



# FCC PART 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: YAMRD98XSIU5**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Digital Repeater
<b>Report Number:</b>	RDG171207020-00A
<b>Report Date:</b>	2018-03-17
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**Note:** This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP\* or any agency of the Federal Government. \* This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk “\*”.

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## GENERAL INFORMATION

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### Product Description for Equipment under Test (EUT)

The *Hytera Communications Corporation Limited's* product, model number: *RD982Si U(5)* (FCC ID: *YAMRD98XSIU5*) in this report is a *Digital Repeater*, which was measured approximately: 366 mm (L) x 483 mm (W) x 88 mm (H), rated input voltage: DC 13.6 V.

*Notes: This series products model: RD985Si U(5), RD986Si U(5), RD988Si U(5) and RD982Si U(5) are identical schematics, and only are different for model number. Model RD982Si U(5) 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: 171207020 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2017-12-07.*

### Objective

This test report is prepared on behalf of *Hytera Communications Corporation Limited* in accordance with Part 2, and Part 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, Sub-part J as well as the following individual parts:

Part 90 – Private Land Mobile Radio Service

Applicable Standards: TIA 603-D.

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

**Measurement Uncertainty**

Parameter		uncertainty
Occupied Channel Bandwidth		±5%
RF output power, conducted		±1.5dB
Unwanted Emission, conducted		±1.5dB
Emissions, Radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB
Temperature		±1 °C
Supply voltages		±0.4%

**Test Facility**

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 382179, the FCC Designation No.: CN5001.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

## 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.

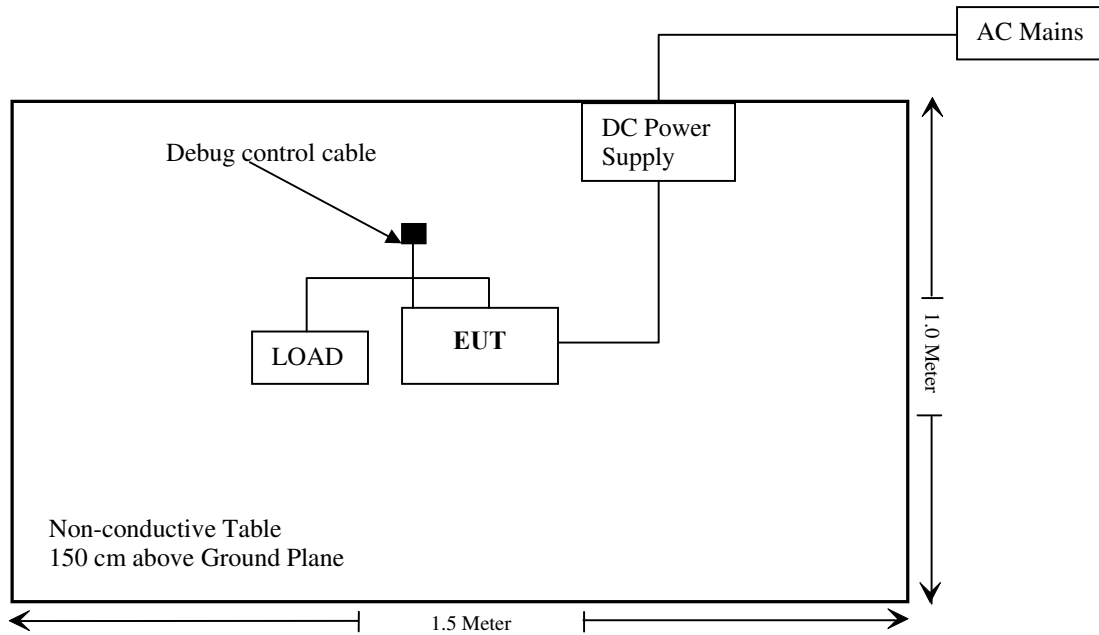
### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
N/A	Load	100W/50Ohm	N/A
TDK-Lambda	DC Power Supply	Z60-14-L-C	N/A
Hytera	Debug control cable	N/A	N/A

### External I/O Cable

Cable Description	Length (m)	From Port	To
Un-shielded Detachable DC Cable	2.5	EUT	DC Power Supply
Shielding RF Conducted Cable	1.0	EUT	Load

### Block Diagram of Test Setup



**SUMMARY OF TEST RESULTS**

<b>FCC Rules</b>	<b>Description of Test</b>	<b>Results</b>
§1.1307(b), §2.1091	Maximum Permissible exposure (MPE)	Compliance
§2.1046; §90.205	RF Output Power	Compliance
§2.1047; §90.207	Modulation Characteristic	Compliance
§2.1049; §90.210	Occupied Bandwidth & Emission Mask	Compliance
§2.1051; §90.210	Spurious Emission at Antenna Terminal	Compliance
§2.1053; §90.210	Spurious Radiated Emissions	Compliance
§2.1055; §90.213	Frequency Stability	Compliance

**TEST EQUIPMENT LIST**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
<b>Radiated Emission Test</b>					
Sunol Sciences	Horn Antenna	DRH-118	A052604	2017-12-28	2020-12-27
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2017-04-24	2018-04-24
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2017-12-17	2020-12-16
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2017-02-14	2018-02-14
HP	Amplifier	HP8447E	1937A01046	2017-11-19	2018-05-17
Anritsu	Signal Generator	68369B	004114	2017-12-05	2018-12-05
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2017-12-07	2018-12-07
COM POWER	Dipole Antenna	AD-100	041000	NCR	NCR
A.H. System	Horn Antenna	SAS-200/571	135	2015-08-18	2018-08-17
Ducommun technologies	RF Cable	UFA210A-1-4724-30050U	MFR64369 223410-001	2017-11-19	2018-05-17
Ducommun technologies	RF Cable	104PEA	218124002	2017-11-19	2018-05-17
Ducommun technologies	RF Cable	RG-214	1	2017-11-19	2018-05-17
Ducommun technologies	RF Cable	RG-214	2	2017-11-22	2018-05-22
<b>RF Conducted Test</b>					
Rohde & Schwarz	SPECTRUM ANALYZER	FSU26	200120	2017-12-05	2018-12-05
Rohde & Schwarz	Signal Analyzer	FSIQ26	837405/023	2017-04-24	2018-04-24
ESPEC	Temperature & Humidity Chamber	EL-10KA	09107726	2017-11-22	2018-11-22
Long Wei	DC Power Supply	TPR-6420D	398363	NCR	NCR
HP Agilent	RF Communication Test Set	HP8920	3325U00859	2017-05-07	2018-05-07
Ducommun technologies	RF Cable	RG-214	3	2017-11-22	2018-05-22
WEINSCHL	30dB Attenuator	53-30-43	PG633	2017-11-22	2018-05-22

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) 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 (b) (1) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

**Applicable Standard**

According to subpart 1.1307 (b)(1), 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

**Limits for Occupational/Controlled Exposure**

Limits for occupational/Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (Minutes)
0.3-1.34	614	1.63	*(100)	6
1.34-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5.0	6

f = frequency in MHz

\* = Plane-wave equivalent power density

**Result**

**Calculated Formulary:**

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

For worst case:

Frequency (MHz)	Antenna Gain		Max average output power (mW)	Evaluation Distance (cm)	Power Density (mW/cm <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
	(dBi)	(numeric)				
851-869	5.5	3.55	19905.5	45	2.78	2.83
935-940	5.5	3.55	19905.5	45	2.78	3.11

Note: Max tune-up output power is 46dBm (39811 mW), and PMR radio 4FSK mode, the duty cycle is 50%. So the average power is 19905.5 mW

To maintain compliance with the FCC’s RF exposure guidelines, place the equipment at least 45cm from nearby persons.

**Result: Compliance**

**FCC §2.1046 & §90.205 - RF OUTPUT POWER**

**Applicable Standard**

FCC §2.1046 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**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Rocky Kang on 2017-12-30.*

*Test Mode: Transmitting*

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

Modulation	Channel Separation (kHz)	Frequency (MHz)	Power Level	Output Power (dBm)	Output Power (W)
Analog	12.5	851.0125	High	45.73	37.41
			Low	37.31	5.38
	12.5	868.9875	High	45.86	38.55
			Low	37.36	5.45
	12.5	935.0125	High	45.18	32.96
			Low	37.52	5.65
	12.5	939.9875	High	45.14	32.66
			Low	37.41	5.51

Modulation	Channel Separation (kHz)	Frequency (MHz)	Power Level	Output Power (dBm)	Output Power (W)
Analog	25	851.0125	High	45.70	37.15
			Low	37.35	5.43
	25	868.9875	High	45.83	38.28
			Low	37.29	5.36

Modulation	Channel Separation (kHz)	Frequency (MHz)	Power Level	Output Power (dBm)	Output Power (W)
Digital	12.5	851.0125	High	45.68	36.98
			Low	37.34	5.42
	12.5	868.9875	High	45.86	38.55
			Low	37.29	5.36
	12.5	935.0125	High	45.21	33.19
			Low	37.45	5.56
	12.5	939.9875	High	45.16	32.81
			Low	37.54	5.68

Note: The rated high power is 35W. The limit of the high output power is 28W-42W.  
 The rated low power is 5W. The limit of the low output power is 4W-6W.

## **FCC §2.1047 & §90.207 - MODULATION CHARACTERISTIC**

### **Applicable Standard**

FCC§2.1047 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-D

### **Test Data**

#### **Environmental Conditions**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Rocky Kang on 2017-12-30.*

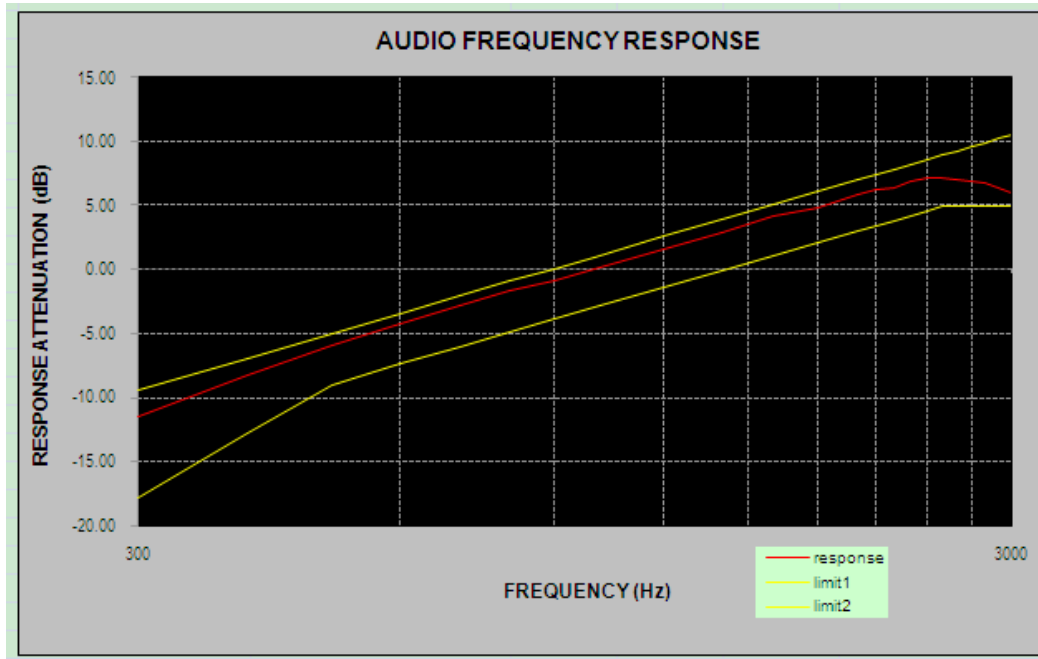
*Test Mode: Transmitting*

Please refer to the following tables and plots.

**Audio Frequency Response**

Carrier Frequency: 851.0125 MHz, Channel spacing=12.5 kHz

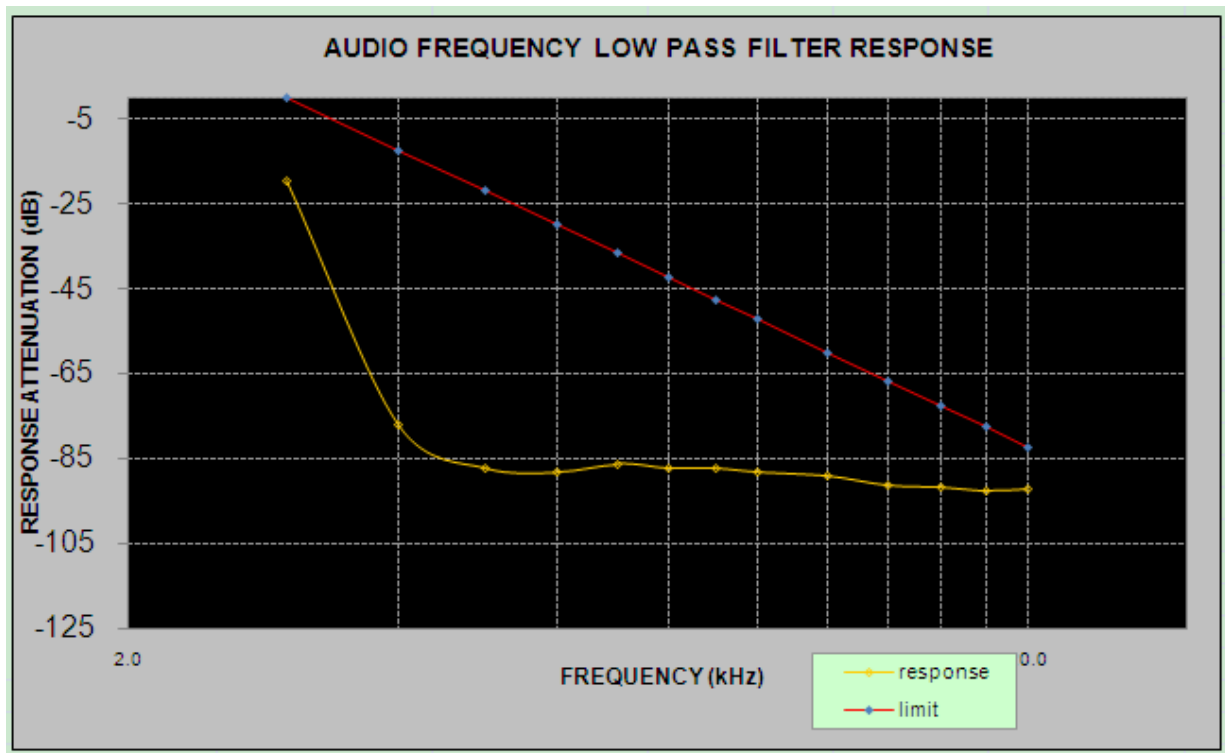
<b>Audio Frequency (Hz)</b>	<b>Response Attenuation (dB)</b>
300	-11.57
400	-8.31
500	-5.99
600	-4.29
700	-2.83
800	-1.68
900	-0.88
1000	0
1200	1.60
1400	2.90
1600	4.15
1800	4.83
2000	5.80
2100	6.20
2200	6.43
2300	6.86
2400	7.17
2500	7.22
2600	7.01
2700	6.95
2800	6.73
2900	6.40
3000	6.00



**Audio frequency lows pass filter response**

Carrier Frequency: 851.0125 MHz, Channel spacing=12.5 kHz

Audio Frequency (kHz)	Response Attenuation (dB)	Limit (dB)
1.0	0	/
3.0	-19.6	0
4.0	-77.3	-12.5
5.0	-87.2	-22.2
6.0	-88.2	-30.1
7.0	-86.4	-36.8
8.0	-87.4	-42.6
9.0	-87.5	-47.7
10.0	-88.3	-52.3
12.0	-89.4	-60.2
14.0	-91.4	-66.9
16.0	-91.8	-72.7
18.0	-92.6	-77.8
20.0	-92.3	-82.5

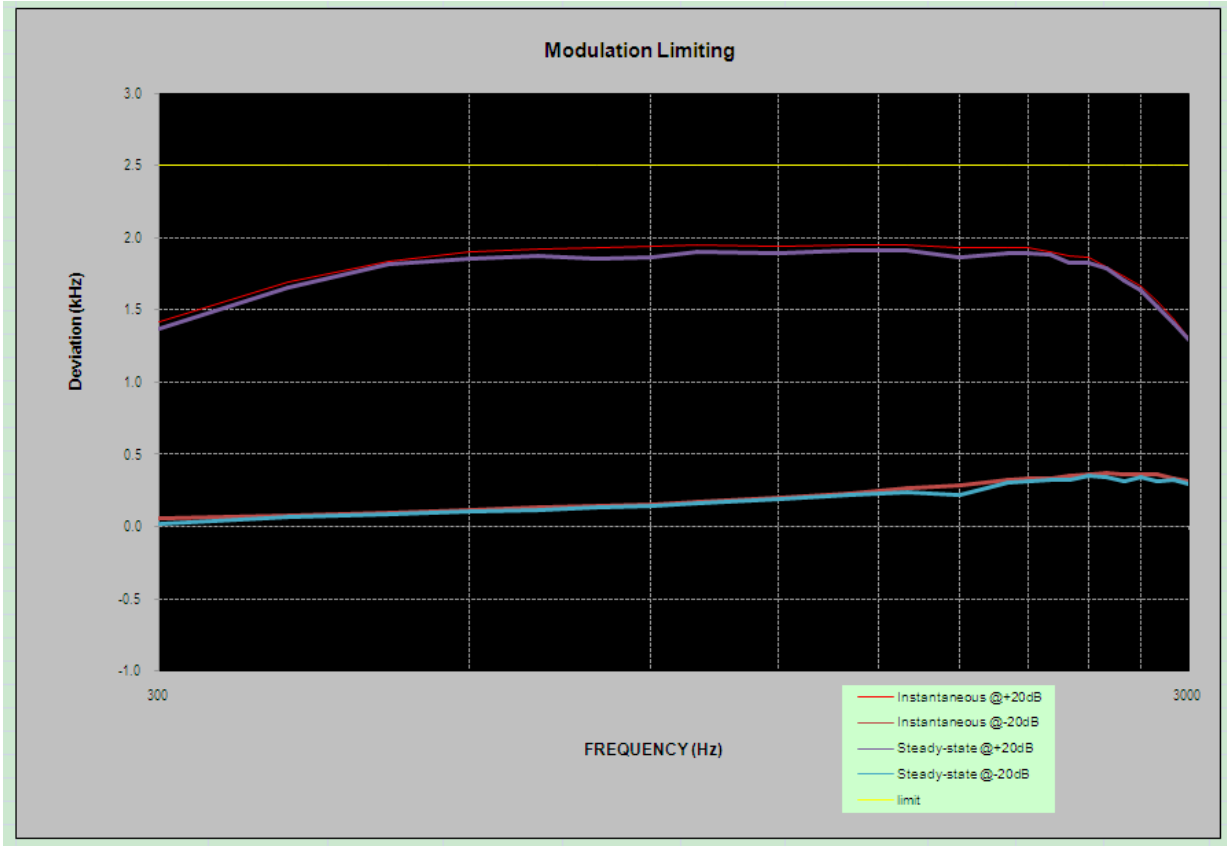


**MODULATION LIMITING**

Carrier Frequency: 851.0125 MHz, Channel spacing=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	1.416	0.058	1.369	0.021	2.500
400	1.695	0.078	1.653	0.068	2.500
500	1.836	0.098	1.821	0.086	2.500
600	1.902	0.113	1.856	0.102	2.500
700	1.921	0.133	1.879	0.112	2.500
800	1.935	0.143	1.856	0.135	2.500
900	1.945	0.156	1.869	0.142	2.500
1000	1.950	0.171	1.902	0.163	2.500
1200	1.938	0.198	1.893	0.187	2.500
1400	1.948	0.233	1.912	0.215	2.500
1600	1.952	0.269	1.914	0.239	2.500
1800	1.936	0.284	1.868	0.218	2.500
2000	1.936	0.321	1.898	0.301	2.500
2100	1.936	0.332	1.897	0.312	2.500
2200	1.902	0.336	1.882	0.321	2.500
2300	1.879	0.354	1.825	0.324	2.500
2400	1.862	0.363	1.831	0.352	2.500
2500	1.801	0.368	1.785	0.347	2.500
2600	1.733	0.366	1.702	0.316	2.500
2700	1.665	0.357	1.635	0.347	2.500
2800	1.562	0.358	1.526	0.312	2.500
2900	1.437	0.336	1.411	0.321	2.500
3000	1.303	0.313	1.296	0.296	2.500

