90
400	-7.33
500	-6.26
600	-4.63
700	-3.35
800	-2.16
900	-1.21
1000	0.00
1200	1.39
1400	2.71
1600	3.75
1800	4.59
2000	5.25
2200	5.79
2400	6.35
2600	7.06
2800	7.88
3000	7.47

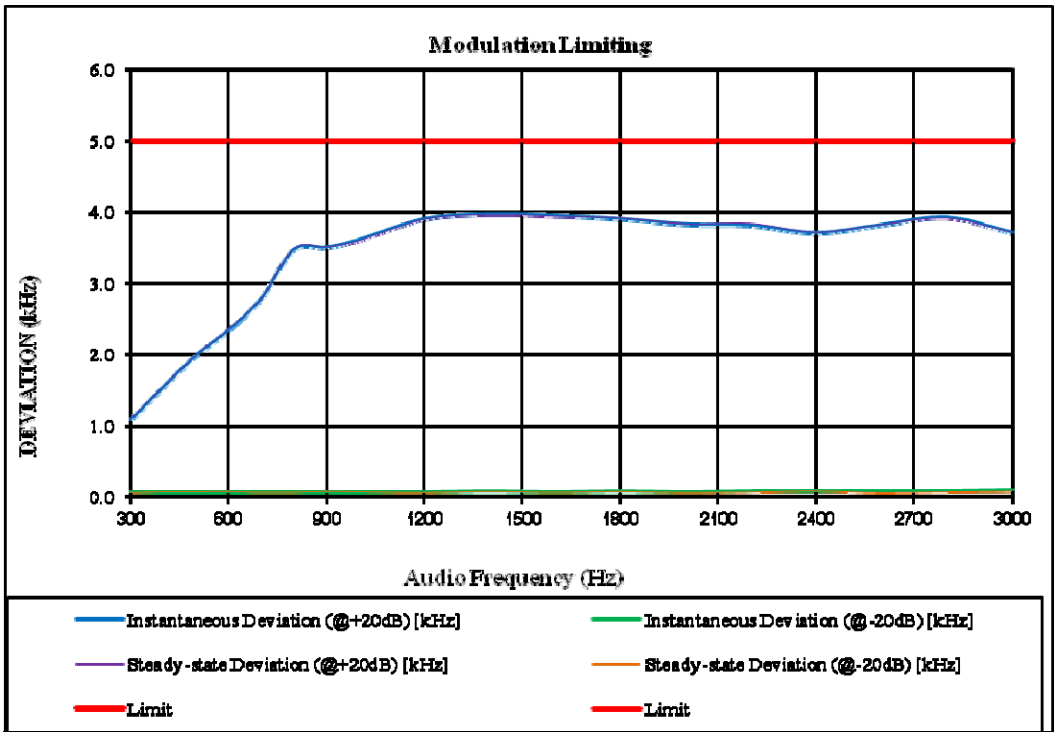


Modulation Limiting – High Power

Channel Spacing: 12.5kHz	Carrier Frequency: 155.7525 MHz				
Audio Frequency (Hz)	Instantaneous		Steady-state		Limit [kHz]
	Deviation (@+20dB) [kHz]	Deviation (@-20dB) [kHz]	Deviation (@+20dB) [kHz]	Deviation (@-20dB) [kHz]	
300	0.583	0.073	0.584	0.086	2.5
400	0.829	0.069	0.827	0.084	2.5
500	1.025	0.066	1.029	0.081	2.5
600	1.221	0.071	1.224	0.096	2.5
700	1.415	0.072	1.423	0.098	2.5
800	1.592	0.072	1.598	0.093	2.5
900	1.752	0.073	1.763	0.078	2.5
1000	1.849	0.076	1.854	0.068	2.5
1200	1.983	0.064	1.953	0.102	2.5
1400	2.001	0.075	1.979	0.098	2.5
1600	2.012	0.064	1.981	0.076	2.5
1800	2.035	0.063	2.012	0.071	2.5
2000	2.023	0.076	2.045	0.103	2.5
2200	2.059	0.077	2.067	0.105	2.5
2400	1.999	0.077	2.021	0.095	2.5
2600	1.928	0.078	1.965	0.082	2.5
2800	1.794	0.071	1.853	0.081	2.5
3000	1.521	0.077	1.495	0.076	2.5

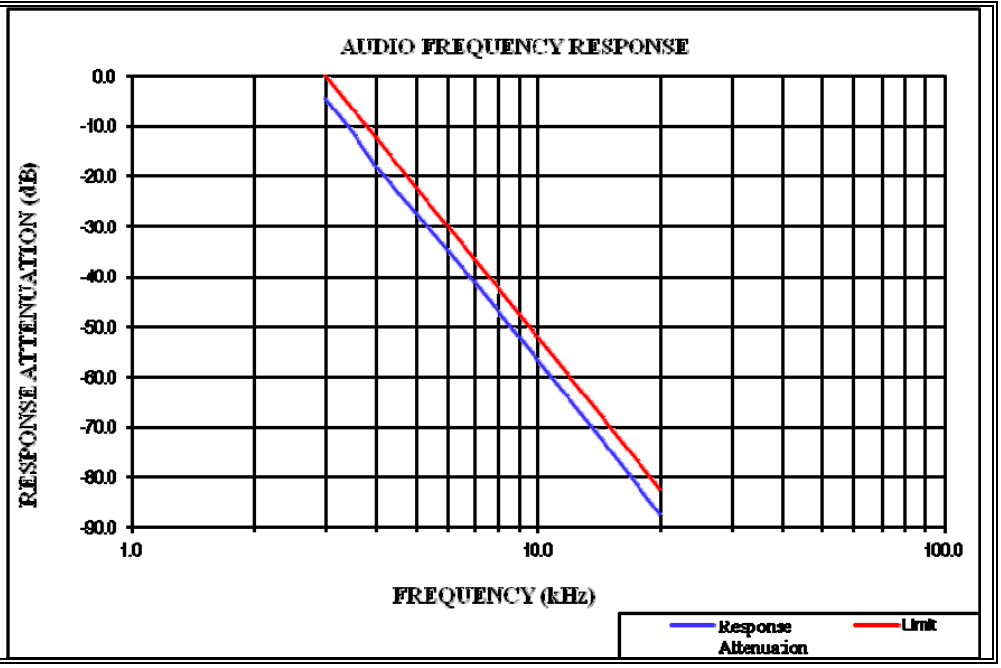


Channel Spacing: 25kHz	Carrier Frequency: 154.0125 MHz				
Audio Frequency (Hz)	Instantaneous		Steady-state		Limit [kHz]
	Deviation (@+20dB) [kHz]	Deviation (@-20dB) [kHz]	Deviation (@+20dB) [kHz]	Deviation (@-20dB) [kHz]	
300	1.083	0.068	1.086	0.066	5
400	1.547	0.073	1.546	0.078	5
500	1.990	0.076	1.989	0.078	5
600	2.347	0.073	2.356	0.083	5
700	2.789	0.068	2.787	0.070	5
800	3.476	0.077	3.486	0.072	5
900	3.510	0.066	3.512	0.083	5
1000	3.619	0.078	3.598	0.078	5
1200	3.910	0.078	3.897	0.066	5
1400	3.981	0.083	3.967	0.084	5
1600	3.959	0.077	3.941	0.069	5
1800	3.912	0.086	3.918	0.082	5
2000	3.837	0.075	3.834	0.066	5
2200	3.820	0.088	3.841	0.074	5
2400	3.714	0.081	3.716	0.090	5
2600	3.828	0.085	3.824	0.063	5
2800	3.932	0.084	3.914	0.076	5
3000	3.720	0.095	3.714	0.085	5

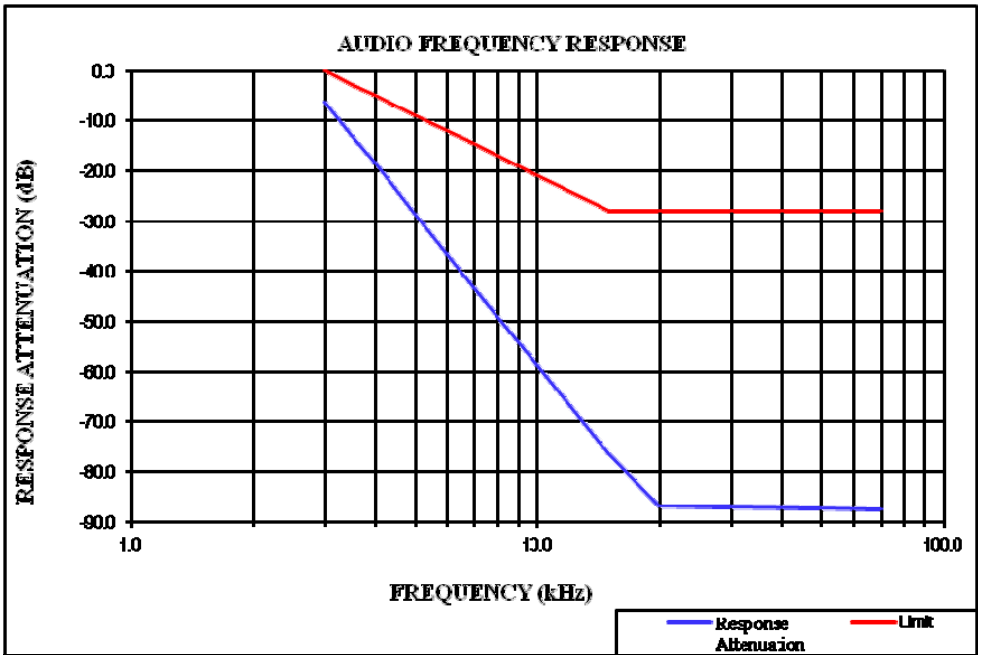


Audio Frequency Low Pass Filter Response – High Power

Channel Spacing: 12.5kHz		
Carrier Frequency: 155.7525 MHz		
Audio Frequency (kHz)	Response Attenuation (dB)	Limit (dB)
3.0	-4.6	0.0
3.5	-11.2	-6.7
4.0	-18.2	-12.5
5.0	-27.3	-22.2
7.0	-41.3	-36.8
10.0	-56.9	-52.3
15.0	-74.5	-69.9
20.0	-87.4	-82.5



Channel Spacing: 25kHz		
Carrier Frequency: 154.0125 MHz		
Audio Frequency (kHz)	Response Attenuation (dB)	Limit (dB)
3.0	-6.3	0.0
3.5	-13.1	-2.7
4.0	-18.6	-5.0
5.0	-28.6	-8.9
7.0	-43.5	-14.7
10.0	-58.9	-20.9
15.0	-76.5	-28.0
20.0	-86.9	-28.0
30.0	-87.1	-28.0
50.0	-87.2	-28.0
70.0	-87.5	-28.0



4 – 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 or 300 Hz and the spectrum was recorded in the frequency band ±50 kHz from the carrier frequency.

Test Data

Test Mode: Transmitting

Test Result: Compliance. *Please refer to following table and plots.*

Test Mode	Test Channel	Test Frequency (MHz)	High Power Level		Low Power Level		Note
			99% Occupied Bandwidth (kHz)	26dB Emission Bandwidth (kHz)	99% Occupied Bandwidth (kHz)	26dB Emission Bandwidth (kHz)	
FM 12.5kHz	Low	136.0125	9.820	10.220	9.820	10.421	FCC
	Middle	155.7525	5.311	10.321	5.311	10.321	FCC Part 90
	High	173.9875	5.311	10.321	5.311	10.321	FCC
	Additional	150.8125	5.311	10.321	6.012	10.321	FCC Part 22
	Additional	161.1000	5.311	10.321	5.311	10.321	FCC Part 74
4FSK 12.5kHz	Low	136.0125	7.415	9.419	7.715	9.519	FCC
	Middle	155.7525	7.715	10.421	7.214	9.218	FCC Part 90
	High	173.9875	7.214	9.419	7.415	9.118	FCC
	Additional	150.8125	7.315	9.218	7.715	9.619	FCC Part 22
	Additional	161.1000	7.515	9.619	7.415	8.818	FCC Part 74
FM 25kHz	Additional	150.8125	10.621	15.832	10.621	16.032	FCC Part 22
	Additional	154.0125	10.621	16.032	10.621	16.032	FCC Part 80
	Additional	161.1000	10.621	15.832	10.621	15.831	FCC Part 74

Note: Emission bandwidth was based on calculation method instead of measurement.
Emission Designator: Per CFR 47 §2.201& §2.202, BW = 2M + 2D

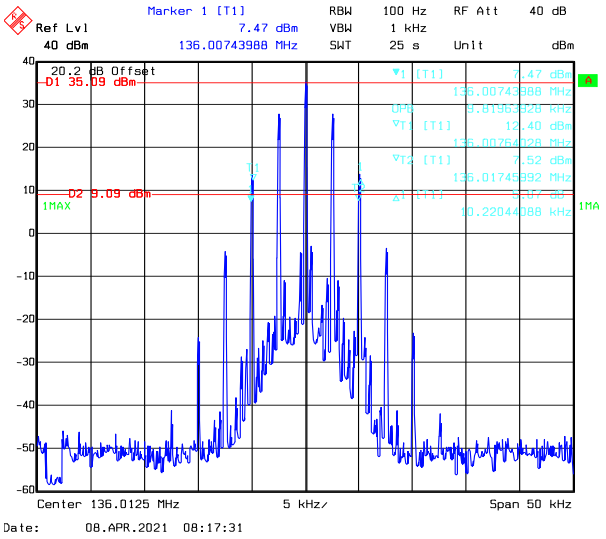
For FM Mode (Channel Spacing: 12.5 kHz)
Emission Designator 11K0F3E
In this case, the maximum modulating frequency is 3.0 kHz with a 2.5 kHz deviation.
BW = 2(M+D) = 2*(3.0 kHz + 2.5 kHz) = 11 kHz = 11K0
F3E portion of the designator represents an FM voice transmission
Therefore, the entire designator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

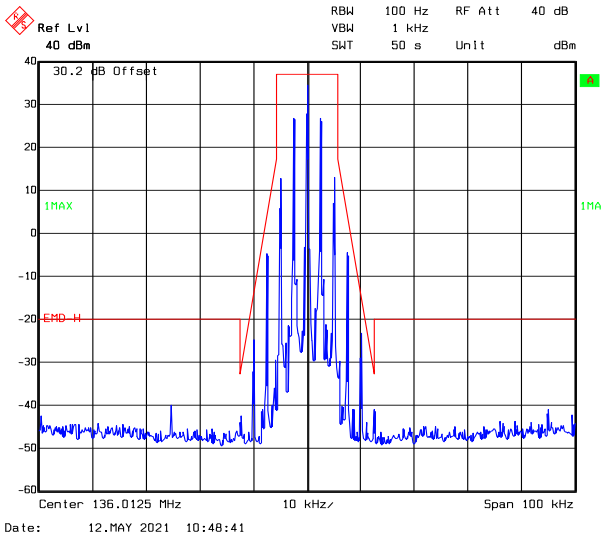
For FM Mode (Channel Spacing: 25 kHz)
Emission Designator 16K0F3E
In this case, the maximum modulating frequency is 3.0 kHz with a 5.0 kHz deviation.
BW = 2(M+D) = 2*(3.0 kHz + 5.0 kHz) = 16 kHz =16K0
F3E portion of the designator represents an FM voice transmission
Therefore, the entire designator for 25 kHz channel spacing FM mode is 16K0F3E.

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, 7.60 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.

