

**TECHNICAL REPORT FOR TYPE ACCEPTANCE
OF SMART COMMUNICATIONS, LTD.**

MODEL : SC-280A, SC-281A

FCC ID : O78SC280A

EMI TEST REPORT

Date of test : May 11, 2007

**UL Japan, Inc.
YAMAKITA EMC LAB.**

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TECHNICAL DATA – SC- 280 A, SC- 281 A Narrow band

A. RF POWER OUTPUT

1. Power measured using test set-up Figure 1.
 Primary power 7.2 VDC at battery input connector.
2. Power Data for 136.0125MHz to 155.9875MHz @ 5W is presented in Paragraph 1.
3. Power Data for 136.0125MHz to 155.9875MHz @ 1W is presented in Paragraph 2.

B. FREQUENCY STABILITY

1. a. Frequency stability with varying temperature. See Figure 1 for test set-up.
 b. Data is presented on Paragraph 3 for Standard Primary Input Voltage of 7.2 VDC maintained throughout entire test.
2. a. Frequency stability with Primary Input Voltage. See Figure 1 for test set-up.
 b. Data is presented on Paragraph 4 for Standard Temperature of 25 degrees Celsius maintained throughout entire test.

C. OCCUPIED BANDWIDTH

1. a. A spectrum analyzer was used to determine the occupied bandwidth.
 See Figure 1 for test set-up.
- b. Data is presented on Paragraph 5 to Paragraph 8 for Standard primary Input Voltage of 7.2 VDC maintained throughout entire test. The carrier and all detectable sidebands were displayed on the spectrum analyzer and pertinent data concerning amplitude and frequency were read from the screen.
- c. un modulated : Data measured at 146.0125MHz. (see Paragraph 5)
- d. Input to transmitter audio circuits: 2500Hz sine wave at a level 16dB greater than that necessary to produce 50% modulation. Data measured at 146.0125MHz and is typical of all frequencies. (see Paragraph 6)
- e. Input to transmitter audio circuits: 2500Hz sine wave at a level 16dB greater than that necessary to produce 50% modulation with CTCSS(250.3Hz).
 Data measured at 146.0125MHz and is typical of all frequencies.
 (see Paragraph 7)
- f. Input to transmitter audio circuits: 2500Hz sine wave at a level 16dB greater than that necessary to produce 50% modulation with DCS(023).
 Data measured at 146.0125MHz and is typical of all frequencies.
 (see Paragraph 8)

D. MODULATION CHARACTERISTICS

1. Modulation Deviation

- a. Measured using test set-up, see Figure 1.
- b. Primary Input Voltage of 7.2 VDC at battery input connector.
- c. Data (Positive peak) is presented in Paragraph 9
- d. Data (Negative peak) is presented in Paragraph 10.
- e. Data (Positive peak) with CTCSS (250.3Hz) is presented in Paragraph 11.
- f. Data (Negative peak) with CTCSS (250.3Hz) is presented in Paragraph 12.
- g. Data (Positive peak) with DCS (023) is presented in Paragraph 13.
- h. Data (Negative peak) with DCS (023) is presented in Paragraph 14.

2. Transmitter Audio Frequency Response

- a. Measured using test set-up, see Figure 1.
- b. Primary Input Voltage of 7.2 VDC at battery input connector.
Ref = 1 kHz tone response at +-1.5 kHz deviation. Curve was taken maintaining constant +- 1.5 kHz deviation.
- c. Data is presented in Paragraph 15.

3. Low-Pass Filter Response

- a. Measured using test set-up, see Figure 1.
- b. Primary Input Voltage of 7.2 VDC at battery input connector.
Input 1 kHz tone at a level 20dB greater than that required for 3 kHz deviation
The response at 1 kHz tone = 0dB. Curve was taken maintaining constant input at modulation sensitivity. Output of low-pass filter was monitored using Audio Analyzer
- c. Data is presented in Paragraph 16.

E. CONDUCTED SPURIOUS EMISSION

1. Conducted spurious data was measured at 25 degrees Celsius, 7.2 VDC applied at battery input connector external power input and using external antenna jack.
See Figure 1 for test set-up.
2. Data for 136.0125MHz @ 5W is presented in Paragraph 17.
3. Data for 146.0125MHz @ 5W is presented in Paragraph 18.
4. Data for 155.9875MHz @ 5W is presented in Paragraph 19.
5. Data for 136.0125MHz @ 1W is presented in Paragraph 20.
6. Data for 146.0125MHz @ 1W is presented in Paragraph 21.

7. Data for 155.9875MHz @ 1W is presented in Paragraph 22.
8. Data for 146.0125MHz @ Receiver is presented in Paragraph 23.

F. TRANSIENT BEHAVIOR

- a. Measured using test set-up, see Figure 1.
- b. Primary Input Voltage of 7.2 VDC at battery input connector.
- c. Data is presented in Paragraph 24.

G. RADIATED SPURIOUS EMISSION

1. Radiated spurious data was measured at 20degrees Celsius, 7.2 VDC applied at battery input and using external antenna jack into a 50 ohm non-radiating load.
The substitution method found in TIA/EIA 603 procedure.
2. Data for 136.0125MHz @ 5W is presented in Paragraph 25.
3. Data for 146.0125MHz @ 5W is presented in Paragraph 26.
4. Data for 155.9875MHz @ 5W is presented in Paragraph 27.

H. RADIATED SPURIOUS EMISSION (Receive)

1. Data for 136.0125MHz to 155.9875MHz @ Receiver is presented in Sheet 1.

(EMI TEST REPORT)

I. PARAGRAPHS

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7. Occupied Bandwidth, 2500Hz Sine Wave with CTCSS (250.3Hz)
8. Occupied Bandwidth, 2500Hz Sine Wave with DCS (023)
9. Deviation vs. Audio input Level - Positive peak
10. Deviation vs. Audio input Level - Negative peak
11. Deviation vs. Audio input Level with CTCSS (250.3Hz) - Positive peak
12. Deviation vs. Audio input Level with CTCSS (250.3Hz) - Negative peak
13. Deviation vs. Audio input Level with DCS (023) - Positive peak
14. Deviation vs. Audio input Level with DCS (023) -Negative peak
15. Transmitter Audio Frequency Response
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17. Conducted Spurious Emissions, 136.0125MHz @ 5W
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19. Conducted Spurious Emissions, 155.9875MHz @ 5W
20. Conducted Spurious Emissions, 136.0125MHz @ 1W
21. Conducted Spurious Emissions, 146.0125MHz @ 1W
22. Conducted Spurious Emissions, 155.9875MHz @ 1W
23. Conducted Spurious Emissions, Receiver
24. Transient Behavior
25. Radiated Spurious Emissions, 136.0125MHz @ 5W
26. Radiated Spurious Emissions, 146.0125MHz @ 5W
27. Radiated Spurious Emissions, 155.9875MHz @ 5W

Sheet 1. Radiated Spurious Emissions, Receiver

J. FIGURE

1. TEST SET-UP

TECHNICAL DATA

Model Name		:	SC-280A, SC-281A	
Sample Number		:	Sample 1	
Specification is Referenced		:	EIA/TIA-603C	
Emission Type		:	11K0F3E	
Channel Spacing		:	12.5	(kHz)
Description		:	Handheld	
Mode		:	FM	
Frequency Range	TX	:	136.000 - 156.000	(MHz)
	RX	:	136.000 - 156.000	(MHz)
Test Voltage	Normal	:	7.2	(V)
	Extreme	:	6.12	(7.2-15%) (V)
		:	8.28	(7.2+15%) (V)
Temperature	Normal	:	25	(°C)
	Extreme	:	-30 - +60	(°C)
Test Frequency	TX	:	136.0125	(MHz)
	RX	:	136.0125	(MHz)
	TX	:	146.0125	(MHz)
	RX	:	146.0125	(MHz)
	TX	:	155.9875	(MHz)
	RX	:	155.9875	(MHz)
1st IF	RX	:	44.95	(MHz)
2nd IF	RX	:	455	(kHz)
Microphone Impedance		:	2000	(Ω)
Speaker Impedance		:	8	(Ω)
Rated RF Power	HIGH	:	5	(W)
	LOW	:	1	(W)
Test Operator		:	K.Atсутa	
Test Date	Start	:	2007/5/1	
	Finish	:	2007/5/17	

Carrier Frequency Stability - Temperature Variation

SAMPLE1

146.013

Temperature[°C]	Measured	Frequency error[Hz]	ppm	Upper Limit	Lower Limit
-30	146.01269	190	0.41	2.50	-2.50
-20	146.01276	260	0.56	2.50	-2.50
-10	146.01265	150	0.32	2.50	-2.50
0	146.01255	50	0.11	2.50	-2.50
10	146.01252	20	0.04	2.50	-2.50
25	146.01250	0	0.00	2.50	-2.50
40	146.01247	-30	-0.06	2.50	-2.50
50	146.01241	-90	-0.19	2.50	-2.50
60	146.01239	-110	-0.24	2.50	-2.50

Audio Frequency Response

Frequency[Hz]	Measured SAMPLE1	Upper Limit	Lower Limit
100			
250	-17.60		
300	-14.11	-9.46	-17.89
400	-9.93	-6.96	-12.90
500	-7.17	-5.02	-9.02
700	-3.45	-2.10	-6.10
1000	0.00	1.00	-3.00
1500	3.70	4.52	0.52
2000	6.15	7.02	3.02
2500	7.72	8.96	4.96
3000	8.12	10.54	4.96
5000	-10.42		

Audio LPF Response

AF[kHz]	Measured SAMPLE1	Limit
1000	0.00	0.00
1500	-0.60	0.00
2000	-1.10	0.00
2500	-1.80	0.00
3000	-2.66	0.00
4000	-9.60	-7.50
5000	-18.75	-13.31
7000	-37.20	-22.08
8000	-41.95	-25.56
15000		-41.94
20000		-50.00
100000		-50.00

Modulation Limiting

Carrier

SAMPLE1

INPUT		f=300Hz		f=1000Hz		f=3000Hz		Limit
V[mV]	[dB]	Positive Peak	Negative Peak	Positive Peak	Negative Peak	Positive Peak	Negative Peak	
1.5	-20	0.06	0.06	0.17	0.17	0.40	0.38	2.5
4.7	-10	0.12	0.12	0.46	0.46	1.11	1.11	2.5
7.5	-6	0.16	0.17	0.72	0.71	1.50	1.50	2.5
10.6	-3	0.21	0.22	0.99	1.00	1.59	1.59	2.5
15.0	0	0.30	0.30	1.40	1.40	1.63	1.63	2.5
21.2	3	0.41	0.41	1.93	1.92	1.65	1.65	2.5
29.9	6	0.55	0.57	2.02	2.02	1.66	1.65	2.5
47.4	10	0.86	0.88	2.09	2.10	1.66	1.66	2.5
75.2	14	1.35	1.35	2.15	2.16	1.66	1.66	2.5
94.6	16	1.69	1.69	2.15	2.15	1.66	1.66	2.5
150.0	20	1.96	1.96	2.23	2.18	1.66	1.66	2.5
474.3	30	2.13	2.30	2.24	2.21	1.68	1.69	2.5

Modulation Limiting

with CTCSS 250.3Hz

SAMPLE1

INPUT		f=300Hz		f=1000Hz		f=3000Hz		Limit
V[mV]	[dB]	Positive Peak	Negative Peak	Positive Peak	Negative Peak	Positive Peak	Negative Peak	
1.5	-20	0.41	0.41	0.51	0.50	0.71	0.70	2.5
4.7	-10	0.46	0.46	0.78	0.78	1.41	1.41	2.5
7.5	-6	0.50	0.50	0.98	0.97	1.71	1.71	2.5
10.6	-3	0.55	0.56	1.26	1.27	1.77	1.77	2.5
15.0	0	0.62	0.62	1.58	1.59	1.80	1.80	2.5
21.2	3	0.71	0.71	2.03	2.02	1.81	1.83	2.5
29.9	6	0.85	0.86	2.12	2.13	1.83	1.83	2.5
47.4	10	1.15	1.12	2.18	2.16	1.83	1.84	2.5
75.2	14	1.54	1.55	2.25	2.26	1.83	1.84	2.5
94.6	16	1.84	1.84	2.30	2.26	1.83	1.84	2.5
150.0	20	2.08	2.08	2.27	2.27	1.83	1.84	2.5
474.3	30	2.20	2.30	2.30	2.30	1.84	1.86	2.5

Modulation Limiting

with DCS 023

SAMPLE1

INPUT		f=300Hz		f=1000Hz		f=3000Hz		Limit
V[mV]	[dB]	Positive Peak	Negative Peak	Positive Peak	Negative Peak	Positive Peak	Negative Peak	
1.5	-20	0.50	0.49	0.56	0.62	0.78	0.77	2.5
4.7	-10	0.52	0.51	0.83	0.86	1.46	1.48	2.5
7.5	-6	0.54	0.57	1.06	1.04	1.72	1.74	2.5
10.6	-3	0.62	0.62	1.31	1.32	1.82	1.84	2.5
15.0	0	0.71	0.71	1.62	1.65	1.84	1.89	2.5
21.2	3	0.80	0.79	2.10	2.13	1.86	1.87	2.5
29.9	6	0.96	0.93	2.16	2.16	1.86	1.90	2.5
47.4	10	1.15	1.10	2.23	2.28	1.87	1.90	2.5
75.2	14	1.55	1.61	2.28	2.29	1.87	1.90	2.5
94.6	16	1.85	1.91	2.33	2.29	1.89	1.90	2.5
150.0	20	2.09	2.12	2.35	2.32	1.89	1.90	2.5
474.3	30	2.22	2.35	2.36	2.32	1.89	1.90	2.5

Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 11K0F3E
Channel Spacing 12.5[kHz]

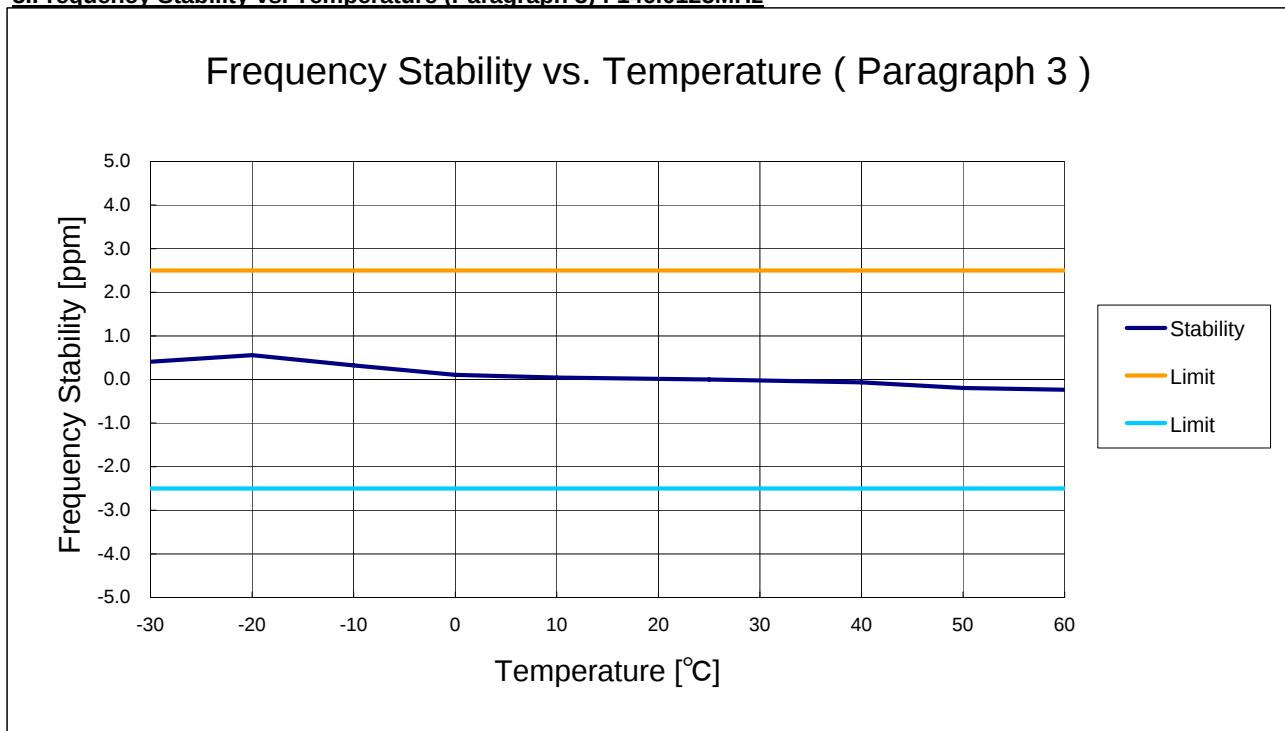
1. RF Power Output @5W (Paragraph 1)

Carrier Frequency [MHz]	RF Power Output [W]	Final D.C. Input Current [A]	D.C. Input Voltage [V]	D.C. Input Power [W]
136.0125	4.98	1.92	7.20	13.82
146.0125	5.00	1.68	7.20	12.10
155.9875	5.00	1.72	7.20	12.38

2. RF Power Output @1W (Paragraph 2)

Carrier Frequency [MHz]	RF Power Output [W]	Final D.C. Input Current [A]	D.C. Input Voltage [V]	D.C. Input Power [W]
136.0125	0.99	0.89	7.20	6.41
146.0125	1.00	0.77	7.20	5.54
155.9875	1.00	0.76	7.20	5.47