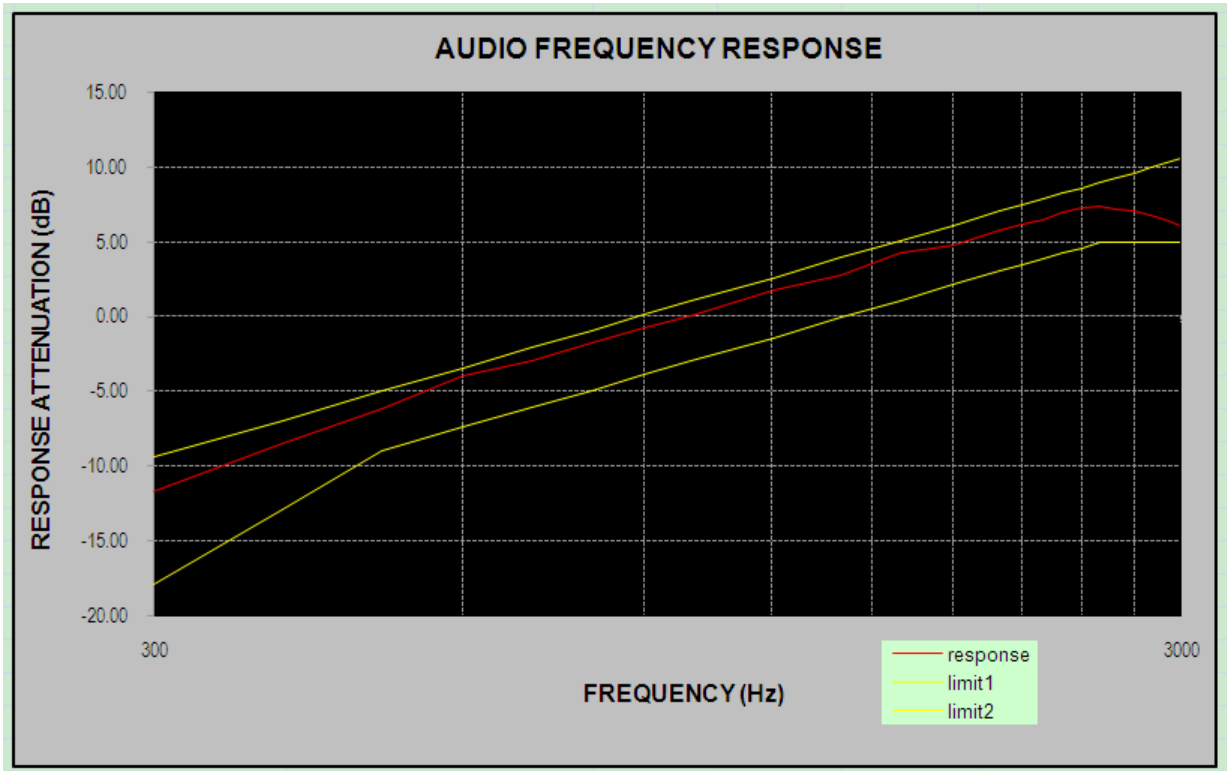




**Audio Frequency Response**

Carrier Frequency: 935.0125 MHz, Channel spacing=12.5 kHz

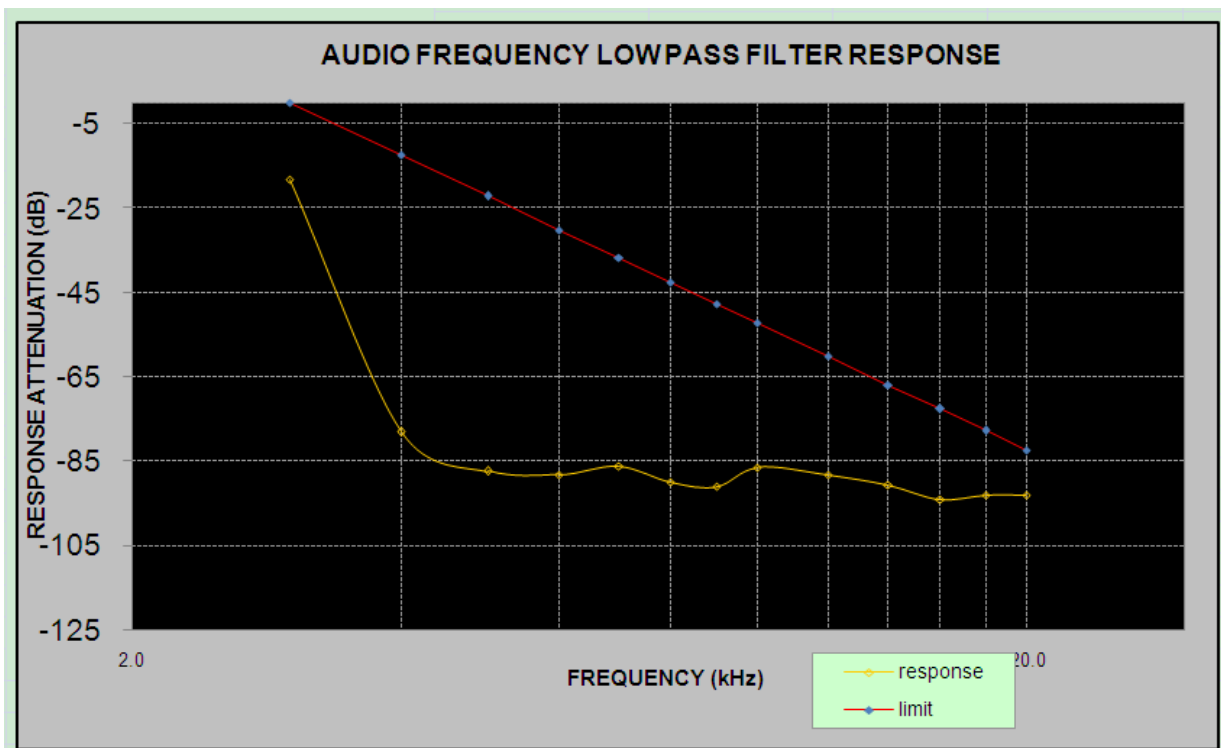
<b>Audio Frequency (Hz)</b>	<b>Response Attenuation (dB)</b>
300	-11.63
400	-8.45
500	-6.16
600	-4.01
700	-2.95
800	-1.77
900	-0.78
1000	0
1200	1.76
1400	2.76
1600	4.21
1800	4.76
2000	5.78
2100	6.16
2200	6.46
2300	6.90
2400	7.22
2500	7.34
2600	7.11
2700	7.09
2800	6.79
2900	6.41
3000	6.05



**Audio frequency lows pass filter response**

Carrier Frequency: 935.0125 MHz, Channel spacing=12.5 kHz

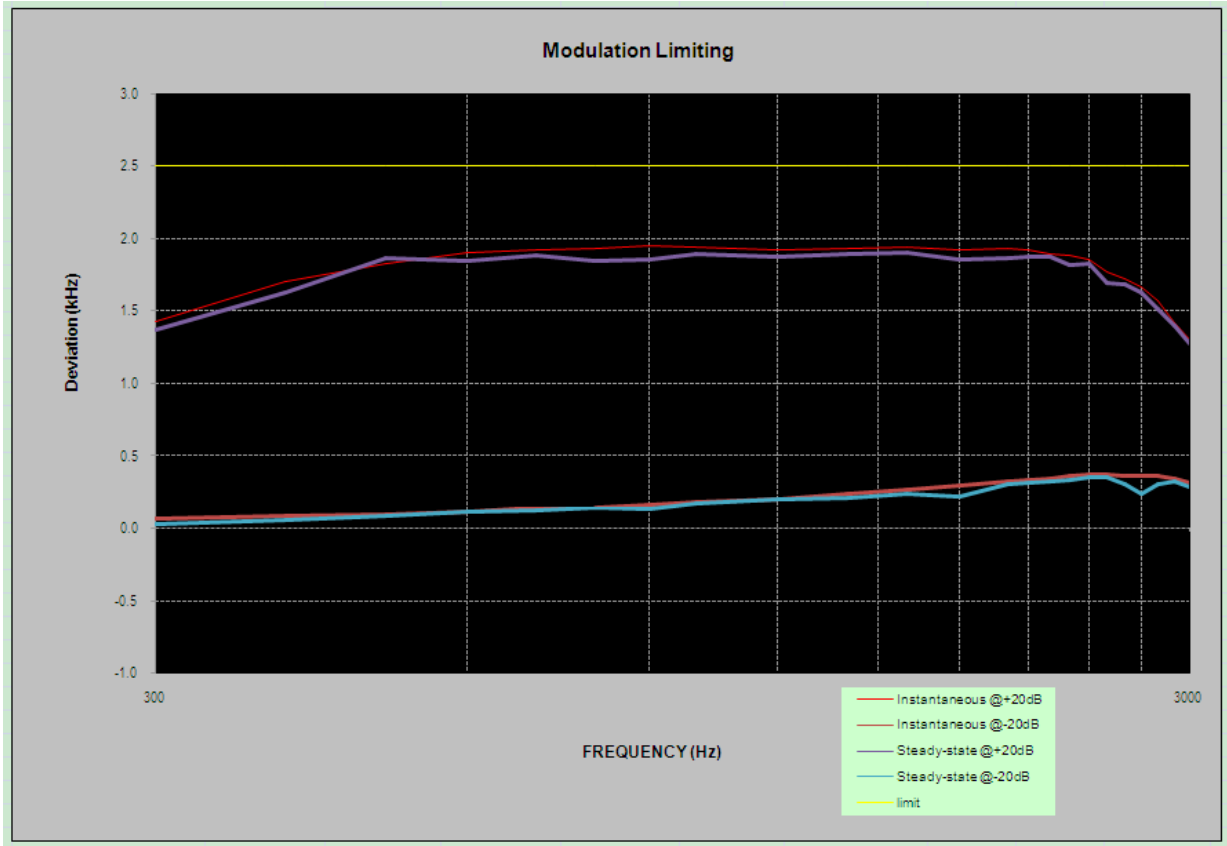
Audio Frequency (kHz)	Response Attenuation (dB)	Limit (dB)
1.0	0	/
3.0	-18.1	0
4.0	-78.2	-12.5
5.0	-87.5	-22.2
6.0	-88.3	-30.1
7.0	-86.2	-36.8
8.0	-90.1	-42.6
9.0	-91.2	-47.7
10.0	-86.5	-52.3
12.0	-88.4	-60.2
14.0	-90.7	-66.9
16.0	-94.2	-72.7
18.0	-93.1	-77.8
20.0	-93.1	-82.5



**MODULATION LIMITING**

Carrier Frequency: 935.0125 MHz, Channel spacing=12.5 kHz

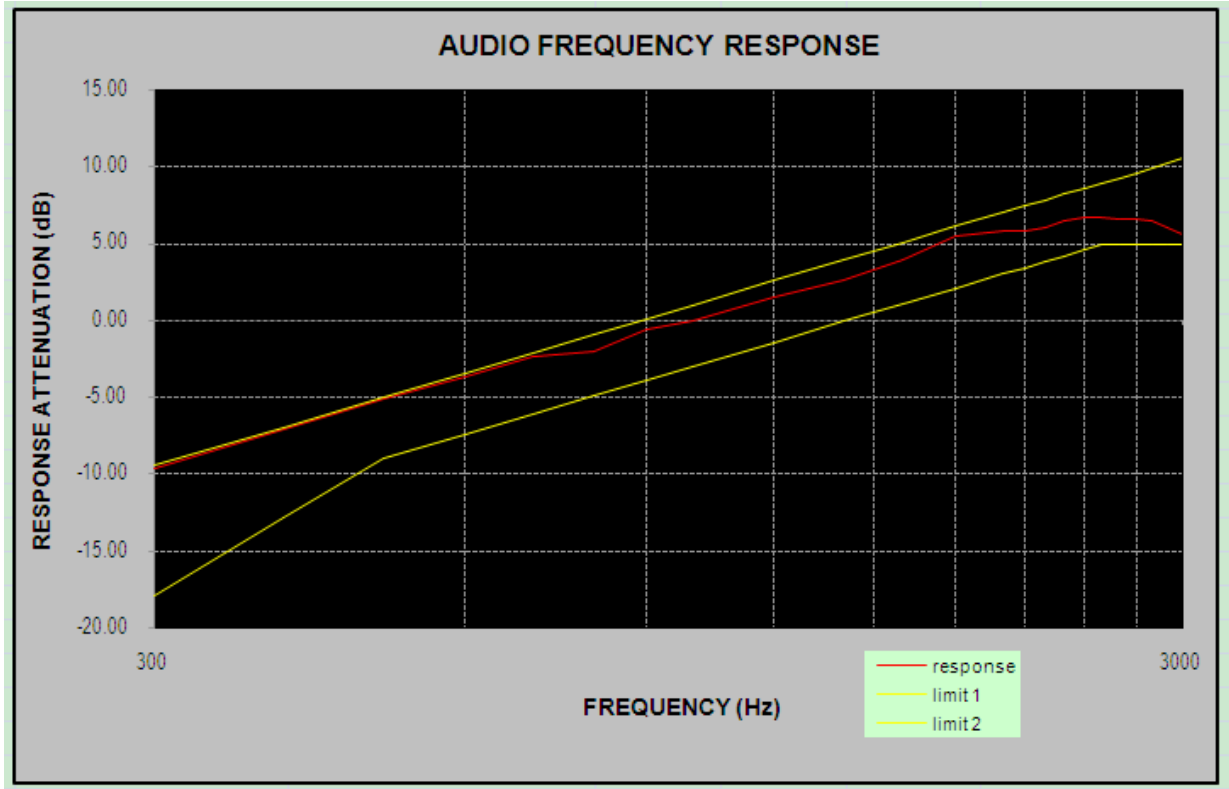
Audio Frequency (Hz)	Instantaneous		Steady-state		FCC Limit [kHz]
	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	
300	1.425	0.063	1.371	0.031	2.500
400	1.701	0.085	1.628	0.059	2.500
500	1.824	0.096	1.869	0.086	2.500
600	1.901	0.118	1.845	0.112	2.500
700	1.918	0.139	1.881	0.124	2.500
800	1.929	0.144	1.842	0.139	2.500
900	1.951	0.158	1.859	0.137	2.500
1000	1.946	0.178	1.897	0.172	2.500
1200	1.925	0.201	1.876	0.198	2.500
1400	1.935	0.234	1.893	0.208	2.500
1600	1.946	0.271	1.902	0.236	2.500
1800	1.926	0.291	1.852	0.215	2.500
2000	1.934	0.328	1.862	0.305	2.500
2100	1.925	0.336	1.875	0.315	2.500
2200	1.896	0.342	1.879	0.326	2.500
2300	1.887	0.362	1.815	0.332	2.500
2400	1.852	0.368	1.824	0.349	2.500
2500	1.768	0.371	1.693	0.348	2.500
2600	1.721	0.359	1.689	0.301	2.500
2700	1.668	0.358	1.629	0.239	2.500
2800	1.568	0.362	1.512	0.308	2.500
2900	1.421	0.342	1.396	0.321	2.500
3000	1.308	0.316	1.278	0.287	2.500



**Audio Frequency Response**

Carrier Frequency: 851.0125 MHz, Channel spacing=25 kHz

<b>Audio Frequency (Hz)</b>	<b>Response Attenuation (dB)</b>
300	-9.68
400	-7.11
500	-5.07
600	-3.70
700	-2.35
800	-2.07
900	-0.61
1000	0
1200	1.54
1400	2.64
1600	3.94
1800	5.43
2000	5.78
2100	5.82
2200	5.99
2300	6.48
2400	6.70
2500	6.71
2600	6.62
2700	6.58
2800	6.46
2900	5.99
3000	5.58