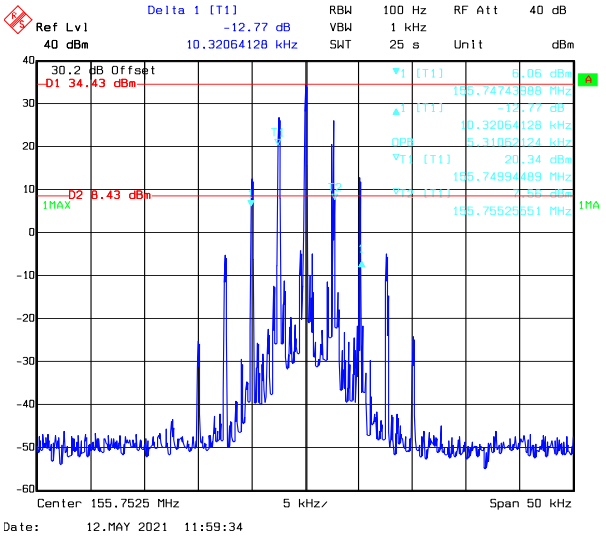
FM, 12.5kHz, High Power:

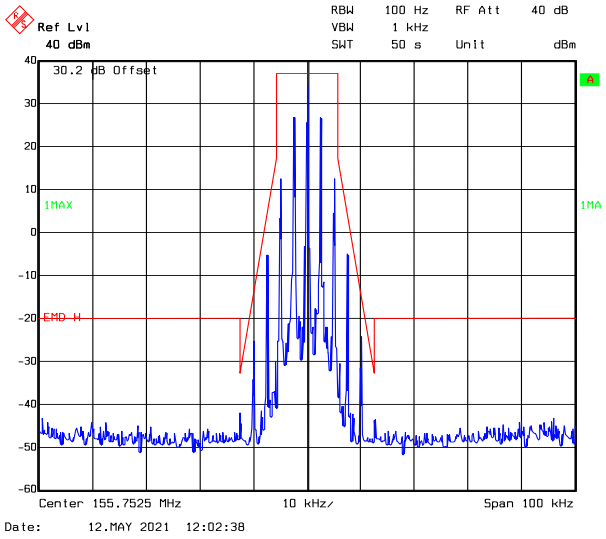
Low Channel



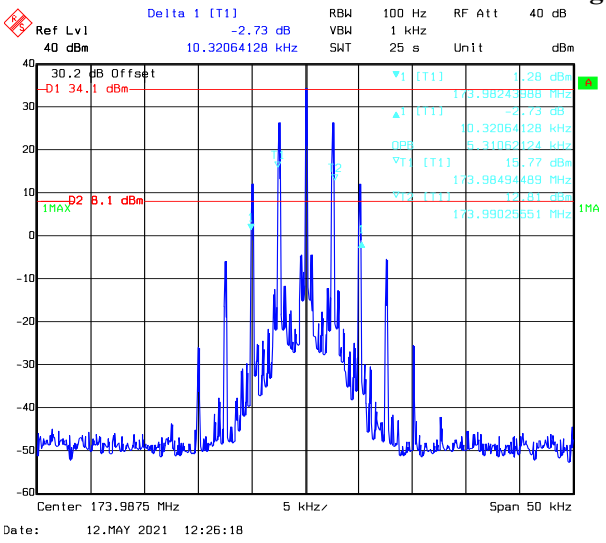


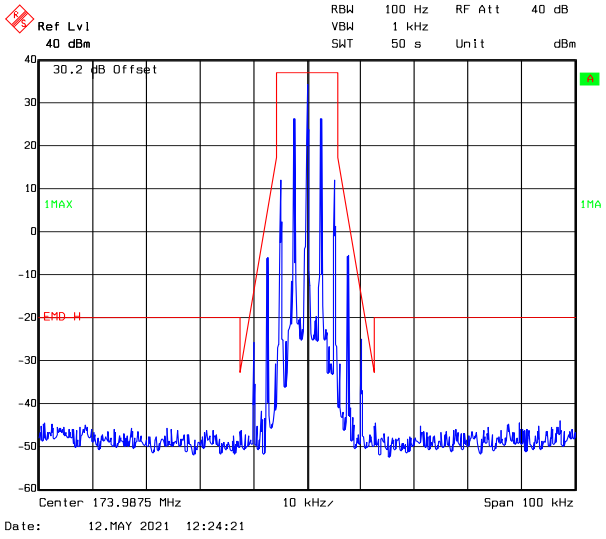
Middle Channel



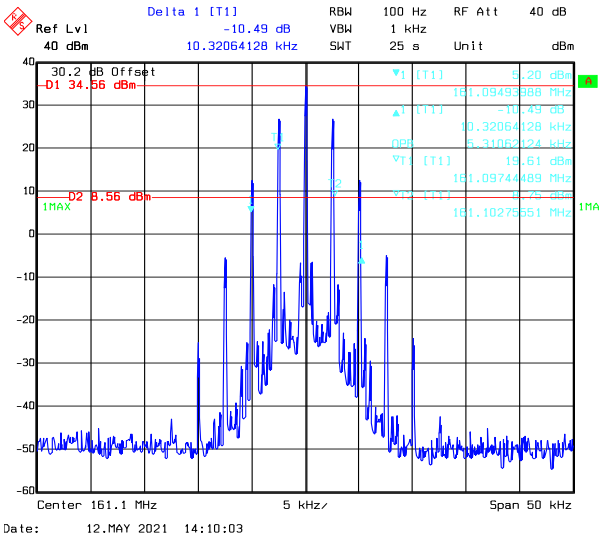


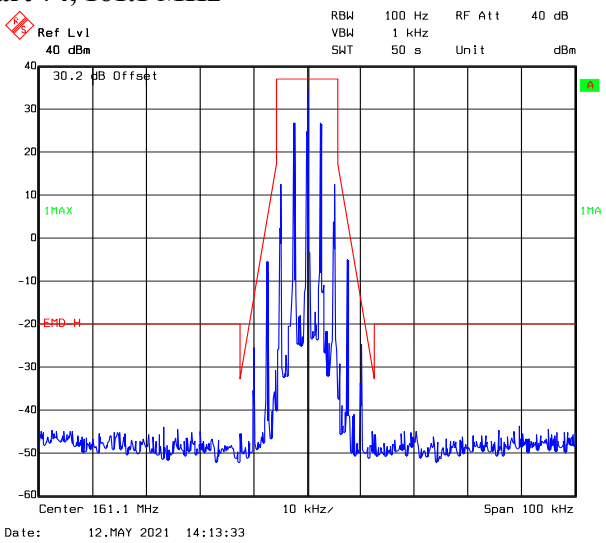
High Channel



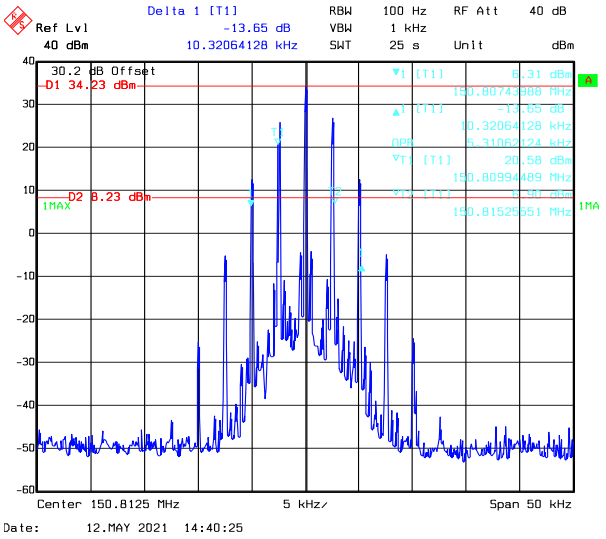


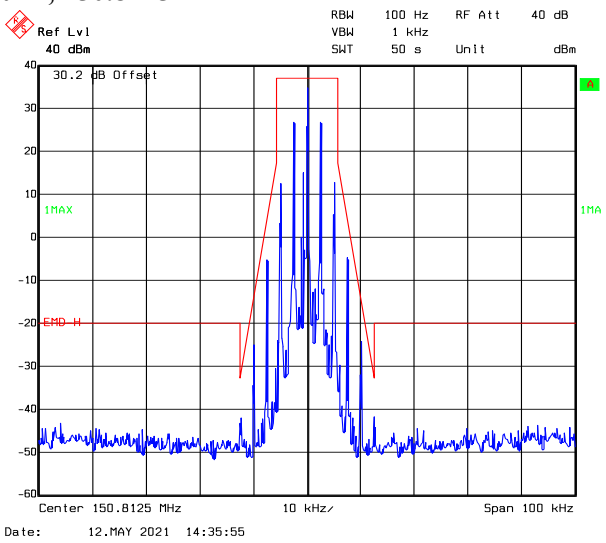
Additional Channel Part 74, 161.1 MHz





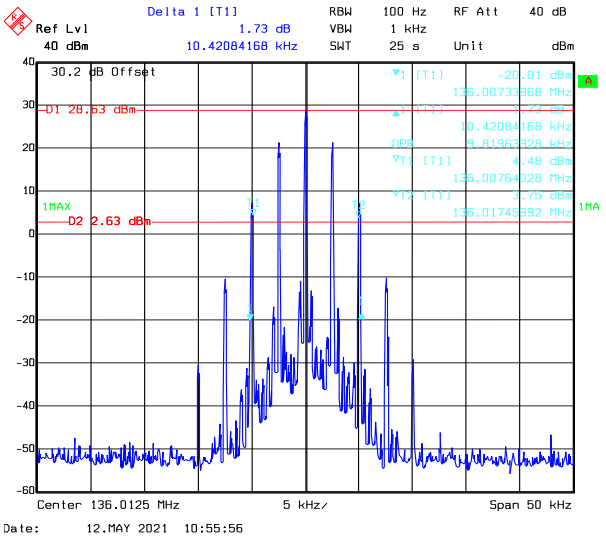
Additional Channel Part 22, 150.8125 MHz

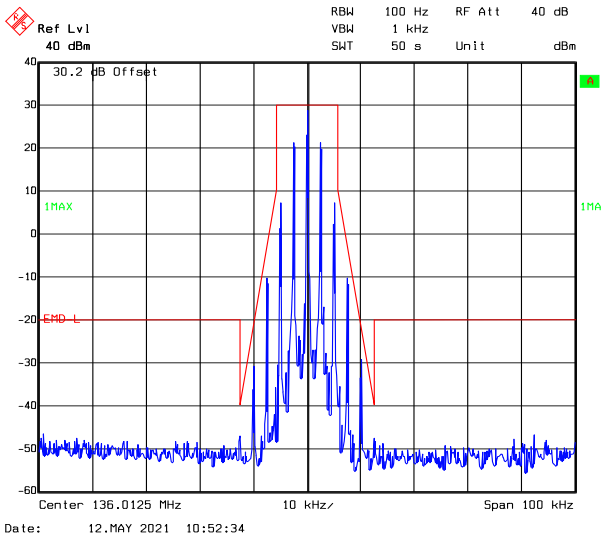




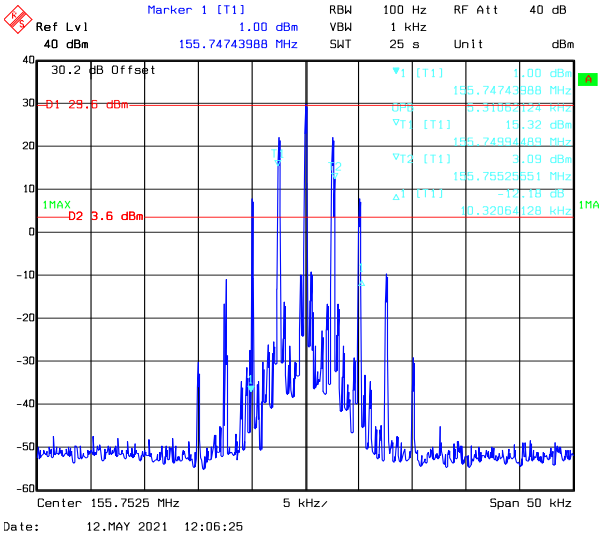
FM, 12.5kHz, Low Power:

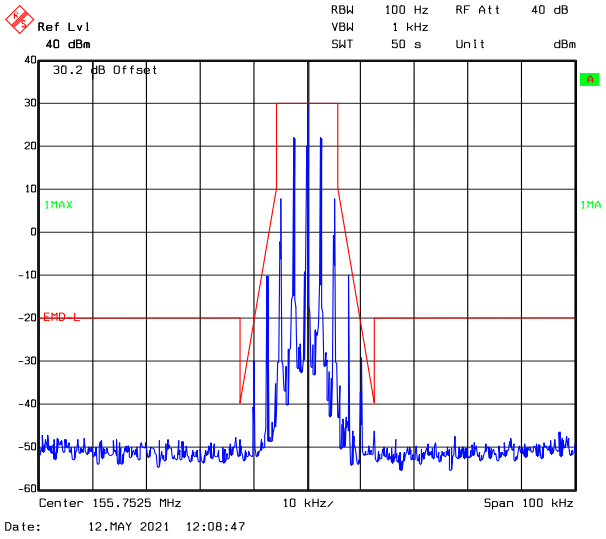
Low Channel



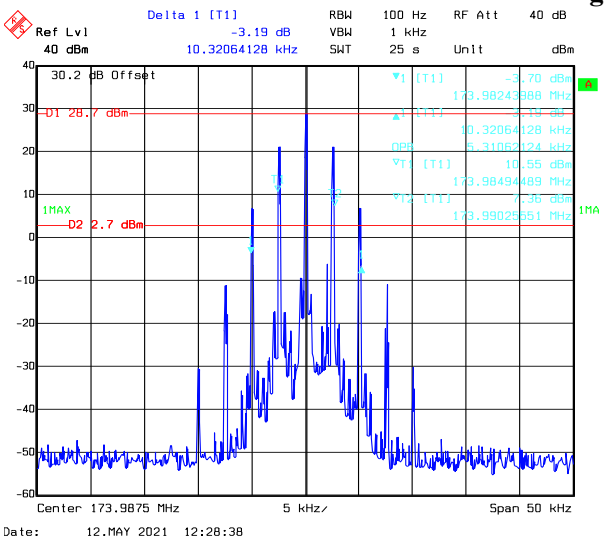


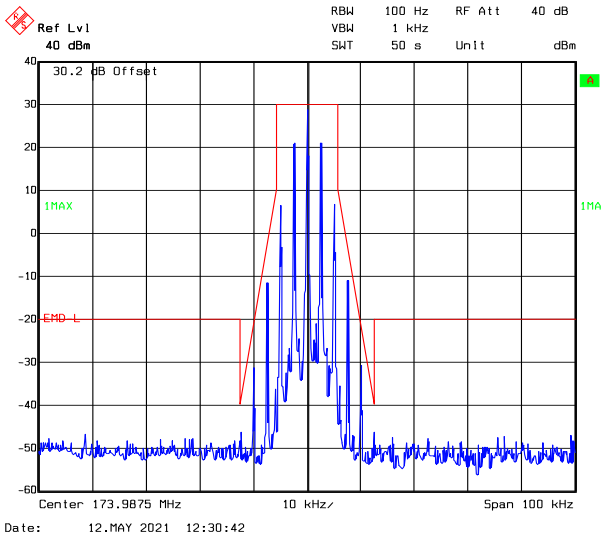
Middle Channel



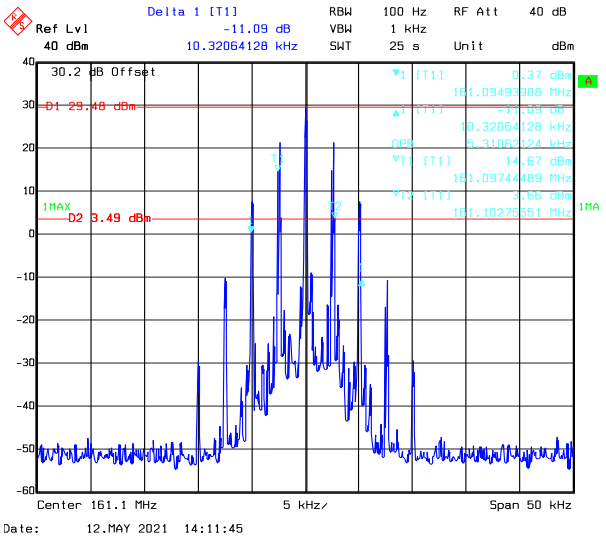


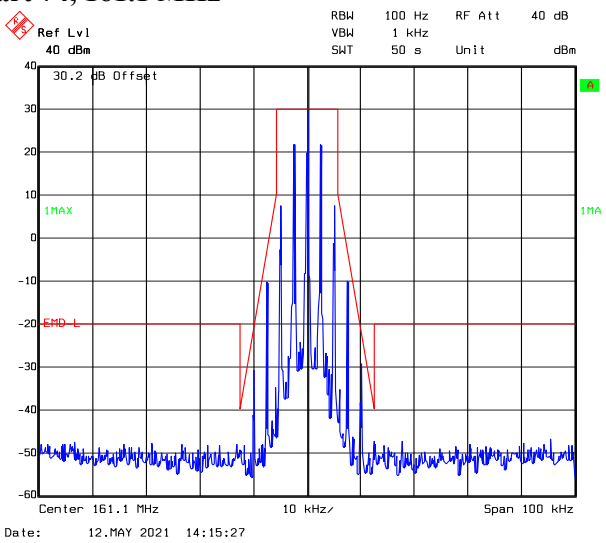
High Channel



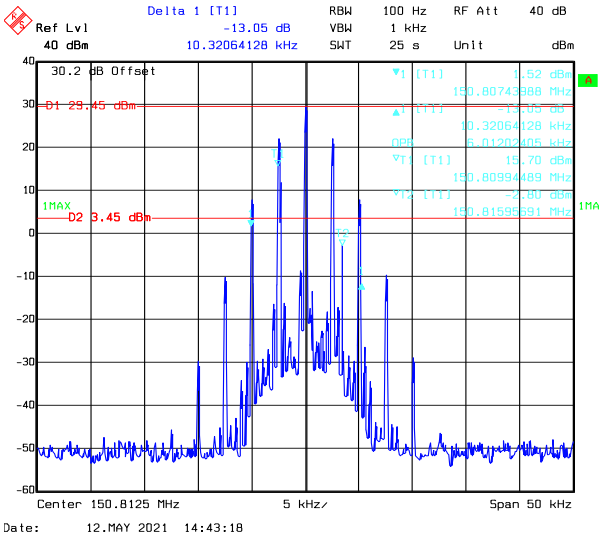


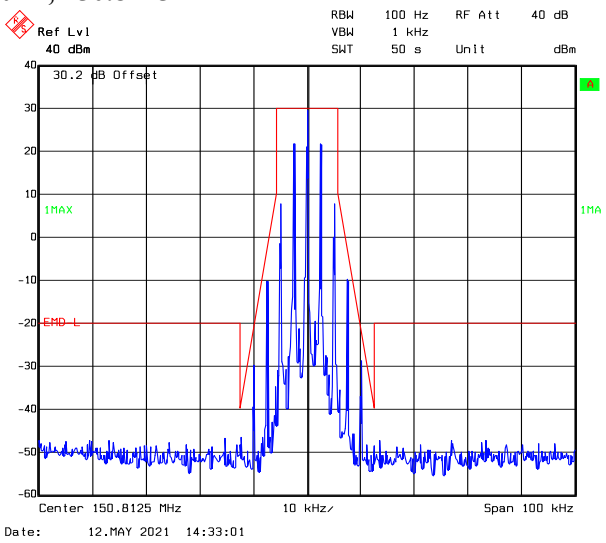
Additional Channel Part 74, 161.1 MHz





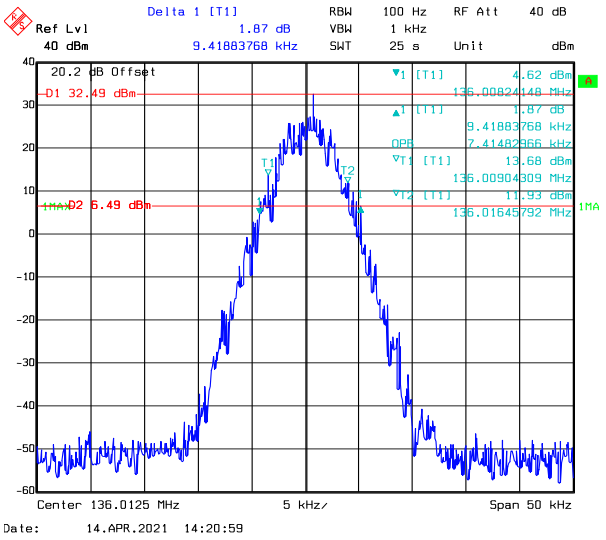
Additional Channel Part 22, 150.8125 MHz

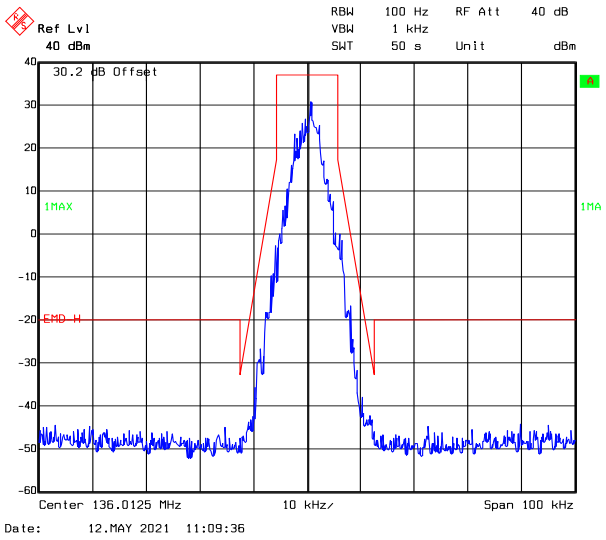




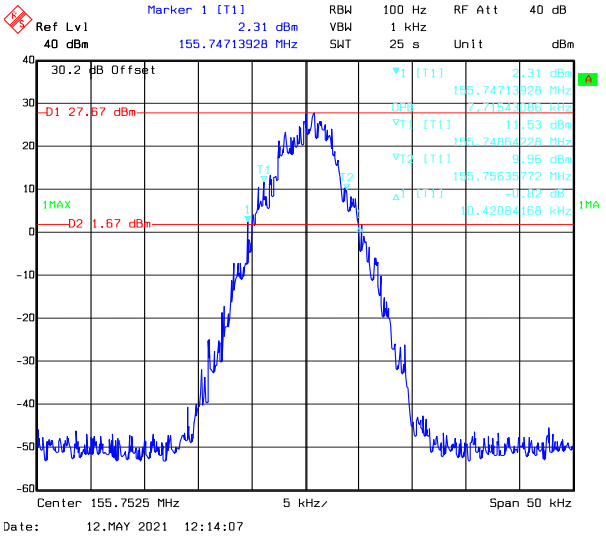
4FSK, 12.5kHz, High Power:

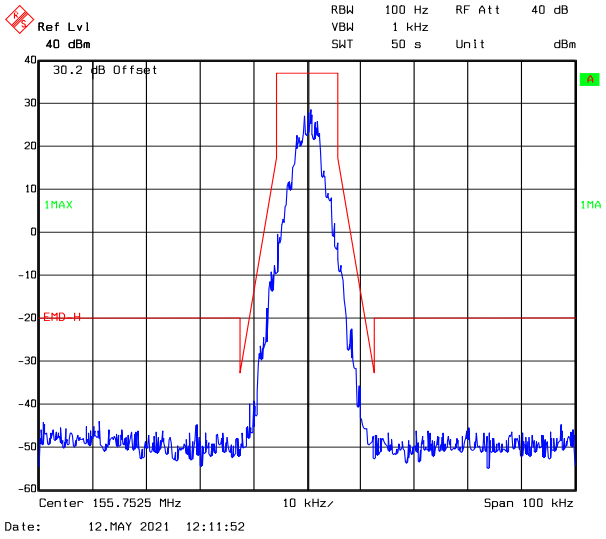
Low Channel



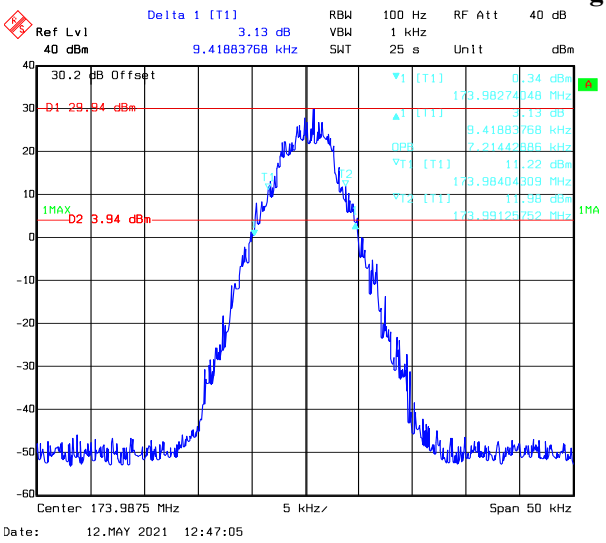


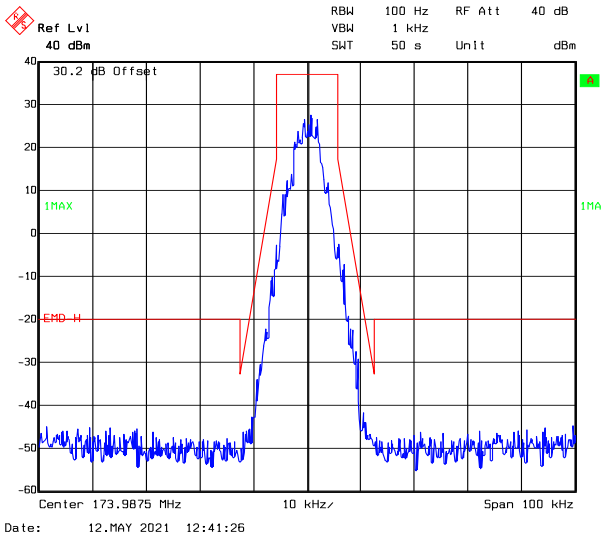
Middle Channel



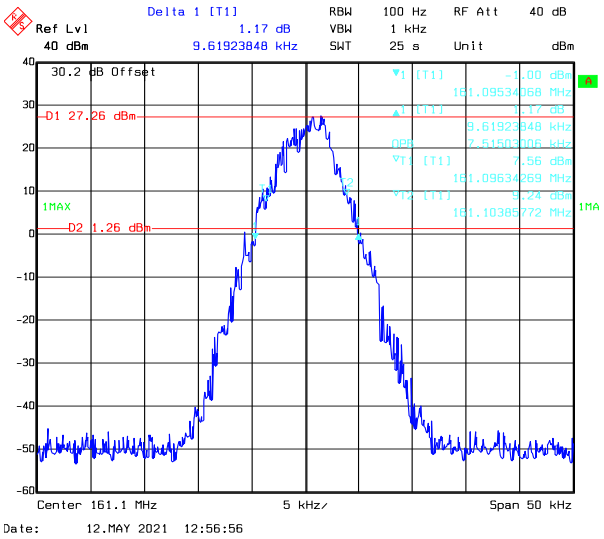


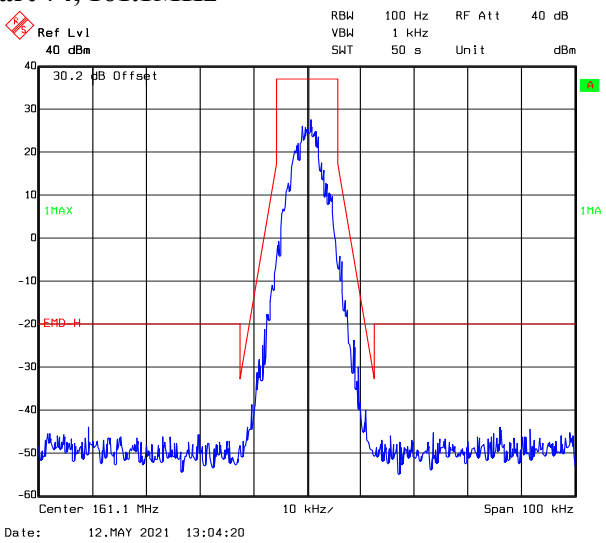
High Channel



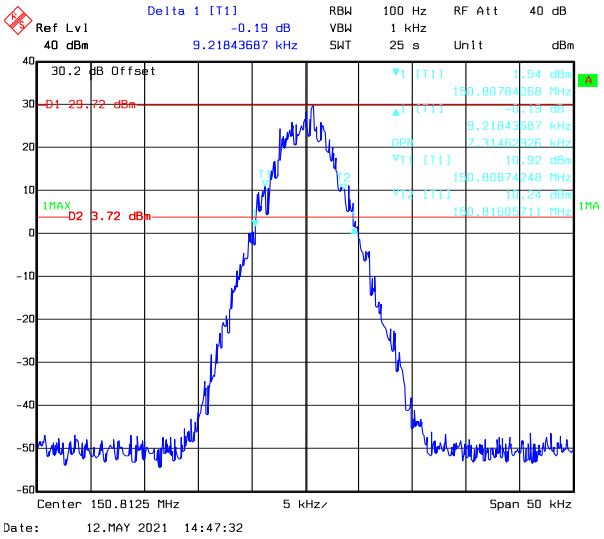


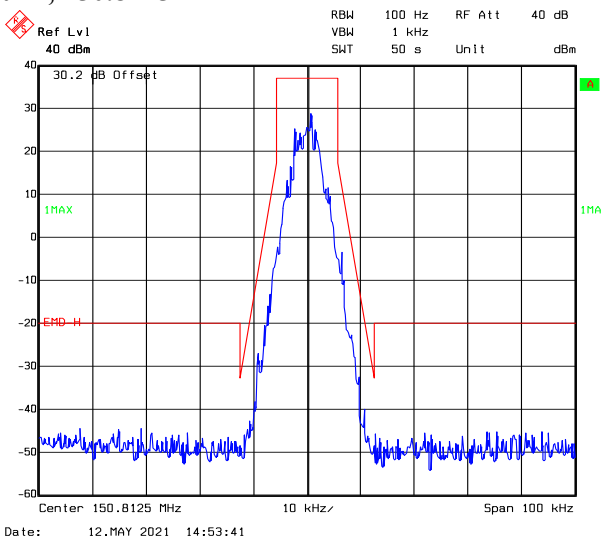
Additional Channel Part 74, 161.1MHz





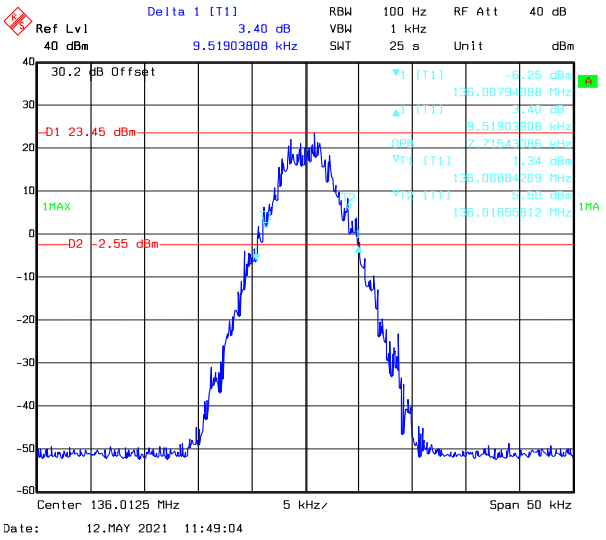
Additional Channel Part 22, 150.8125 MHz

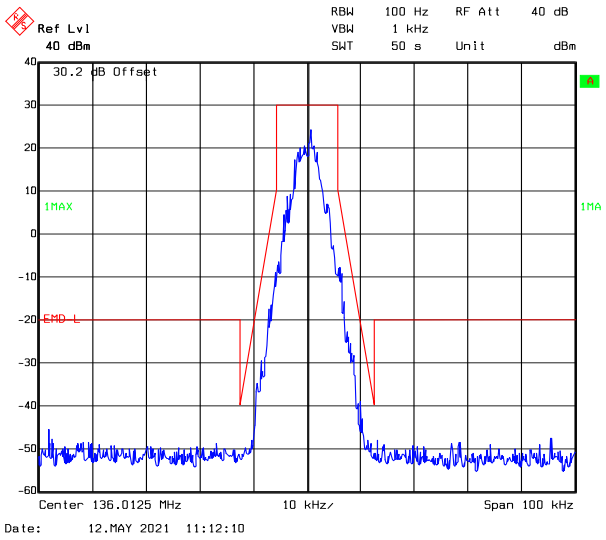




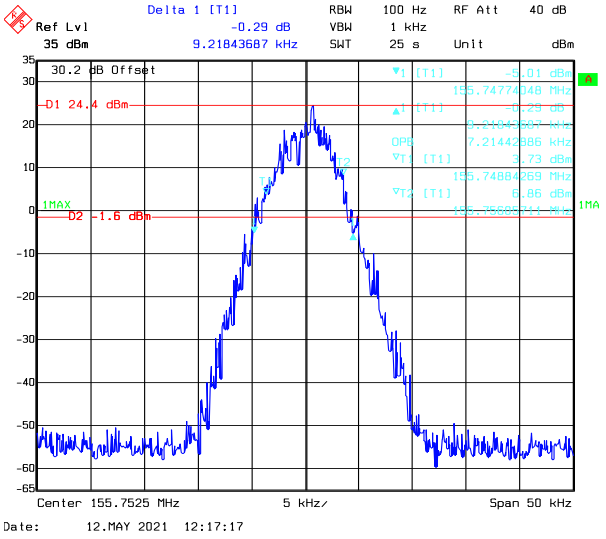
4FSK, 12.5kHz, Low Power:

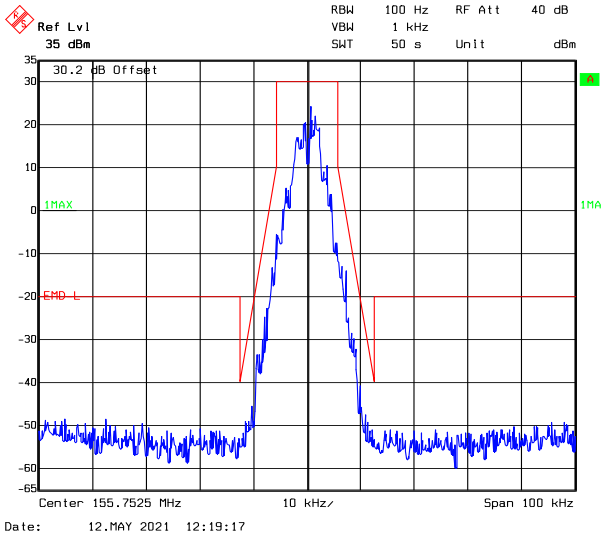
Low Channel



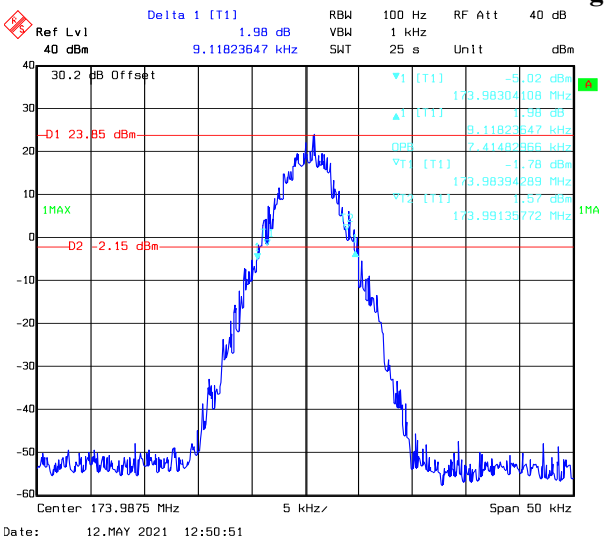


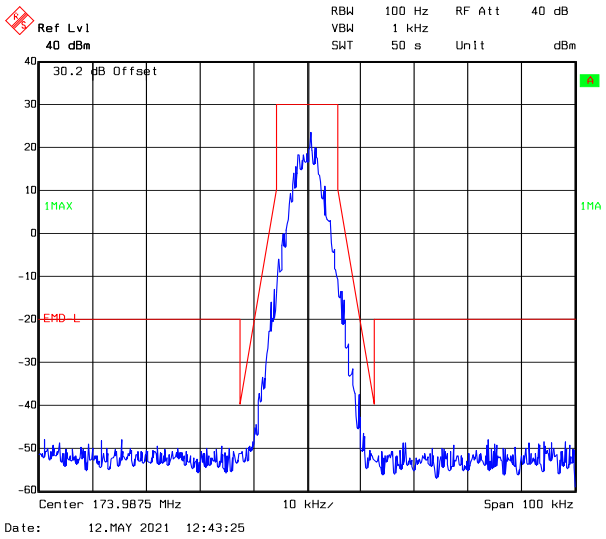
Middle Channel



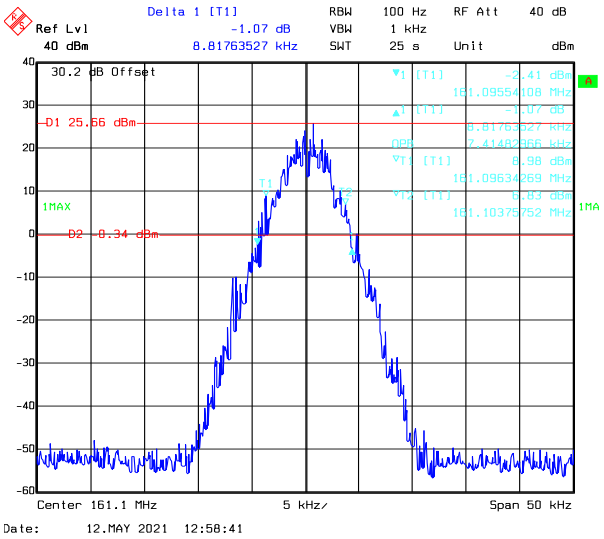


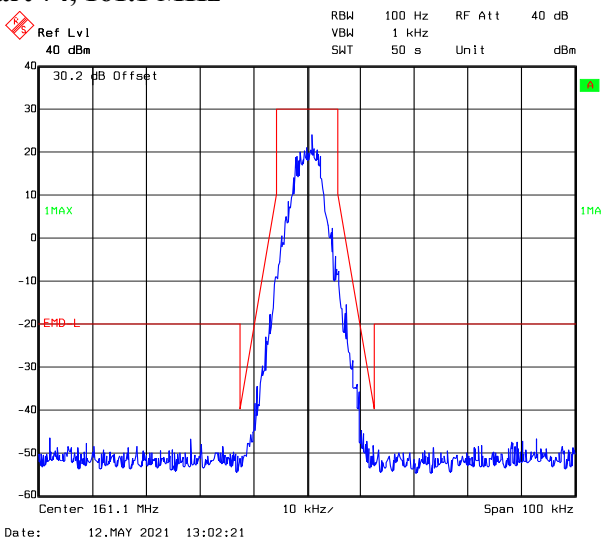
High Channel



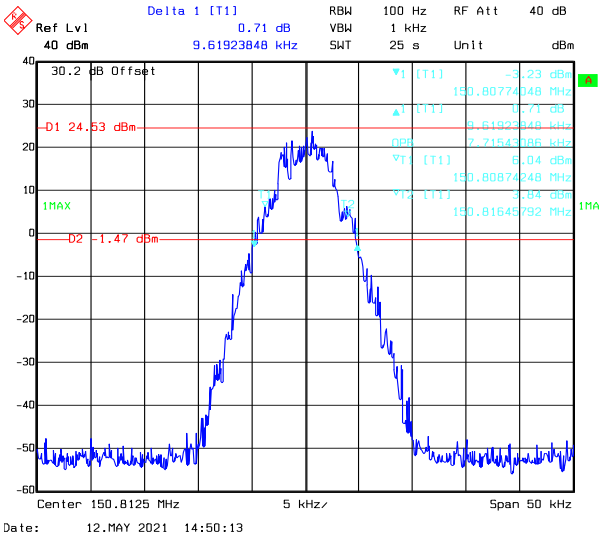


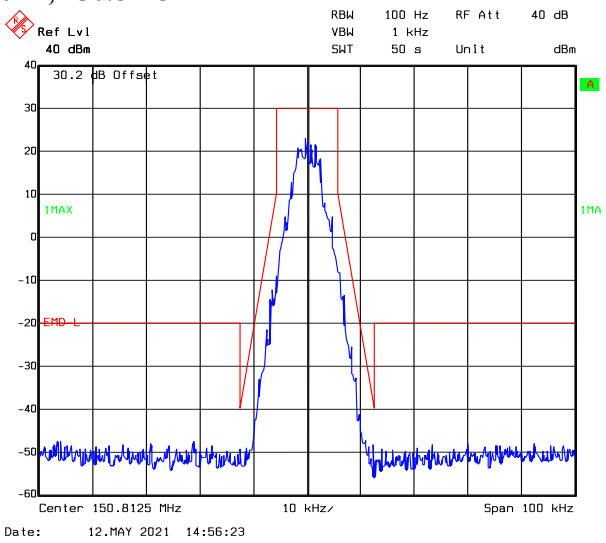
Additional Channel Part 74, 161.1 MHz





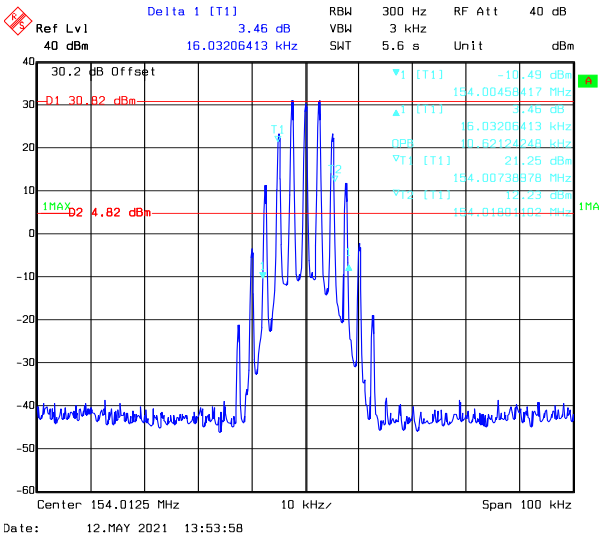
Additional Channel Part 22, 150.8125 MHz

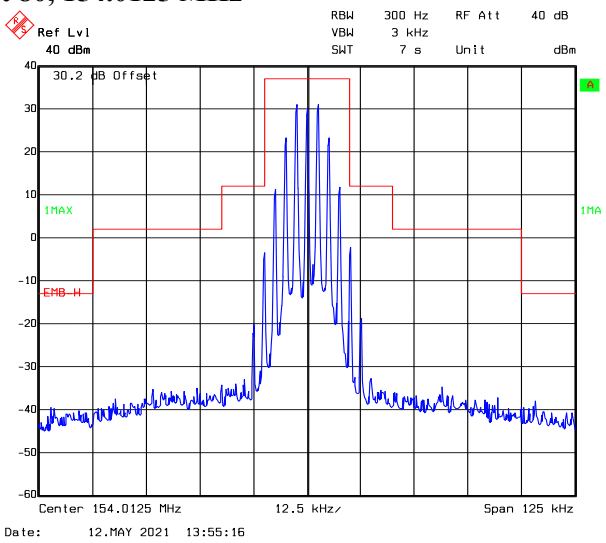




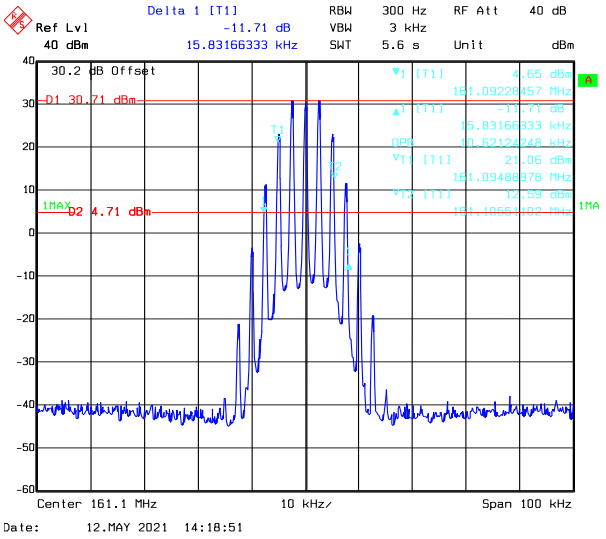
FM, 25 kHz, High Power:

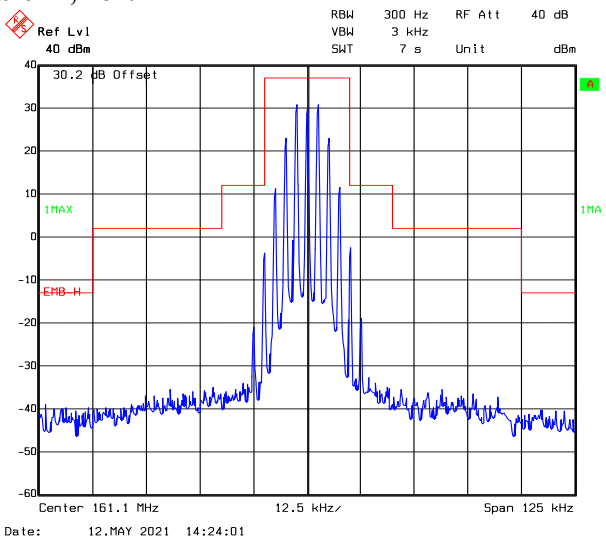
Additional Channel Part 80, 154.0125 MHz



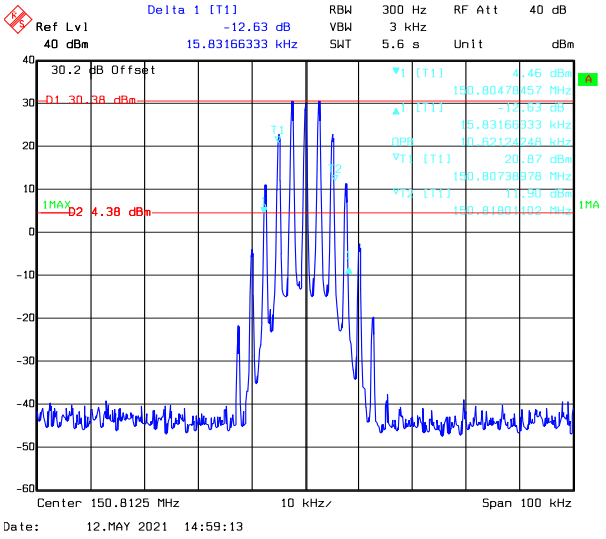


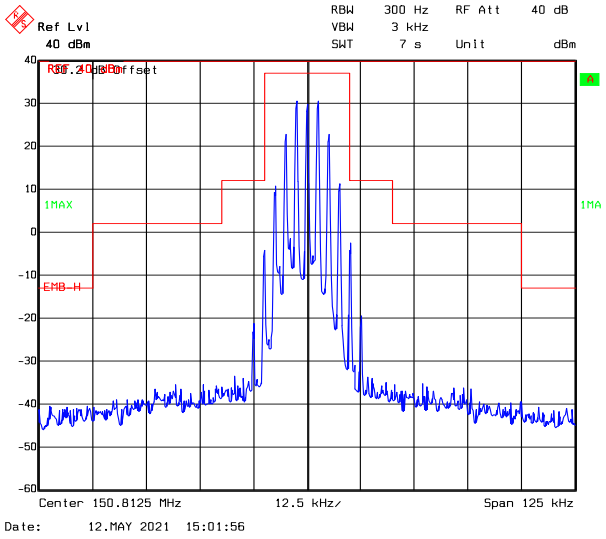
Additional Channel Part 74, 161.1 MHz





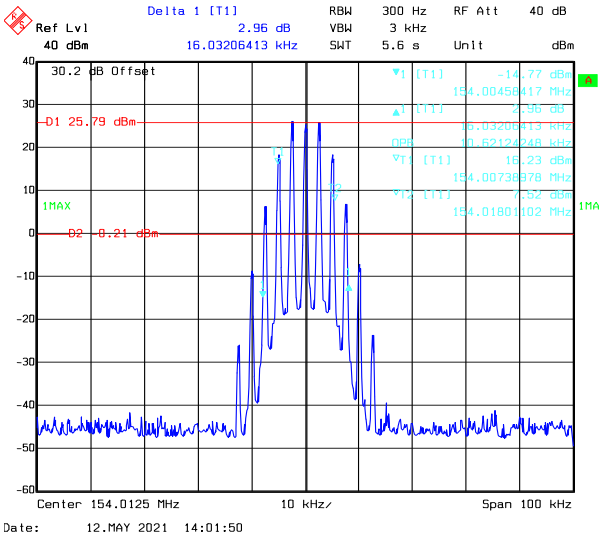
Additional Channel Part 22,150.8125 MHz

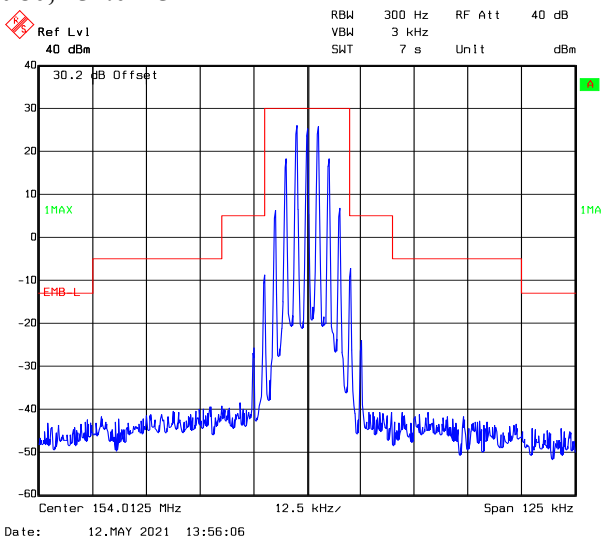




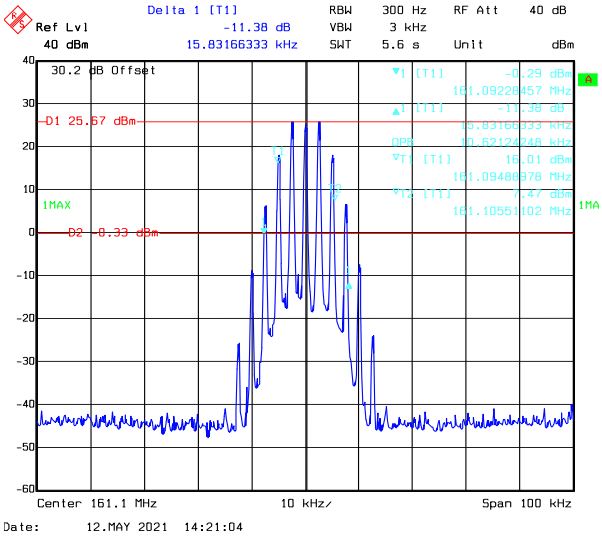
FM, 25 kHz, Low Power:

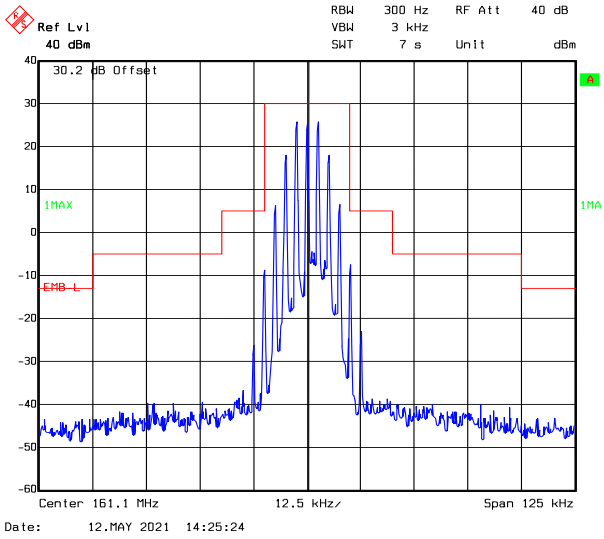
Additional Channel Part 80, 154.0125 MHz



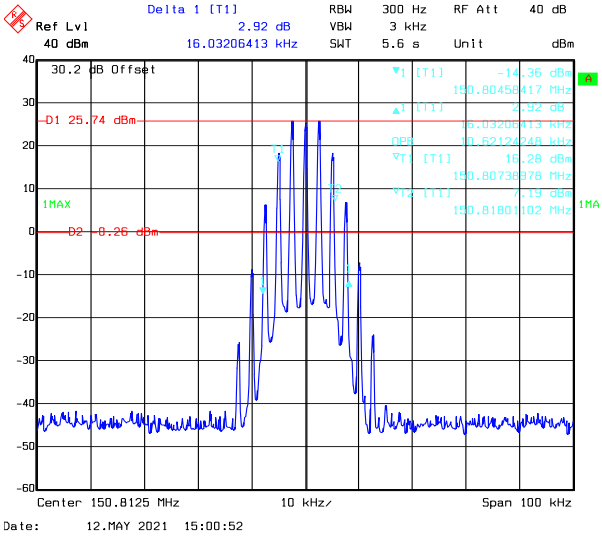


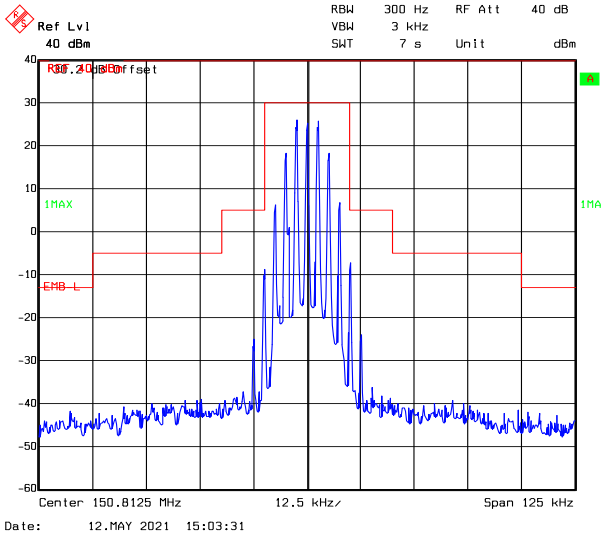
Additional Channel Part 74, 161.1 MHz





Additional Channel Part 22,150.8125 MHz





5 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard

FCC §2.1051, §22.861, §74.462, §80.211, and §90.210

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

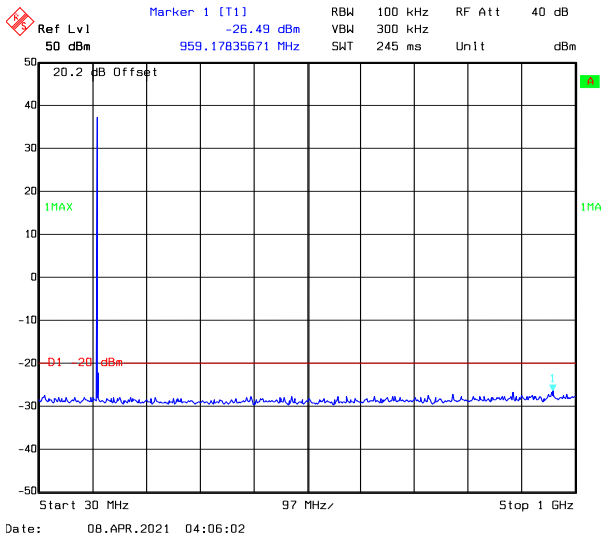
Test Mode: Transmitting

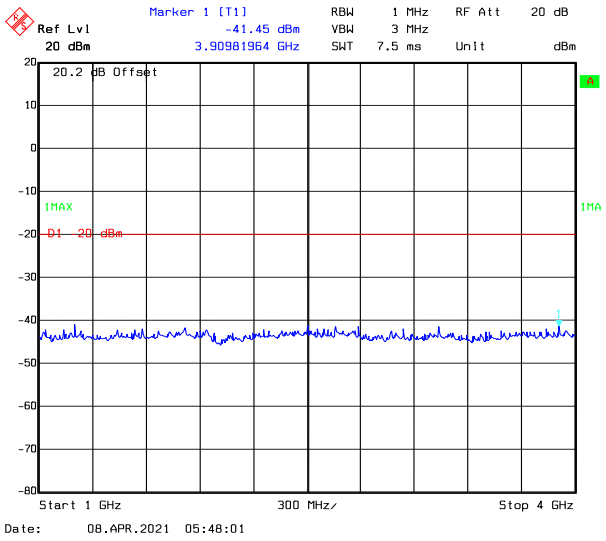
Test Result: Compliance.

Test performed at high power level with Band Reject Filter, *please refer to the following plots.*

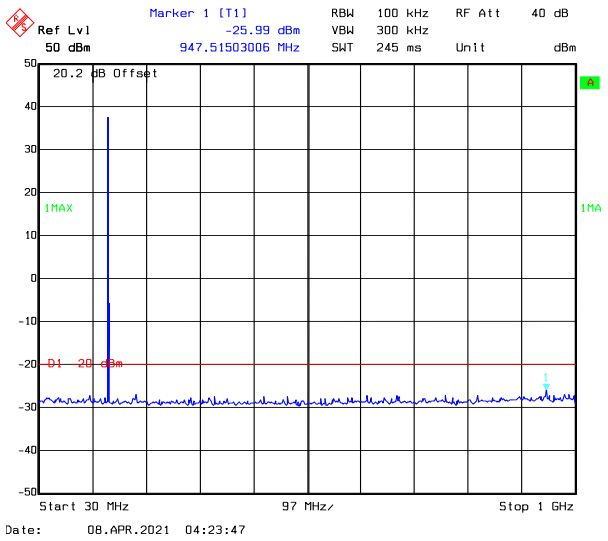
FM, 12.5kHz:

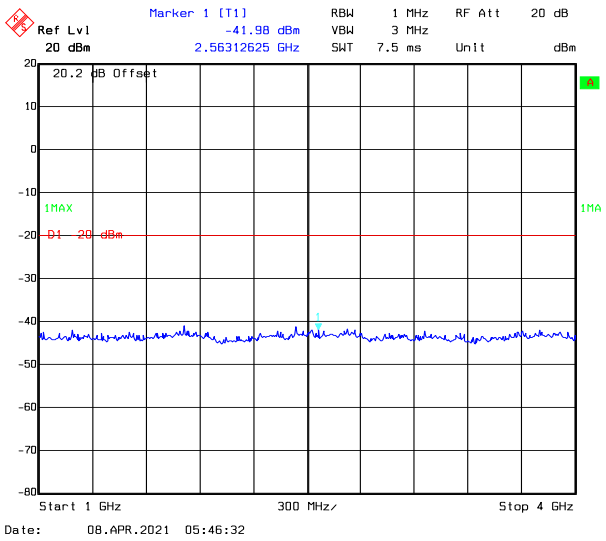
Low Channel, 136.0125 MHz



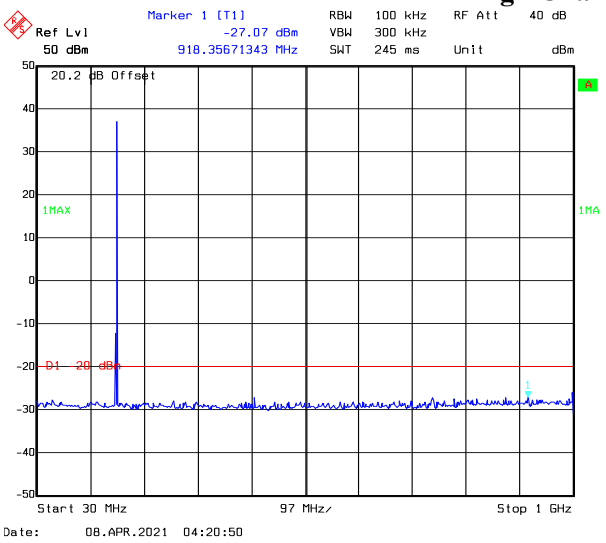


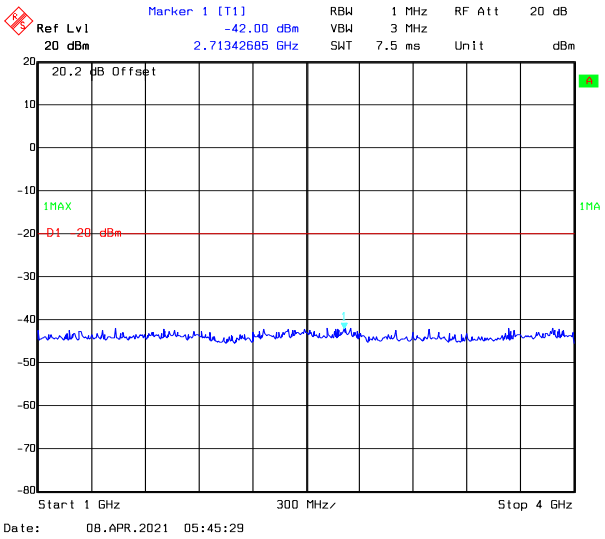
Middle Channel, 155.7525 MHz





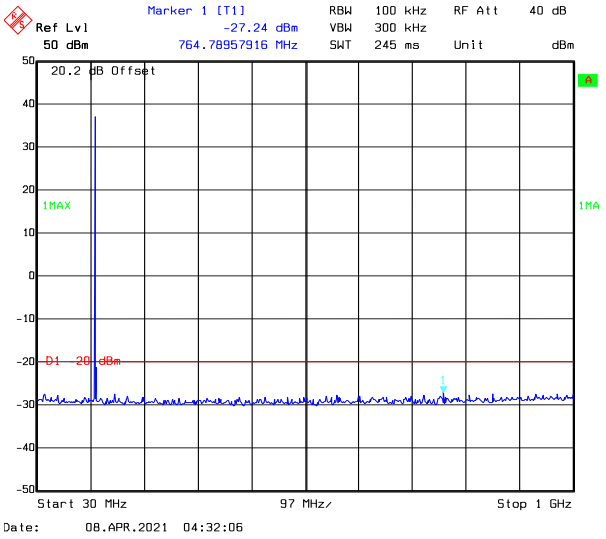
High Channel, 173.9875 MHz

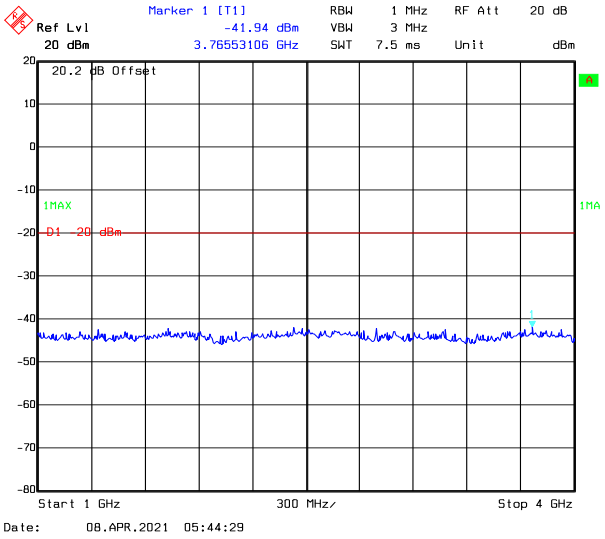




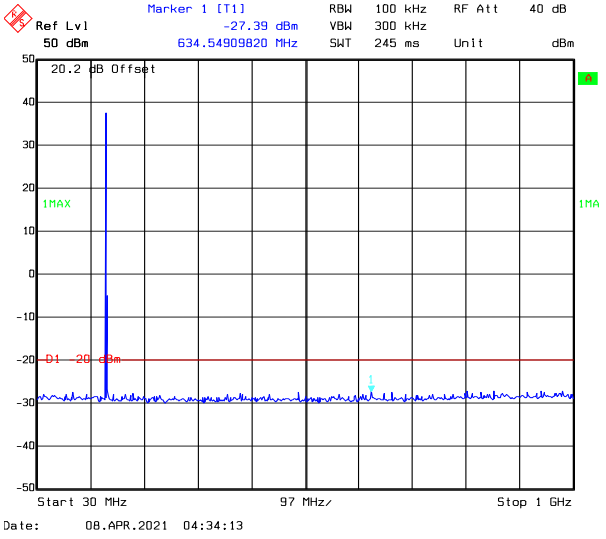
4FSK, 12.5kHz:

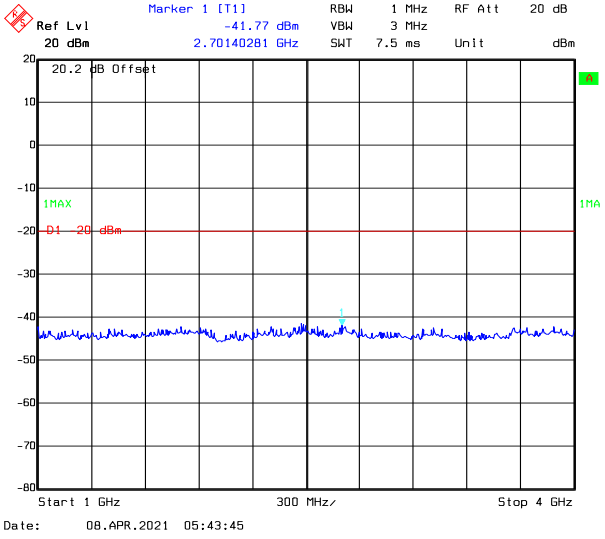
Low Channel,136.0125 MHz



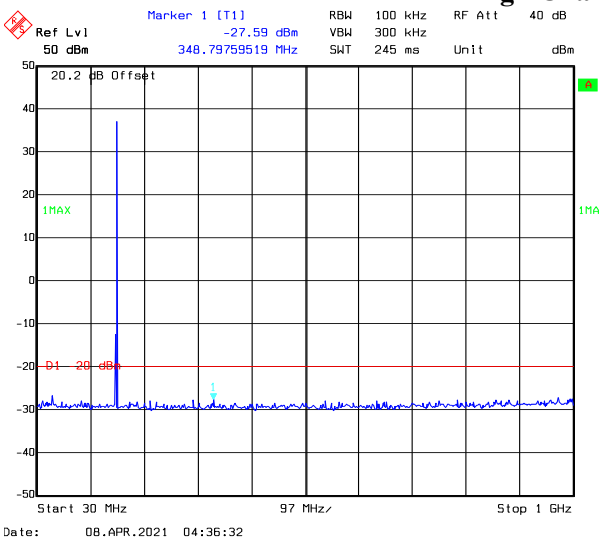


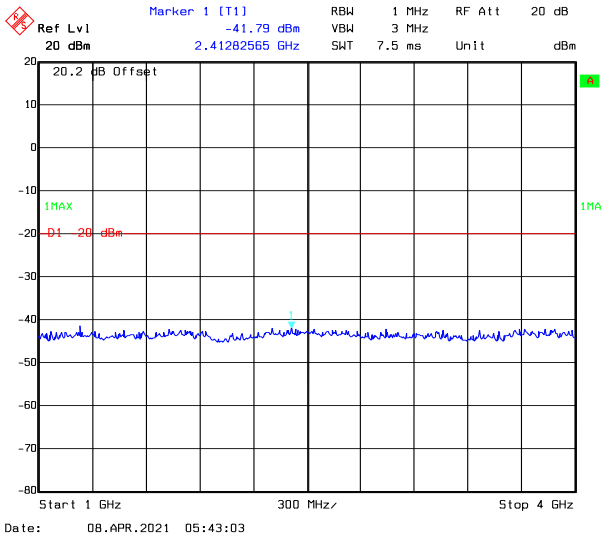
Middle Channel, 155.7525 MHz





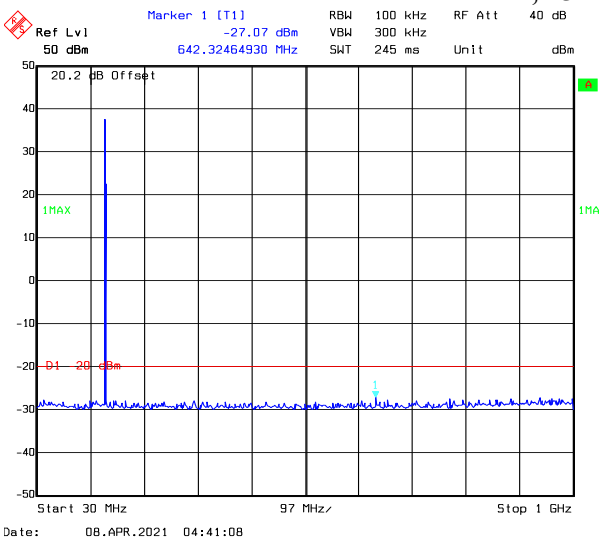
High Channel, 173.9875 MHz

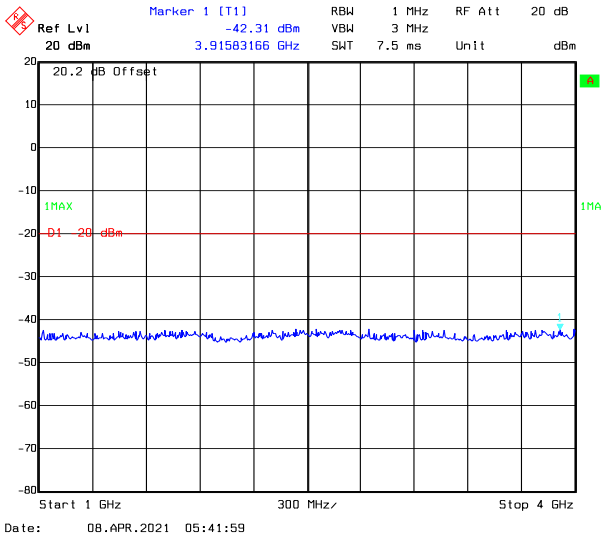




Part 80 (All emissions are under -13dBm limit):

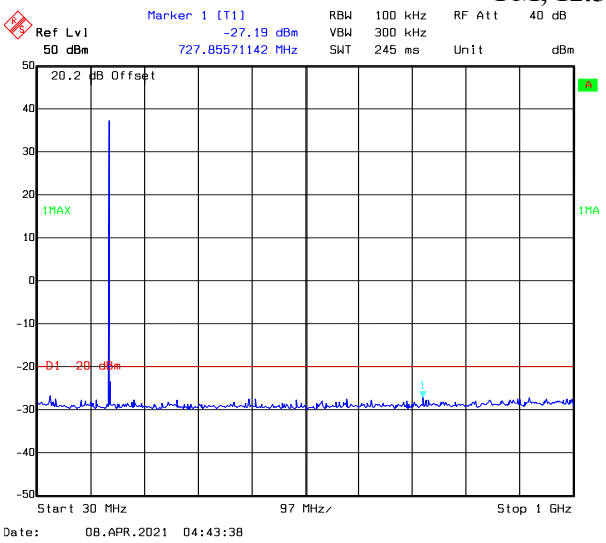
FM, 25kHz, 154.0125 MHz

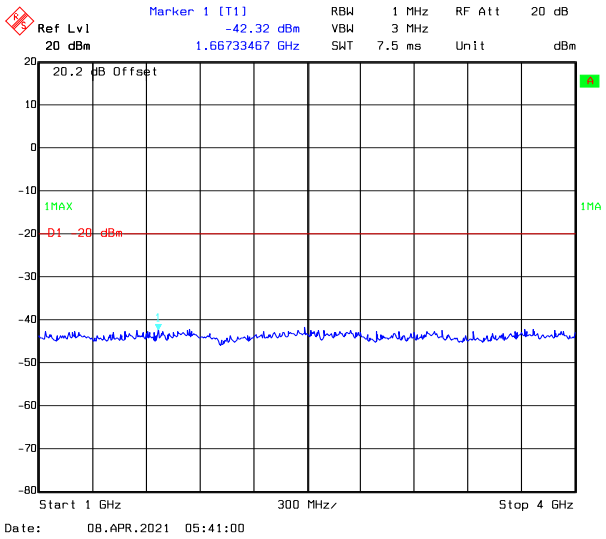




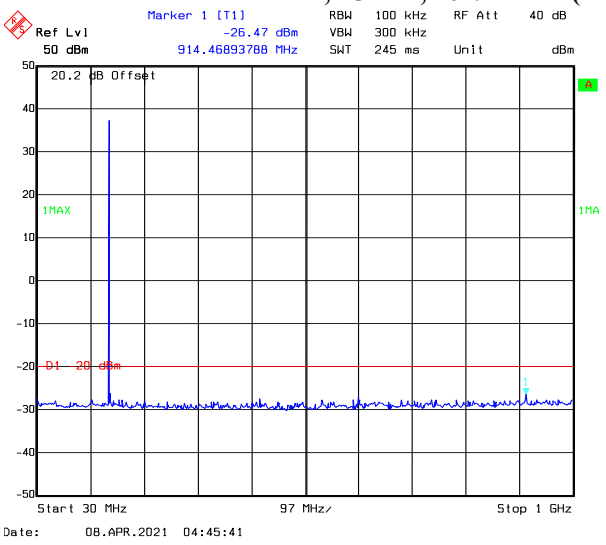
Part 74:

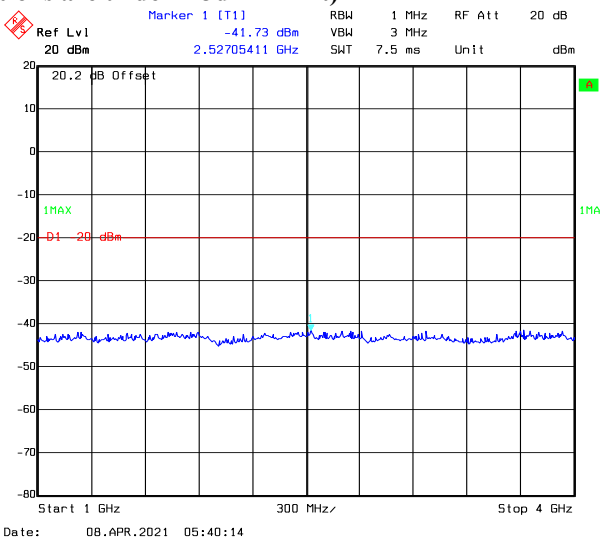
FM, 12.5kHz, 161.1 MHz



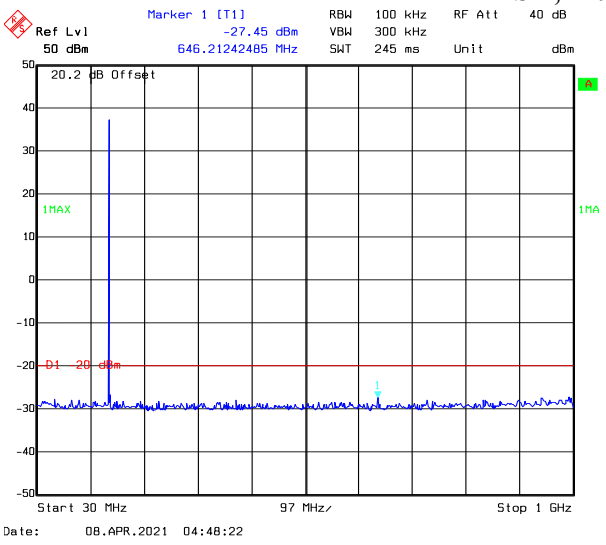


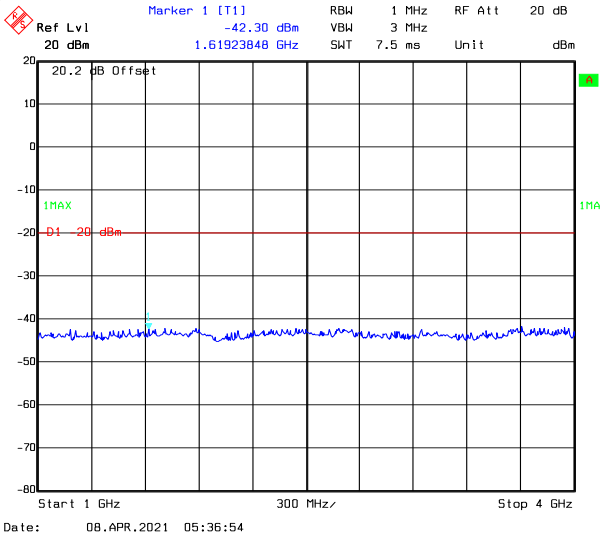
FM, 25kHz, 161.1 MHz (All emissions are under -13dBm limit)





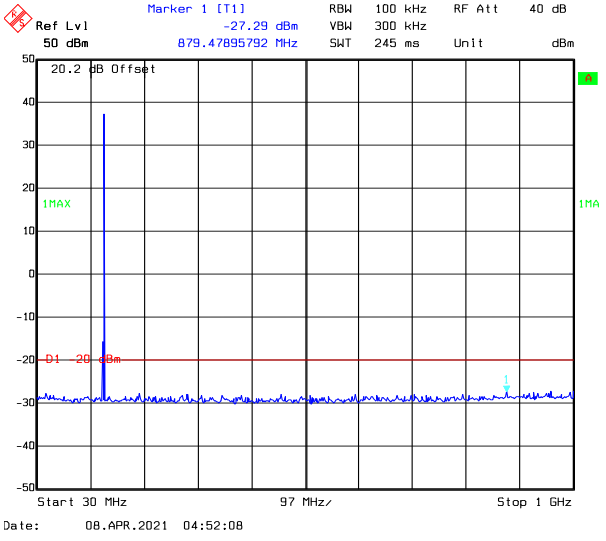
4FSK, 12.5kHz, 161.1 MHz

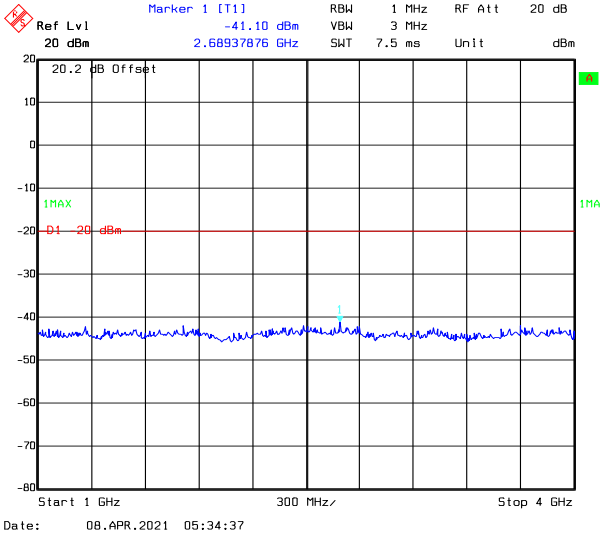




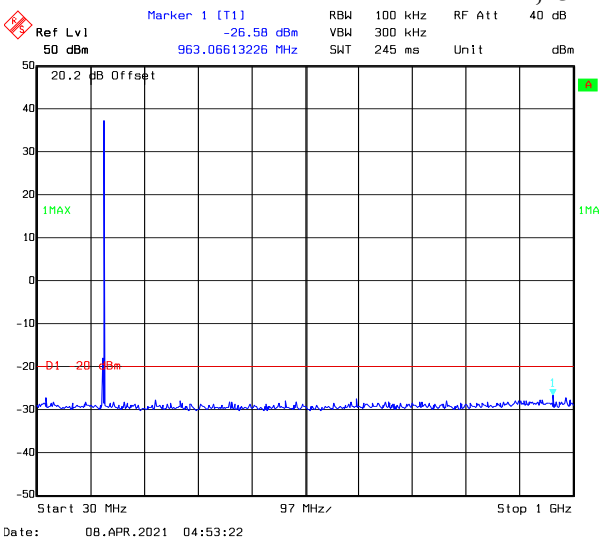
Part 22 (All emissions are under -13dBm limit):

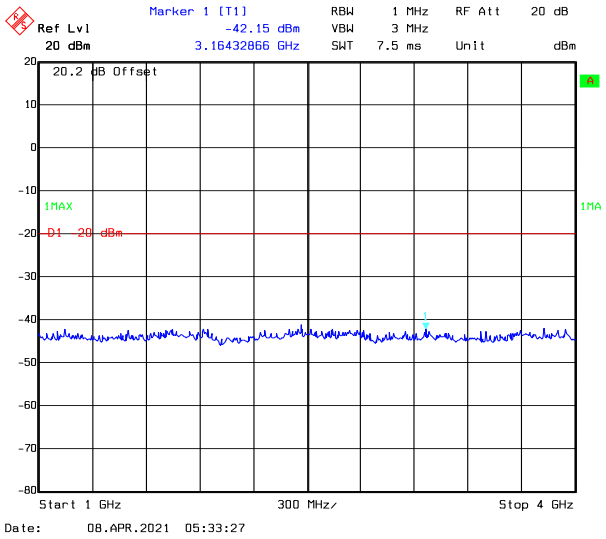
FM,12.5kHz, 150.8125 MHz



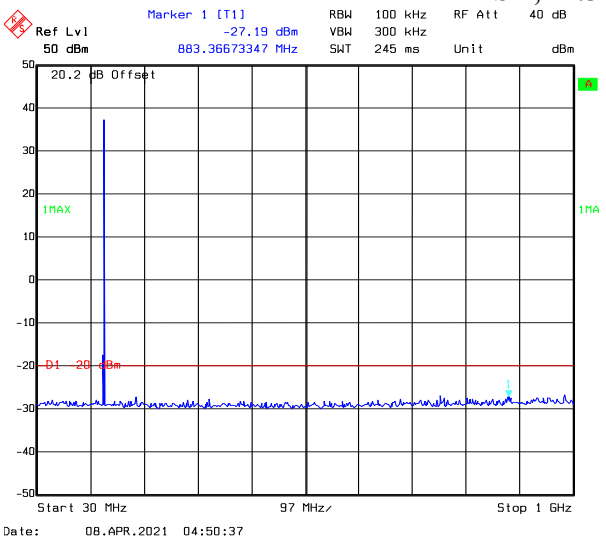


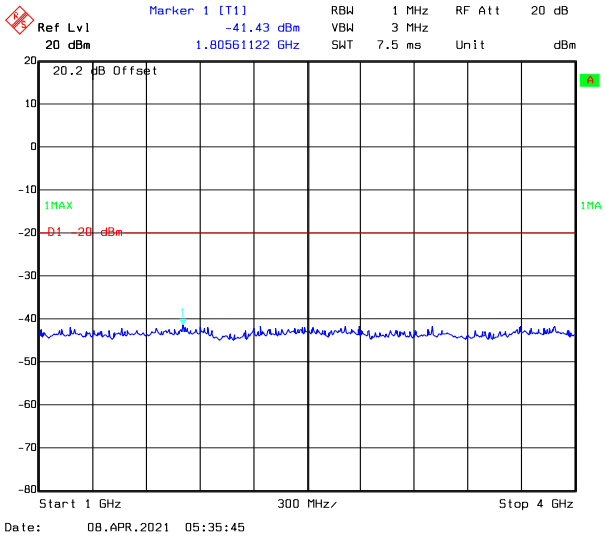
FM,25kHz, 150.8125 MHz





4FSK, 12.5kHz, 150.8125 MHz





6 - 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

Test Data

Test Mode: Transmitting

Test Result: Compliance.