3.Frequency Stability vs. Temperature (Paragraph 3) : 146.0125MHz

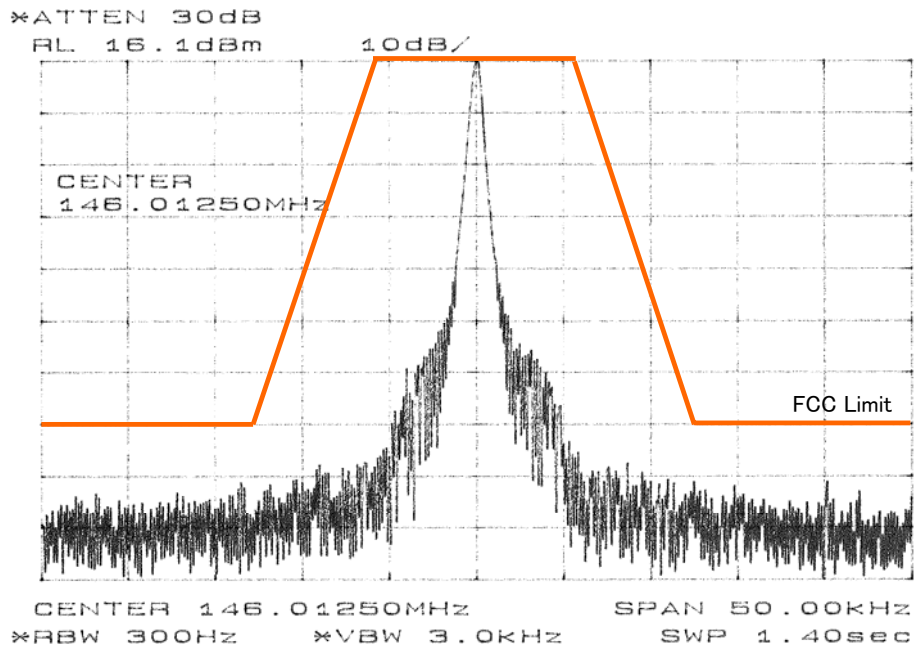


4. Frequency Stability vs. Voltage (Paragraph 4)

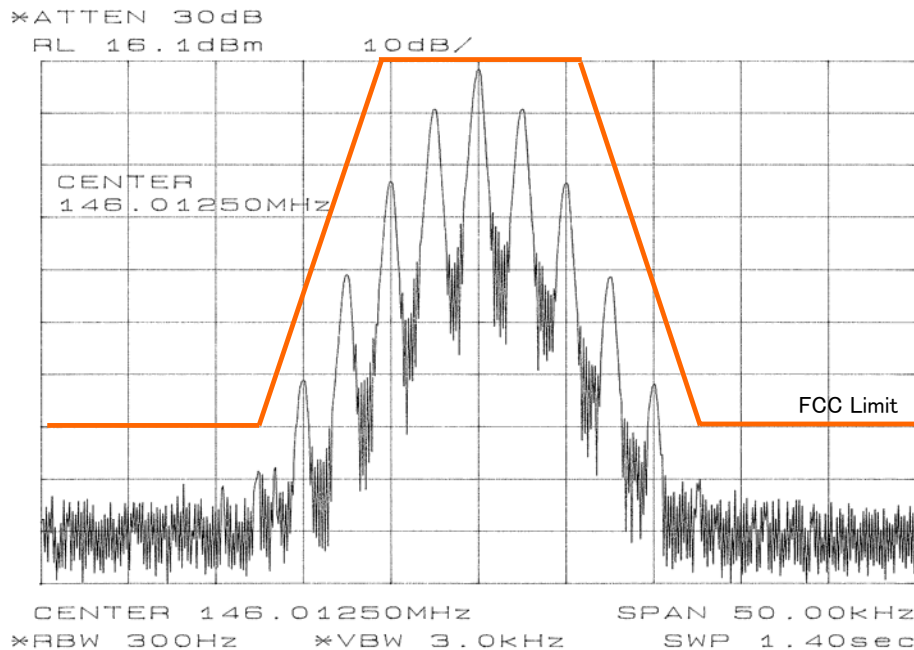
Carrier Frequency [MHz]	STV [%]	Voltage [V]	Change in Frequency		
			[MHz]	[Hz]	[ppm]
146.0125	100	7.20	146.01249	-10	-0.07
	85	6.12	146.01249	-10	-0.07
	115	8.28	146.01249	-10	-0.07

Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 11K0F3E
Channel Spacing 12.5[kHz]
Frequency 146.0125[MHz]

5. Occupied Bandwidth unmodulated (Paragraph 5)

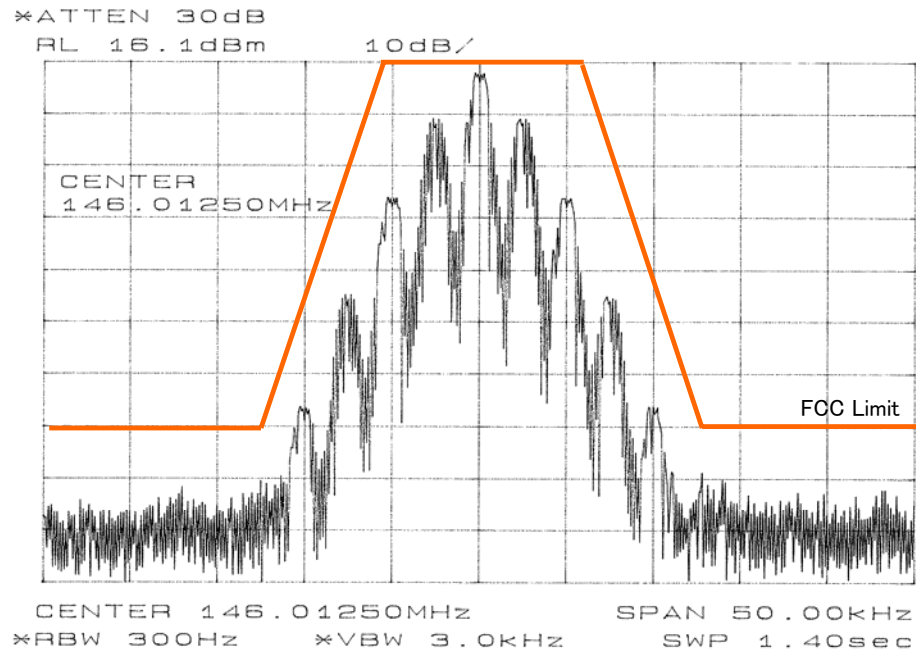


6. Occupied Bandwidth 2500Hz Sine Wave (Paragraph 6)

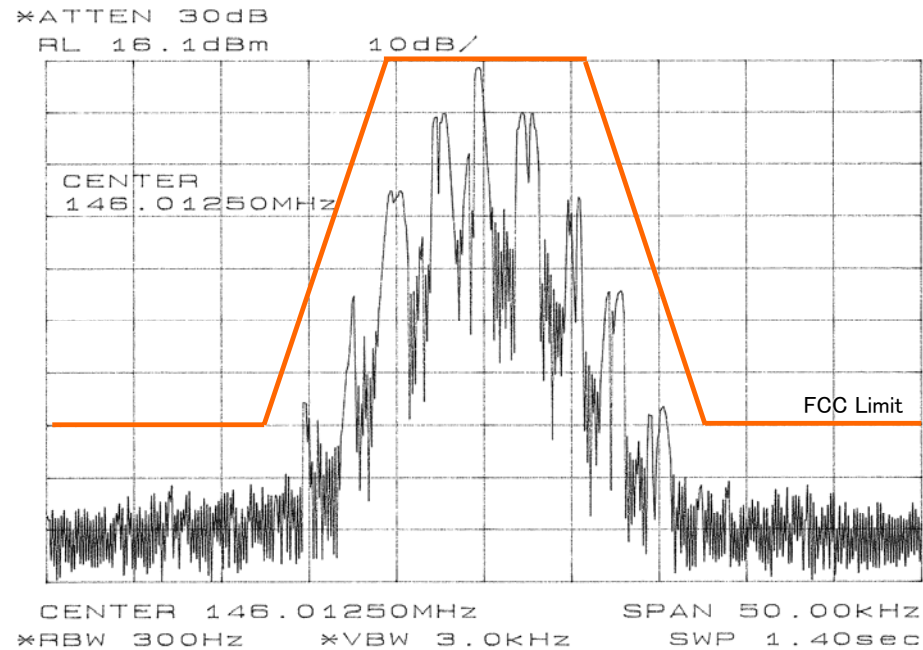


Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 11K0F3E
Channel Spacing 12.5[kHz]
Frequency 146.0125[MHz]

7. Occupied Bandwidth 2500Hz Sine Wave with CTCSS(250.3Hz) (Paragraph 7)



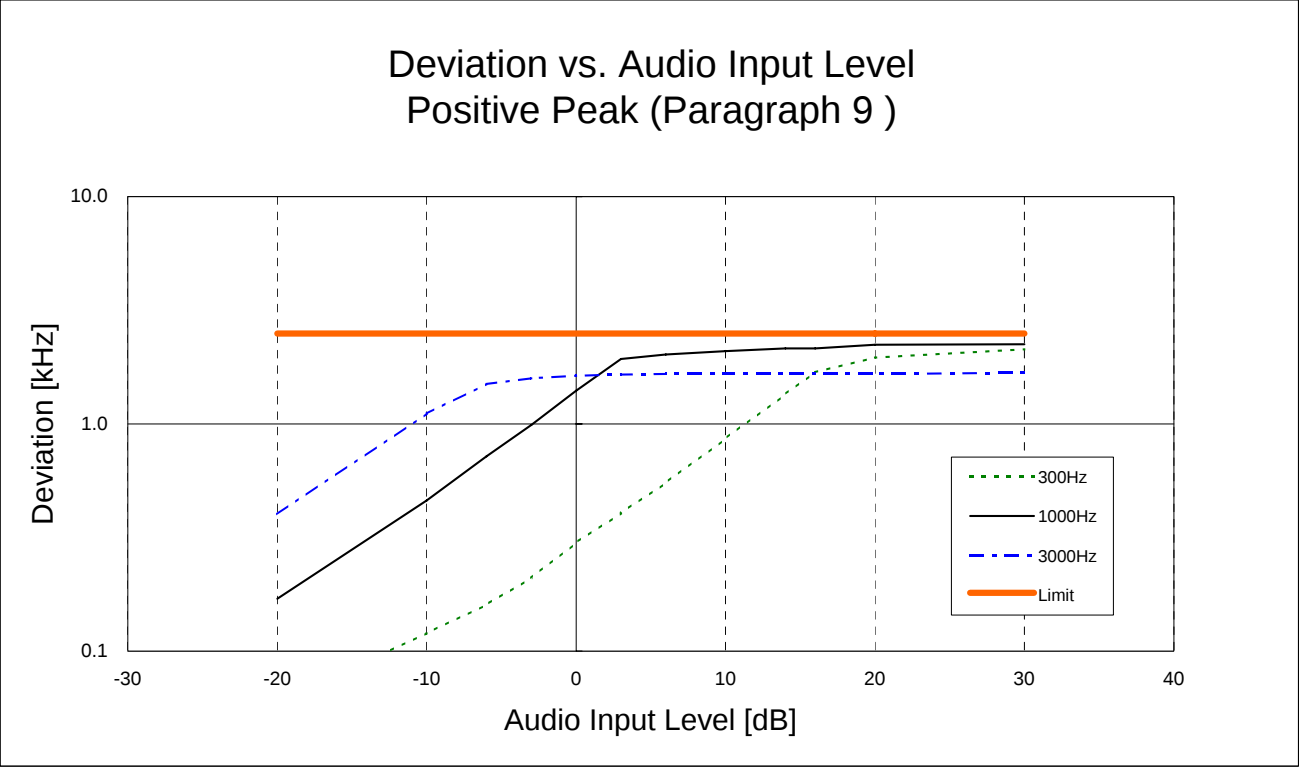
8. Occupied Bandwidth 2500Hz Sine Wave with DCS(023) (Paragraph 8)



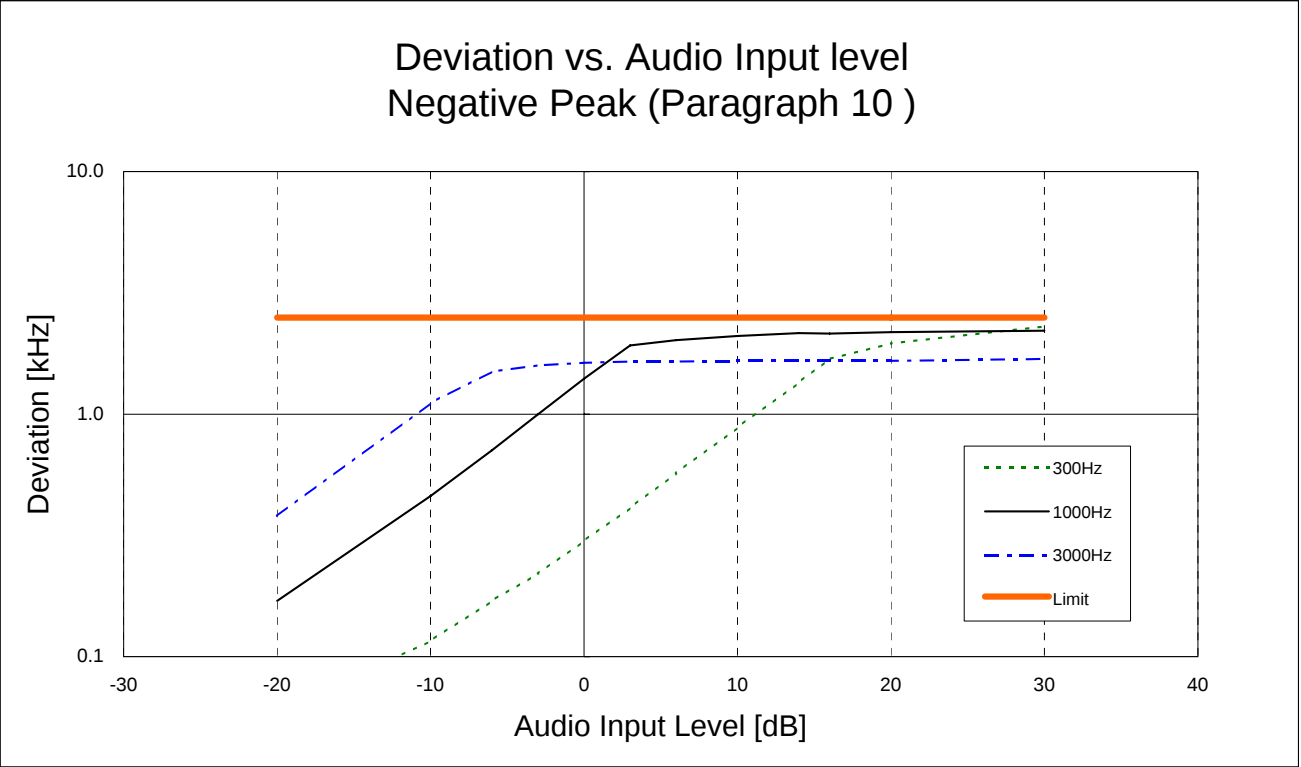
Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 11K0F3E
Channel Spacing 12.5[kHz]
Frequency 146.0125[MHz]

0dB =15.0[mV]

9.Deviation vs. Audio Input Level (Paragraph 9)



10.Deviation vs. Audio Input Level (Paragraph 10)

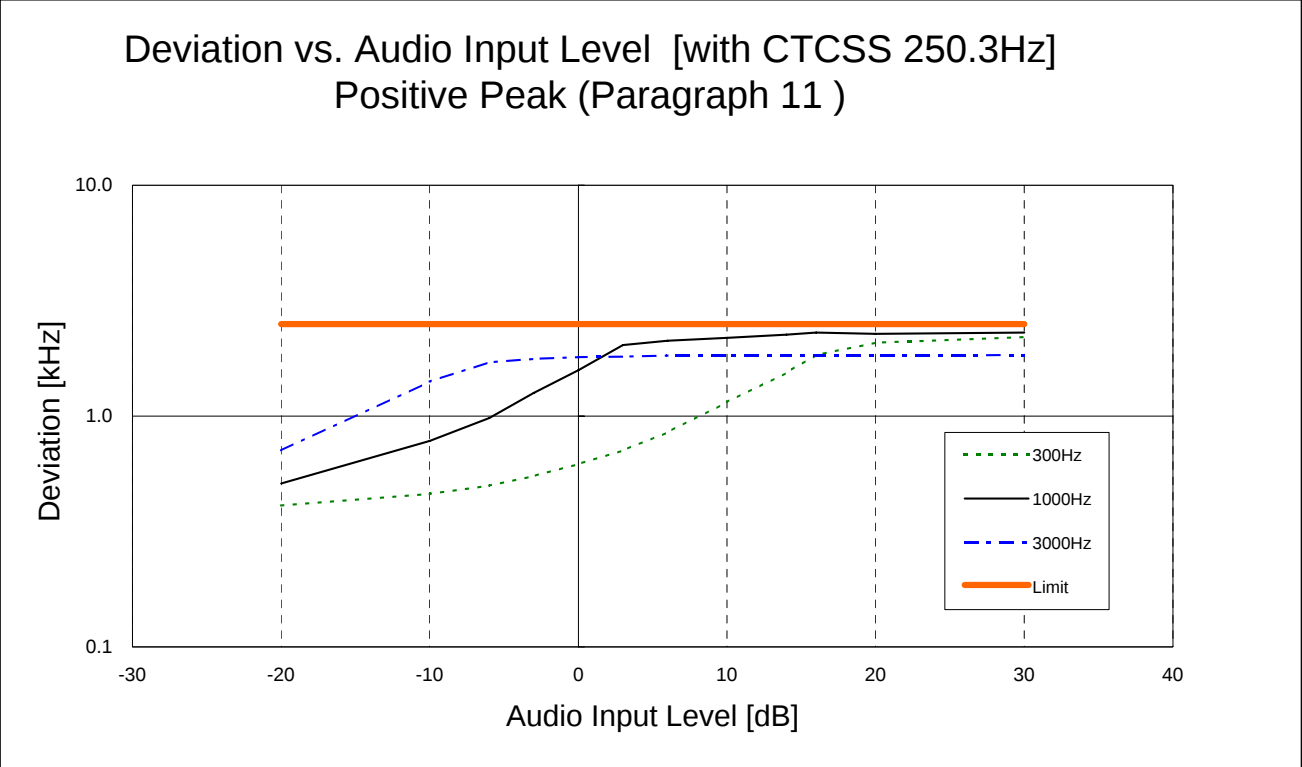


Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 11K0F3E
Channel Spacing 12.5[kHz]
Frequency 146.0125[MHz]