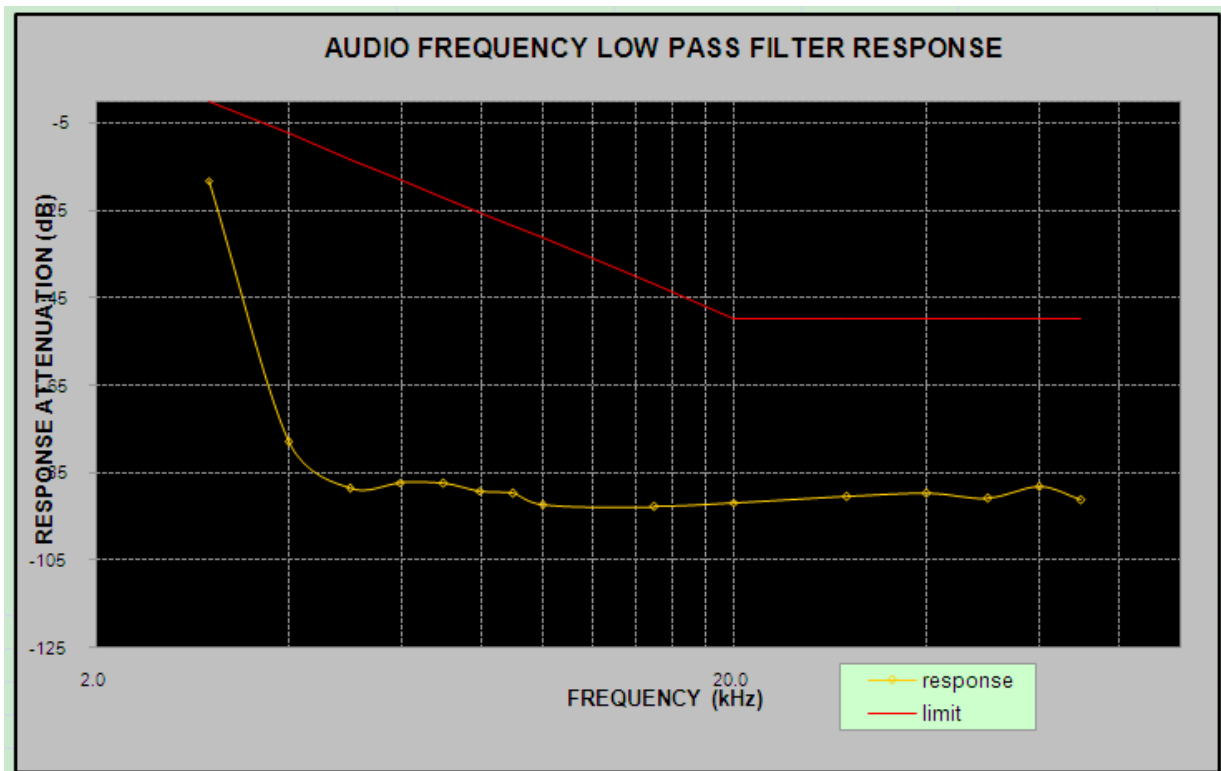




**Audio frequency lows pass filter response**

Carrier Frequency: 851.0125 MHz, Channel spacing=25 kHz

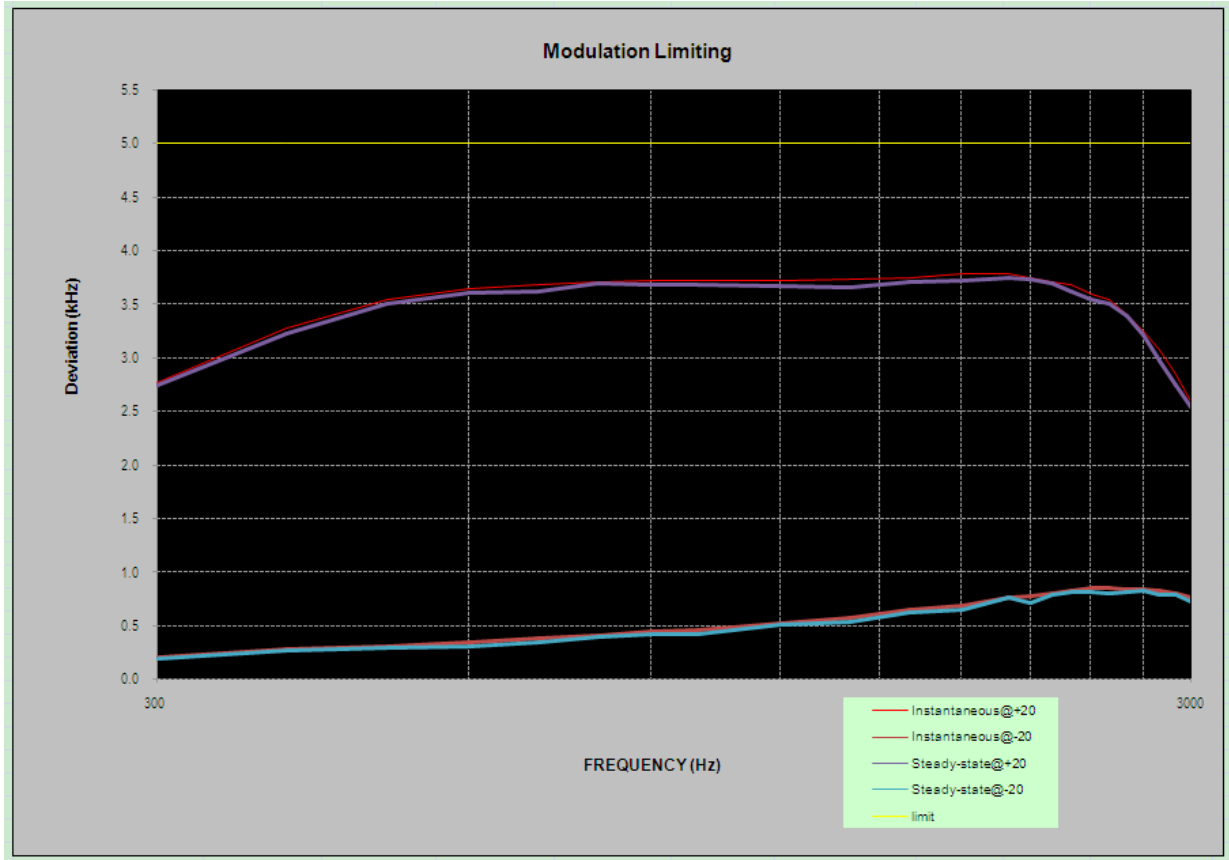
Audio Frequency (kHz)	Response Attenuation (dB)	Limit (dB)
1.0	0	/
3.0	-18.2	0
4.0	-77.9	-7.5
5.0	-88.6	-13.3
6.0	-87.3	-18.1
7.0	-87.5	-22.1
8.0	-89.1	-25.6
9.0	-89.7	-28.6
10.0	-92.4	-31.4
15.0	-92.8	-41.9
20.0	-91.9	-50.0
30.0	-90.5	-50.0
40.0	-89.7	-50.0
50.0	-90.8	-50.0



**MODULATION LIMITING**

Carrier Frequency: 851.0125 MHz, Channel spacing=25 kHz

Audio Frequency (Hz)	Instantaneous		Steady-state		FCC Limit [kHz]
	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	
300	2.768	0.214	2.745	0.199	5.000
400	3.275	0.283	3.221	0.272	5.000
500	3.547	0.312	3.502	0.293	5.000
600	3.642	0.351	3.612	0.313	5.000
700	3.684	0.381	3.621	0.351	5.000
800	3.715	0.411	3.693	0.396	5.000
900	3.717	0.443	3.689	0.422	5.000
1000	3.721	0.458	3.689	0.421	5.000
1200	3.728	0.527	3.675	0.517	5.000
1400	3.739	0.573	3.658	0.537	5.000
1600	3.751	0.654	3.712	0.624	5.000
1800	3.781	0.689	3.724	0.658	5.000
2000	3.779	0.762	3.752	0.762	5.000
2100	3.753	0.782	3.731	0.714	5.000
2200	3.712	0.805	3.699	0.795	5.000
2300	3.687	0.832	3.625	0.821	5.000
2400	3.591	0.858	3.547	0.813	5.000
2500	3.541	0.853	3.512	0.808	5.000
2600	3.401	0.848	3.396	0.816	5.000
2700	3.258	0.846	3.210	0.825	5.000
2800	3.078	0.825	2.968	0.786	5.000
2900	2.845	0.802	2.745	0.793	5.000
3000	2.594	0.762	2.538	0.724	5.000



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**FCC §2.1049 & §90.210 – OCCUPIED BANDWIDTH & EMISSION MASK**

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**Applicable Standard**

FCC §2.1049 and §90.210

Emission Mask B - 25 kHz channel bandwidth equipment. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

- (1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.
- (2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB.
- (3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least  $43 + 10 \log (P)$  dB.

Emission Mask I. For transmitters that are equipped with an audio low pass filter, the power of any emission must be attenuated below the unmodulated carrier power of the transmitter (P) as follows:

- (1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency of more than 6.8 kHz, but no more than 9.0 kHz: At least 25 dB;
- (2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency of more than 9.0 kHz, but no more than 15 kHz: At least 35 dB;
- (3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency of more than 15 kHz: At least  $43 + 10 \log (P)$  dB, or 70 dB, whichever is the lesser attenuation.

**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  $\pm 50$  kHz from the carrier frequency.

**Test Data**

**Environmental Conditions**

<b>Temperature:</b>	22-25 °C
<b>Relative Humidity:</b>	54-62 %
<b>ATM Pressure:</b>	101.0 kPa

The testing was performed by Rocky Kang on 2017-12-30 and 2018-03-17.

Test mode: transmitting

Modulation	Channel Separation (kHz)	Frequency (MHz)	Power Level	99% Occupied Bandwidth (kHz)	26 dB Emissions Bandwidth (kHz)
Analog	12.5	851.0125	High	9.856	10.176
			Low	9.776	10.176
	12.5	868.9875	High	5.288	10.176
			Low	5.288	10.176
	12.5	935.0125	High	9.936	10.176
			Low	9.856	10.176
Digital	12.5	851.0125	High	7.372	8.974
			Low	7.853	9.696
	12.5	868.9875	High	7.853	9.375
			Low	7.612	9.455
	12.5	935.0125	High	7.692	10.417
			Low	8.093	9.776

Note: Emission bandwidth was based on calculation method instead of measurement.

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

**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.  $BW = 2(M+D) = 2*(3.0 \text{ kHz} + 2.5 \text{ kHz}) = 11 \text{ kHz} \rightarrow 11K0$   
 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)**

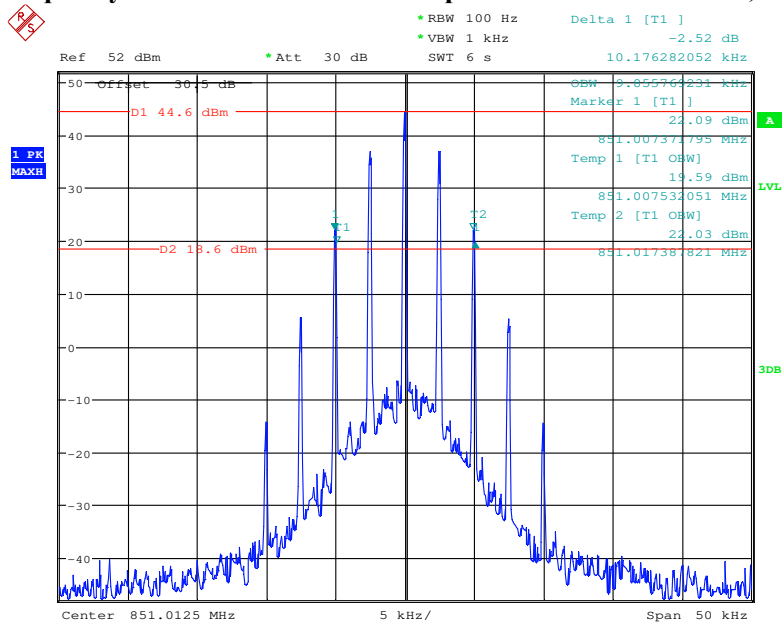
Emission Designator 7K60F1D and 7K60F1E

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, 7.60 kHz. The emission mask was obtained from 47CFR 90.210(d).

F1D and F1E portion of the designator indicates digital information.

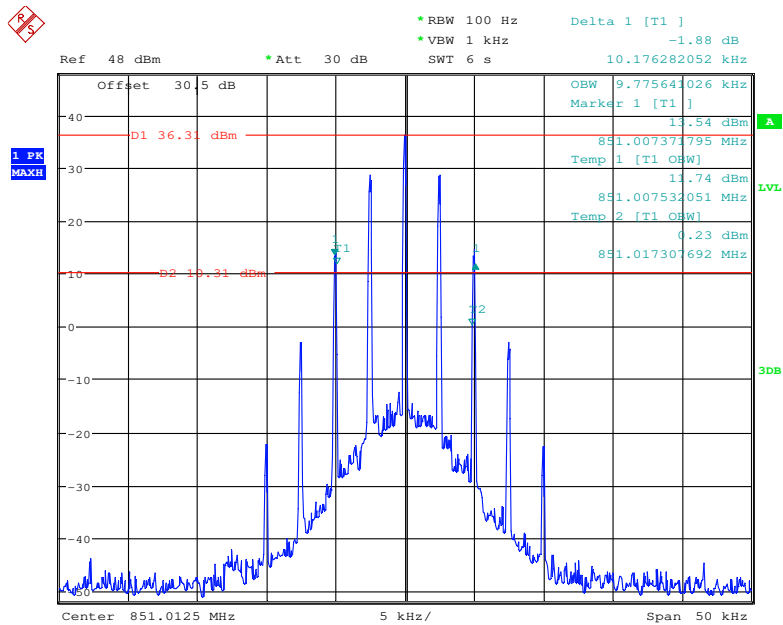
Therefore, the entire designator for 12.5 kHz channel spacing digital mode is 7K60F1D and 7K60F1E.