Test performed at high power level with Band Reject Filter, *please refer to the following table*.

30MHz - 5GHz:

Part 90

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
FM, Frequency: 136.0125MHz-12.5 kHz								
272.03	H	38.80	-70.20	0.00	0.29	-70.49	-20.00	50.49
272.03	V	38.49	-69.05	0.00	0.29	-69.34	-20.00	49.34
408.04	H	33.88	-72.80	0.00	0.38	-73.18	-20.00	53.18
408.04	V	37.21	-66.81	0.00	0.38	-67.19	-20.00	47.19
544.05	H	33.44	-70.66	0.00	0.35	-71.01	-20.00	51.01
544.05	V	33.57	-67.96	0.00	0.35	-68.31	-20.00	48.31
680.06	H	33.14	-68.07	0.00	0.38	-68.45	-20.00	48.45
680.06	V	34.12	-63.90	0.00	0.38	-64.28	-20.00	44.28
816.08	H	33.57	-64.49	0.00	0.49	-64.98	-20.00	44.98
816.08	V	34.71	-60.26	0.00	0.49	-60.75	-20.00	40.75
952.09	H	33.39	-60.37	0.00	0.51	-60.88	-20.00	40.88
952.09	V	33.24	-57.49	0.00	0.51	-58.00	-20.00	38.00
1088.10	H	37.90	-64.39	8.27	0.85	-56.97	-20.00	36.97
1088.10	V	38.23	-64.65	8.27	0.85	-57.23	-20.00	37.23
1224.11	H	40.00	-63.24	8.84	1.01	-55.41	-20.00	35.41
1224.11	V	40.84	-62.77	8.84	1.01	-54.94	-20.00	34.94
1360.13	H	38.15	-66.04	9.41	1.18	-57.81	-20.00	37.81
1360.13	V	37.95	-66.39	9.41	1.18	-58.16	-20.00	38.16
4FSK, Frequency: 136.0125MHz-12.5 kHz								
272.03	H	38.21	-70.79	0.00	0.29	-71.08	-20.00	51.08
272.03	V	37.25	-70.29	0.00	0.29	-70.58	-20.00	50.58
408.04	H	33.76	-72.92	0.00	0.38	-73.30	-20.00	53.30
408.04	V	36.56	-67.46	0.00	0.38	-67.84	-20.00	47.84
544.05	H	33.78	-70.32	0.00	0.35	-70.67	-20.00	50.67
544.05	V	33.21	-68.32	0.00	0.35	-68.67	-20.00	48.67
680.06	H	32.98	-68.23	0.00	0.38	-68.61	-20.00	48.61
680.06	V	34.16	-63.86	0.00	0.38	-64.24	-20.00	44.24
816.08	H	33.59	-64.47	0.00	0.49	-64.96	-20.00	44.96
816.08	V	32.96	-62.01	0.00	0.49	-62.50	-20.00	42.50
952.09	H	33.26	-60.50	0.00	0.51	-61.01	-20.00	41.01
952.09	V	32.31	-58.42	0.00	0.51	-58.93	-20.00	38.93
1088.10	H	38.25	-64.04	8.27	0.85	-56.62	-20.00	36.62
1088.10	V	38.30	-64.58	8.27	0.85	-57.16	-20.00	37.16
1224.11	H	38.24	-65.00	8.84	1.01	-57.17	-20.00	37.17
1224.11	V	37.48	-66.13	8.84	1.01	-58.30	-20.00	38.30
1360.13	H	38.27	-65.92	9.41	1.18	-57.69	-20.00	37.69
1360.13	V	37.27	-67.07	9.41	1.18	-58.84	-20.00	38.84

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
FM, Frequency: 155.7525MHz-12.5 kHz								
311.51	H	37.11	-71.33	0.00	0.32	-71.65	-20.00	51.65
311.51	V	47.32	-59.34	0.00	0.32	-59.66	-20.00	39.66
467.26	H	33.84	-72.02	0.00	0.36	-72.38	-20.00	52.38
467.26	V	33.22	-69.96	0.00	0.36	-70.32	-20.00	50.32
623.01	H	33.12	-68.96	0.00	0.36	-69.32	-20.00	49.32
623.01	V	33.21	-66.23	0.00	0.36	-66.59	-20.00	46.59
778.76	H	33.24	-65.79	0.00	0.47	-66.26	-20.00	46.26
778.76	V	32.88	-63.05	0.00	0.47	-63.52	-20.00	43.52
934.52	H	33.92	-60.46	0.00	0.51	-60.97	-20.00	40.97
934.52	V	32.87	-58.36	0.00	0.51	-58.87	-20.00	38.87
1090.27	H	38.76	-63.55	8.28	0.85	-56.12	-20.00	36.12
1090.27	V	38.22	-64.67	8.28	0.85	-57.24	-20.00	37.24
1246.02	H	38.60	-64.79	8.93	1.04	-56.90	-20.00	36.90
1246.02	V	38.17	-65.56	8.93	1.04	-57.67	-20.00	37.67
1401.77	H	37.64	-66.84	9.59	1.23	-58.48	-20.00	38.48
1401.77	V	37.96	-66.60	9.59	1.23	-58.24	-20.00	38.24
1557.53	H	37.34	-67.77	10.17	1.32	-58.92	-20.00	38.92
1557.53	V	37.63	-67.41	10.17	1.32	-58.56	-20.00	38.56
4FSK, Frequency:155.7525MHz-12.5 kHz								
311.51	H	35.18	-73.26	0.00	0.32	-73.58	-20.00	53.58
311.51	V	42.88	-63.78	0.00	0.32	-64.10	-20.00	44.10
467.26	H	32.93	-72.93	0.00	0.36	-73.29	-20.00	53.29
467.26	V	36.57	-66.61	0.00	0.36	-66.97	-20.00	46.97
623.01	H	33.61	-68.47	0.00	0.36	-68.83	-20.00	48.83
623.01	V	34.75	-64.69	0.00	0.36	-65.05	-20.00	45.05
778.76	H	32.65	-66.38	0.00	0.47	-66.85	-20.00	46.85
778.76	V	34.25	-61.68	0.00	0.47	-62.15	-20.00	42.15
934.52	H	33.11	-61.27	0.00	0.51	-61.78	-20.00	41.78
934.52	V	32.90	-58.33	0.00	0.51	-58.84	-20.00	38.84
1090.27	H	38.49	-63.82	8.28	0.85	-56.39	-20.00	36.39
1090.27	V	38.02	-64.87	8.28	0.85	-57.44	-20.00	37.44
1246.02	H	38.70	-64.69	8.93	1.04	-56.80	-20.00	36.80
1246.02	V	38.30	-65.43	8.93	1.04	-57.54	-20.00	37.54
1401.77	H	37.50	-66.98	9.59	1.23	-58.62	-20.00	38.62
1401.77	V	38.11	-66.45	9.59	1.23	-58.09	-20.00	38.09
1557.53	H	37.55	-67.56	10.17	1.32	-58.71	-20.00	38.71
1557.53	V	37.43	-67.61	10.17	1.32	-58.76	-20.00	38.76

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
FM, Frequency: 173.9875MHz-12.5 kHz								
347.98	H	33.43	-74.33	0.00	0.34	-74.67	-20.00	54.67
347.98	V	34.82	-70.80	0.00	0.34	-71.14	-20.00	51.14
521.96	H	33.28	-71.48	0.00	0.35	-71.83	-20.00	51.83
521.96	V	35.11	-67.01	0.00	0.35	-67.36	-20.00	47.36
695.95	H	32.53	-68.43	0.00	0.38	-68.81	-20.00	48.81
695.95	V	33.87	-63.76	0.00	0.38	-64.14	-20.00	44.14
869.94	H	33.47	-63.01	0.00	0.50	-63.51	-20.00	43.51
869.94	V	33.53	-59.68	0.00	0.50	-60.18	-20.00	40.18
1043.93	H	39.02	-62.97	8.08	0.79	-55.68	-20.00	35.68
1043.93	V	38.67	-63.98	8.08	0.79	-56.69	-20.00	36.69
1217.91	H	39.13	-64.07	8.82	1.01	-56.26	-20.00	36.26
1217.91	V	37.85	-65.73	8.82	1.01	-57.92	-20.00	37.92
1391.90	H	39.13	-65.28	9.55	1.22	-56.95	-20.00	36.95
1391.90	V	38.02	-66.49	9.55	1.22	-58.16	-20.00	38.16
1565.89	H	37.65	-67.46	10.20	1.32	-58.58	-20.00	38.58
1565.89	V	37.69	-67.35	10.20	1.32	-58.47	-20.00	38.47
1739.88	H	37.86	-67.10	10.72	1.24	-57.62	-20.00	37.62
1739.88	V	37.96	-66.94	10.72	1.24	-57.46	-20.00	37.46
4FSK, Frequency:173.9875MHz-12.5 kHz								
347.98	H	36.74	-71.02	0.00	0.34	-71.36	-20.00	51.36
347.98	V	37.90	-67.72	0.00	0.34	-68.06	-20.00	48.06
521.96	H	32.96	-71.80	0.00	0.35	-72.15	-20.00	52.15
521.96	V	33.74	-68.38	0.00	0.35	-68.73	-20.00	48.73
695.95	H	33.83	-67.13	0.00	0.38	-67.51	-20.00	47.51
695.95	V	33.95	-63.68	0.00	0.38	-64.06	-20.00	44.06
869.94	H	33.39	-63.09	0.00	0.50	-63.59	-20.00	43.59
869.94	V	33.37	-59.84	0.00	0.50	-60.34	-20.00	40.34
1043.93	H	38.93	-63.06	8.08	0.79	-55.77	-20.00	35.77
1043.93	V	38.53	-64.12	8.08	0.79	-56.83	-20.00	36.83
1217.91	H	39.06	-64.14	8.82	1.01	-56.33	-20.00	36.33
1217.91	V	38.02	-65.56	8.82	1.01	-57.75	-20.00	37.75
1391.90	H	39.19	-65.22	9.55	1.22	-56.89	-20.00	36.89
1391.90	V	38.08	-66.43	9.55	1.22	-58.10	-20.00	38.10
1565.89	H	37.47	-67.64	10.20	1.32	-58.76	-20.00	38.76
1565.89	V	37.40	-67.64	10.20	1.32	-58.76	-20.00	38.76
1739.88	H	38.10	-66.86	10.72	1.24	-57.38	-20.00	37.38
1739.88	V	38.05	-66.85	10.72	1.24	-57.37	-20.00	37.37

Part 80

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
FM, Frequency: 154.0125MHz-25 kHz								
308.03	H	37.12	-71.38	0.00	0.32	-71.70	-13.00	58.70
308.03	V	47.11	-59.65	0.00	0.32	-59.97	-13.00	46.97
462.04	H	32.74	-73.19	0.00	0.36	-73.55	-13.00	60.55
462.04	V	32.37	-70.89	0.00	0.36	-71.25	-13.00	58.25
616.05	H	34.08	-68.10	0.00	0.36	-68.46	-13.00	55.46
616.05	V	33.99	-65.62	0.00	0.36	-65.98	-13.00	52.98
770.06	H	32.61	-66.63	0.00	0.46	-67.09	-13.00	54.09
770.06	V	33.25	-62.86	0.00	0.46	-63.32	-13.00	50.32
924.08	H	33.35	-61.40	0.00	0.51	-61.91	-13.00	48.91
924.08	V	34.76	-56.77	0.00	0.51	-57.28	-13.00	44.28
1078.09	H	37.16	-65.06	8.23	0.84	-57.67	-13.00	44.67
1078.09	V	37.65	-65.18	8.23	0.84	-57.79	-13.00	44.79
1232.10	H	37.89	-65.41	8.87	1.02	-57.56	-13.00	44.56
1232.10	V	38.01	-65.64	8.87	1.02	-57.79	-13.00	44.79
1386.11	H	38.27	-66.10	9.52	1.21	-57.79	-13.00	44.79
1386.11	V	37.36	-67.12	9.52	1.21	-58.81	-13.00	45.81
1540.13	H	38.66	-66.47	10.12	1.33	-57.68	-13.00	44.68
1540.13	V	38.41	-66.65	10.12	1.33	-57.86	-13.00	44.86

Part 74

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
FM, Frequency: 161.1MHz-12.5 kHz								
322.20	H	38.71	-69.53	0.00	0.33	-69.86	-20.00	49.86
322.20	V	50.54	-55.82	0.00	0.33	-56.15	-20.00	36.15
483.30	H	47.74	-57.90	0.00	0.36	-58.26	-20.00	38.26
483.30	V	65.40	-37.56	0.00	0.36	-37.92	-20.00	17.92
644.40	H	32.58	-69.17	0.00	0.37	-69.54	-20.00	49.54
644.40	V	32.69	-66.22	0.00	0.37	-66.59	-20.00	46.59
805.50	H	33.00	-65.37	0.00	0.49	-65.86	-20.00	45.86
805.50	V	36.44	-58.88	0.00	0.49	-59.37	-20.00	39.37
966.60	H	34.24	-59.00	0.00	0.51	-59.51	-20.00	39.51
966.60	V	32.70	-57.61	0.00	0.51	-58.12	-20.00	38.12
1127.70	H	37.13	-65.44	8.44	0.90	-57.90	-20.00	37.90
1127.70	V	37.44	-65.65	8.44	0.90	-58.11	-20.00	38.11
1288.80	H	38.12	-65.57	9.11	1.09	-57.55	-20.00	37.55
1288.80	V	37.75	-66.21	9.11	1.09	-58.19	-20.00	38.19
1449.90	H	38.18	-66.63	9.79	1.29	-58.13	-20.00	38.13
1449.90	V	37.16	-67.66	9.79	1.29	-59.16	-20.00	39.16
1611.00	H	38.63	-66.44	10.33	1.30	-57.41	-20.00	37.41
1611.00	V	38.51	-66.49	10.33	1.30	-57.46	-20.00	37.46
FM, Frequency: 161.1MHz-25 kHz								
322.20	H	38.17	-70.07	0.00	0.33	-70.40	-13.00	57.40
322.20	V	57.77	-48.59	0.00	0.33	-48.92	-13.00	35.92
483.30	H	51.00	-54.64	0.00	0.36	-55.00	-13.00	42.00
483.30	V	71.60	-31.36	0.00	0.36	-31.72	-13.00	18.72
644.40	H	32.92	-68.83	0.00	0.37	-69.20	-13.00	56.20
644.40	V	35.19	-63.72	0.00	0.37	-64.09	-13.00	51.09
805.50	H	32.70	-65.67	0.00	0.49	-66.16	-13.00	53.16
805.50	V	42.64	-52.68	0.00	0.49	-53.17	-13.00	40.17
966.60	H	34.12	-59.12	0.00	0.51	-59.63	-13.00	46.63
966.60	V	32.38	-57.93	0.00	0.51	-58.44	-13.00	45.44
1127.70	H	37.19	-65.38	8.44	0.90	-57.84	-13.00	44.84
1127.70	V	37.39	-65.70	8.44	0.90	-58.16	-13.00	45.16
1288.80	H	38.39	-65.30	9.11	1.09	-57.28	-13.00	44.28
1288.80	V	37.81	-66.15	9.11	1.09	-58.13	-13.00	45.13
1449.90	H	38.02	-66.79	9.79	1.29	-58.29	-13.00	45.29
1449.90	V	37.38	-67.44	9.79	1.29	-58.94	-13.00	45.94
1611.00	H	38.76	-66.31	10.33	1.30	-57.28	-13.00	44.28
1611.00	V	38.54	-66.46	10.33	1.30	-57.43	-13.00	44.43