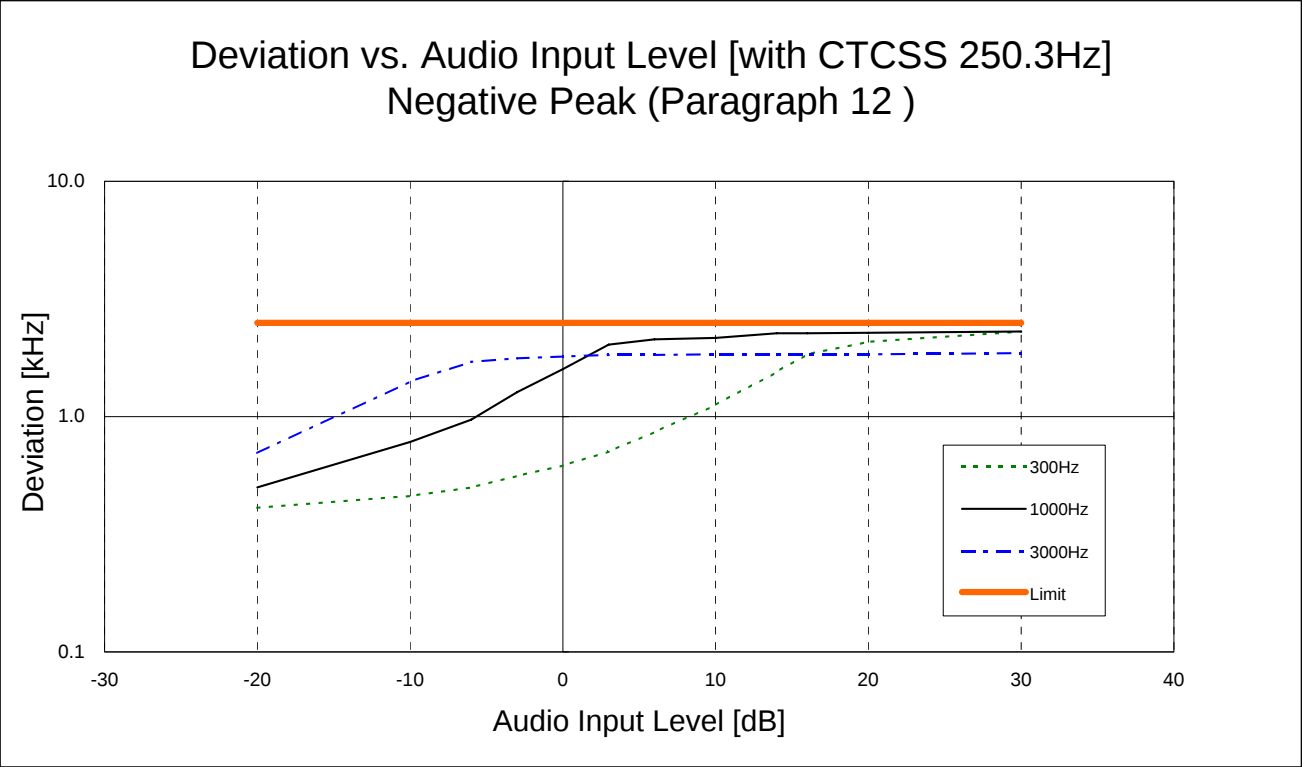
e 5 (V1_Narrow)

0dB =15.0[mV]

11.Deviation vs. Audio Input Level (Paragraph 11)



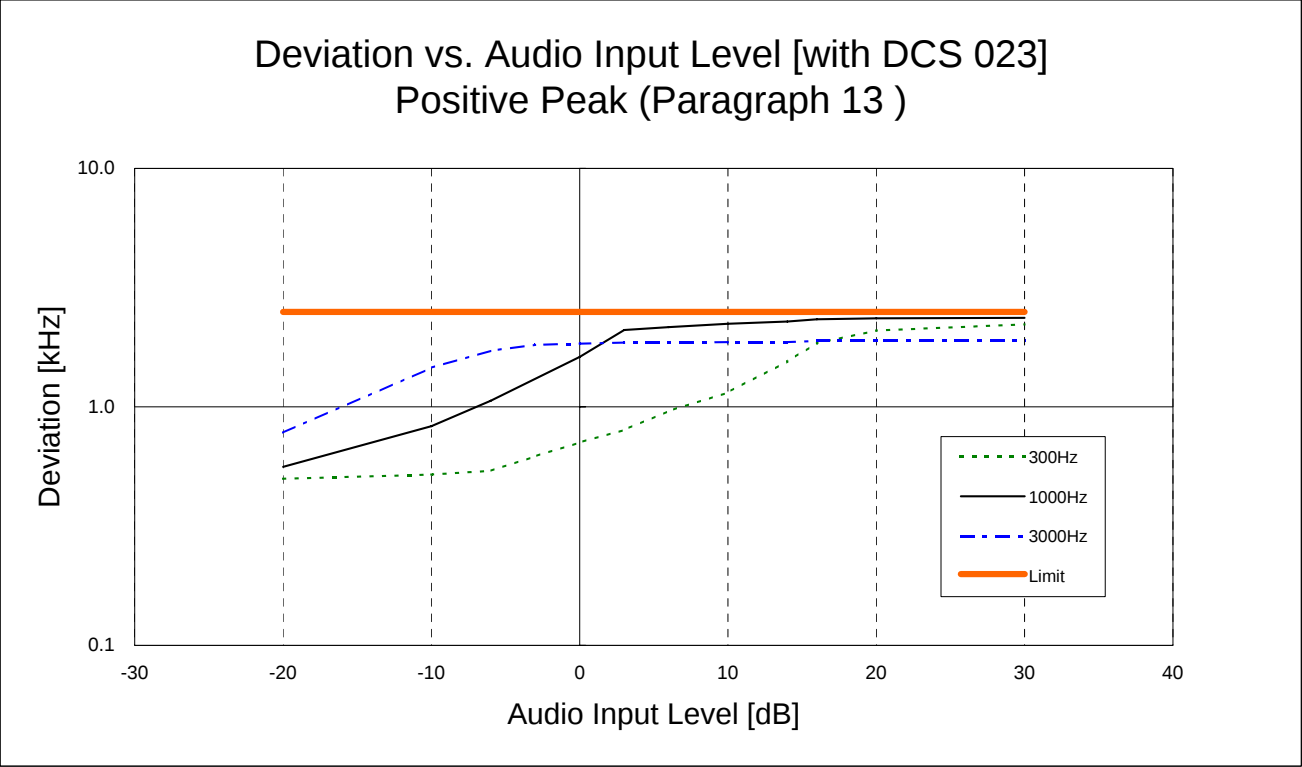
12.Deviation vs. Audio Input Level (Paragraph 12)



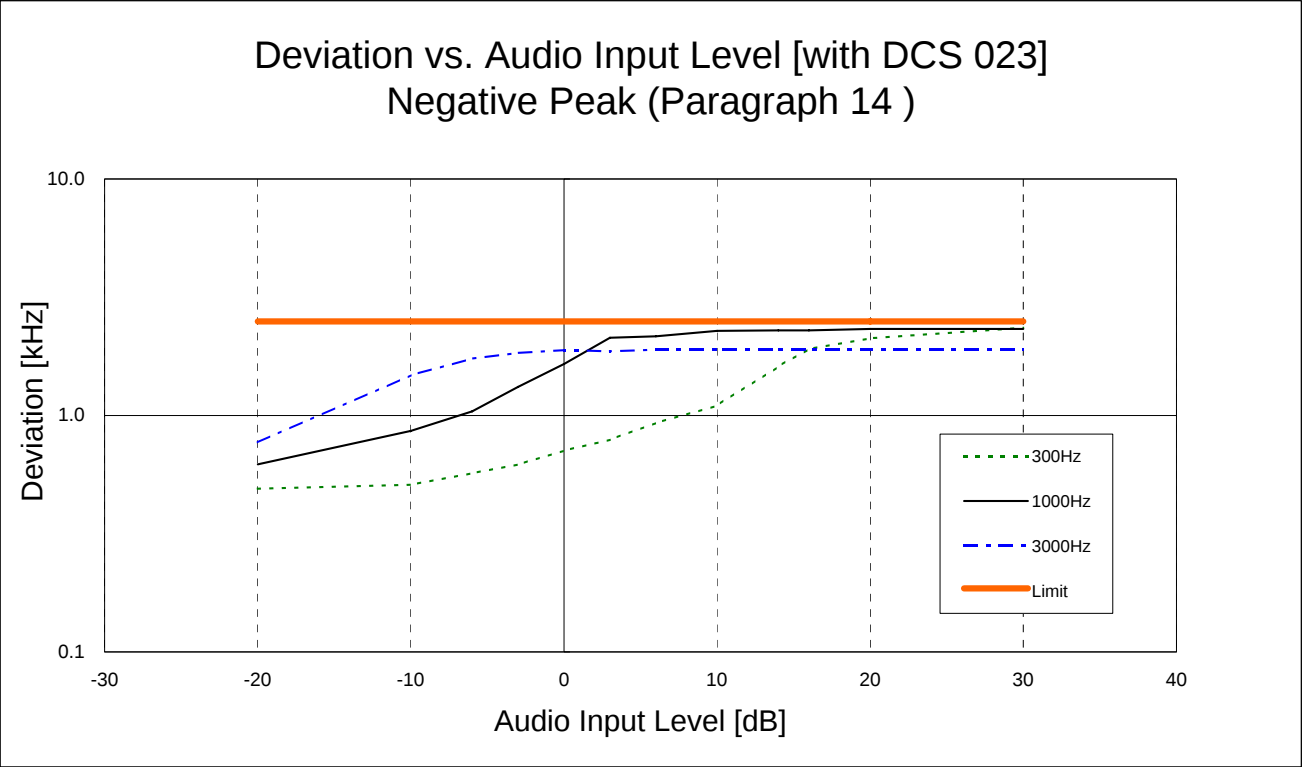
Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 11K0F3E
Channel Spacing 12.5[kHz]
Frequency 146.0125[MHz]

0dB =15.0[mV]

13.Deviation vs. Audio Input Level (Paragraph 13)

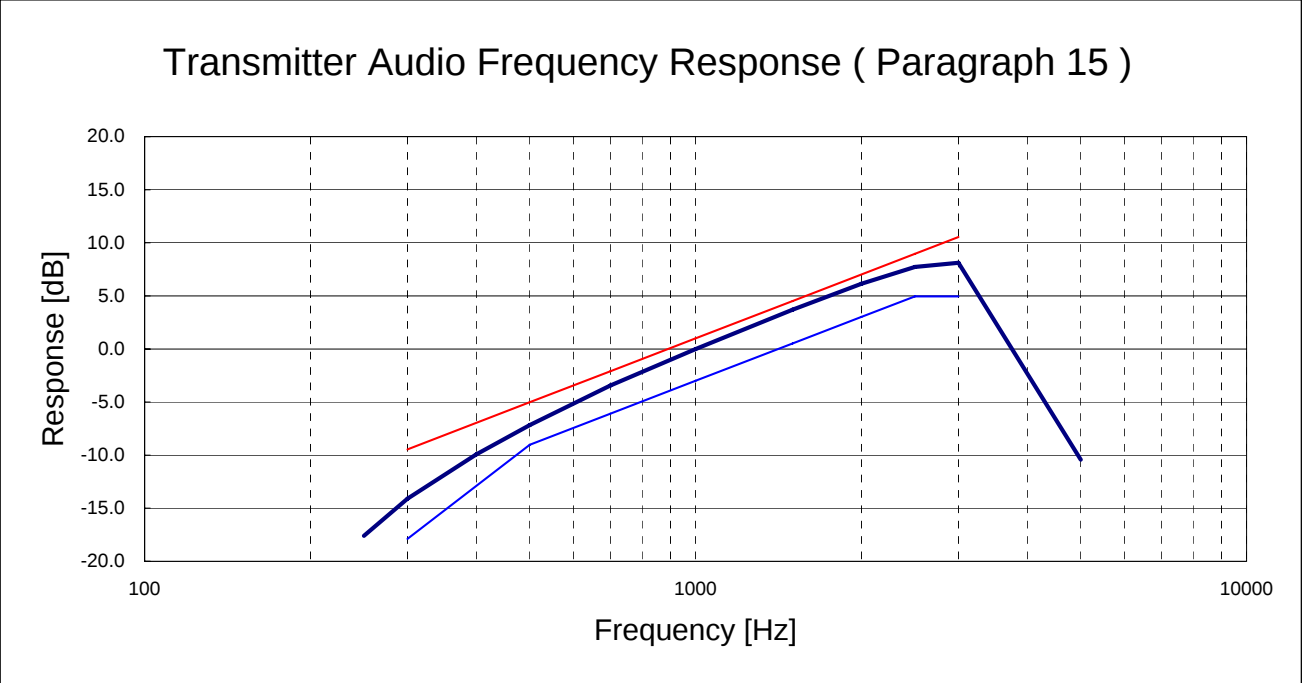


14.Deviation vs. Audio Input Level (Paragraph 14)

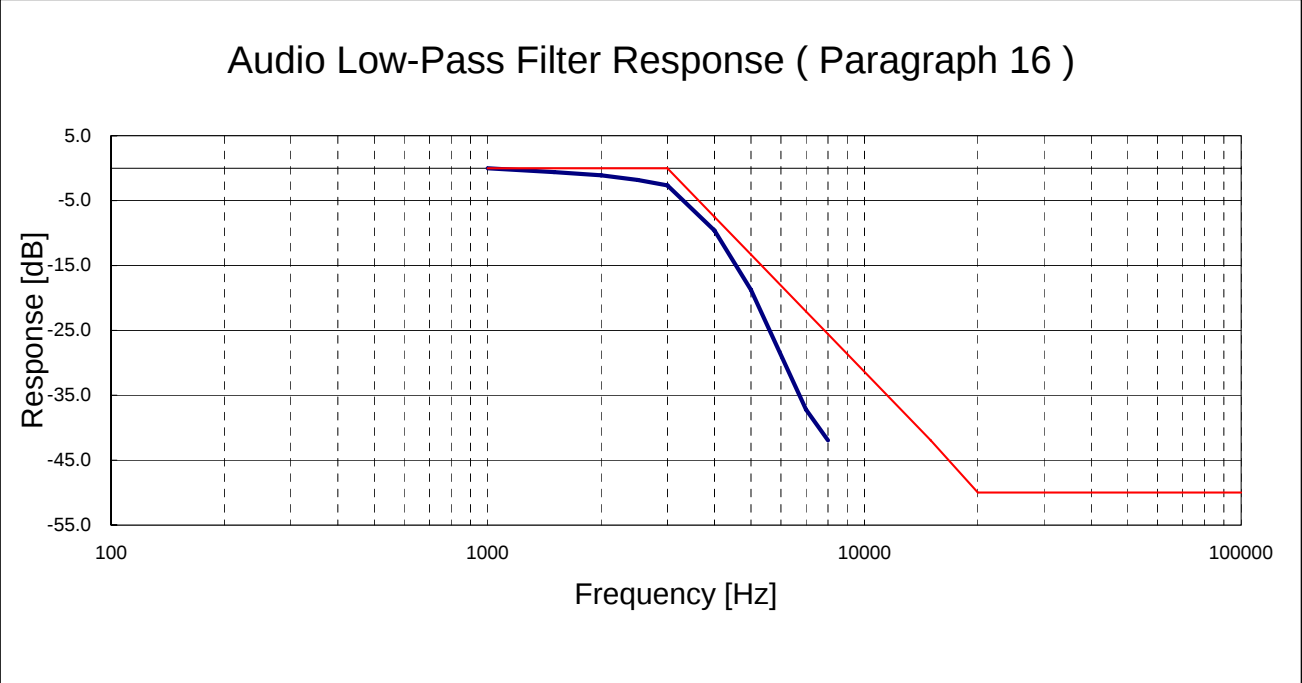


Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 11K0F3E
Channel Spacing 12.5[kHz]
Frequency 146.0125[MHz]

15. Transmitter Audio Frequency Response (Paragraph 15)



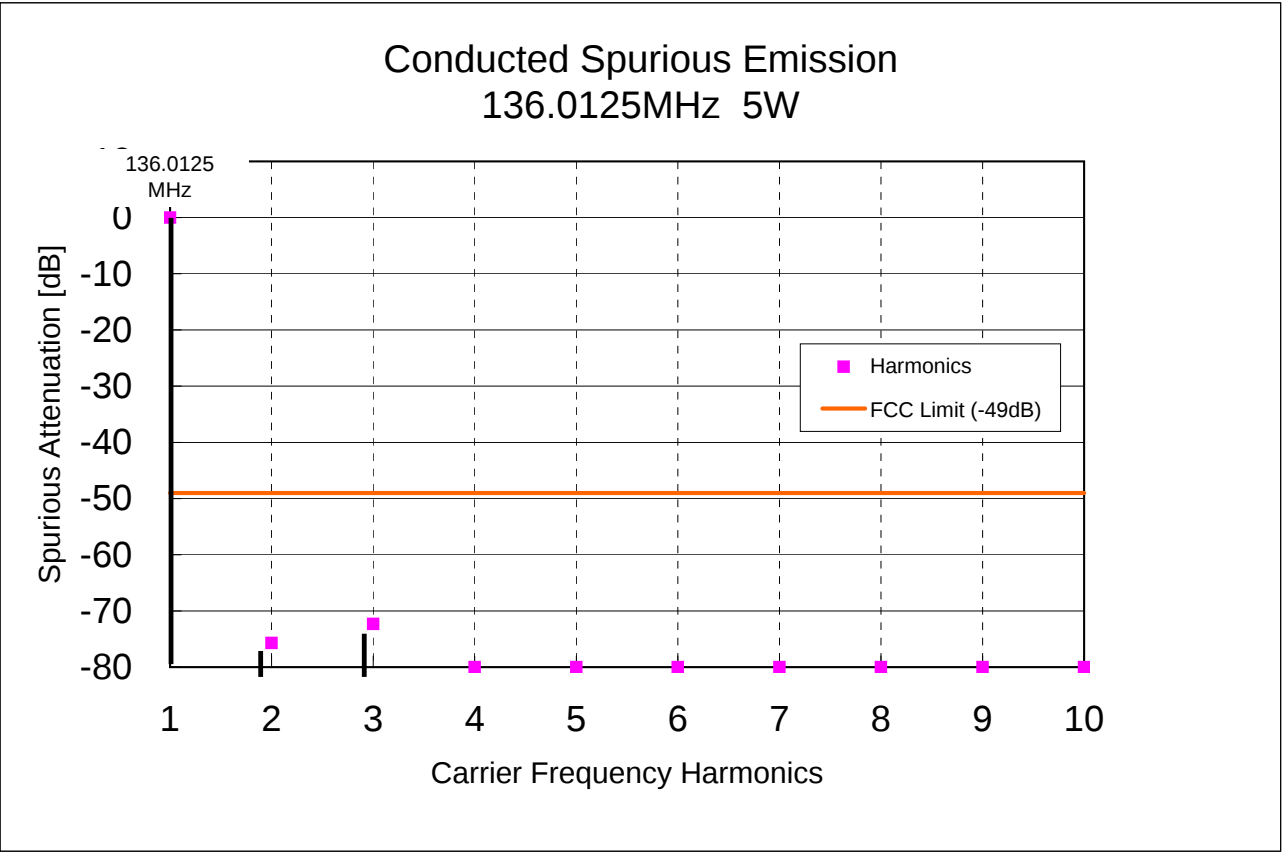
16. Audio Low-Pass Filter Response (Paragraph 16)



Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 11K0F3E
Channel Spacing 12.5[kHz]

17. Conducted Spurious Emission, 136.0125MHz@5W (PARAGRAPH 17)

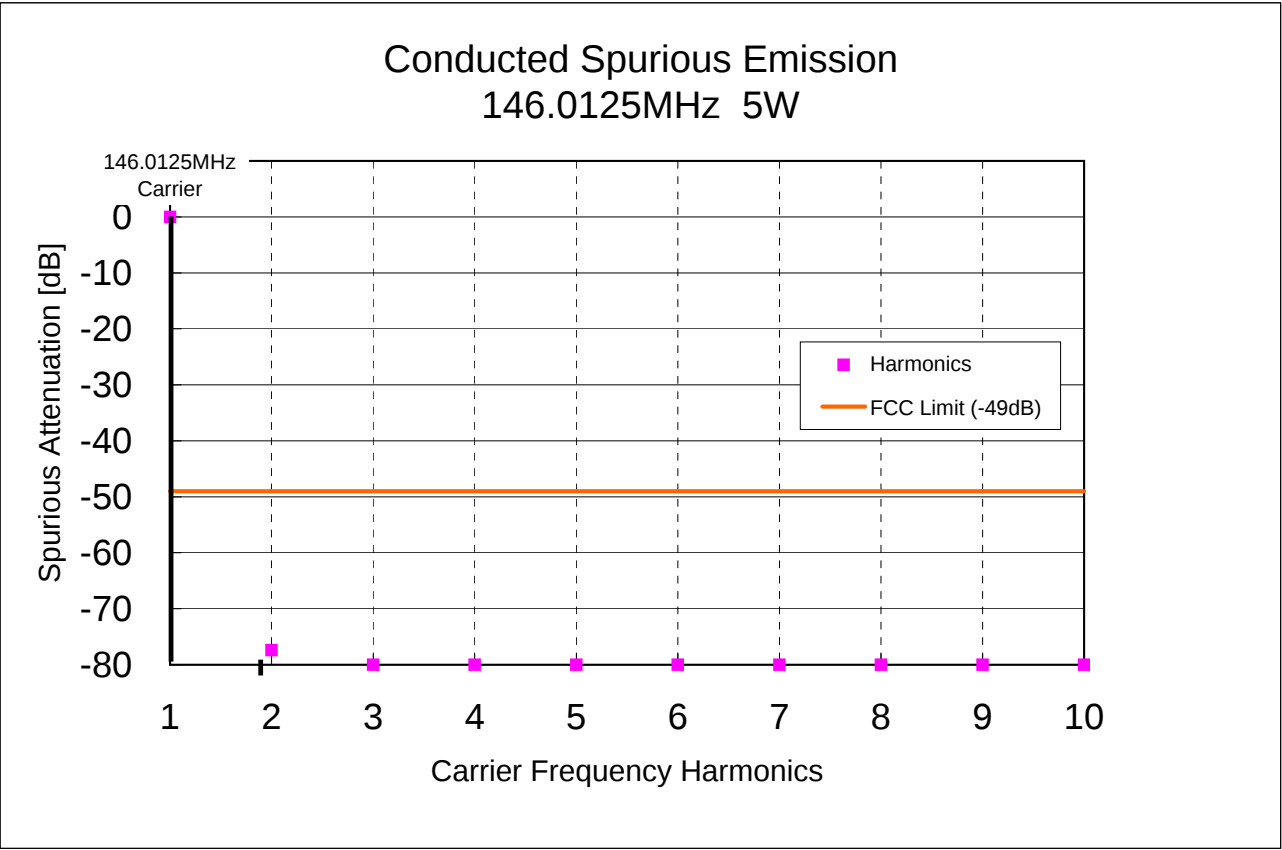
Harmonics	Emission Frequency [MHz]	Spurious Attenuation [dB]	FCC Limit
1	136.0125(Carrier)	0.0	-49.0
2	272.025	-75.7	-49.0
3	408.038	-72.3	-49.0
4	544.050	-80.0	-49.0
5	680.063	-80.0	-49.0
6	816.075	-80.0	-49.0
7	952.088	-80.0	-49.0
8	1088.100	-80.0	-49.0
9	1224.113	-80.0	-49.0
10	1360.125	-80.0	-49.0



Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 11K0F3E
Channel Spacing 12.5[kHz]

18. Conducted Spurious Emission, 146.0125.000MHz@5W (PARAGRAPH 18)

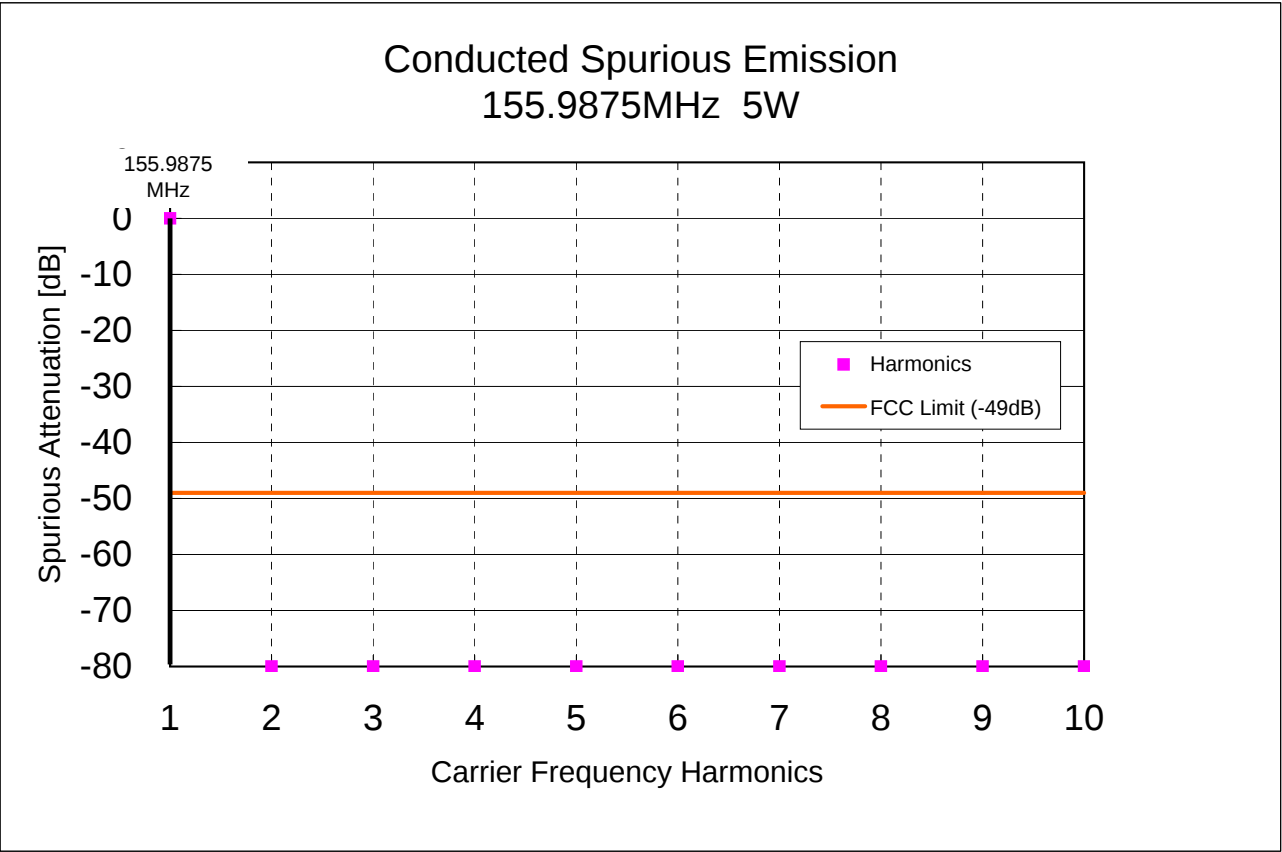
Harmonics	Emission Frequency [MHz]	Spurious Attenuation [dB]	FCC Limit
1	146.0125(Carrier)	0.0	-49.0
2	292.025	-77.4	-49.0
3	438.038	-80.0	-49.0
4	584.050	-80.0	-49.0
5	730.063	-80.0	-49.0
6	876.075	-80.0	-49.0
7	1022.088	-80.0	-49.0
8	1168.100	-80.0	-49.0
9	1314.113	-80.0	-49.0
10	1460.125	-80.0	-49.0



Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 11K0F3E
Channel Spacing 12.5[kHz]

19. Conducted Spurious Emission, 155.9875MHz@5W (PARAGRAPH 19)

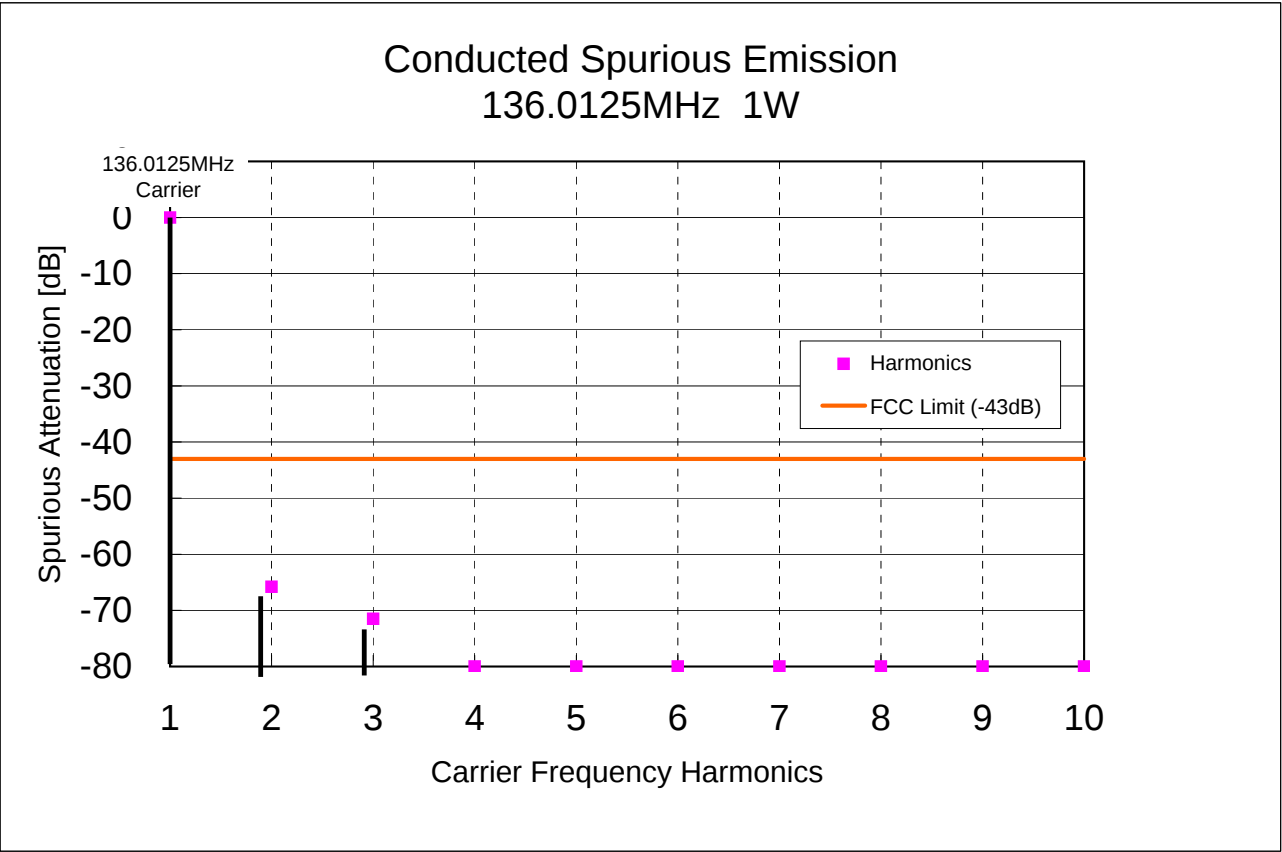
Harmonics	Emission Frequency [MHz]	Spurious Attenuation [dB]	FCC Limit
1	155.9875(Carrier)	0.0	-49.0
2	311.975	-80.0	-49.0
3	467.963	-80.0	-49.0
4	623.950	-80.0	-49.0
5	779.938	-80.0	-49.0
6	935.925	-80.0	-49.0
7	1091.913	-80.0	-49.0
8	1247.900	-80.0	-49.0
9	1403.888	-80.0	-49.0
10	1559.875	-80.0	-49.0



Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 11K0F3E
Channel Spacing 12.5[kHz]

20. Conducted Spurious Emission, 136.0125MHz@1W (PARAGRAPH 20)

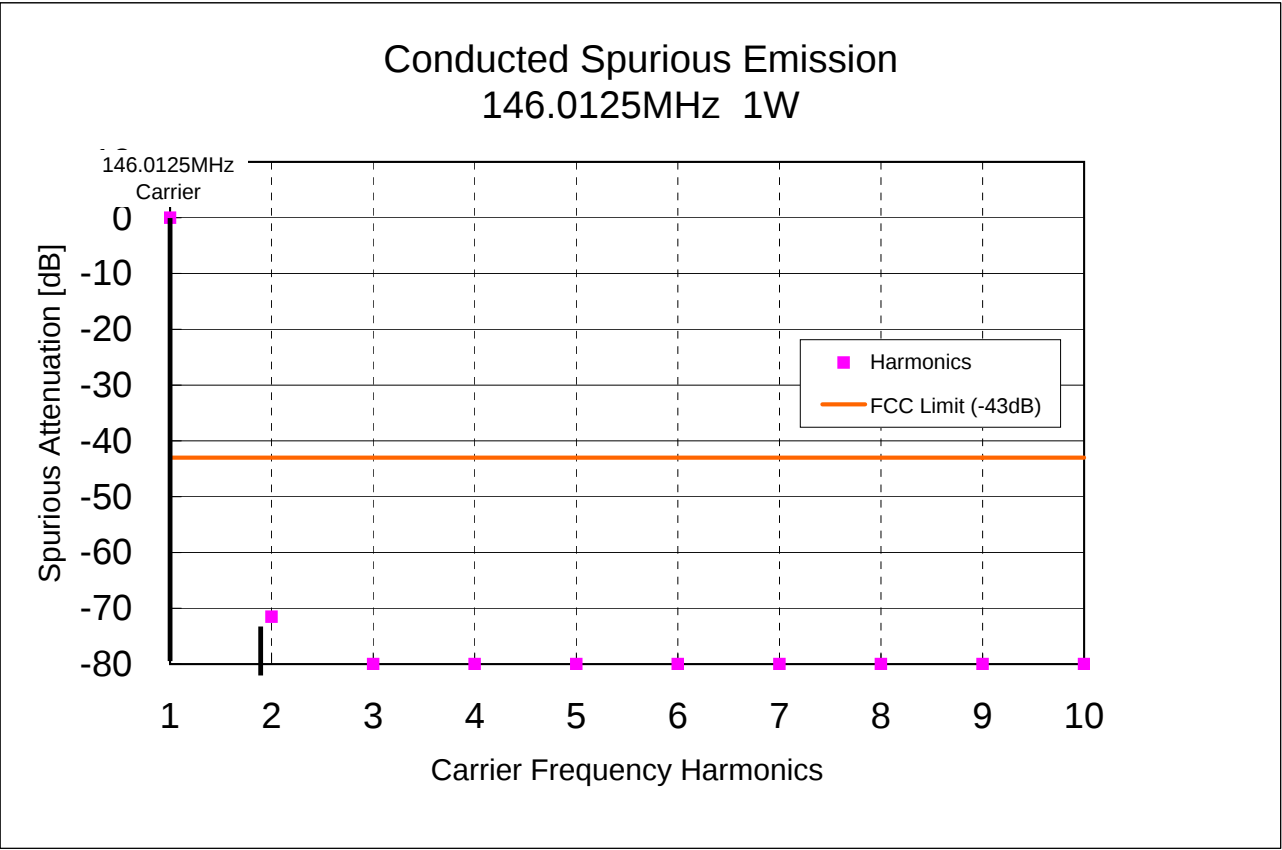
Harmonics	Emission Frequency [MHz]	Spurious Attenuation [dB]	FCC Limit
1	136.0125(Carrier)	0.0	-43.0
2	272.025	-65.8	-43.0
3	408.038	-71.5	-43.0
4	544.050	-80.0	-43.0
5	680.063	-80.0	-43.0
6	816.075	-80.0	-43.0
7	952.088	-80.0	-43.0
8	1088.100	-80.0	-43.0
9	1224.113	-80.0	-43.0
10	1360.125	-80.0	-43.0



Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 11K0F3E
Channel Spacing 12.5[kHz]