**Analog Modulation:  
Frequency 851.0125 MHz: 99% Occupied & 26 dB Bandwidth, High Power**



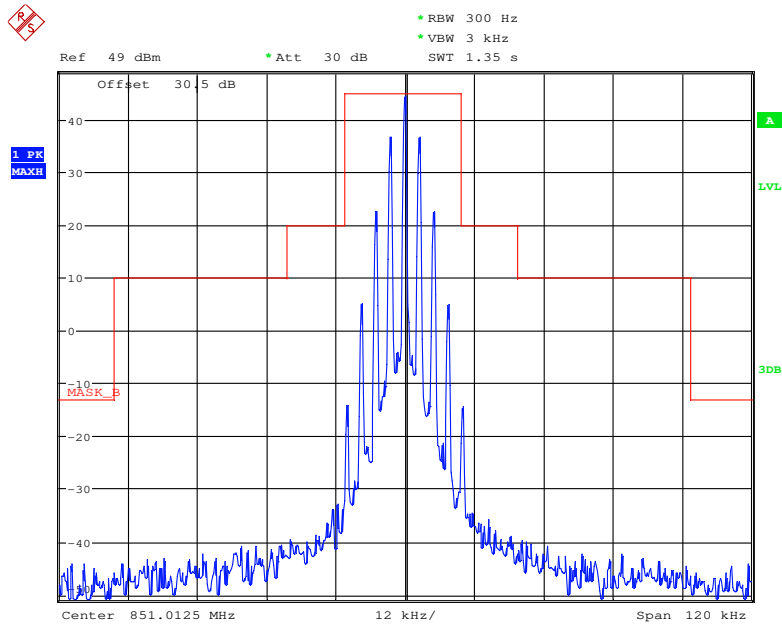
Date: 30.DEC.2017 10:58:54

**Frequency 851.0125 MHz: 99% Occupied & 26 dB Bandwidth, Low Power**



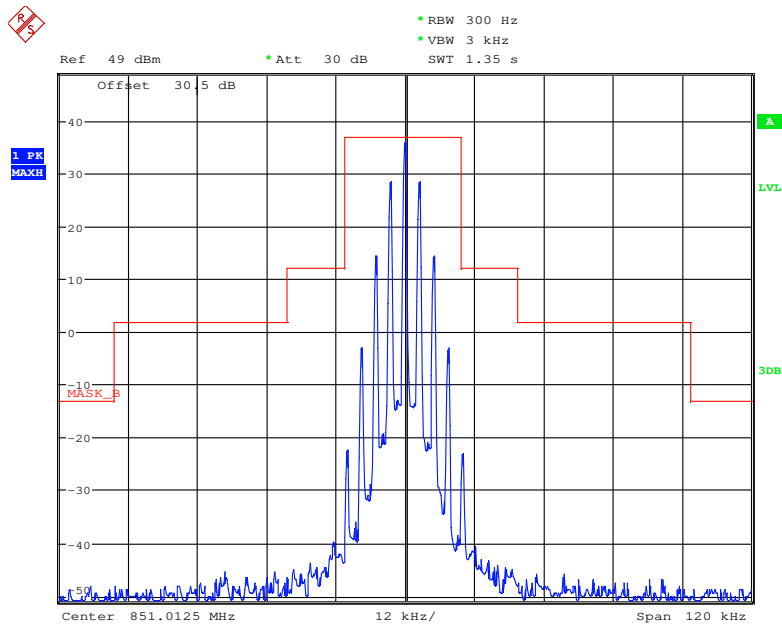
Date: 30.DEC.2017 10:53:43

### Frequency 851.0125 MHz: Emission Mask B, High Power



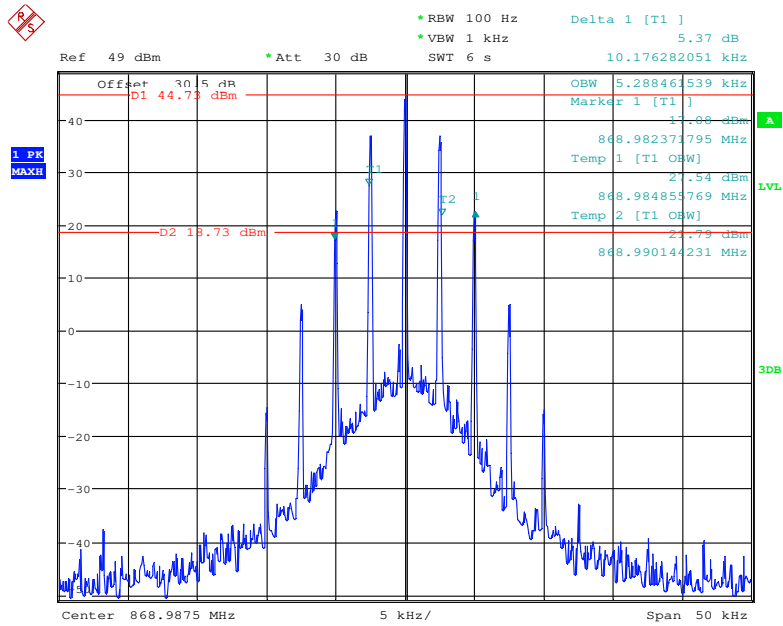
Date: 30.DEC.2017 13:33:20

### Frequency 851.0125 MHz: Emission Mask B, Low Power



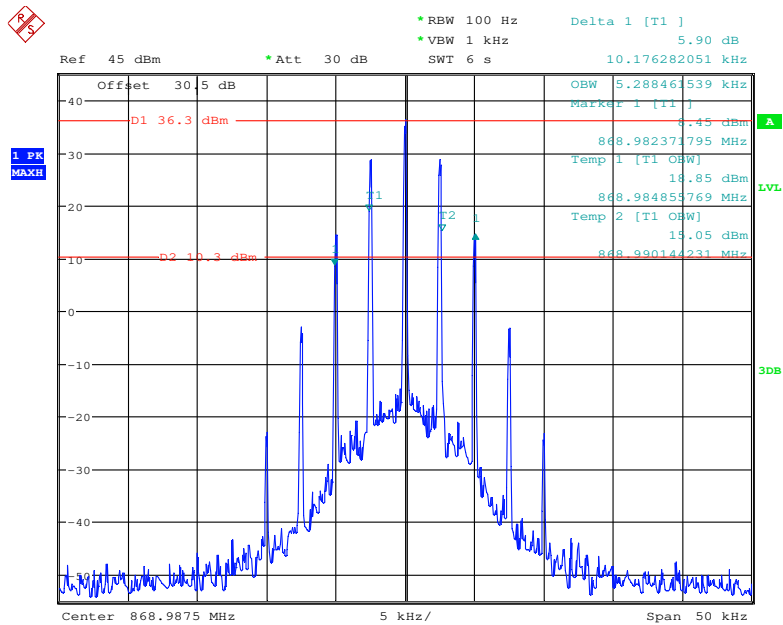
Date: 30.DEC.2017 13:30:42

**Frequency 868.9875 MHz: 99% Occupied & 26 dB Bandwidth, High Power**



Date: 30.DEC.2017 11:09:20

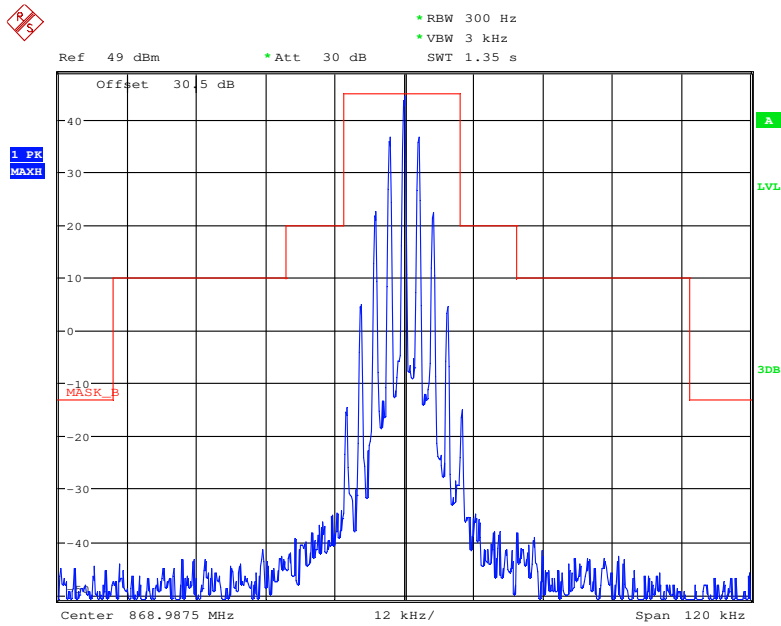
**Frequency 868.9875 MHz: 99% Occupied & 26 dB Bandwidth, Low Power**