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
4FSK, Frequency: 161.1MHz-12.5 kHz								
322.20	H	38.12	-70.12	0.00	0.33	-70.45	-20.00	50.45
322.20	V	45.32	-61.04	0.00	0.33	-61.37	-20.00	41.37
483.30	H	37.71	-67.93	0.00	0.36	-68.29	-20.00	48.29
483.30	V	64.54	-38.42	0.00	0.36	-38.78	-20.00	18.78
644.40	H	33.16	-68.59	0.00	0.37	-68.96	-20.00	48.96
644.40	V	33.76	-65.15	0.00	0.37	-65.52	-20.00	45.52
805.50	H	33.47	-64.90	0.00	0.49	-65.39	-20.00	45.39
805.50	V	32.88	-62.44	0.00	0.49	-62.93	-20.00	42.93
966.60	H	33.47	-59.77	0.00	0.51	-60.28	-20.00	40.28
966.60	V	33.17	-57.14	0.00	0.51	-57.65	-20.00	37.65
1127.70	H	37.44	-65.13	8.44	0.90	-57.59	-20.00	37.59
1127.70	V	37.15	-65.94	8.44	0.90	-58.40	-20.00	38.40
1288.80	H	38.62	-65.07	9.11	1.09	-57.05	-20.00	37.05
1288.80	V	38.03	-65.93	9.11	1.09	-57.91	-20.00	37.91
1449.90	H	38.01	-66.80	9.79	1.29	-58.30	-20.00	38.30
1449.90	V	37.47	-67.35	9.79	1.29	-58.85	-20.00	38.85
1611.00	H	38.64	-66.43	10.33	1.30	-57.40	-20.00	37.40
1611.00	V	38.67	-66.33	10.33	1.30	-57.30	-20.00	37.30

Part 22

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
FM, Frequency: 150.8125MHz-12.5 kHz								
301.63	H	38.83	-69.79	0.00	0.31	-70.10	-13.00	57.10
301.63	V	46.88	-60.06	0.00	0.31	-60.37	-13.00	47.37
452.44	H	46.32	-59.75	0.00	0.36	-60.11	-13.00	47.11
452.44	V	64.28	-39.11	0.00	0.36	-39.47	-13.00	26.47
603.25	H	33.63	-68.75	0.00	0.36	-69.11	-13.00	56.11
603.25	V	33.76	-66.17	0.00	0.36	-66.53	-13.00	53.53
754.06	H	33.64	-65.98	0.00	0.44	-66.42	-13.00	53.42
754.06	V	33.10	-63.33	0.00	0.44	-63.77	-13.00	50.77
904.88	H	33.49	-61.94	0.00	0.51	-62.45	-13.00	49.45
904.88	V	33.03	-59.05	0.00	0.51	-59.56	-13.00	46.56
1055.69	H	37.60	-64.47	8.13	0.81	-57.15	-13.00	44.15
1055.69	V	37.36	-65.35	8.13	0.81	-58.03	-13.00	45.03
1206.50	H	38.84	-64.28	8.77	0.99	-56.50	-13.00	43.50
1206.50	V	38.29	-65.23	8.77	0.99	-57.45	-13.00	44.45
1357.31	H	38.27	-65.90	9.40	1.18	-57.68	-13.00	44.68
1357.31	V	37.66	-66.67	9.40	1.18	-58.45	-13.00	45.45
1508.13	H	38.82	-66.33	10.02	1.35	-57.66	-13.00	44.66
1508.13	V	38.68	-66.40	10.02	1.35	-57.73	-13.00	44.73
FM, Frequency: 150.8125MHz-25 kHz								
301.63	H	38.17	-70.45	0.00	0.31	-70.76	-13.00	57.76
301.63	V	47.60	-59.34	0.00	0.31	-59.65	-13.00	46.65
452.44	H	33.77	-72.30	0.00	0.36	-72.66	-13.00	59.66
452.44	V	34.89	-68.50	0.00	0.36	-68.86	-13.00	55.86
603.25	H	33.60	-68.78	0.00	0.36	-69.14	-13.00	56.14
603.25	V	32.96	-66.97	0.00	0.36	-67.33	-13.00	54.33
754.06	H	33.60	-66.02	0.00	0.44	-66.46	-13.00	53.46
754.06	V	33.06	-63.37	0.00	0.44	-63.81	-13.00	50.81
904.88	H	33.63	-61.80	0.00	0.51	-62.31	-13.00	49.31
904.88	V	32.83	-59.25	0.00	0.51	-59.76	-13.00	46.76
1055.69	H	37.44	-64.63	8.13	0.81	-57.31	-13.00	44.31
1055.69	V	37.41	-65.30	8.13	0.81	-57.98	-13.00	44.98
1206.50	H	38.72	-64.40	8.77	0.99	-56.62	-13.00	43.62
1206.50	V	38.24	-65.28	8.77	0.99	-57.50	-13.00	44.50
1357.31	H	38.07	-66.10	9.40	1.18	-57.88	-13.00	44.88
1357.31	V	37.51	-66.82	9.40	1.18	-58.60	-13.00	45.60
1508.13	H	38.83	-66.32	10.02	1.35	-57.65	-13.00	44.65
1508.13	V	38.72	-66.36	10.02	1.35	-57.69	-13.00	44.69

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
4FSK,Frequency: 150.8125MHz-12.5 kHz								
301.63	H	38.74	-69.88	0.00	0.31	-70.19	-13.00	57.19
301.63	V	46.99	-59.95	0.00	0.31	-60.26	-13.00	47.26
452.44	H	33.42	-72.65	0.00	0.36	-73.01	-13.00	60.01
452.44	V	33.34	-70.05	0.00	0.36	-70.41	-13.00	57.41
603.25	H	34.95	-67.43	0.00	0.36	-67.79	-13.00	54.79
603.25	V	34.29	-65.64	0.00	0.36	-66.00	-13.00	53.00
754.06	H	33.25	-66.37	0.00	0.44	-66.81	-13.00	53.81
754.06	V	33.68	-62.75	0.00	0.44	-63.19	-13.00	50.19
904.88	H	33.13	-62.30	0.00	0.51	-62.81	-13.00	49.81
904.88	V	33.74	-58.34	0.00	0.51	-58.85	-13.00	45.85
1055.69	H	37.58	-64.49	8.13	0.81	-57.17	-13.00	44.17
1055.69	V	37.42	-65.29	8.13	0.81	-57.97	-13.00	44.97
1206.50	H	38.84	-64.28	8.77	0.99	-56.50	-13.00	43.50
1206.50	V	38.17	-65.35	8.77	0.99	-57.57	-13.00	44.57
1357.31	H	38.15	-66.02	9.40	1.18	-57.80	-13.00	44.80
1357.31	V	37.94	-66.39	9.40	1.18	-58.17	-13.00	45.17
1508.13	H	38.63	-66.52	10.02	1.35	-57.85	-13.00	44.85
1508.13	V	38.42	-66.66	10.02	1.35	-57.99	-13.00	44.99

Note 1:The unit of antenna gain is dBd for frequency below 1GHz and is dBi for frequency above 1GHz.
Note 2:
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

7 - 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

Test Mode: Transmitting

Test Result: Compliance. *Please refer to the following Tables.*

FCC Part 90:

FM,12.5kHz, Reference Frequency: 155.7525 MHz, Limit: ±5.0 ppm			
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Measured Frequency (MHz)**	**Frequency Error (ppm)**
-30	7.2	155.7525377	0.24
-20		155.7527241	1.44
-10		155.7527033	1.31
0		155.7525582	0.37
10		155.7526482	0.95
20		155.7526000	0.64
30		155.7526634	1.05
40		155.7524767	-0.15
50		155.7524854	-0.09
20	6.4	155.7525709	0.46
20	8.4	155.7526875	1.20

4FSK, 12.5kHz, Reference Frequency: 155.7525MHz, Limit: ±5.0 ppm			
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Measured Frequency (MHz)**	**Frequency Error (ppm)**
-30	7.2	155.7526085	0.70
-20		155.7525530	0.34
-10		155.7526723	1.11
0		155.7526098	0.70
10		155.7525392	0.25
20		155.7528507	2.25
30		155.7525878	0.56
40		155.7527323	1.49
50		155.7526185	0.76
20	6.4	155.7527172	1.39
20	8.4	155.7526270	0.82

FCC Part 80:

FM,25kHz, Reference Frequency: 154.0125MHz,Limit: ±5.0 ppm			
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Measured Frequency (MHz)**	**Frequency Error (ppm)**
-30	7.2	154.012663	1.06
-20		154.012750	1.62
-10		154.012576	0.50
0		154.012747	1.61
10		154.012548	0.31
20		154.012600	0.65
30		154.012762	1.70
40		154.012631	0.85
50		154.012729	1.49
20	6.4	154.012777	1.80
20	8.4	154.012532	0.21

FCC Part 74:

FM, 12.5kHz, Reference Frequency: 161.1 MHz, Limit: ±5.0 ppm			
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Measured Frequency (MHz)**	**Frequency Error (ppm)**
-30	7.2	161.1001048	0.65
-20		161.1001229	0.76
-10		161.1002758	1.71
0		161.1000082	0.05
10		161.1002348	1.46
20		161.1001403	0.87
30		161.1001263	0.78
40		161.1001185	0.74
50		161.1001947	1.21
20	6.4	161.1002430	1.51
20	8.4	161.1002548	1.58

4FSK, 12.5kHz, Reference Frequency: 161.1 MHz, Limit: ±5.0 ppm			
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Measured Frequency (MHz)**	**Frequency Error (ppm)**
-30	7.2	161.1002570	1.60
-20		161.1000502	0.31
-10		161.1002719	1.69
0		161.1002079	1.29
10		161.1001548	0.96
20		161.1002505	1.55
30		161.1002546	1.58
40		161.1001014	0.63
50		161.1000132	0.08
20	6.4	161.1002006	1.25
20	8.4	161.1000191	0.12

FM, 25kHz, Reference Frequency: 161.1 MHz, Limit: ±5.0 ppm			
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Measured Frequency (MHz)**	**Frequency Error (ppm)**
-30	7.2	161.1002160	1.34
-20		161.1001353	0.84
-10		161.1002027	1.26
0		161.1002227	1.38
10		161.1000838	0.52
20		161.1001403	0.87
30		161.1000181	0.11
40		161.1000767	0.48
50		161.1001918	1.19
20	6.4	161.1000622	0.39
20	8.4	161.1002838	1.76

FCC Part 22:

FM, 12.5kHz, Reference Frequency: 150.8125MHz, Limit: ±5.0 ppm			
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Measured Frequency (MHz)**	**Frequency Error (ppm)**
-30	7.2	150.8125856	0.57
-20		150.8127020	1.34
-10		150.8125130	0.09
0		150.8124934	-0.04
10		150.8125012	0.01
20		150.8126002	0.66
30		150.8124838	-0.11
40		150.8125473	0.31
50		150.8127116	1.40
20	6.4	150.8125878	0.58
20	8.4	150.8124511	-0.32

4FSK,12.5kHz, Reference Frequency: 150.8125MHz, Limit: ±5.0 ppm			
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Measured Frequency (MHz)**	**Frequency Error (ppm)**
-30	7.2	150.8126870	1.24
-20		150.8125717	0.48
-10		150.8125576	0.38
0		150.8126920	1.27
10		150.8124786	-0.14
20		150.8124499	-0.33
30		150.8124550	-0.30
40		150.8124809	-0.13
50		150.8125417	0.28
20	6.4	150.8124562	-0.29
20	8.4	150.8124604	-0.26

FM, 25kHz, Reference Frequency: 150.8125MHz, Limit: ±5.0 ppm			
Temperature (℃)	**Voltage Supplied (V_{DC})**	**Measured Frequency (MHz)**	**Frequency Error (ppm)**
-30	7.2	150.8125071	0.05
-20		150.8126511	1.00
-10		150.8124821	-0.12
0		150.8126186	0.79
10		150.8127042	1.35
20		150.8126002	0.66
30		150.8127372	1.57
40		150.8125661	0.44
50		150.8126313	0.87
20	6.4	150.8124618	-0.25
20	8.4	150.8125269	0.18

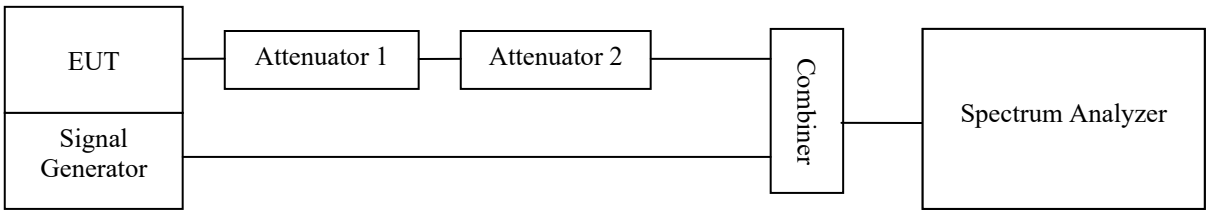
8 - TRANSIENT FREQUENCY BEHAVIOR

Applicable Standard

Regulations: FCC §90.214

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.



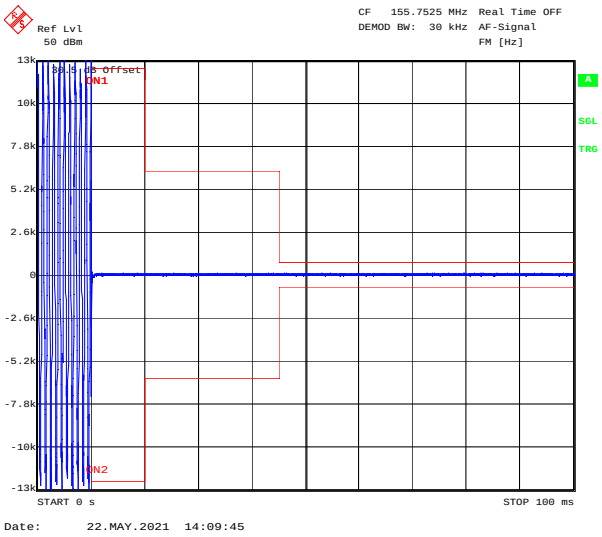
Test Data

Test Mode: Transmitting

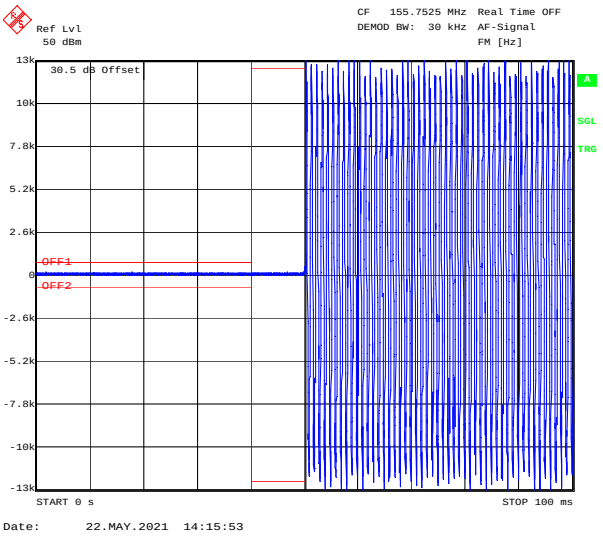
Test Result: Compliance. *Please refer to the following table and plots.*

Channel Spacing (kHz)	Transient Period (ms)	Transient Frequency	Result
12.5	5(t_1)	±12.5 kHz	Pass
	20(t_2)	±6.25 kHz	
	5(t_3)	±12.5 kHz	

155.7525_Turn On



155.7525_Turn Off



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