21. Conducted Spurious Emission, 146.0125MHz@1W (PARAGRAPH 21)

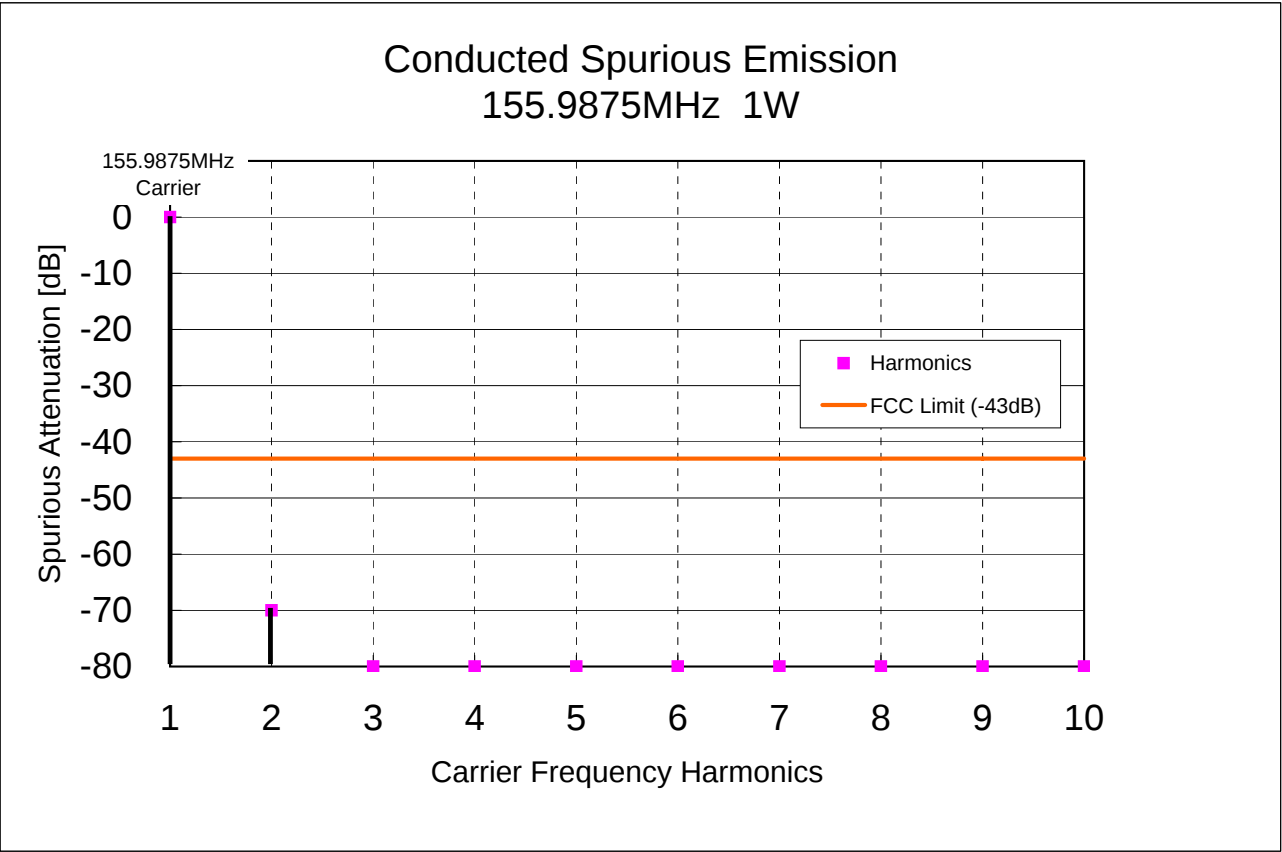
Harmonics	Emission Frequency [MHz]	Spurious Attenuation [dB]	FCC Limit
1	146.0125(Carrier)	0.0	-43.0
2	292.025	-71.5	-43.0
3	438.038	-80.0	-43.0
4	584.050	-80.0	-43.0
5	730.063	-80.0	-43.0
6	876.075	-80.0	-43.0
7	1022.088	-80.0	-43.0
8	1168.100	-80.0	-43.0
9	1314.113	-80.0	-43.0
10	1460.125	-80.0	-43.0



Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 11K0F3E
Channel Spacing 12.5[kHz]

22.Conducted Spurious Emission, 155.9875MHz@1W (PARAGRAPH 22)

Harmonics	Emission Frequency [MHz]	Spurious Attenuation [dB]	FCC Limit
1	155.9875(Carrier)	0.0	-43.0
2	311.975	-70.0	-43.0
3	467.963	-80.0	-43.0
4	623.950	-80.0	-43.0
5	779.938	-80.0	-43.0
6	935.925	-80.0	-43.0
7	1091.913	-80.0	-43.0
8	1247.900	-80.0	-43.0
9	1403.888	-80.0	-43.0
10	1559.875	-80.0	-43.0



Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 11K0F3E
Channel Spacing 12.5[kHz]
Frequency 146.0125[MHz]

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23. Conducted Spurious Emission@Receiver (Paragraph 23)

Frequency Tuned [MHz]	Frequency Emission [MHz]	Level [dBm]
146.0125	190.963	---
146.0125	381.925	---
146.0125	572.888	---
146.0125	763.850	---
146.0125	954.813	---
146.0125	1145.775	---
146.0125	1336.738	---
146.0125	1527.700	---
146.0125	1718.663	---
146.0125	1909.625	---

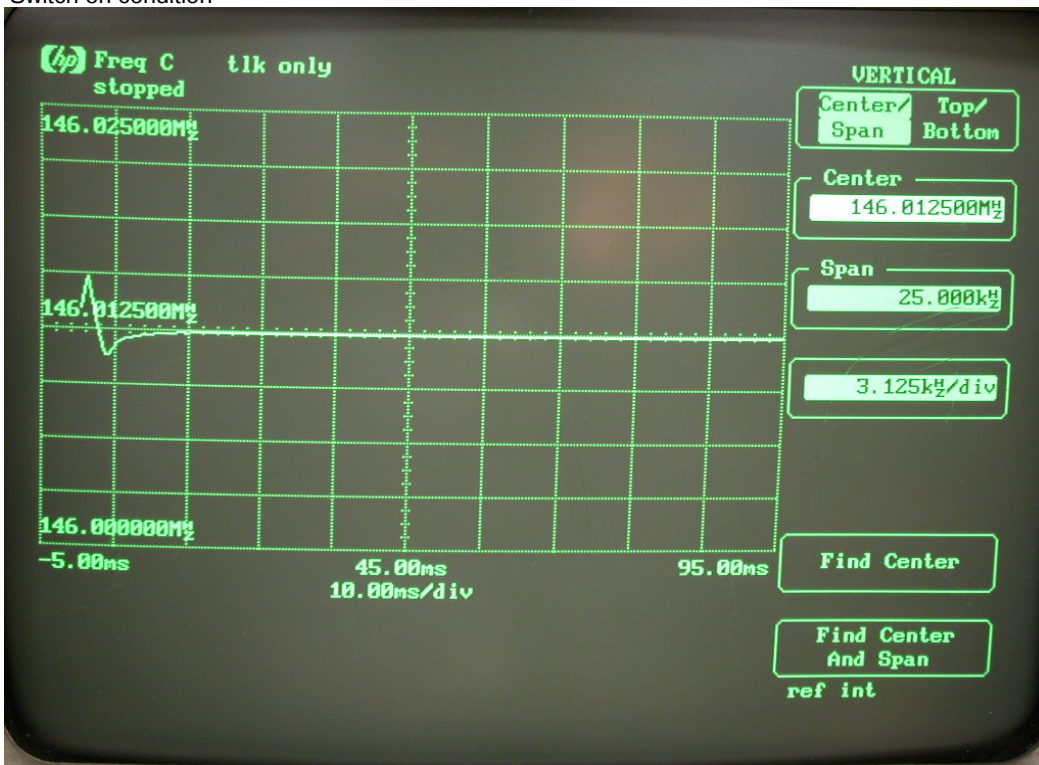
* Less than -80dBm

Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 11K0F3E
Channel Spacing 12.5[kHz]
Frequency 146.0125[MHz]

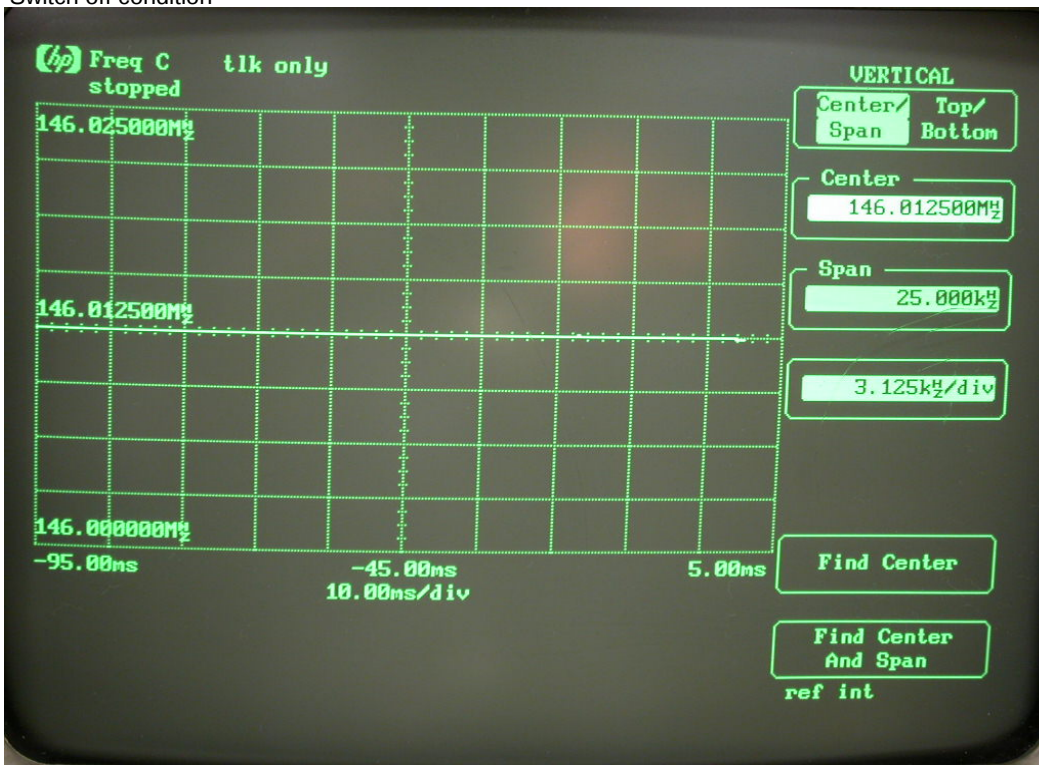
Page 15 (V1_Narrow)

24. Transient Behavior (Paragraph 24)

Switch on condition



Switch off condition



DATA OF SPURIOUS EMISSIONS TEST (RADIATED)

UL Japan, Inc.
YAMAKITA NO.2 Open Test Site
27IE0351-YK

Applicant : SMART COMMUNICATIONS LIMITED.
Kind of Equipment : VHF Handheld Transceiver
Model No. : SC-280 A
Serial No. : Sample1
Power : DC7.2V
Mode : Transmitting(136.0125MHz)
Remarks : e.r.p
Date : 05/11/2007 05/11/2007
Test Distans : 3m 3m
Temperature : 22 °C 22 °C
Humidity : 49 % 49 %
Regulation : FCC Part90

Engineer : Takahiro Suzuki
Tatsuya Arai

No.	FREQ [MHz]	READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT		LIMITS (ERP) [dBm]	MARGIN	
		HOR	VER				HOR	VER		HOR	VER
		[dBm]					[dBm]			[dBm]	
1	272.05	-45.1	-34.9	3.1	2.15	10.03	-58.2	-48.0	-13.0	45.2	35.0
2	408.05	-34.9	-31.4	3.9	2.15	9.90	-48.7	-45.2	-13.0	35.7	32.2
3	544.06	-51.5	-44.7	4.7	2.15	9.93	-66.1	-59.3	-13.0	53.1	46.3
4	680.07	-42.7	-38.3	5.4	2.15	9.92	-58.0	-53.6	-13.0	45.0	40.6
5	816.09	-47.5	-47.7	5.9	2.15	10.00	-63.4	-63.6	-13.0	50.4	50.6
6	952.11	-38.3	-40.9	6.4	2.15	10.15	-54.9	-57.5	-13.0	41.9	44.5
7	1088.10	-60.6	-59.5	4.5	7.09	0.00	-60.2	-59.1	-13.0	47.2	46.1
8	1224.11	-60.7	-54.8	4.7	7.68	0.00	-59.9	-54.0	-13.0	46.9	41.0
9	1360.13	-57.8	-60.4	4.9	8.27	0.00	-56.6	-59.2	-13.0	43.6	46.2

CALCULATION:READING(SG)-CABLE LOSS+ANT.GAIN-ATTEN-2.15dB

RxANTENNA:Biconical Antenna(30-300MHz), Logperiodic Antenna(No.300-1000MHz), DRG Horn Antenna(1-18GHz)

TxANTENNA:Biconical Antenna(30-60MHz), Dipole Antenna(60-1000MHz), DRG Horn Antenna(1-18GHz)

DATA OF SPURIOUS EMISSIONS TEST (RADIATED)

UL Japan, Inc.
YAMAKITA NO.2 Open Test Site
27IE0351-YK

Applicant : SMART COMMUNICATIONS LIMITED.
Kind of Equipment : VHF Handheld Transceiver
Model No. : SC-280 A
Serial No. : Sample1
Power : DC7.2V
Mode : Transmitting(146.0125MHz)
Remarks : e.r.p
Date : 05/11/2007 05/11/2007
Test Distans : 3m 3m
Temperature : 22 °C 22 °C
Humidity : 49 % 49 %
Regulation : FCC Part90

Engineer : Takahiro Suzuki
Tatsuya Arai

No.	FREQ [MHz]	READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT		LIMITS (ERP) [dBm]	MARGIN	
		HOR	VER				HOR	VER		HOR	VER
		[dBm]	[dBm]				[dBm]	[dBm]		[dBm]	[dBm]
1	292.04	-43.3	-34.4	3.2	2.15	10.04	-56.5	-47.6	-13.0	43.5	34.6
2	438.05	-30.5	-32.5	4.1	2.15	9.91	-44.5	-46.5	-13.0	31.5	33.5
3	584.07	-58.0	-56.0	5.0	2.15	9.94	-72.9	-70.9	-13.0	59.9	57.9
4	730.07	-45.4	-43.1	5.6	2.15	9.93	-60.9	-58.6	-13.0	47.9	45.6
5	876.08	-50.7	-51.6	6.1	2.15	10.10	-66.9	-67.8	-13.0	53.9	54.8
6	1022.09	-58.1	-56.9	4.3	6.81	0.00	-57.7	-56.5	-13.0	44.7	43.5
7	1168.10	-66.0	-58.3	4.6	7.44	0.00	-65.3	-57.6	-13.0	52.3	44.6
8	1314.11	-54.0	-55.9	4.9	8.07	0.00	-53.0	-54.9	-13.0	40.0	41.9
9	1460.13	-53.3	-56.4	5.1	8.71	0.00	-51.8	-54.9	-13.0	38.8	41.9

CALCULATION:READING(SG)-CABLE LOSS+ANT.GAIN-ATTEN-2.15dB

RxANTENNA:Biconical Antenna(30-300MHz), Logperriodic Antenna(No.300-1000MHz), DRG Horn Antenna(1-18GHz)

TxANTENNA:Biconical Antenna(30-60MHz), Dipole Antenna(60-1000MHz), DRG Horn Antenna(1-18GHz)

DATA OF SPURIOUS EMISSIONS TEST (RADIATED)

UL Japan, Inc.
YAMAKITA NO.2 Open Test Site
27IE0351-YK

Applicant : SMART COMMUNICATIONS LIMITED.
Kind of Equipment : VHF Handheld Transceiver
Model No. : SC-280 A
Serial No. : Sample1
Power : DC7.2V
Mode : Transmitting(155.9875MHz)
Remarks : e.r.p
Date : 05/11/2007 05/11/2007
Test Distans : 3m 3m
Temperature : 22 °C 22 °C
Humidity : 49 % 49 %
Regulation : FCC Part90

Engineer : Takahiro Suzuki
Tatsuya Arai

No.	FREQ [MHz]	READING		CABLE LOSS [dB]	ANT GAIN [dBi]	ATTEN [dB]	RESULT		LIMITS (ERP) [dBm]	MARGIN	
		HOR [dBm]	VER [dBm]				HOR [dBm]	VER [dBm]		HOR [dBm]	VER [dBm]
1	311.99	-46.3	-36.1	3.3	2.15	9.85	-59.5	-49.3	-13.0	46.5	36.3
2	467.98	-36.1	-41.1	4.3	2.15	9.91	-50.3	-55.3	-13.0	37.3	42.3
3	623.97	-54.9	-54.9	5.2	2.15	9.96	-70.1	-70.1	-13.0	57.1	57.1
4	779.96	-43.0	-39.8	5.8	2.15	9.98	-58.8	-55.6	-13.0	45.8	42.6
5	935.93	-48.0	-45.6	6.4	2.15	10.14	-64.5	-62.1	-13.0	51.5	49.1
6	1091.91	-55.8	-55.3	4.5	7.11	0.00	-55.3	-54.8	-13.0	42.3	41.8
7	1247.90	-55.8	-56.3	4.7	7.79	0.00	-54.9	-55.4	-13.0	41.9	42.4
8	1403.89	-56.5	-58.6	5.0	8.46	0.00	-55.2	-57.3	-13.0	42.2	44.3
9	1559.88	-54.6	-63.2	5.3	9.14	0.00	-52.9	-61.5	-13.0	39.9	48.5

CALCULATION:READING(SG)-CABLE LOSS+ANT.GAIN-ATTEN-2.15dB

RxANTENNA:Biconical Antenna(30-300MHz), Logperiodic Antenna(No.300-1000MHz), DRG Horn Antenna(1-18GHz)

TxANTENNA:Biconical Antenna(30-60MHz), Dipole Antenna(60-1000MHz), DRG Horn Antenna(1-18GHz)

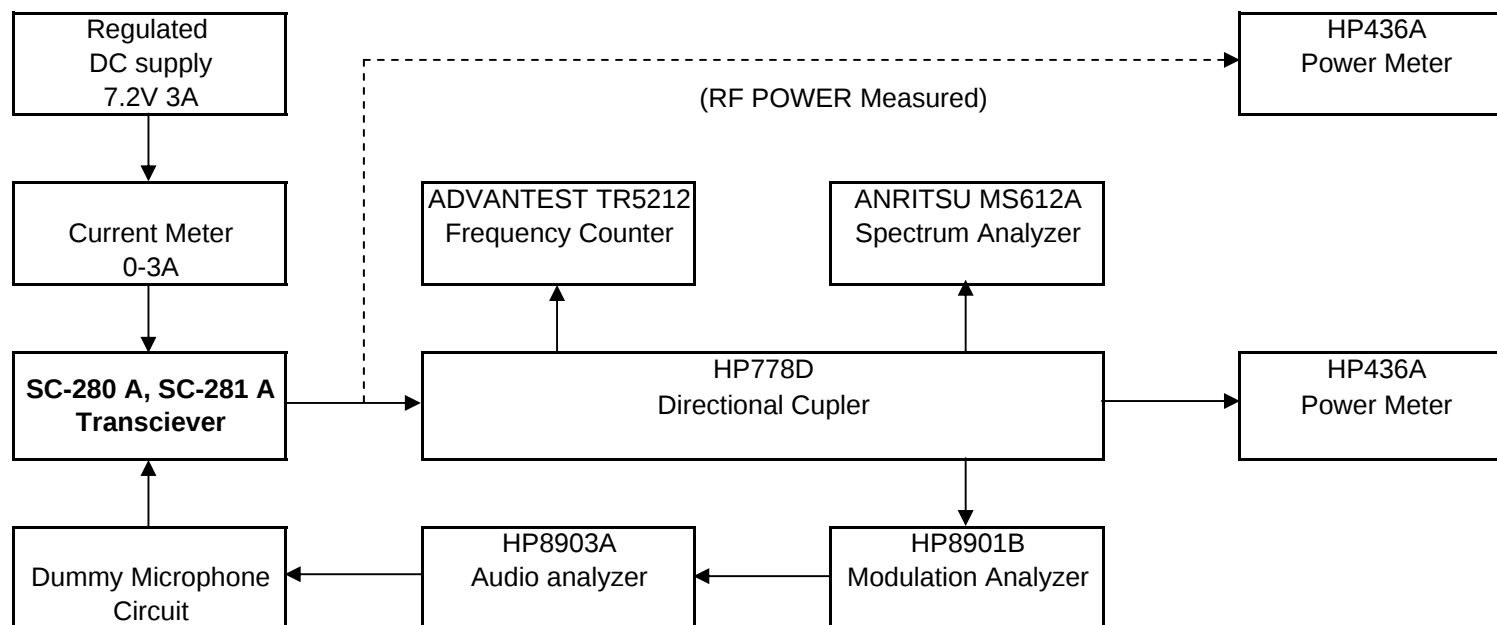


Figure 1. Test Set-Up

TECHNICAL DATA – SC- 280 A, SC- 281 A Wide band

A. RF POWER OUTPUT

1. Power measured using test set-up Figure 1.
 Primary power 7.2 VDC at battery input connector.
2. Power Data for 136.025MHz to 155.975MHz @ 5W is presented in Paragraph 1.
3. Power Data for 136.025MHz to 155.975MHz @ 1W is presented in Paragraph 2.