Date: 30.DEC.2017 11:08:10

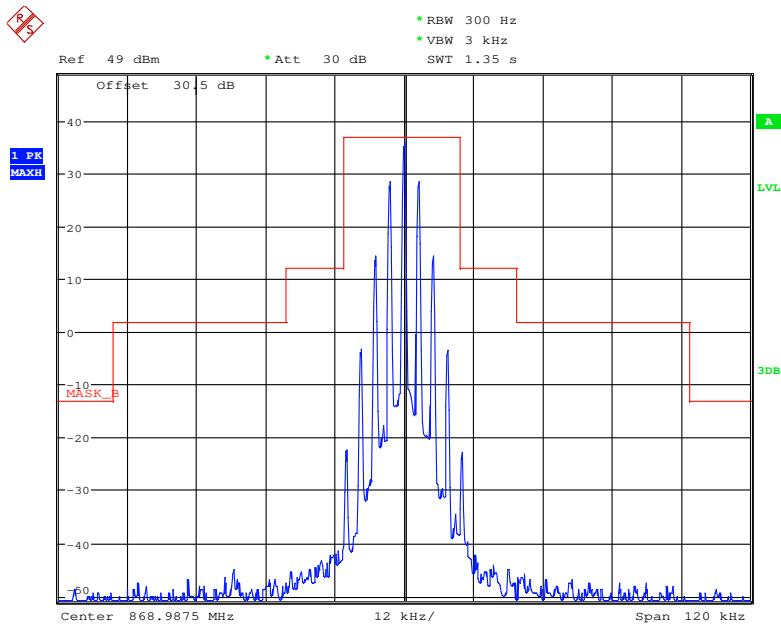


### Frequency 868.9875 MHz: Emission Mask B, High Power



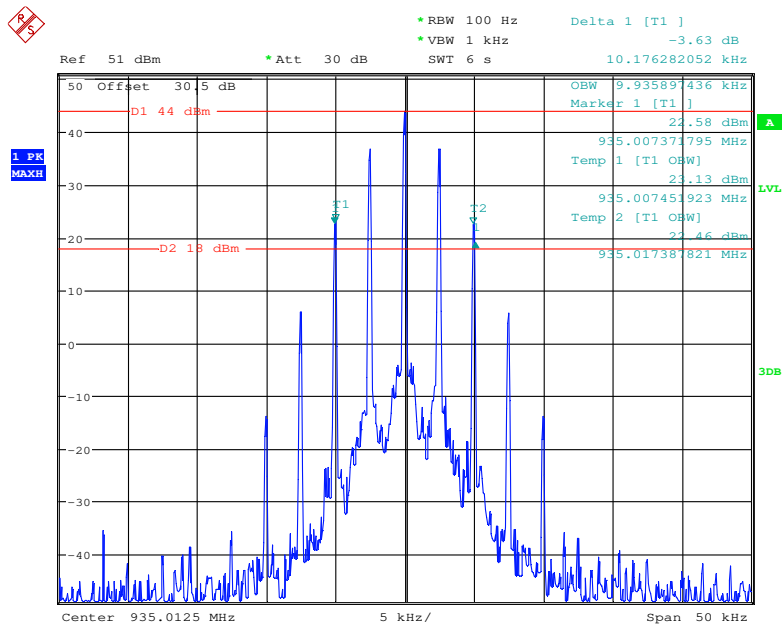
Date: 30.DEC.2017 13:34:54

### Frequency 868.9875 MHz: Emission Mask B, Low Power



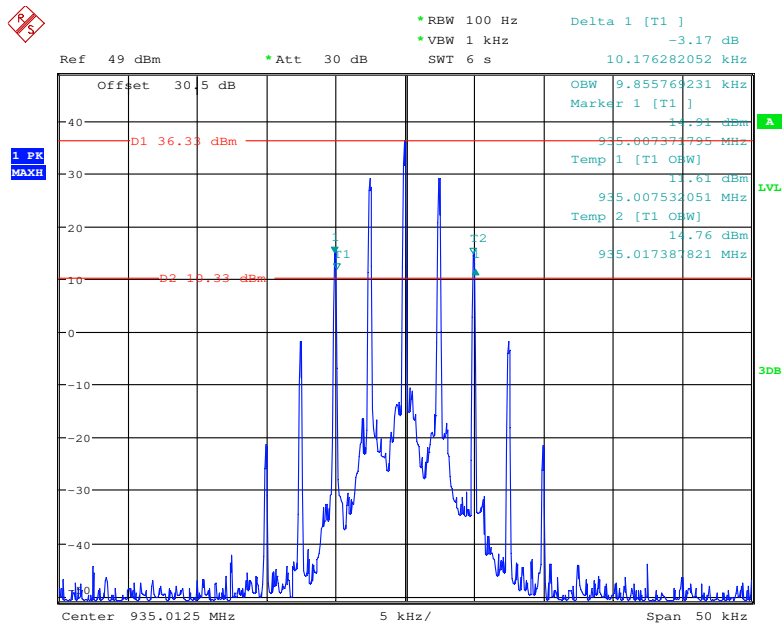
Date: 30.DEC.2017 13:37:14

**Frequency 935.0125 MHz: 99% Occupied & 26 dB Bandwidth, High Power**



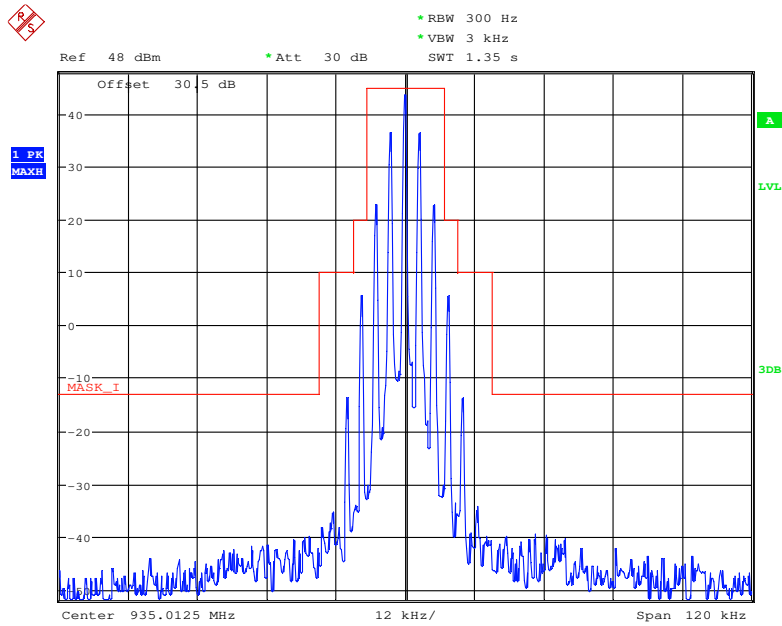
Date: 30.DEC.2017 11:12:27

**Frequency 935.0125 MHz: 99% Occupied & 26 dB Bandwidth, Low Power**



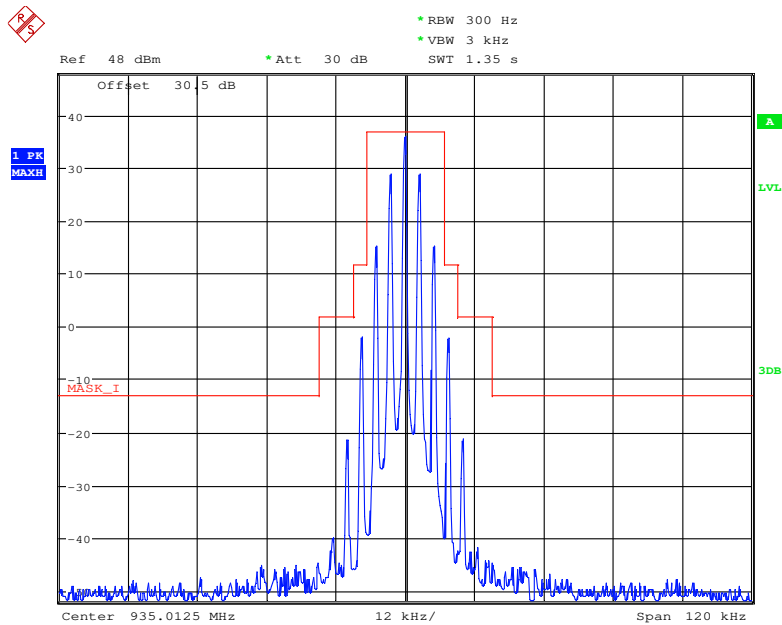
Date: 30.DEC.2017 11:10:55

### Frequency 935.0125 MHz: Emission Mask I, High Power



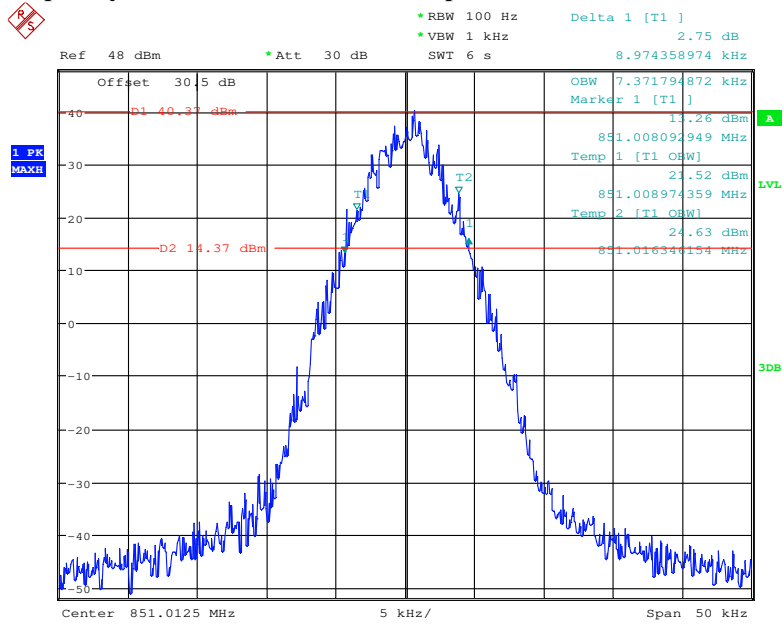
Date: 30.DEC.2017 13:53:24

### Frequency 935.0125 MHz: Emission Mask I, Low Power



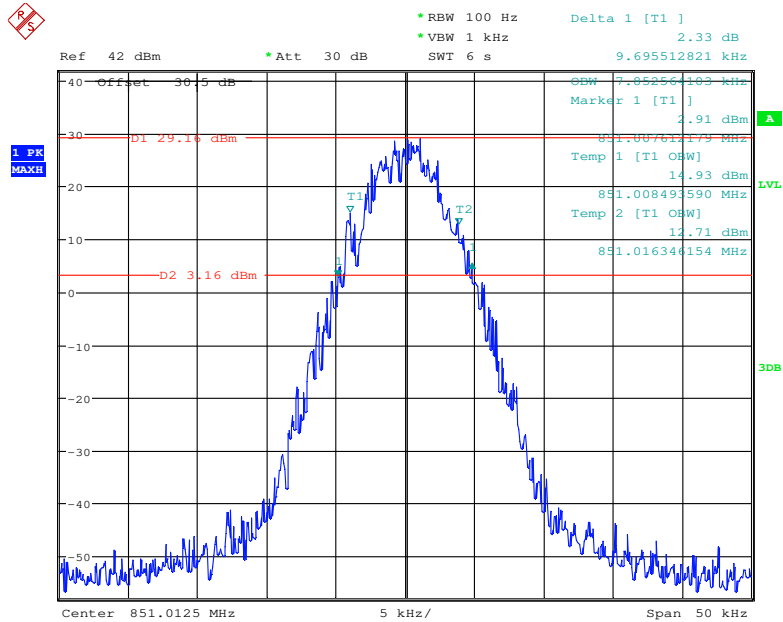
Date: 30.DEC.2017 13:51:26

### Digital Modulation: Frequency 851.0125 MHz: 99% Occupied & 26 dB Bandwidth, High Power



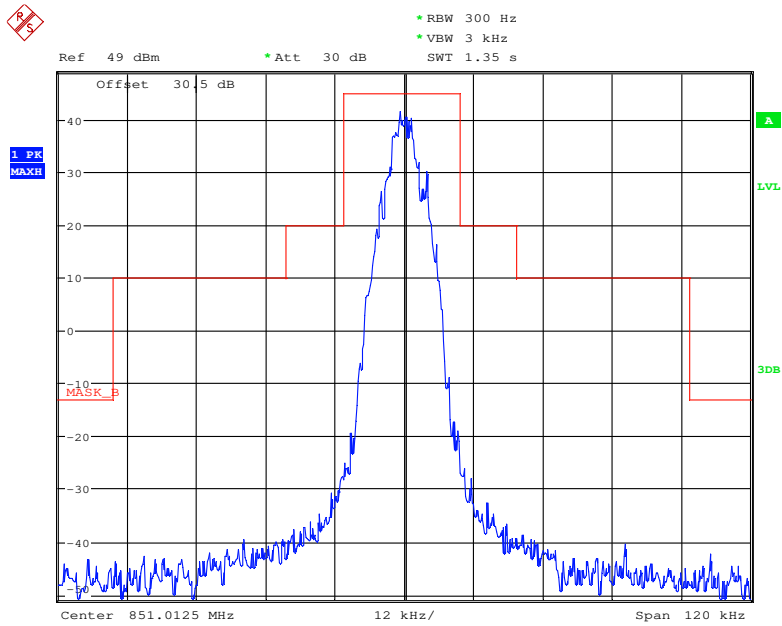
Date: 30.DEC.2017 10:39:51

### Frequency 851.0125 MHz: 99% Occupied & 26 dB Bandwidth, Low Power



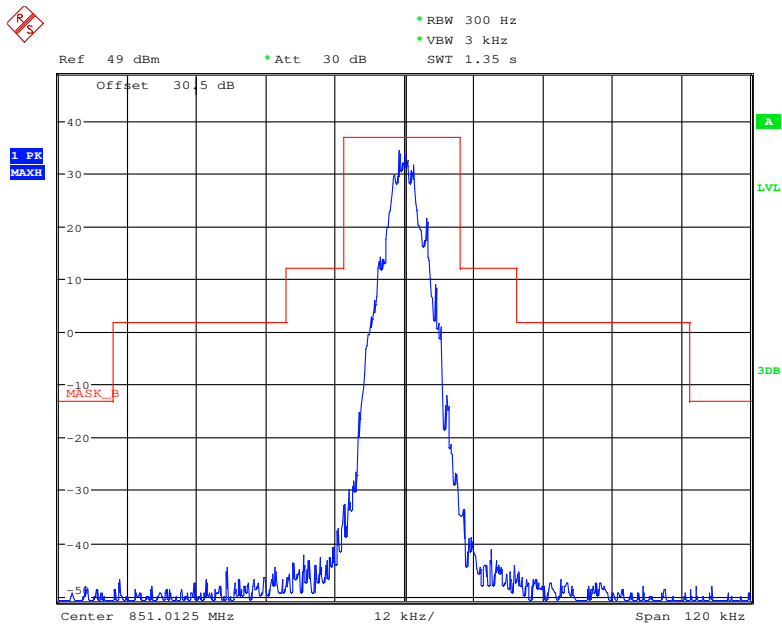
Date: 30.DEC.2017 10:37:52

### Frequency 851.0125 MHz: Emission Mask B, High Power



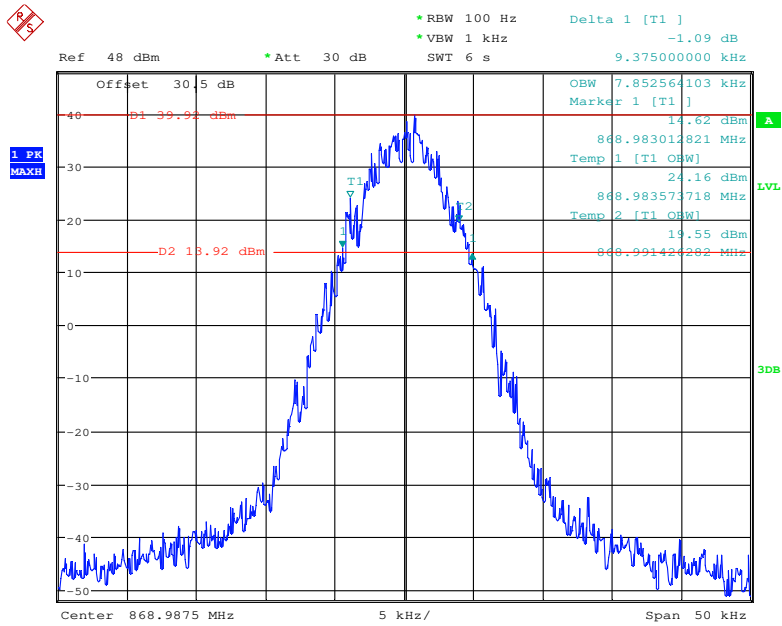
Date: 30.DEC.2017 13:33:00

### Frequency 851.0125 MHz: Emission Mask B, Low Power



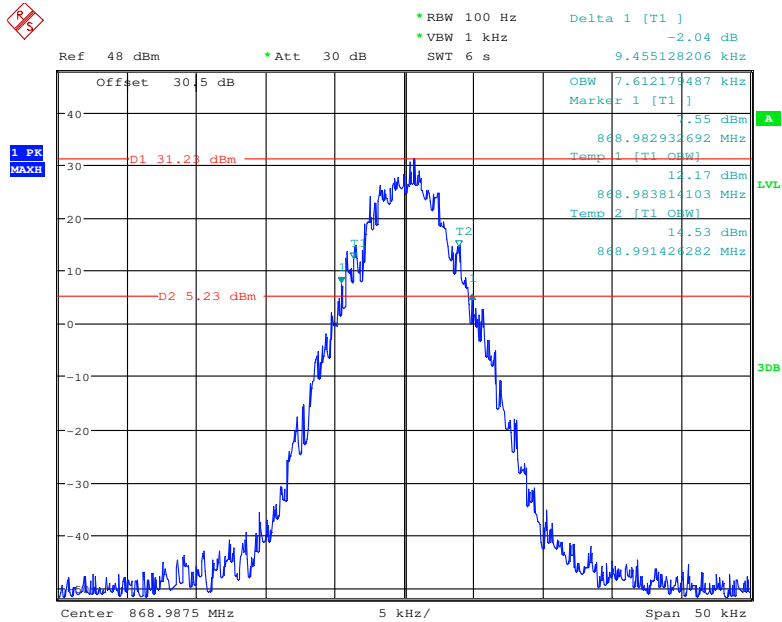
Date: 30.DEC.2017 13:31:56

**Frequency 868.9875 MHz: 99% Occupied & 26 dB Bandwidth, High Power**



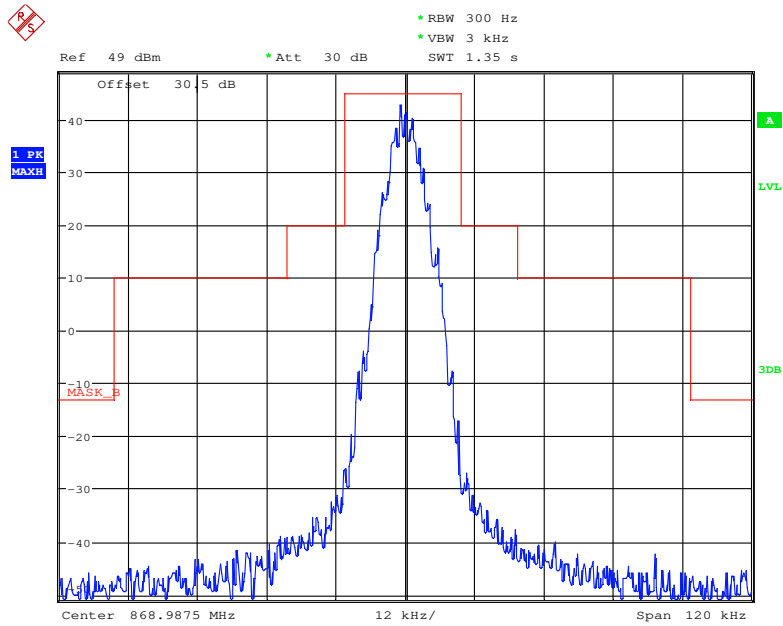
Date: 30.DEC.2017 10:42:20

**Frequency 868.9875 MHz: 99% Occupied & 26 dB Bandwidth, Low Power**



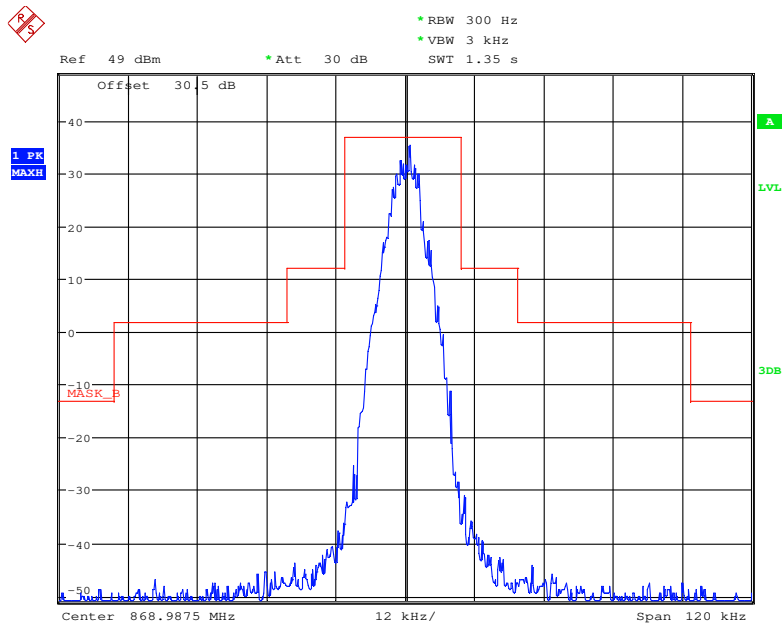
Date: 30.DEC.2017 10:41:11

### Frequency 868.9875 MHz: Emission Mask B, High Power



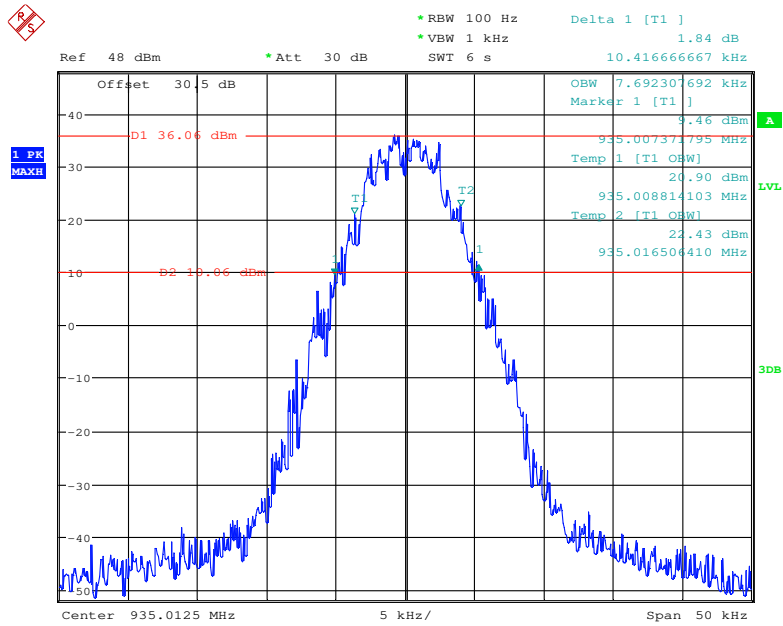
Date: 30.DEC.2017 13:35:51

### Frequency 868.9875 MHz: Emission Mask B, Low Power



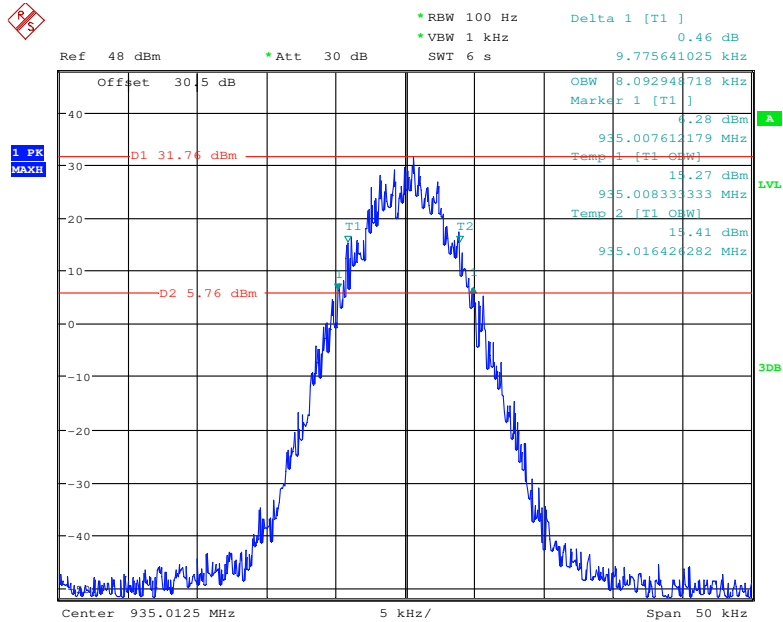
Date: 30.DEC.2017 13:36:47

**Frequency 935.0125 MHz: 99% Occupied & 26 dB Bandwidth, High Power**



Date: 30.DEC.2017 10:43:39

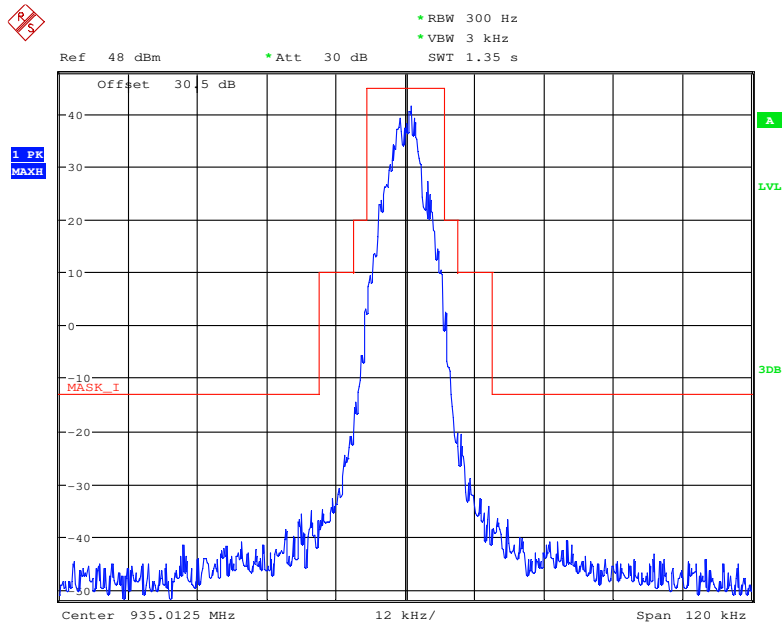
**Frequency 935.0125 MHz: 99% Occupied & 26 dB Bandwidth, Low Power**



Date: 30.DEC.2017 10:44:53

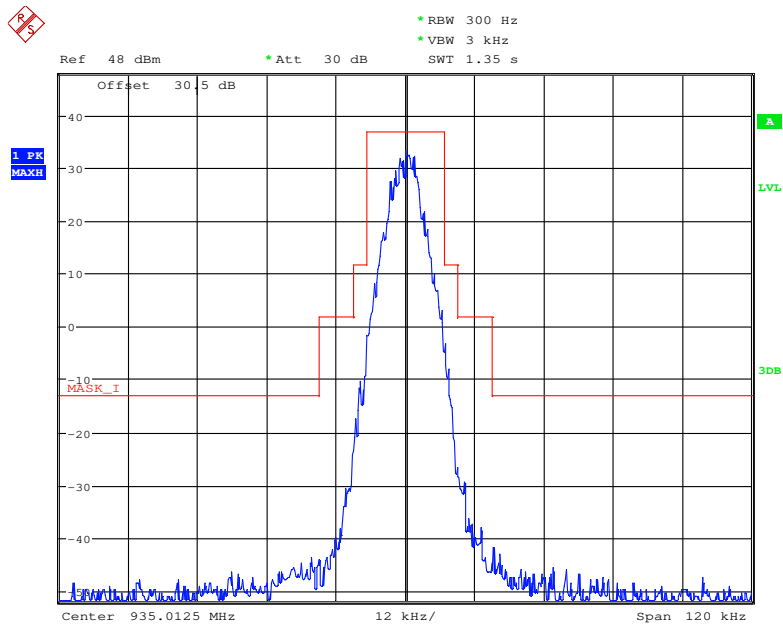


### Frequency 935.0125 MHz: Emission Mask I, High Power



Date: 30.DEC.2017 13:53:05

### Frequency 935.0125 MHz: Emission Mask I, Low Power



Date: 30.DEC.2017 13:52:07

Modulation	Channel Separation (kHz)	Frequency (MHz)	Power Level	99% Occupied Bandwidth (kHz)	26 dB Emissions Bandwidth (kHz)
Analog	25	851.0125	High	14.90	15.58
	25		Low	14.90	15.58
	25	868.9875	High	14.81	15.67
	25		Low	14.81	15.67

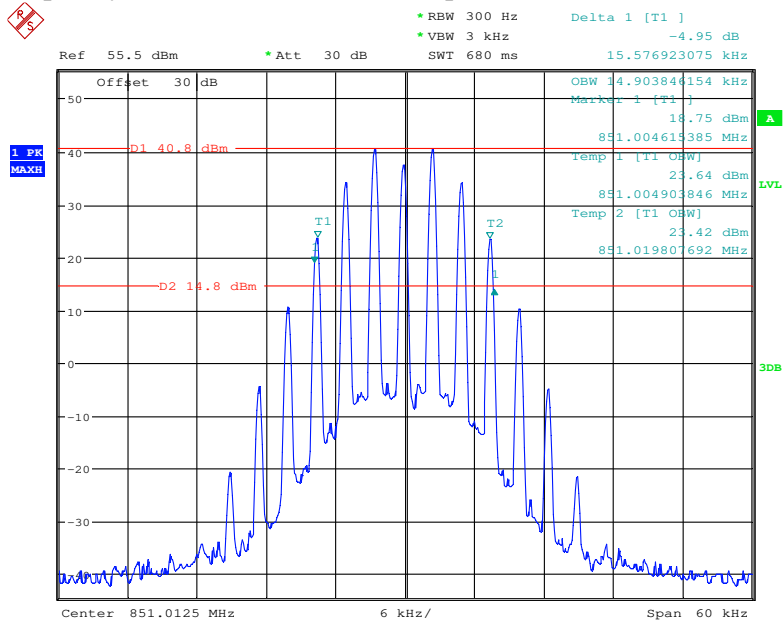
*Emission Designator Per CFR 47 §2.201 & §2.202,  $B_n = 2M + 2D$*

***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.  $BW = 2(M+D) = 2*(5\text{ kHz} + 3\text{ kHz}) = 16\text{ kHz} \rightarrow 16K0$*

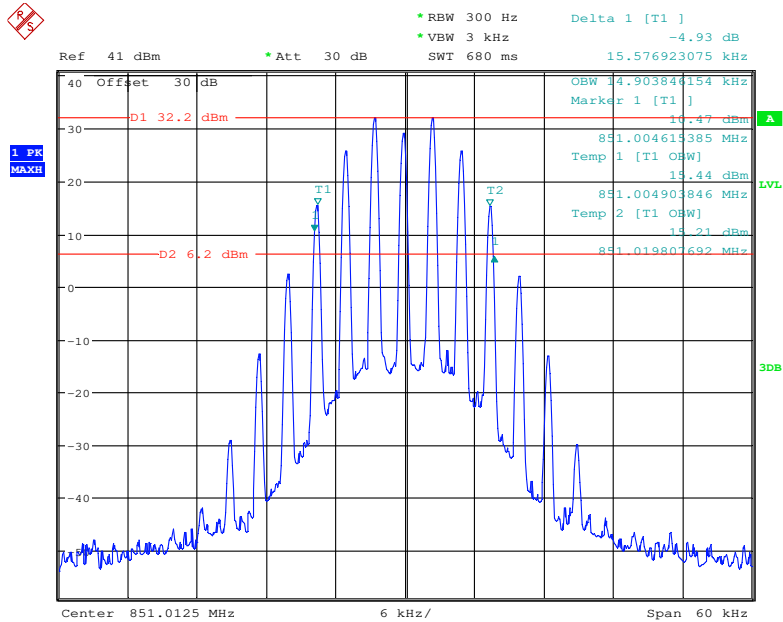
*F3E portion of the designator represents an FM voice transmission Therefore, the entire designator for 25 kHz channel spacing FM mode is 16K0F3E.*

### Analog Modulation Frequency 851.0125 MHz: 99% Occupied & 26 dB Bandwidth, High Power



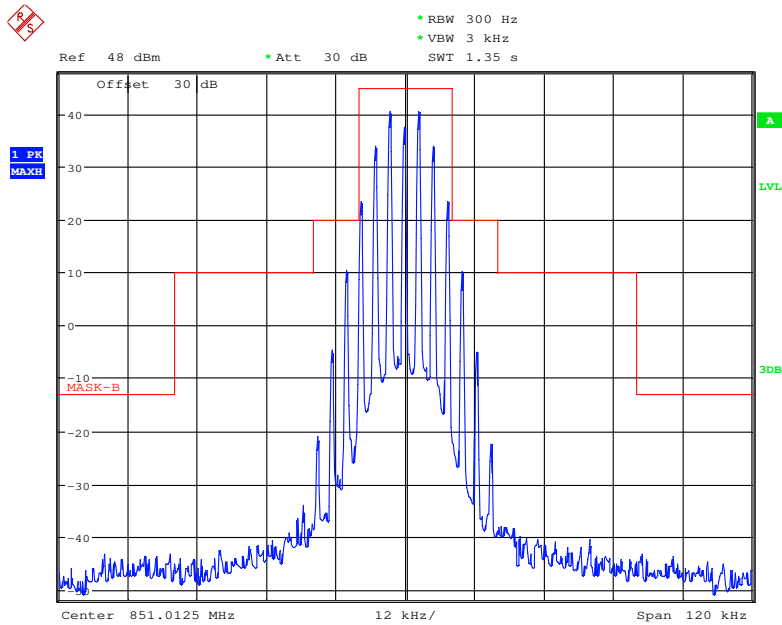
Date: 17.MAR.2018 14:13:56

### Frequency 851.0125 MHz: 99% Occupied & 26 dB Bandwidth, Low Power



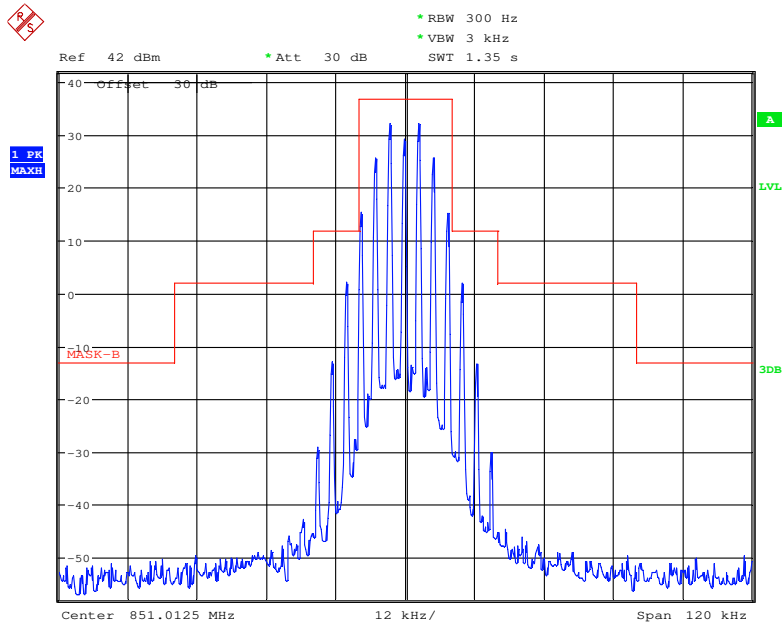
Date: 17.MAR.2018 14:15:15

### Frequency 851.0125 MHz: Emission Mask B, High Power



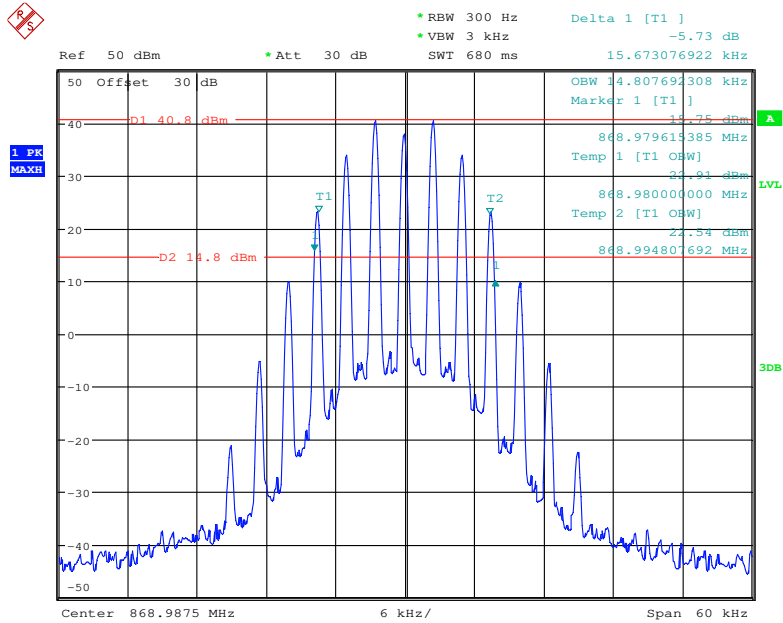
Date: 17.MAR.2018 14:25:17

### Frequency 851.0125 MHz: Emission Mask B, Low Power



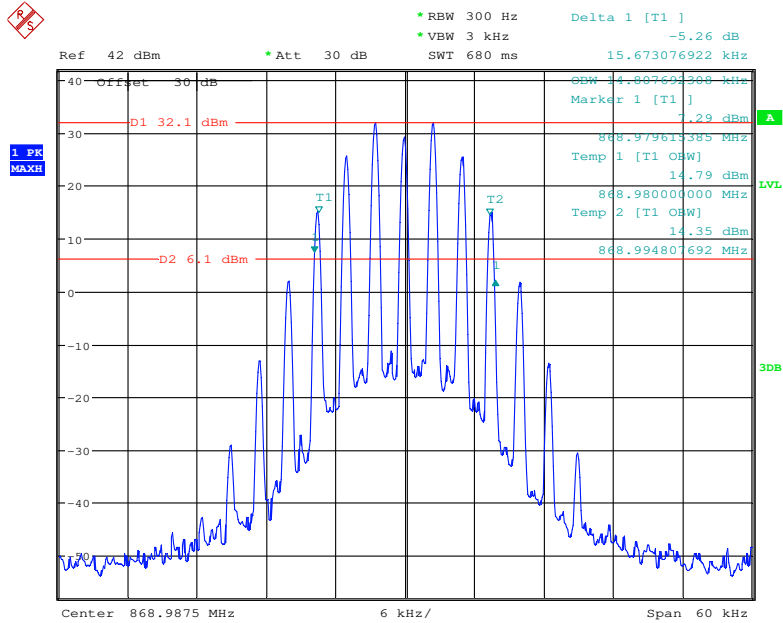
Date: 17.MAR.2018 14:27:06

**Frequency 868.9875 MHz: 99% Occupied & 26 dB Bandwidth, High Power**



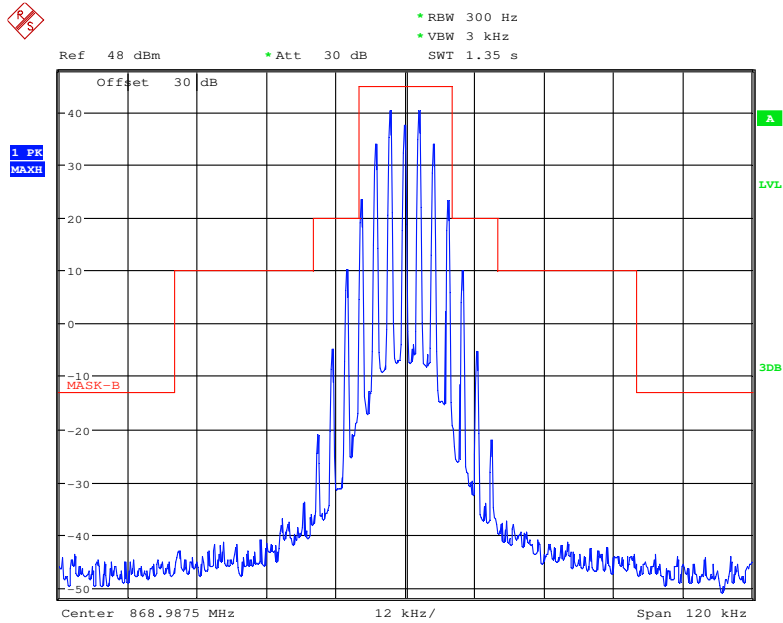
Date: 17.MAR.2018 14:16:23

**Frequency 868.9875 MHz: 99% Occupied & 26 dB Bandwidth, Low Power**



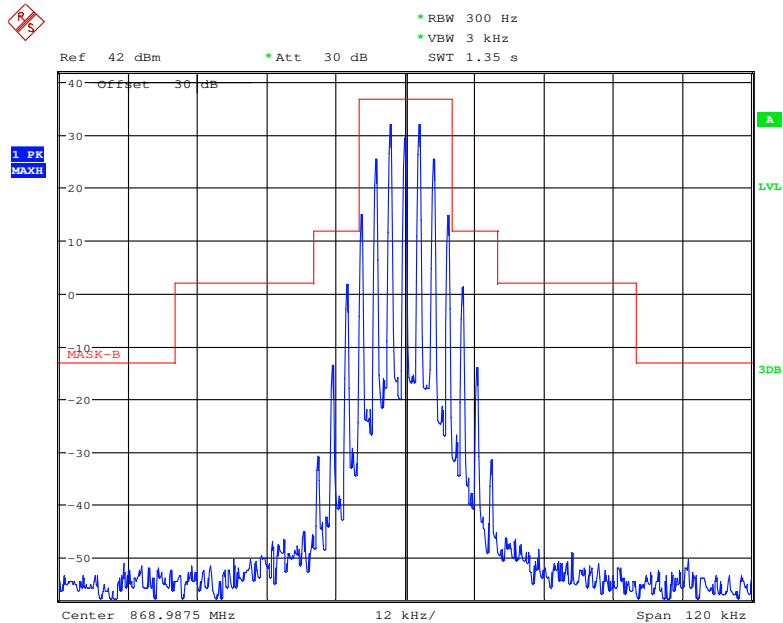
Date: 17.MAR.2018 14:17:14

### Frequency 868.9875 MHz: Emission Mask B, High Power



Date: 17.MAR.2018 14:23:46

### Frequency 868.9875 MHz: Emission Mask B, Low Power



Date: 17.MAR.2018 14:21:10

## FCC §2.1051 & §90.210 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

### Applicable Standard

Emission Mask B. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

- 1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.
- 2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB.
- 3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least  $43 + 10 \log (P)$  dB.

Emission Mask I. For transmitters that are equipped with an audio low pass filter, the power of any emission must be attenuated below the unmodulated carrier power of the transmitter (P) as follows:

- 1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency of more than 6.8 kHz, but no more than 9.0 kHz: At least 25 dB;
- 2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency of more than 9.0 kHz, but no more than 15 kHz: At least 35 dB;
- 3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency of more than 15 kHz: At least  $43 + 10 \log (P)$  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 10<sup>th</sup> harmonic.

### Test Data

#### Environmental Conditions

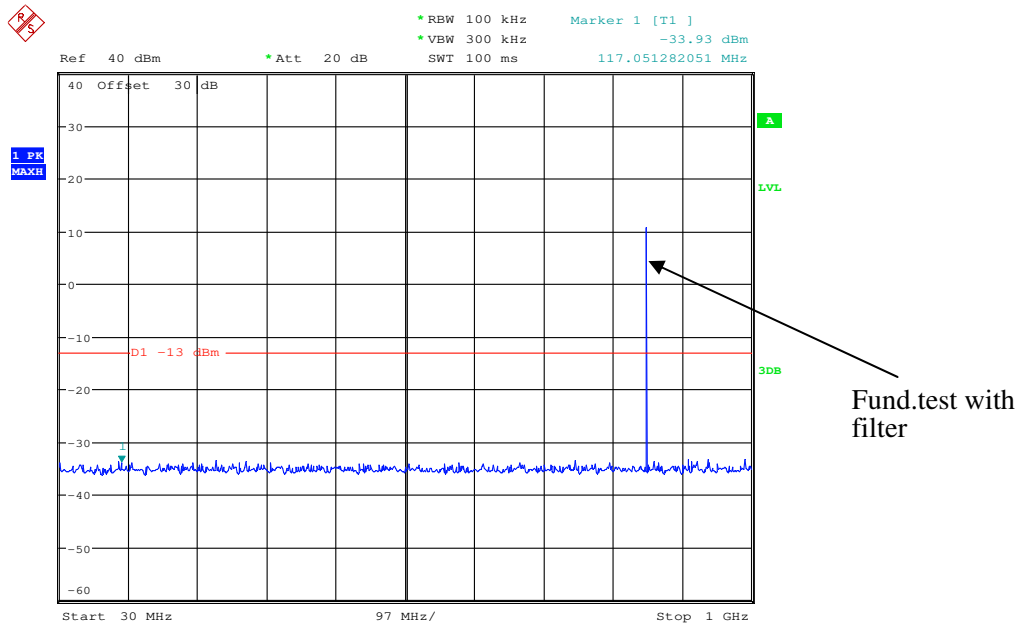
<b>Temperature:</b>	23 °C
<b>Relative Humidity:</b>	54 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Rocky Kang on 2018-01-05.*

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

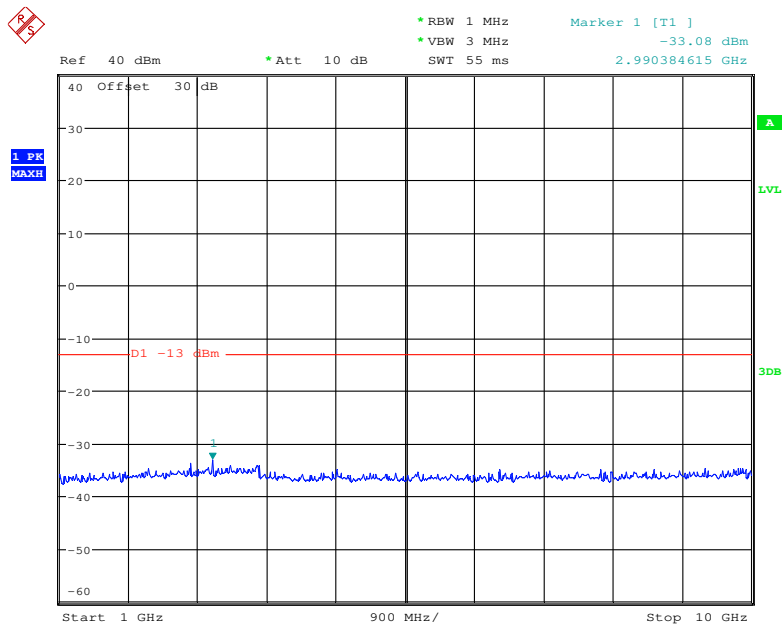
**Analog Modulation:**

**30MHz – 1 GHz, Channel Spacing 12.5 kHz, 851.0125 MHz**



Date: 5.JAN.2018 16:22:11

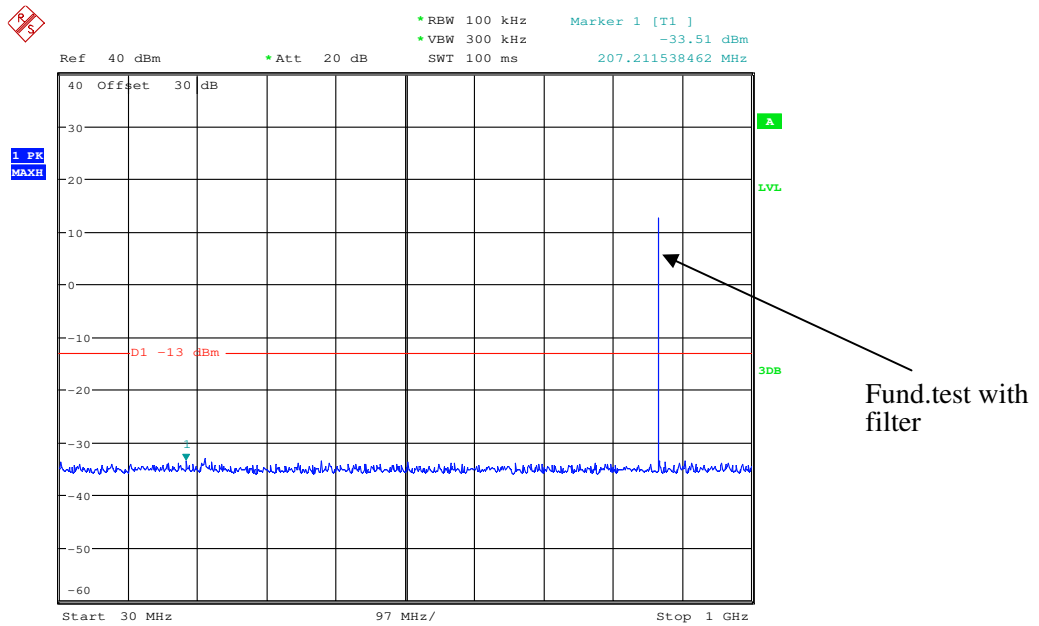
**1 GHz – 10 GHz, Channel Spacing 12.5 kHz, 851.0125 MHz**