B. FREQUENCY STABILITY

1. a. Frequency stability with varying temperature. See Figure 1 for test set-up.
 b. Data is presented on Paragraph 3 for Standard Primary Input Voltage of 7.2 VDC maintained throughout entire test.
2. a. Frequency stability with Primary Input Voltage. See Figure 1 for test set-up.
 b. Data is presented on Paragraph 4 for Standard Temperature of 25 degrees Celsius maintained throughout entire test.

C. OCCUPIED BANDWIDTH

1. a. A spectrum analyzer was used to determine the occupied bandwidth.
 See Figure 1 for test set-up.
- b. Data is presented on Paragraph 5 to Paragraph 8 for Standard primary Input Voltage of 7.2 VDC maintained throughout entire test. The carrier and all detectable sidebands were displayed on the spectrum analyzer and pertinent data concerning amplitude and frequency were read from the screen.
- c. un modulated : Data measured at 146.025MHz. (see Paragraph 5)
- d. Input to transmitter audio circuits: 2500Hz sine wave at a level 16dB greater than that necessary to produce 50% modulation. Data measured at 146.025MHz and is typical of all frequencies. (see Paragraph 6)
- e. Input to transmitter audio circuits: 2500Hz sine wave at a level 16dB greater than that necessary to produce 50% modulation with CTCSS(250.3Hz).
 Data measured at 146.025MHz and is typical of all frequencies.
 (see Paragraph 7)
- f. Input to transmitter audio circuits: 2500Hz sine wave at a level 16dB greater than that necessary to produce 50% modulation with DCS(023).
 Data measured at 146.025MHz and is typical of all frequencies.
 (see Paragraph 8)

D. MODULATION CHARACTERISTICS

1. Modulation Deviation

- a. Measured using test set-up, see Figure 1.
- b. Primary Input Voltage of 7.2 VDC at battery input connector.
- c. Data (Positive peak) is presented in Paragraph 9
- d. Data (Negative peak) is presented in Paragraph 10.
- e. Data (Positive peak) with CTCSS (250.3Hz) is presented in Paragraph 11.
- f. Data (Negative peak) with CTCSS (250.3Hz) is presented in Paragraph 12.
- g. Data (Positive peak) with DCS (023) is presented in Paragraph 13.
- h. Data (Negative peak) with DCS (023) is presented in Paragraph 14.

2. Transmitter Audio Frequency Response

- a. Measured using test set-up, see Figure 1.
- b. Primary Input Voltage of 7.2 VDC at battery input connector.
Ref = 1 kHz tone response at +-1.5 kHz deviation. Curve was taken maintaining constant +- 1.5 kHz deviation.
- c. Data is presented in Paragraph 15.

3. Low-Pass Filter Response

- a. Measured using test set-up, see Figure 1.
- b. Primary Input Voltage of 7.2 VDC at battery input connector.
Input 1 kHz tone at a level 20dB greater than that required for 3 kHz deviation
The response at 1 kHz tone = 0dB. Curve was taken maintaining constant input at modulation sensitivity. Output of low-pass filter was monitored using Audio Analyzer
- c. Data is presented in Paragraph 16.

E. CONDUCTED SPURIOUS EMISSION

1. Conducted spurious data was measured at 25 degrees Celsius, 7.2 VDC applied at battery input connector external power input and using external antenna jack.
See Figure 1 for test set-up.
2. Data for 136.025MHz @ 5W is presented in Paragraph 17.
3. Data for 146.025MHz @ 5W is presented in Paragraph 18.
4. Data for 155.975MHz @ 5W is presented in Paragraph 19.
5. Data for 136.025MHz @ 1W is presented in Paragraph 20.
6. Data for 146.025MHz @ 1W is presented in Paragraph 21.

7. Data for 155.975MHz @ 1W is presented in Paragraph 22.
8. Data for 146.025MHz @ Receiver is presented in Paragraph 23.

F. TRANSIENT BEHAVIOR

- a. Measured using test set-up, see Figure 1.
- b. Primary Input Voltage of 7.2 VDC at battery input connector.
- c. Data is presented in Paragraph 24.

G. PARAGRAPHS

1. RF Power Output, 5W
2. RF Power Output, 1W
3. Frequency Stability vs. Temperature
4. Frequency Stability vs. Voltage
5. Occupied Bandwidth, un modulated
6. Occupied Bandwidth, 2500Hz Sine Wave
7. Occupied Bandwidth, 2500Hz Sine Wave with CTCSS (250.3Hz)
8. Occupied Bandwidth, 2500Hz Sine Wave with DCS (023)
9. Deviation vs. Audio input Level - Positive peak
10. Deviation vs. Audio input Level - Negative peak
11. Deviation vs. Audio input Level with CTCSS (250.3Hz) - Positive peak
12. Deviation vs. Audio input Level with CTCSS (250.3Hz) - Negative peak
13. Deviation vs. Audio input Level with DCS (023) - Positive peak
14. Deviation vs. Audio input Level with DCS (023) -Negative peak
15. Transmitter Audio Frequency Response
16. Audio Low-Pass Filter Response
17. Conducted Spurious Emissions, 136.025MHz @ 5W
18. Conducted Spurious Emissions, 146.025MHz @ 5W
19. Conducted Spurious Emissions, 155.975MHz @ 5W
20. Conducted Spurious Emissions, 136.025MHz @ 1W
21. Conducted Spurious Emissions, 146.025MHz @ 1W
22. Conducted Spurious Emissions, 155.975MHz @ 1W
23. Conducted Spurious Emissions, Receiver
24. Transient Behavior

TECHNICAL DATA

Model Name		:	SC-280A, SC-281A	
Sample Number		:	Sample1	
Specification is Referenced		:	EIA/TIA-603C	
Emission Type		:	16K0F3E	
Channel Spacing		:	25	(kHz)
Description		:	Handheld	
Mode		:	FM	
Frequency Range	TX	:	136.000 - 156.000	(MHz)
	RX	:	136.000 - 156.000	(MHz)
Test Voltage	Normal	:	7.2	(V)
	Extreme	:	6.12	(7.2-15%) (V)
		:	8.28	(7.2+15%) (V)
Temperature	Normal	:	25	(°C)
	Extreme	:	-30 - +60	(°C)
Test Frequency	TX	:	136.025	(MHz)
	RX	:	136.025	(MHz)
	TX	:	146.025	(MHz)
	RX	:	146.025	(MHz)
	TX	:	155.975	(MHz)
	RX	:	155.975	(MHz)
1st IF	RX	:	44.95	(MHz)
2nd IF	RX	:	455	(kHz)
Microphone Impedance		:	2000	(Ω)
Speaker Impedance		:	8	(Ω)
Rated RF Power	HIGH	:	5	(W)
	LOW	:	1	(W)
Test Operator		:	K.Atсутa	
Test Date	Start	:	2007/5/1	
	Finish	:	2007/5/17	

Carrier Frequency Stability - Temperature Variation

SAMPLE1

146.025

Temperature[°C]	Measured	Frequency error[Hz]	ppm	Upper Limit	Lower Limit
-30	146.02522	220	0.47	2.50	-2.50
-20	146.02525	250	0.54	2.50	-2.50
-10	146.02514	140	0.30	2.50	-2.50
0	146.02505	50	0.11	2.50	-2.50
10	146.02502	20	0.04	2.50	-2.50
25	146.02501	10	0.02	2.50	-2.50
40	146.02497	-30	-0.06	2.50	-2.50
50	146.02491	-90	-0.19	2.50	-2.50
60	146.02489	-110	-0.24	2.50	-2.50

Audio Frequency Response

Frequency[Hz]	Measured SAMPLE1	Upper Limit	Lower Limit
100			
250	-17.33		
300	-14.11	-9.46	-17.89
400	-9.90	-6.96	-12.90
500	-7.10	-5.02	-9.02
700	-3.42	-2.10	-6.10
1000	0.00	1.00	-3.00
1500	3.56	4.52	0.52
2000	5.85	7.02	3.02
2500	7.24	8.96	4.96
3000	7.44	10.54	4.96
5000	-12.03		

Audio LPF Response

AF[kHz]	Measured SAMPLE1	Limit
1000	0.00	0.00
1500	-0.50	0.00
2000	-0.90	0.00
2500	-1.60	0.00
3000	-2.66	0.00
4000	-9.60	-7.50
5000	-18.75	-13.31
7000	-37.00	-22.08
8000	-41.95	-25.56
15000		-41.94
20000		-50.00
100000		-50.00

Modulation Limiting

Carrier

SAMPLE1

INPUT		f=300Hz		f=1000Hz		f=3000Hz		Limit
V[mV]	[dB]	Positive Peak	Negative Peak	Positive Peak	Negative Peak	Positive Peak	Negative Peak	
1.5	-20	0.13	0.12	0.35	0.34	0.78	0.78	5
4.7	-10	0.23	0.24	1.01	1.00	2.29	2.30	5
7.5	-6	0.34	0.36	1.59	1.57	2.83	2.84	5
10.6	-3	0.47	0.47	2.21	2.21	2.95	2.97	5
15.0	0	0.64	0.65	3.10	3.12	3.00	3.02	5
21.2	3	0.88	0.89	3.93	3.96	3.04	3.06	5
29.9	6	1.21	1.23	4.03	4.08	3.06	3.06	5
47.4	10	1.89	1.91	4.17	4.22	3.06	3.07	5
75.2	14	2.93	2.93	4.29	4.29	3.06	3.07	5
94.6	16	3.64	3.51	4.30	4.27	3.06	3.07	5
150.0	20	4.15	3.99	4.37	4.31	3.06	3.07	5
474.3	30	4.65	4.60	4.44	4.29	3.08	3.11	5

Modulation Limiting

with CTCSS 250.3Hz

SAMPLE1

INPUT		f=300Hz		f=1000Hz		f=3000Hz		Limit
V[mV]	[dB]	Positive Peak	Negative Peak	Positive Peak	Negative Peak	Positive Peak	Negative Peak	
1.5	-20	0.66	0.64	0.85	0.81	1.23	1.23	5
4.7	-10	0.76	0.76	1.44	1.51	2.67	2.70	5
7.5	-6	0.85	0.86	1.86	1.89	3.01	3.05	5
10.6	-3	0.96	0.95	2.54	2.57	3.12	3.16	5
15.0	0	1.13	1.10	3.30	3.29	3.17	3.20	5
21.2	3	1.32	1.33	3.96	3.98	3.20	3.24	5
29.9	6	1.64	1.61	4.07	4.09	3.20	3.24	5
47.4	10	2.20	2.21	4.12	4.16	3.20	3.24	5
75.2	14	3.09	3.09	4.25	4.22	3.20	3.24	5
94.6	16	3.71	3.67	4.38	4.21	3.20	3.24	5
150.0	20	4.17	4.07	4.35	4.21	3.20	3.24	5
474.3	30	4.62	4.60	4.37	4.25	3.23	3.27	5

Modulation Limiting

with DCS 023

SAMPLE1

INPUT		f=300Hz		f=1000Hz		f=3000Hz		Limit
V[mV]	[dB]	Positive Peak	Negative Peak	Positive Peak	Negative Peak	Positive Peak	Negative Peak	
1.5	-20	0.73	0.78	0.98	1.02	1.19	1.22	5
4.7	-10	0.89	0.88	1.54	1.55	2.16	2.15	5
7.5	-6	0.98	1.00	2.07	2.04	2.41	2.41	5
10.6	-3	1.08	1.17	2.61	2.69	2.49	2.51	5
15.0	0	1.22	1.26	3.32	3.27	2.50	2.52	5
21.2	3	1.36	1.39	3.97	3.94	2.51	2.57	5
29.9	6	1.68	1.66	4.05	4.13	2.52	2.58	5
47.4	10	2.25	2.25	4.18	4.15	2.53	2.60	5
75.2	14	3.15	3.18	4.24	4.28	2.54	2.54	5
94.6	16	3.75	3.66	4.35	4.28	2.55	2.59	5
150.0	20	4.15	4.08	4.32	4.28	2.54	2.58	5
474.3	30	4.55	4.55	4.38	4.26	2.54	2.59	5

Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 16K0F3E
Channel Spacing 25[kHz]

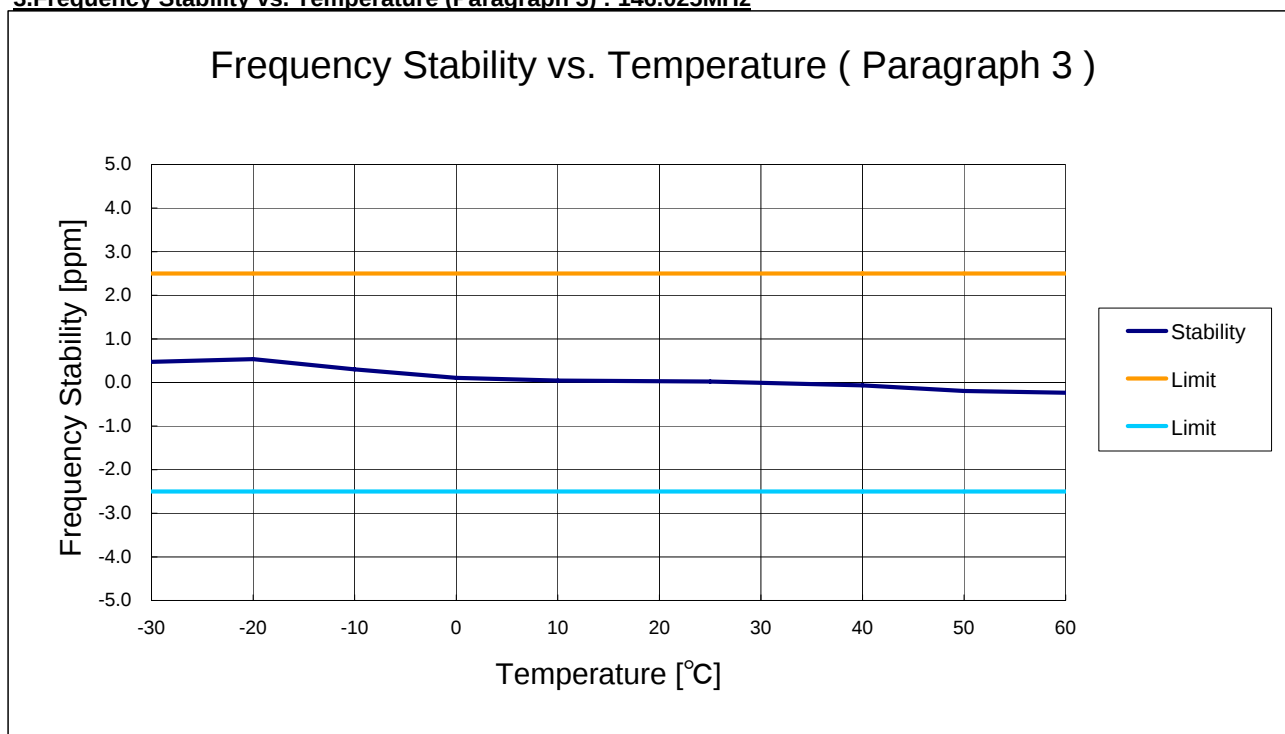
1. RF Power Output @5W (Paragraph 1)

Carrier Frequency [MHz]	RF Power Output [W]	Final D.C. Input Current [A]	D.C. Input Voltage [V]	D.C. Input Power [W]
136.025	4.99	1.92	7.20	13.82
146.025	5.00	1.68	7.20	12.10
155.975	5.00	1.72	7.20	12.38

2. RF Power Output @1W (Paragraph 2)

Carrier Frequency [MHz]	RF Power Output [W]	Final D.C. Input Current [A]	D.C. Input Voltage [V]	D.C. Input Power [W]
136.025	0.98	0.89	7.20	6.41
146.025	1.00	0.77	7.20	5.54
155.975	1.00	0.76	7.20	5.47