Date: 5.JAN.2018 16:19:40

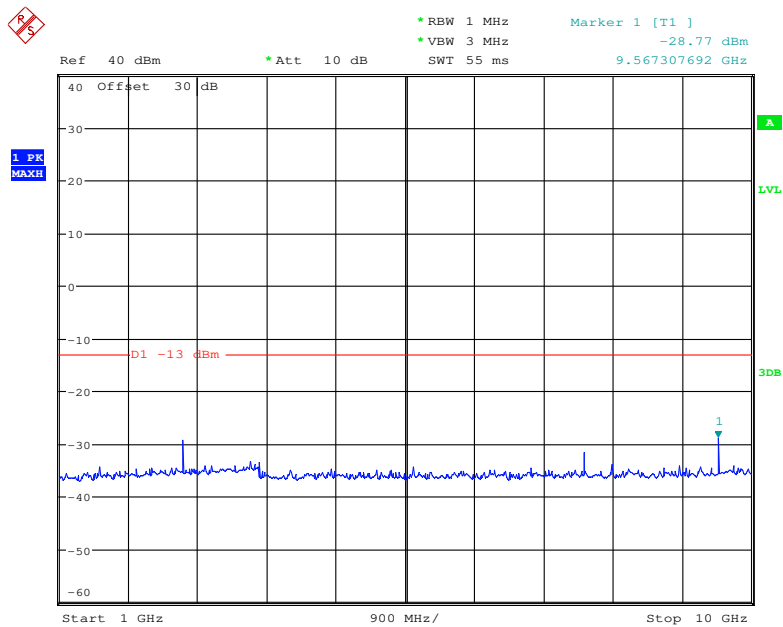


### 30MHz – 1 GHz, Channel Spacing 12.5 kHz, 868.9875 MHz



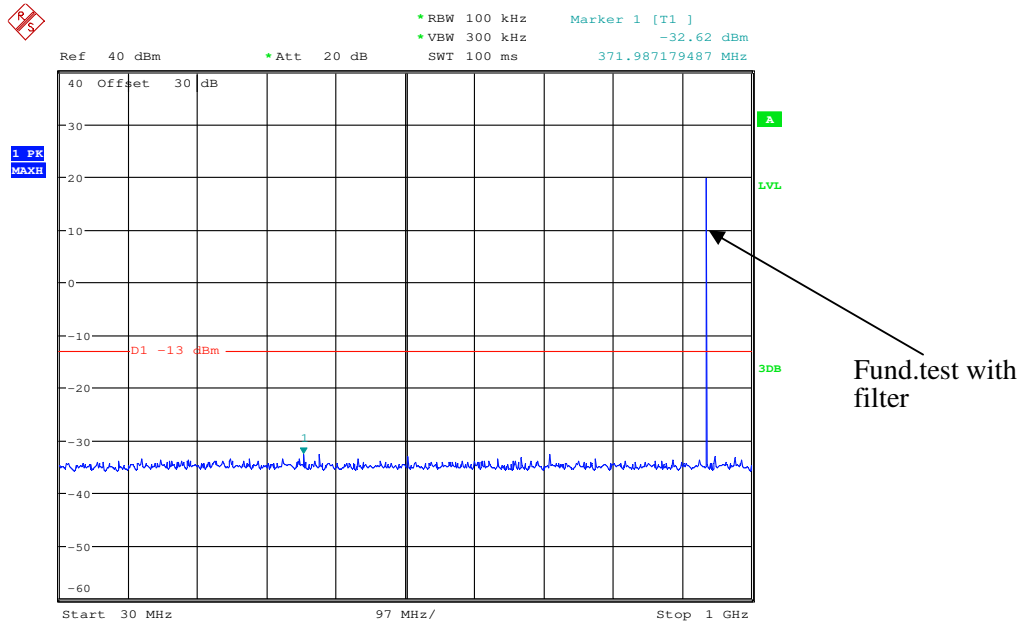
Date: 5.JAN.2018 16:24:09

### 1 GHz – 10 GHz, Channel Spacing 12.5 kHz, 868.9875 MHz



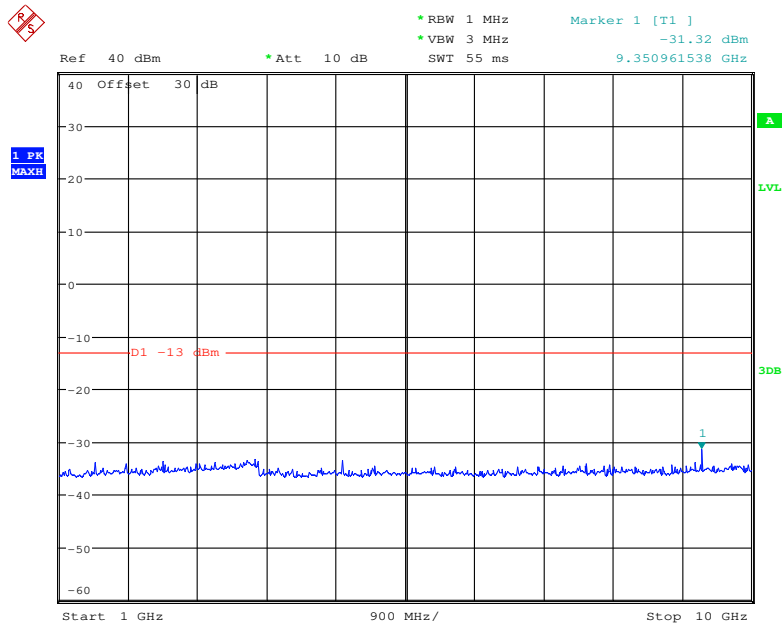
Date: 5.JAN.2018 16:26:03

### 30MHz – 1 GHz, Channel Spacing 12.5 kHz, 935.0125 MHz



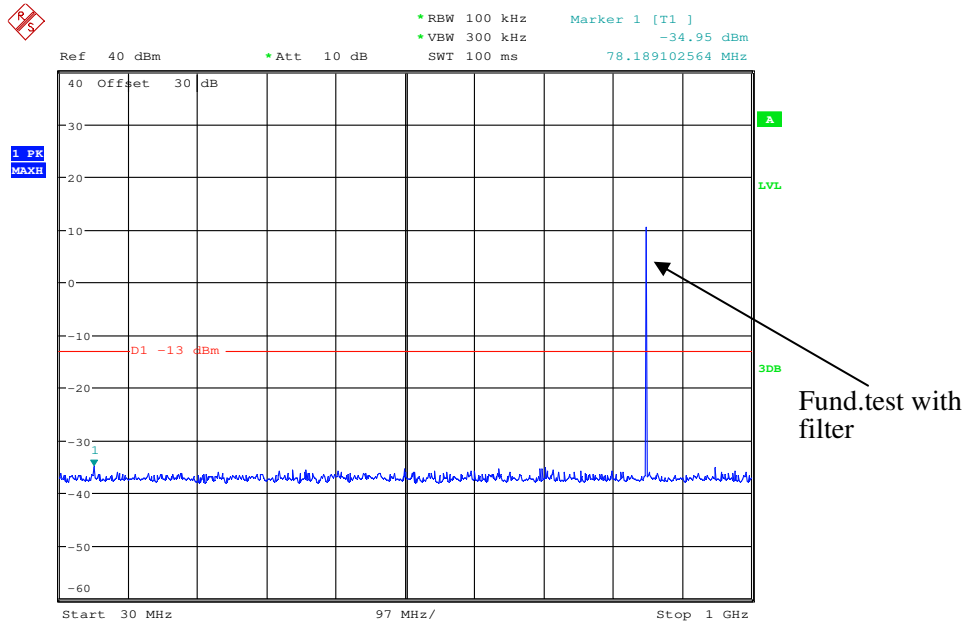
Date: 5.JAN.2018 16:31:22

### 1 GHz – 10 GHz, Channel Spacing 12.5 kHz, 935.0125 MHz



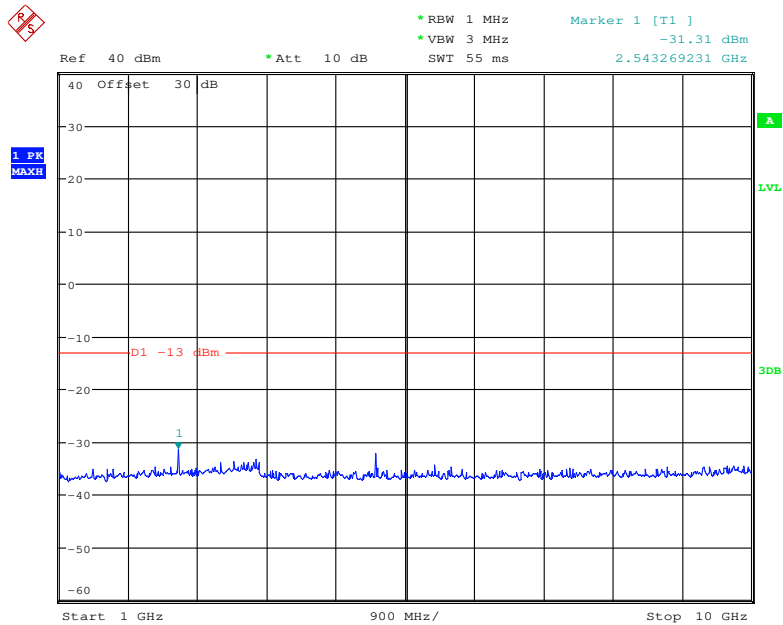
Date: 5.JAN.2018 16:28:26

### 30MHz – 1 GHz, Channel Spacing 25 kHz, 851.0125 MHz



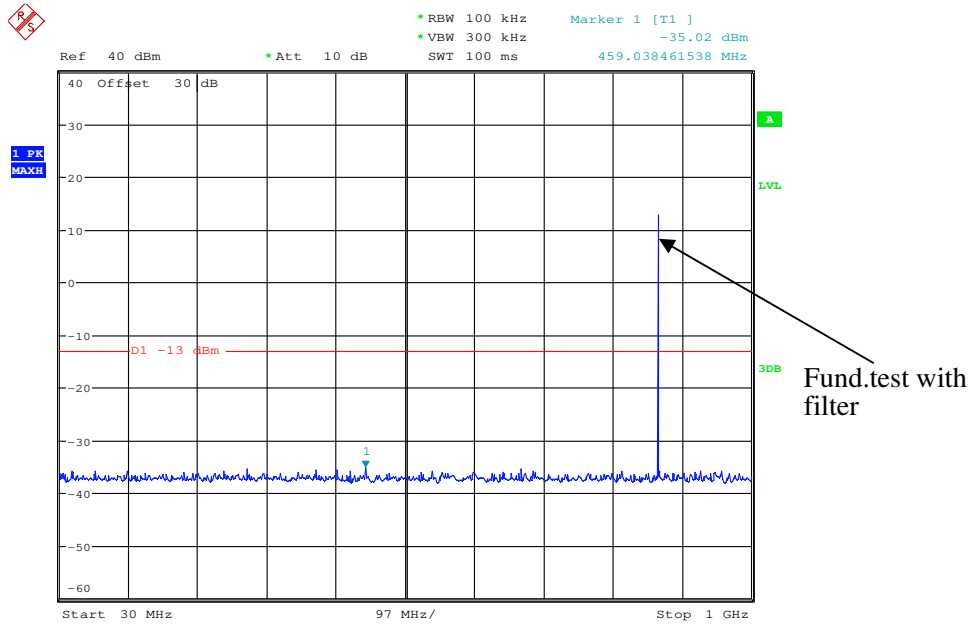
Date: 5.JAN.2018 16:40:17

### 1 GHz – 10 GHz, Channel Spacing 25 kHz, 851.0125 MHz



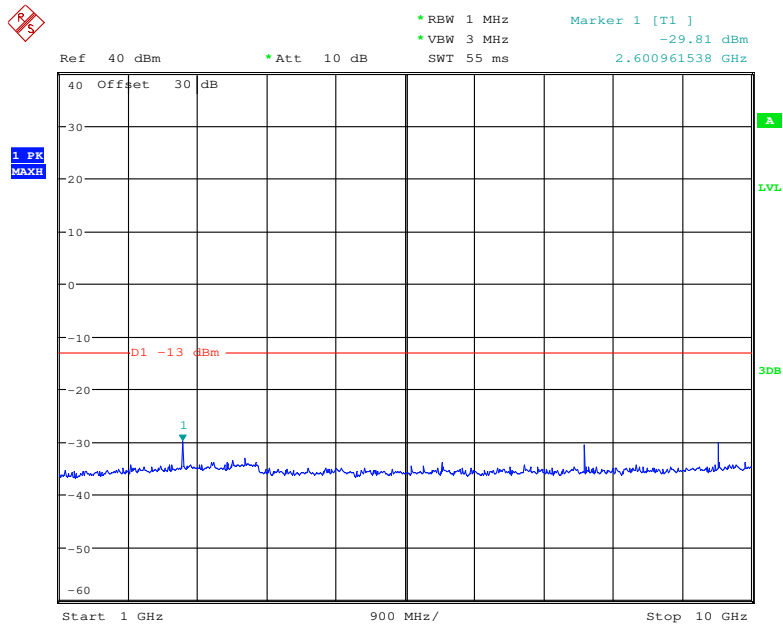
Date: 5.JAN.2018 16:38:12

### 30MHz – 1 GHz, Channel Spacing 25 kHz, 868.9875 MHz



Date: 5.JAN.2018 16:42:11

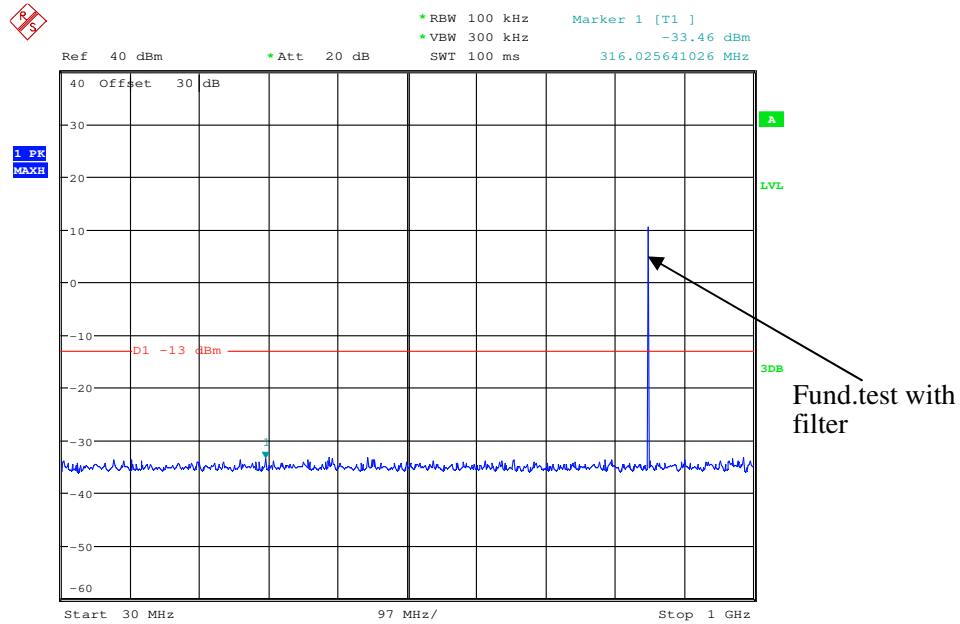
### 1 GHz – 10 GHz, Channel Spacing 25 kHz, 868.9875 MHz



Date: 5.JAN.2018 16:45:59

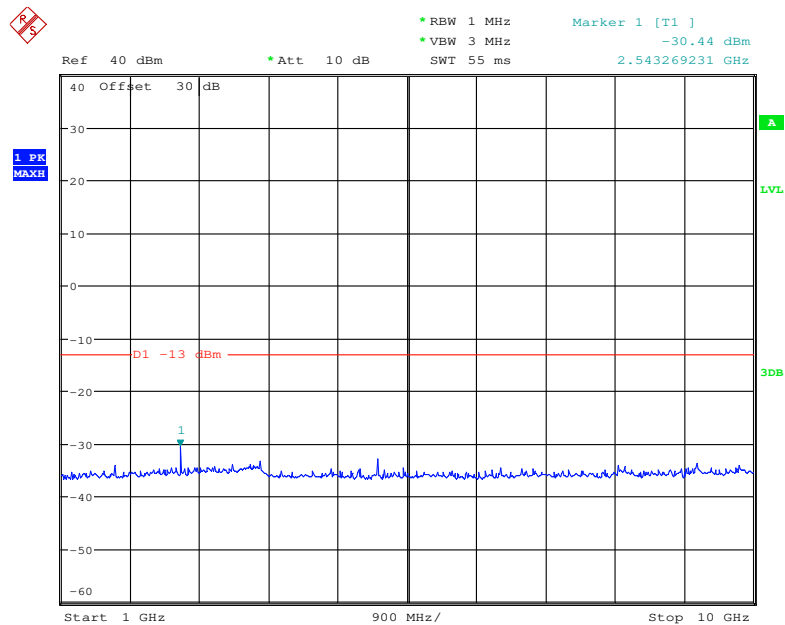
**Digital Modulation:**

**30MHz – 1 GHz, Channel Spacing 12.5 kHz, 851.0125 MHz**



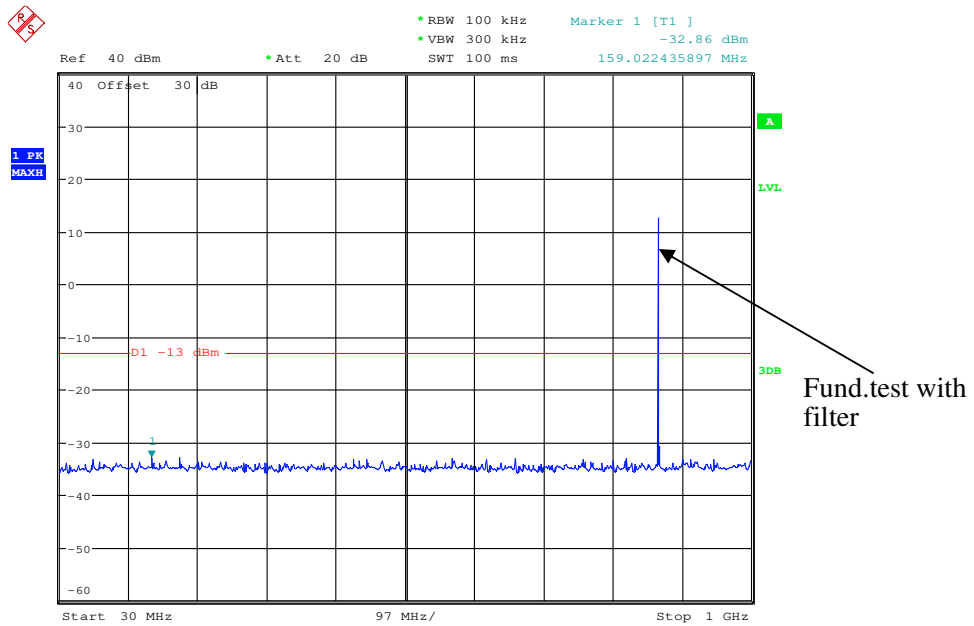
Date: 5.JAN.2018 16:50:05

**1 GHz – 10 GHz, Channel Spacing 12.5 kHz, 851.0125 MHz**



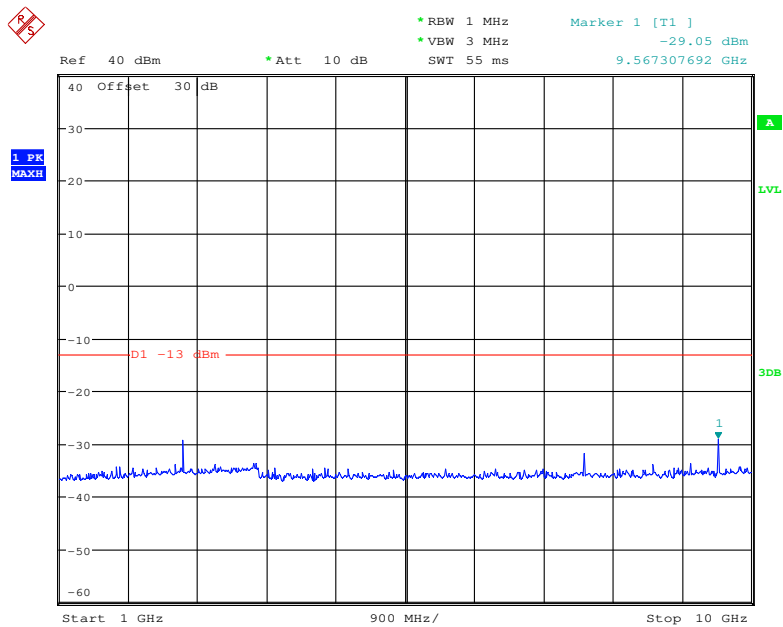
Date: 5.JAN.2018 16:47:57

### 30MHz – 1 GHz, Channel Spacing 12.5 kHz, 868.9875 MHz



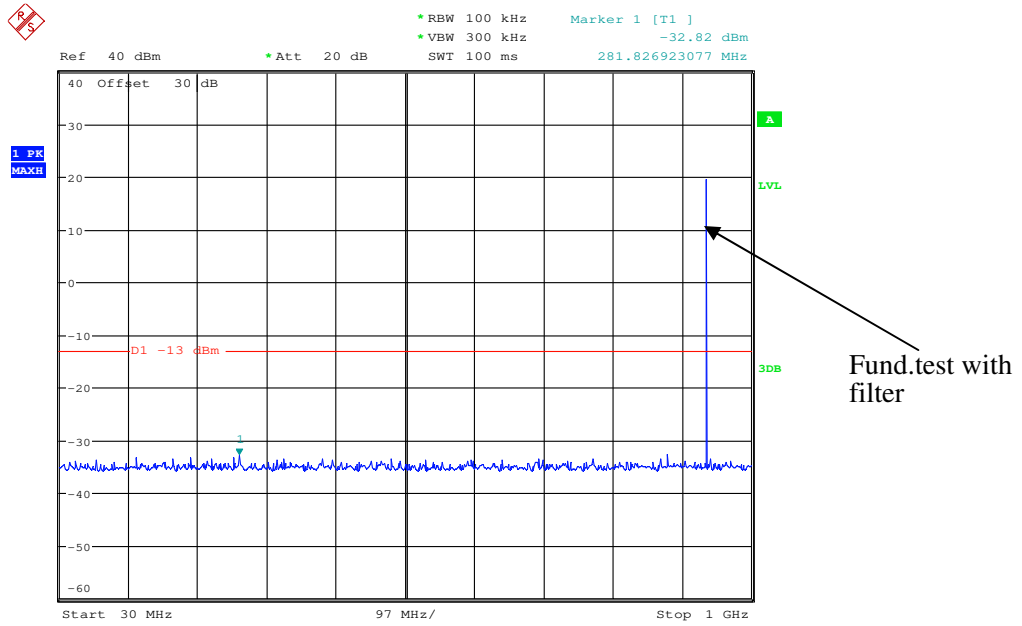
Date: 5.JAN.2018 16:54:03

### 1 GHz – 10 GHz, Channel Spacing 12.5 kHz, 868.9875 MHz



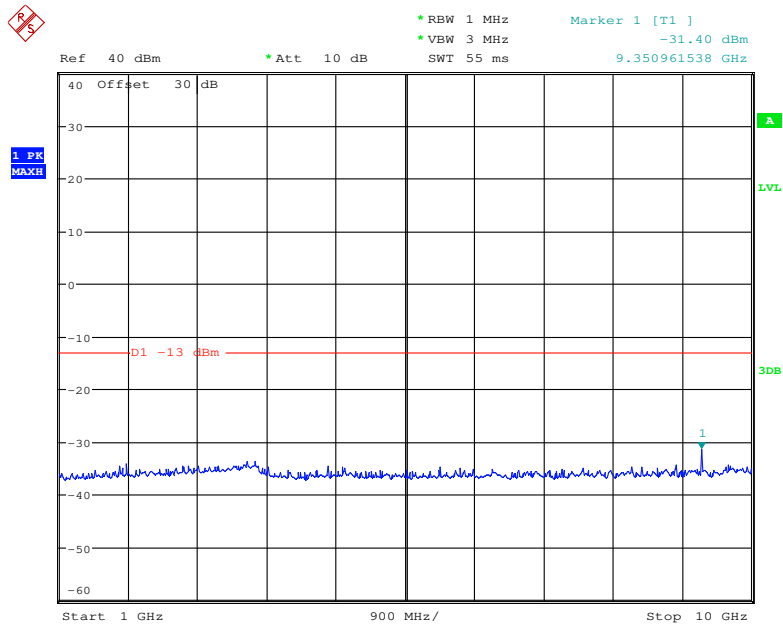
Date: 5.JAN.2018 16:55:55

### 30MHz – 1 GHz, Channel Spacing 12.5 kHz, 935.0125 MHz



Date: 5.JAN.2018 17:00:33

### 1 GHz – 10 GHz, Channel Spacing 12.5 kHz, 935.0125 MHz



Date: 5.JAN.2018 16:58:06

## FCC §2.1053 & §90.210 - RADIATED SPURIOUS EMISSIONS

### Applicable Standard

FCC §2.1053 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 lg (TXpwr in Watts/0.001)-the absolute level

Spurious attenuation limit in dB = 43 + 10 Log<sub>10</sub> (power out in Watts) for EUT.

### Test Data

#### Environmental Conditions

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Rocky Kang on 2017-12-30.*

*Test Mode: Transmitting*



**30MHz - 10GHz:**

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 851.0125 MHz-12.5 kHz										
886.489	40.25	191	2.0	H	-54.8	0.70	0	-55.50	-13	42.50
886.489	41.06	288	1.2	V	-52.9	0.70	0	-53.60	-13	40.60
1702.03	54.76	115	1.3	H	-52.3	1.30	9.10	-44.50	-13	31.5
1702.03	54.29	12	1.4	V	-52.2	1.30	9.10	-44.40	-13	31.4
2553.04	57.11	9	2.4	H	-46.6	2.20	9.40	-39.40	-13	26.4
2553.04	58.79	215	2.2	V	-44.6	2.20	9.40	-37.40	-13	24.4
3404.05	46.8	300	2.2	H	-53.8	1.40	9.70	-45.50	-13	32.5
3404.05	48.97	224	1.2	V	-51.5	1.40	9.70	-43.20	-13	30.2
Analog Modulation 868.9875 MHz-12.5 kHz										
886.489	41.36	194	1.9	H	-53.6	0.70	0	-54.30	-13	41.30
886.489	40.58	103	2.4	V	-53.4	0.70	0	-54.10	-13	41.10
1737.98	56.71	247	1.3	H	-50.4	1.30	9.10	-42.60	-13	29.6
1737.98	55.26	52	2.2	V	-51.2	1.30	9.10	-43.40	-13	30.4
2606.96	59.05	187	1.7	H	-44.7	2.20	9.40	-37.50	-13	24.5
2606.96	61.27	32	1.1	V	-42.1	2.20	9.40	-34.90	-13	21.9
3475.95	46.59	214	1.4	H	-53.9	1.50	9.70	-45.70	-13	32.7
3475.95	48.66	219	1.9	V	-52.6	1.50	9.70	-44.40	-13	31.4
Analog Modulation 935.0125 MHz-12.5 kHz										
886.489	40.36	318	1.0	H	-54.6	0.70	0	-55.30	-13	42.30
886.489	41.26	59	1.5	V	-52.7	0.70	0	-53.40	-13	40.40
1870.03	60.67	173	2.1	H	-43.6	1.30	8.50	-36.40	-13	23.4
1870.03	61.25	97	2.3	V	-43.2	1.30	8.50	-36.00	-13	23
2805.04	53.46	207	1.0	H	-50.3	1.80	9.70	-42.40	-13	29.4
2805.04	52.84	268	1.5	V	-50.6	1.80	9.70	-42.70	-13	29.7
3740.05	47.27	317	2.1	H	-54.1	1.60	9.80	-45.90	-13	32.9
3740.05	49.21	105	2.1	V	-51.6	1.60	9.80	-43.40	-13	30.4

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 851.0125 MHz-25 kHz										
886.489	41.34	50	2.0	H	-53.7	0.70	0	-54.40	-13	41.40
886.489	42.37	135	1.3	V	-51.6	0.70	0	-52.30	-13	39.30
1702.03	55.47	194	1.0	H	-51.6	1.30	9.10	-43.80	-13	30.80
1702.03	53.92	338	1.9	V	-52.6	1.30	9.10	-44.80	-13	31.80
2553.04	57.04	24	2.4	H	-46.7	2.20	9.40	-39.50	-13	26.50
2553.04	58.14	27	1.4	V	-45.2	2.20	9.40	-38.00	-13	25.00
3404.05	46.6	140	1.7	H	-54.0	1.40	9.70	-45.70	-13	32.70
3404.05	49.59	249	1.6	V	-50.9	1.40	9.70	-42.60	-13	29.60
Analog Modulation 868.9875 MHz-25 kHz										
886.489	40.36	71	2.2	H	-54.6	0.70	0	-55.30	-13	42.30
886.489	42.69	138	1.9	V	-51.3	0.70	0	-52.00	-13	39.00
1737.98	57.11	50	1.4	H	-50.0	1.30	9.10	-42.20	-13	29.20
1737.98	55.13	303	1.6	V	-51.3	1.30	9.10	-43.50	-13	30.50
2606.96	59.05	318	2.1	H	-44.7	2.20	9.40	-37.50	-13	24.50
2606.96	60.97	65	1.9	V	-42.4	2.20	9.40	-35.20	-13	22.20
3475.95	46.44	57	1.9	H	-54.1	1.50	9.70	-45.90	-13	32.90
3475.95	48.41	240	2.5	V	-52.9	1.50	9.70	-44.70	-13	31.70
Digital Modulation 851.0125 MHz-12.5 kHz										
886.489	39.86	225	2.3	H	-55.1	0.70	0	-55.80	-13	42.80
886.489	40.12	61	1.8	V	-53.9	0.70	0	-54.60	-13	41.60
1702.03	53.44	296	2.0	H	-53.6	1.30	9.10	-45.80	-13	32.8
1702.03	52.8	325	2.0	V	-53.7	1.30	9.10	-45.90	-13	32.9
2553.04	56.72	153	1.1	H	-47.0	2.20	9.40	-39.80	-13	26.8
2553.04	58.09	33	1.1	V	-45.3	2.20	9.40	-38.10	-13	25.1
3404.05	46.52	20	1.6	H	-54.1	1.40	9.70	-45.80	-13	32.8
3404.05	48.04	278	1.3	V	-52.4	1.40	9.70	-44.10	-13	31.1

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 868.9875 MHz-12.5 kHz										
886.489	40.82	43	1.0	H	-54.2	0.70	0	-54.90	-13	41.90
886.489	41.32	120	1.8	V	-52.7	0.70	0	-53.40	-13	40.40
1737.98	52.39	240	2.0	H	-54.7	1.30	9.10	-46.90	-13	33.9
1737.98	53.76	140	2.0	V	-52.7	1.30	9.10	-44.90	-13	31.9
2606.96	57.42	75	1.1	H	-46.3	2.20	9.40	-39.10	-13	26.1
2606.96	56.66	28	1.3	V	-46.7	2.20	9.40	-39.50	-13	26.5
3475.95	47.41	306	1.5	H	-53.1	1.50	9.70	-44.90	-13	31.9
3475.95	46.41	260	2.4	V	-54.9	1.50	9.70	-46.70	-13	33.7
Digital Modulation 935.0125 MHz-12.5 kHz										
886.489	41.95	20	2.4	H	-53.1	0.70	0	-53.80	-13	40.80
886.489	40.16	237	1.4	V	-53.8	0.70	0	-54.50	-13	41.50
1870.03	63.41	311	1.8	H	-40.9	1.30	8.50	-33.70	-13	20.7
1870.03	61.68	166	1.9	V	-42.8	1.30	8.50	-35.60	-13	22.6
2805.04	51.92	73	2.1	H	-51.9	1.80	9.70	-44.00	-13	31
2805.04	51.22	41	1.1	V	-52.2	1.80	9.70	-44.30	-13	31.3
3740.05	46.98	340	1.3	H	-54.4	1.60	9.80	-46.20	-13	33.2
3740.05	47.69	213	2.1	V	-53.1	1.60	9.80	-44.90	-13	31.9

**Note:**

Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

## **FCC §2.1055 & §90.213 - FREQUENCY STABILITY**

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### **Applicable Standard**

FCC §2.1055 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**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Rocky Kang on 2017-12-30.*

*Test Mode: Transmitting*

**For 12.5 kHz:**

<b>Analog Modulation, Reference Frequency: 851.0125 MHz, Limit: ±1.0 ppm</b>			
<b>Test Environment</b>		<b>Frequency Measure with Time Elapsed</b>	
<b>Temperature (°C)</b>	<b>Voltage Supplied (V<sub>DC</sub>)</b>	<b>Measured Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
Frequency Stability versus Input Temperature			
50	13.60	851.012486	-0.0165
40	13.60	851.012476	-0.0282
30	13.60	851.012469	-0.0364
20	13.60	851.012476	-0.0282
10	13.60	851.012469	-0.0364
0	13.60	851.012453	-0.0552
-10	13.60	851.012477	-0.0270
-20	13.60	851.012469	-0.0364
-30	13.60	851.012469	-0.0364
Frequency Stability versus Input Voltage			
20	15.64	851.012458	-0.0494
20	11.56	851.012462	-0.0447

<b>Digital Modulation, Reference Frequency: 851.0125 MHz, Limit: ±1.0 ppm</b>			
<b>Test Environment</b>		<b>Frequency Measure with Time Elapsed</b>	
<b>Temperature (°C)</b>	<b>Voltage Supplied (V<sub>DC</sub>)</b>	<b>Measured Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
Frequency Stability versus Input Temperature			
50	13.60	851.012484	-0.0188
40	13.60	851.012475	-0.0294
30	13.60	851.012468	-0.0376
20	13.60	851.012476	-0.0282
10	13.60	851.012464	-0.0423
0	13.60	851.012453	-0.0552
-10	13.60	851.012474	-0.0306
-20	13.60	851.012462	-0.0447
-30	13.60	851.012467	-0.0388
Frequency Stability versus Input Voltage			
20	15.64	851.012452	-0.0564
20	11.56	851.012445	-0.0646

<b>Analog Modulation, Reference Frequency: 868.9875 MHz, Limit: ±1.5 ppm</b>			
<b>Test Environment</b>		<b>Frequency Measure with Time Elapsed</b>	
<b>Temperature (°C)</b>	<b>Voltage Supplied (V<sub>DC</sub>)</b>	<b>Measured Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
Frequency Stability versus Input Temperature			
50	13.60	868.987481	-0.0219
40	13.60	868.987495	-0.0058
30	13.60	868.987435	-0.0748
20	13.60	868.987465	-0.0403
10	13.60	868.987418	-0.0944
0	13.60	868.987459	-0.0472
-10	13.60	868.987484	-0.0184
-20	13.60	868.987438	-0.0713
-30	13.60	868.987465	-0.0403
Frequency Stability versus Input Voltage			
20	15.64	868.987451	-0.0564
20	11.56	868.987447	-0.0610

<b>Digital Modulation, Reference Frequency: 868.9875 MHz, Limit: ±1.5 ppm</b>			
<b>Test Environment</b>		<b>Frequency Measure with Time Elapsed</b>	
<b>Temperature (°C)</b>	<b>Voltage Supplied (V<sub>DC</sub>)</b>	<b>Measured Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
Frequency Stability versus Input Temperature			
50	13.60	868.987477	-0.0265
40	13.60	868.987487	-0.0150
30	13.60	868.987465	-0.0403
20	13.60	868.987444	-0.0644
10	13.60	868.987412	-0.1013
0	13.60	868.987454	-0.0529
-10	13.60	868.987483	-0.0196
-20	13.60	868.987438	-0.0713
-30	13.60	868.987464	-0.0414
Frequency Stability versus Input Voltage			
20	15.64	868.987449	-0.0587
20	11.56	868.987456	-0.0506

<b>Analog Modulation, Reference Frequency: 935.0125 MHz, Limit: ±0.1 ppm</b>			
<b>Test Environment</b>		<b>Frequency Measure with Time Elapsed</b>	
<b>Temperature (°C)</b>	<b>Voltage Supplied (V<sub>DC</sub>)</b>	<b>Measured Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
Frequency Stability versus Input Temperature			
50	13.60	935.012475	-0.0267
40	13.60	935.012475	-0.0267
30	13.60	935.012468	-0.0342
20	13.60	935.012467	-0.0353
10	13.60	935.012448	-0.0556
0	13.60	935.012477	-0.0246
-10	13.60	935.012469	-0.0332
-20	13.60	935.012477	-0.0246
-30	13.60	935.012474	-0.0278
Frequency Stability versus Input Voltage			
20	15.64	935.012470	-0.0321
20	11.56	935.012463	-0.0396

<b>Digital Modulation, Reference Frequency: 935.0125 MHz, Limit: ±0.1 ppm</b>			
<b>Test Environment</b>		<b>Frequency Measure with Time Elapsed</b>	
<b>Temperature (°C)</b>	<b>Voltage Supplied (V<sub>DC</sub>)</b>	<b>Measured Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
Frequency Stability versus Input Temperature			
50	13.60	935.012457	-0.0460
40	13.60	935.012472	-0.0299
30	13.60	935.012447	-0.0567
20	13.60	935.012475	-0.0267
10	13.60	935.012452	-0.0513
0	13.60	935.012471	-0.0310
-10	13.60	935.012464	-0.0385
-20	13.60	935.012472	-0.0299
-30	13.60	935.012471	-0.0310
Frequency Stability versus Input Voltage			
20	15.64	935.012443	-0.0610
20	11.56	935.012456	-0.0471

**For 25 kHz:**

<b>Analog Modulation, Reference Frequency: 851.0125 MHz, Limit: ±1.0 ppm</b>			
<b>Test Environment</b>		<b>Frequency Measure with Time Elapsed</b>	
<b>Temperature (°C)</b>	<b>Voltage Supplied (V<sub>DC</sub>)</b>	<b>Measured Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
Frequency Stability versus Input Temperature			
50	13.60	851.012476	-0.0188
40	13.60	851.012467	-0.0294
30	13.60	851.012469	-0.0376
20	13.60	851.012466	-0.0282
10	13.60	851.012475	-0.0423
0	13.60	851.012469	-0.0552
-10	13.60	851.012439	-0.0306
-20	13.60	851.012477	-0.0564
-30	13.60	851.012476	-0.0646
Frequency Stability versus Input Voltage			
20	15.64	851.012449	-0.0599
20	11.56	851.012436	-0.0752

<b>Analog Modulation, Reference Frequency: 868.9875 MHz, Limit: ±1.5 ppm</b>			
<b>Test Environment</b>		<b>Frequency Measure with Time Elapsed</b>	
<b>Temperature (°C)</b>	<b>Voltage Supplied (V<sub>DC</sub>)</b>	<b>Measured Frequency (MHz)</b>	<b>Frequency Error (ppm)</b>
Frequency Stability versus Input Temperature			
50	13.60	868.987439	-0.0702
40	13.60	868.987453	-0.0541
30	13.60	868.987459	-0.0472
20	13.60	868.987468	-0.0368
10	13.60	868.987469	-0.0357
0	13.60	868.987457	-0.0495
-10	13.60	868.987466	-0.0391
-20	13.60	868.987459	-0.0472
-30	13.60	868.987418	-0.0944
Frequency Stability versus Input Voltage			
20	15.64	868.987451	-0.0564
20	11.56	868.987457	-0.0495

**\*\*\*\*\* END OF REPORT \*\*\*\*\***