3.Frequency Stability vs. Temperature (Paragraph 3) : 146.025MHz

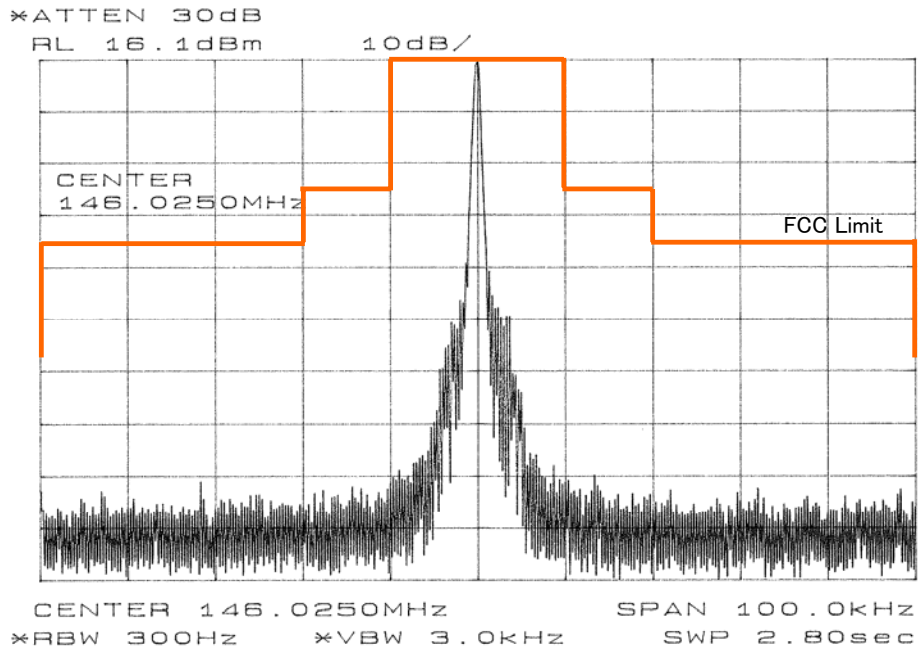


4. Frequency Stability vs. Voltage (Paragraph 4)

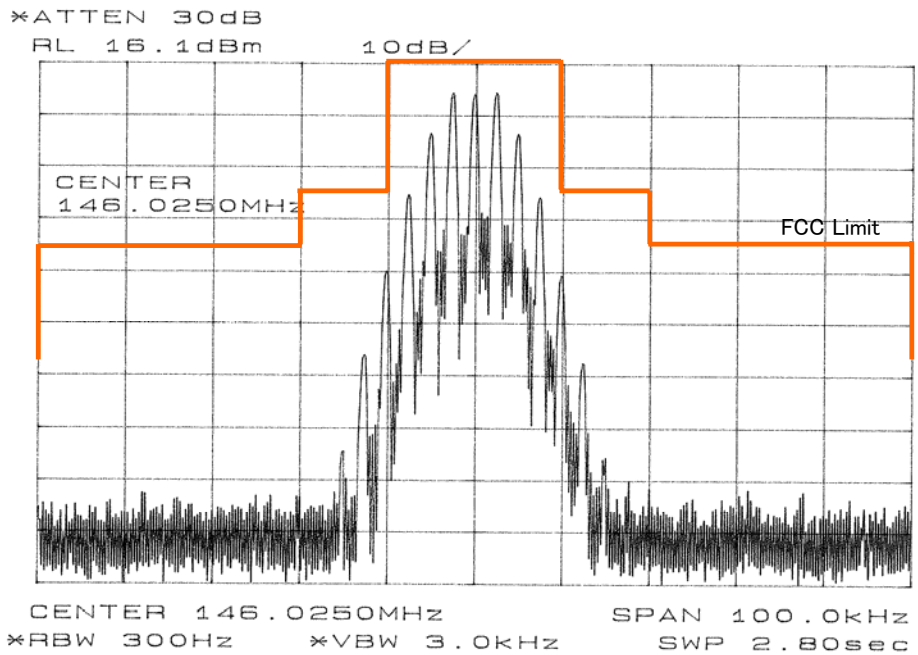
Carrier Frequency [MHz]	STV [%]	Voltage [V]	Change in Frequency		
			[MHz]	[Hz]	[ppm]
146.025	100	7.20	146.02499	-10	-0.07
	85	6.12	146.02499	-10	-0.07
	115	8.28	146.02499	-10	-0.07

Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 16K0F3E
Channel Spacing 25[kHz]
Frequency 146.025[MHz]

5. Occupied Bandwidth unmodulated (Paragraph 5)



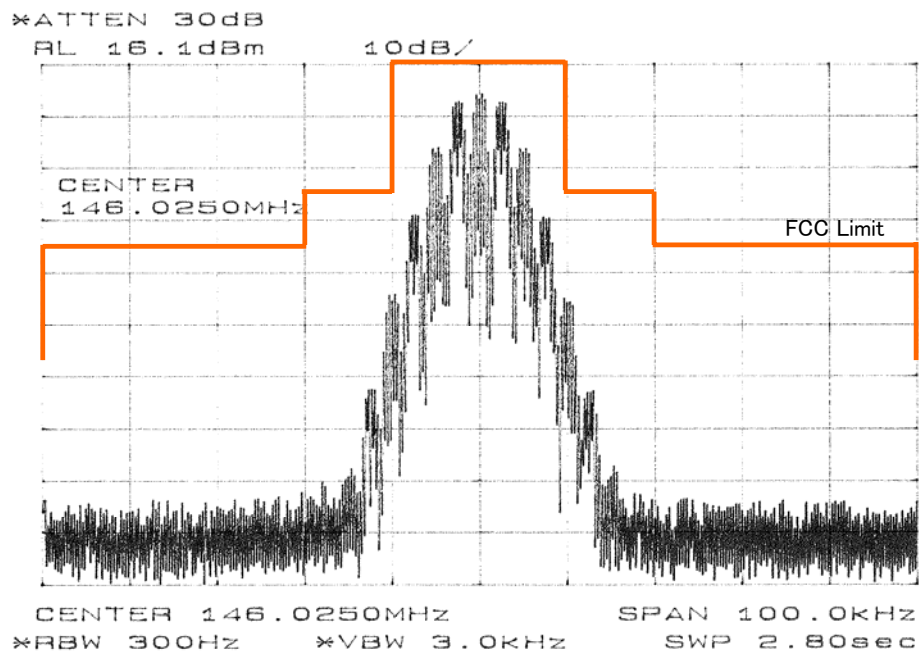
6. Occupied Bandwidth 2500Hz Sine Wave (Paragraph 6)



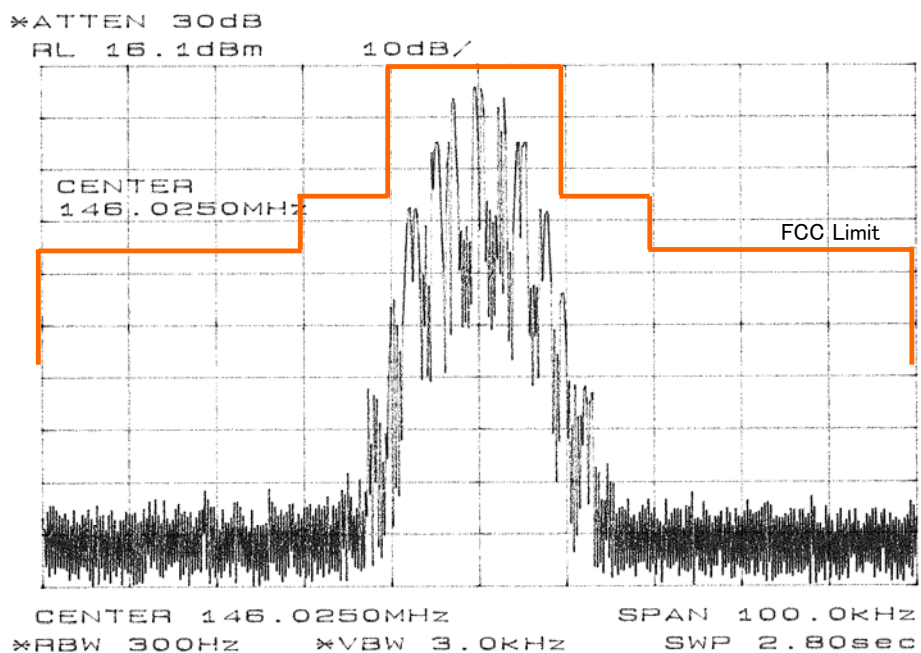
Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 16K0F3E
Channel Spacing 25[kHz]
Frequency 146.025[MHz]

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7. Occupied Bandwidth 2500Hz Sine Wave with CTCSS(250.3Hz) (Paragraph 7)



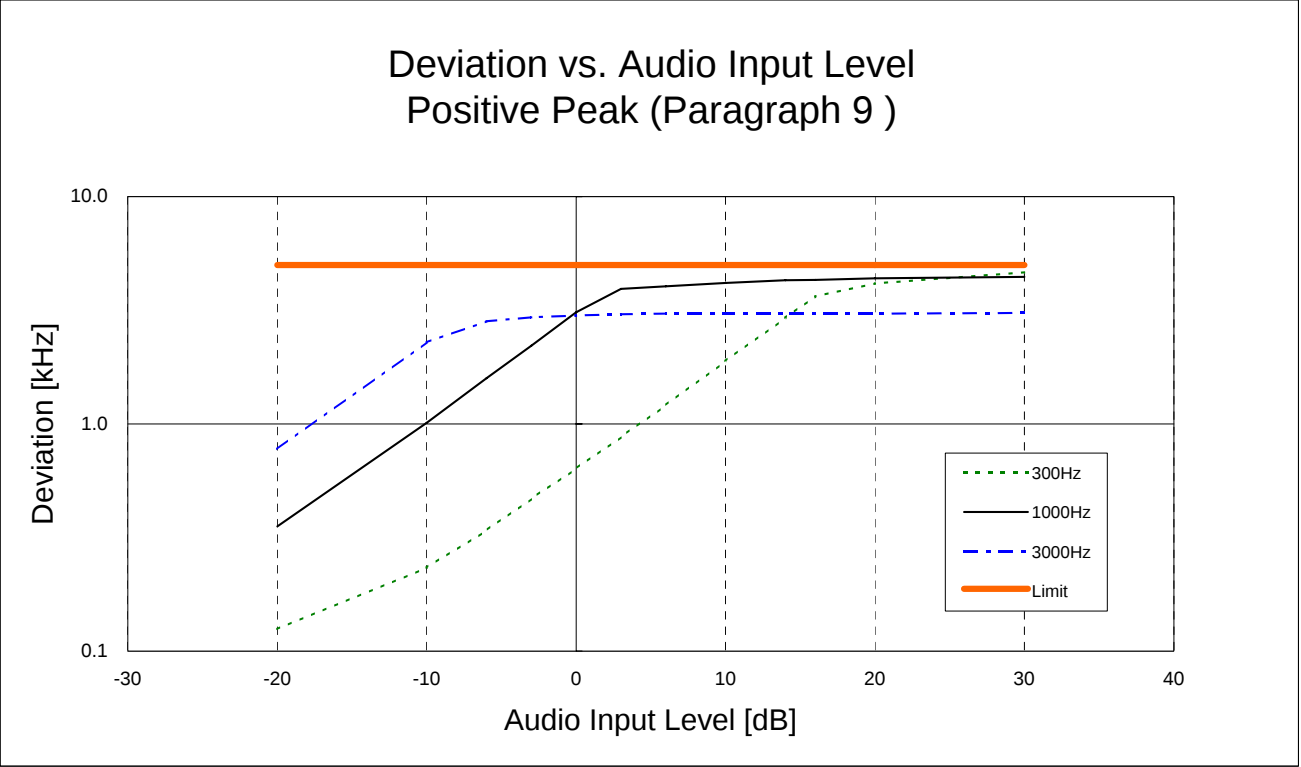
8. Occupied Bandwidth 2500Hz Sine Wave with DCS(023) (Paragraph 8)



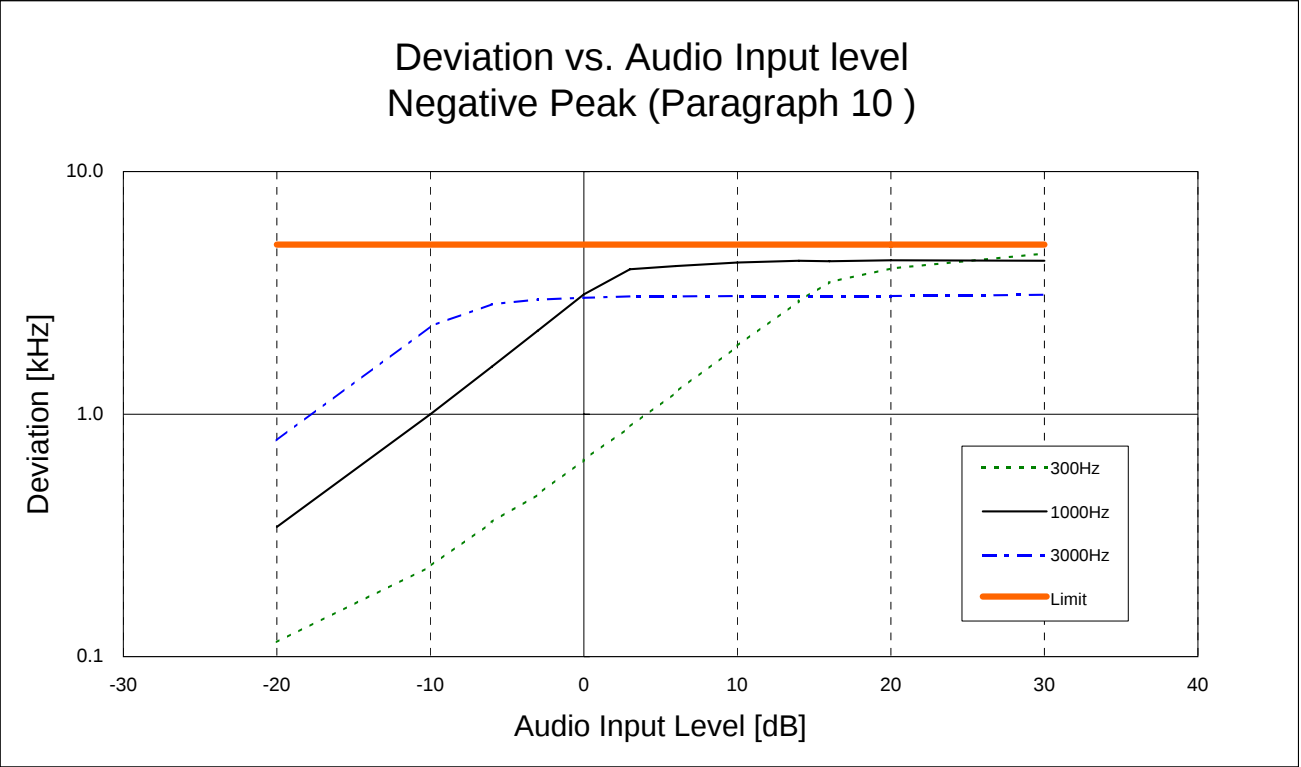
Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 16K0F3E
Channel Spacing 25[kHz]
Frequency 146.025[MHz]

0dB =15.0[mV]

9.Deviation vs. Audio Input Level (Paragraph 9)



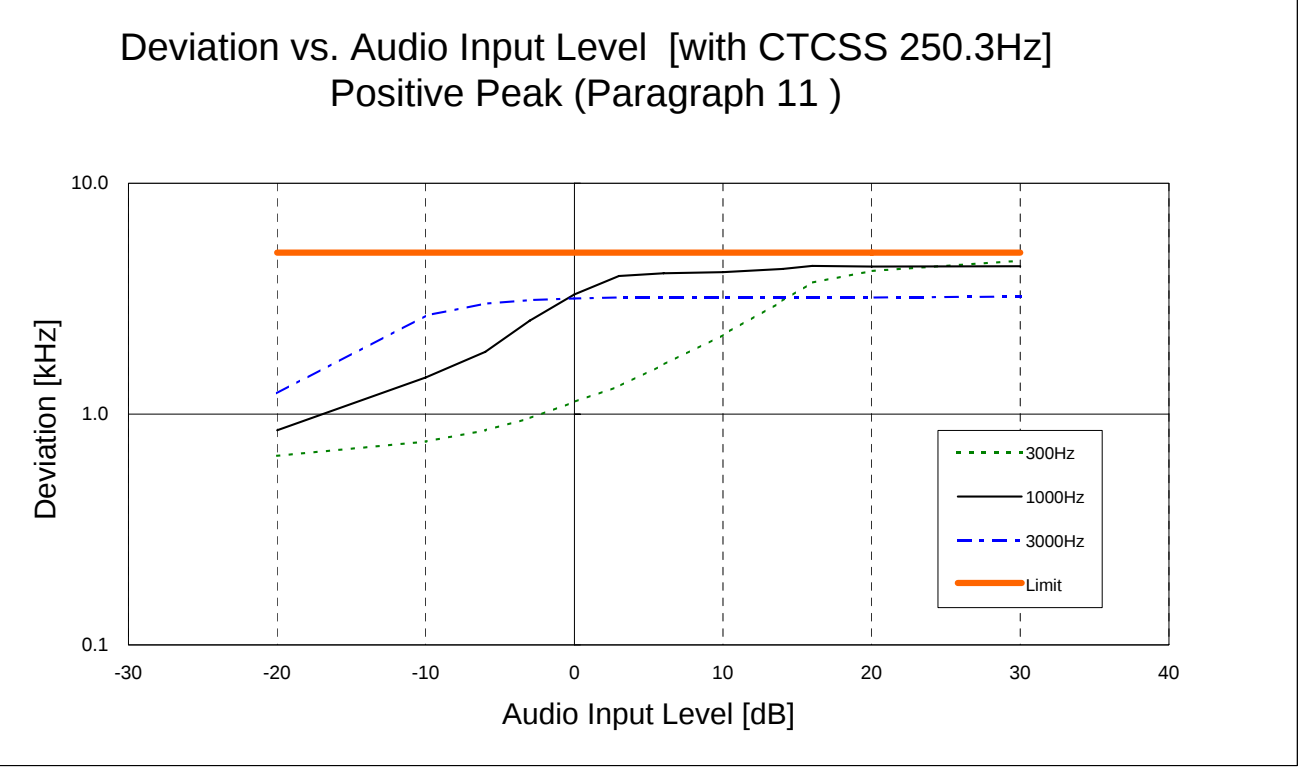
10.Deviation vs. Audio Input Level (Paragraph 10)



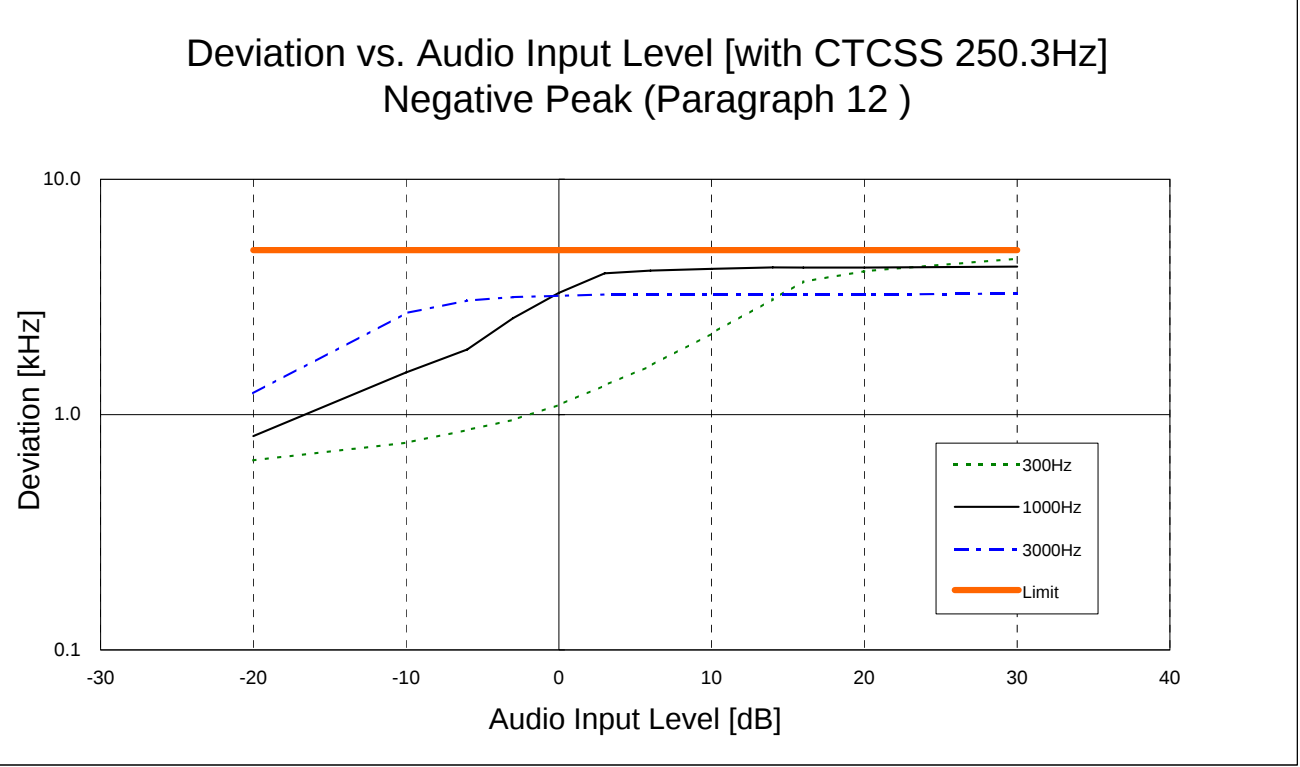
Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 16K0F3E
Channel Spacing 25[kHz]
Frequency 146.025[MHz]

0dB =15.0[mV]

11.Deviation vs. Audio Input Level (Paragraph 11)



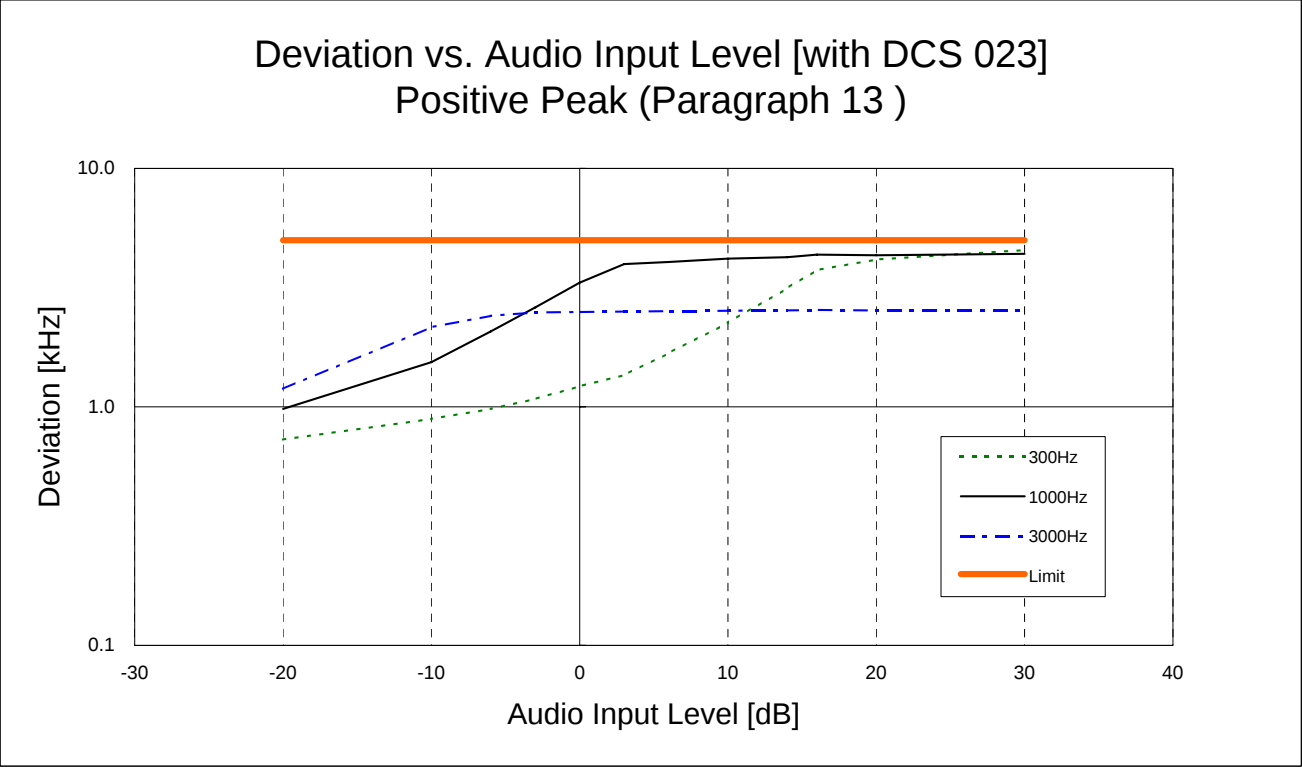
12.Deviation vs. Audio Input Level (Paragraph 12)



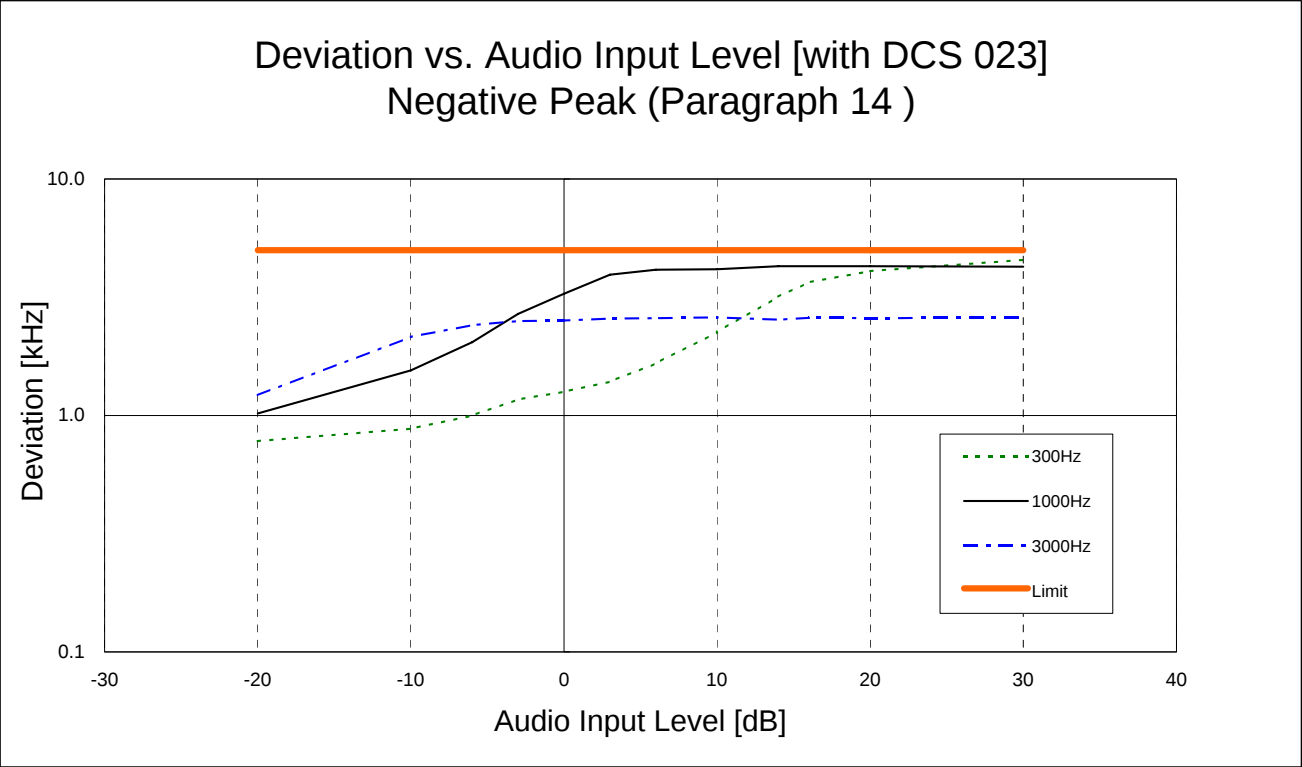
Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 16K0F3E
Channel Spacing 25[kHz]
Frequency 146.025[MHz]

0dB =15.0[mV]

13.Deviation vs. Audio Input Level (Paragraph 13)

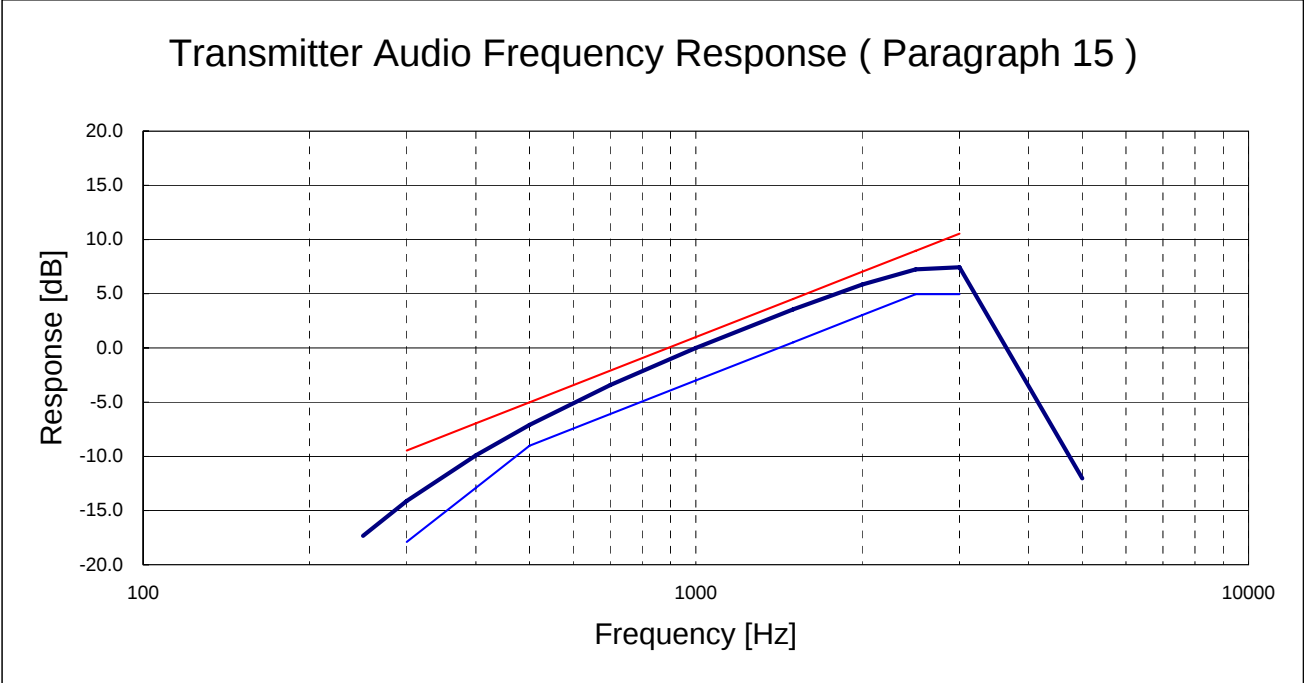


14.Deviation vs. Audio Input Level (Paragraph 14)

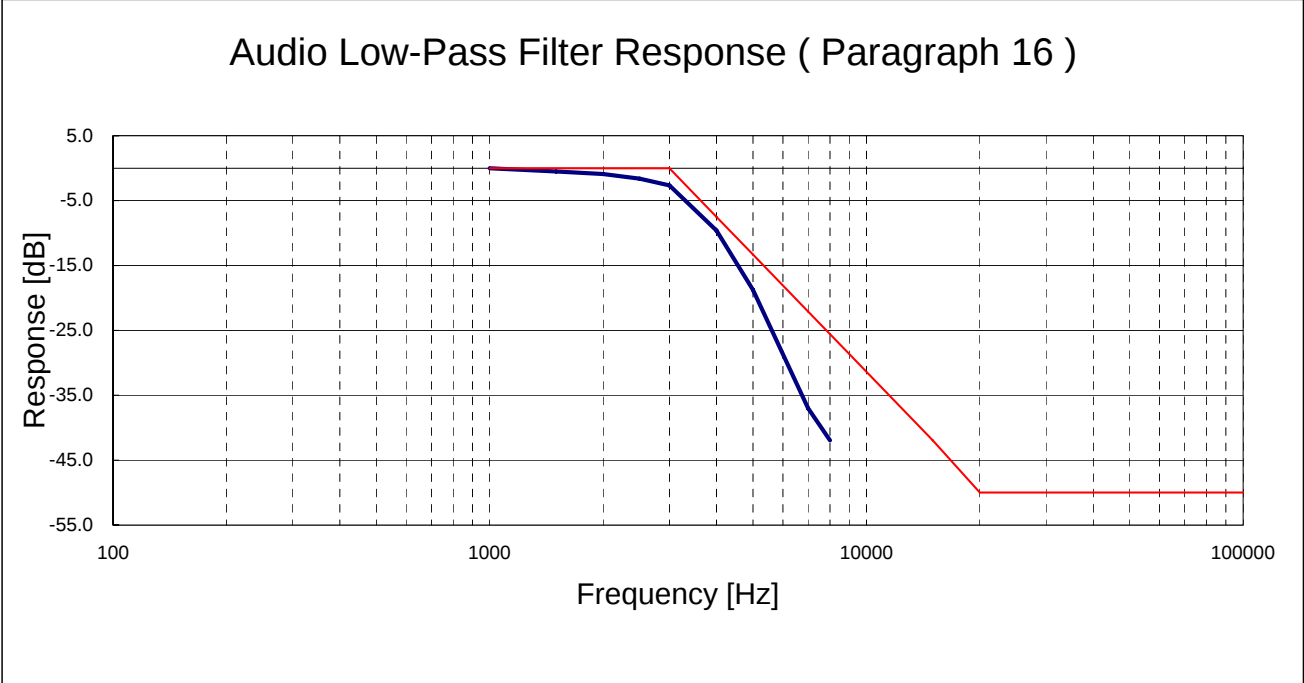


Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 16K0F3E
Channel Spacing 25[kHz]
Frequency 146.025[MHz]

15. Transmitter Audio Frequency Response (Paragraph 15)



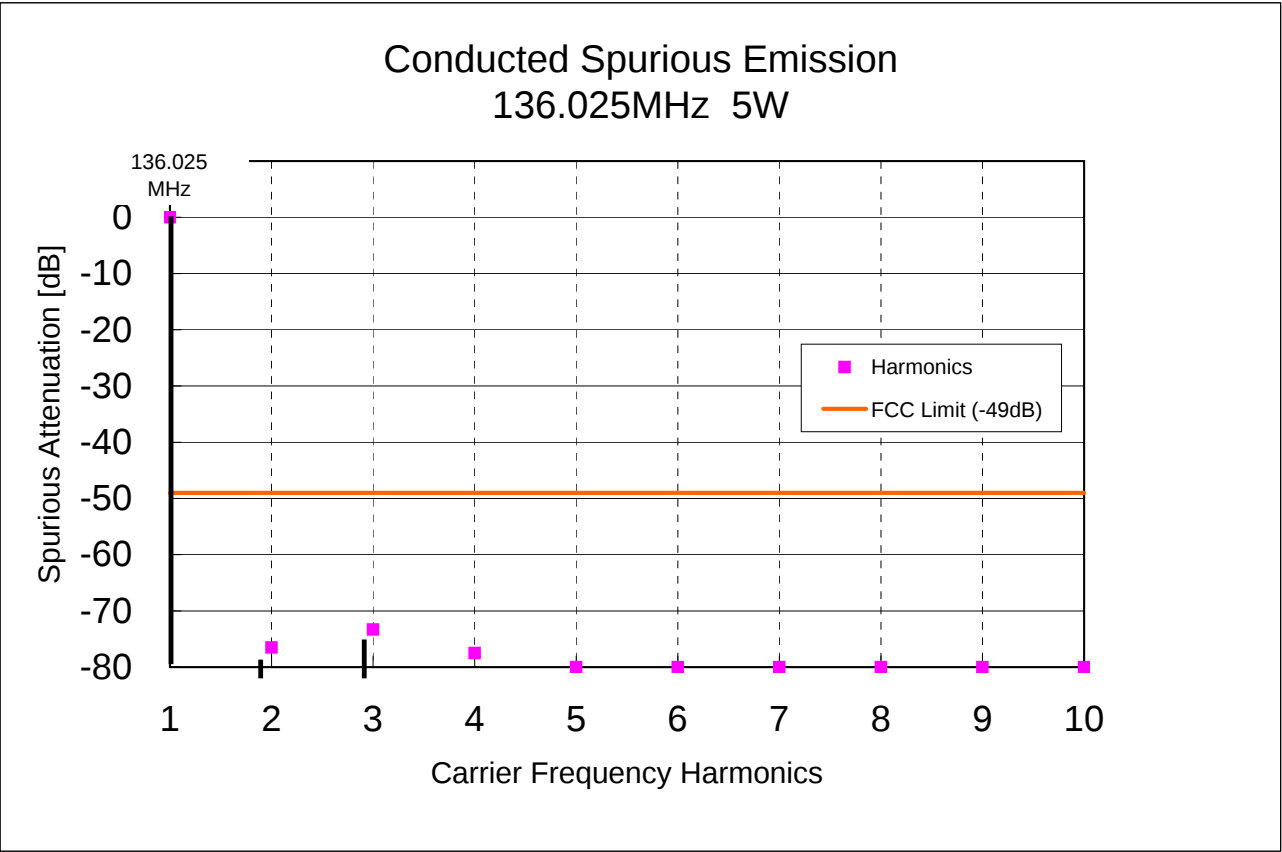
16. Audio Low-Pass Filter Response (Paragraph 16)



Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 16K0F3E
Channel Spacing 25[kHz]

17. Conducted Spurious Emission, 136.025MHz@5W (PARAGRAPH 17)

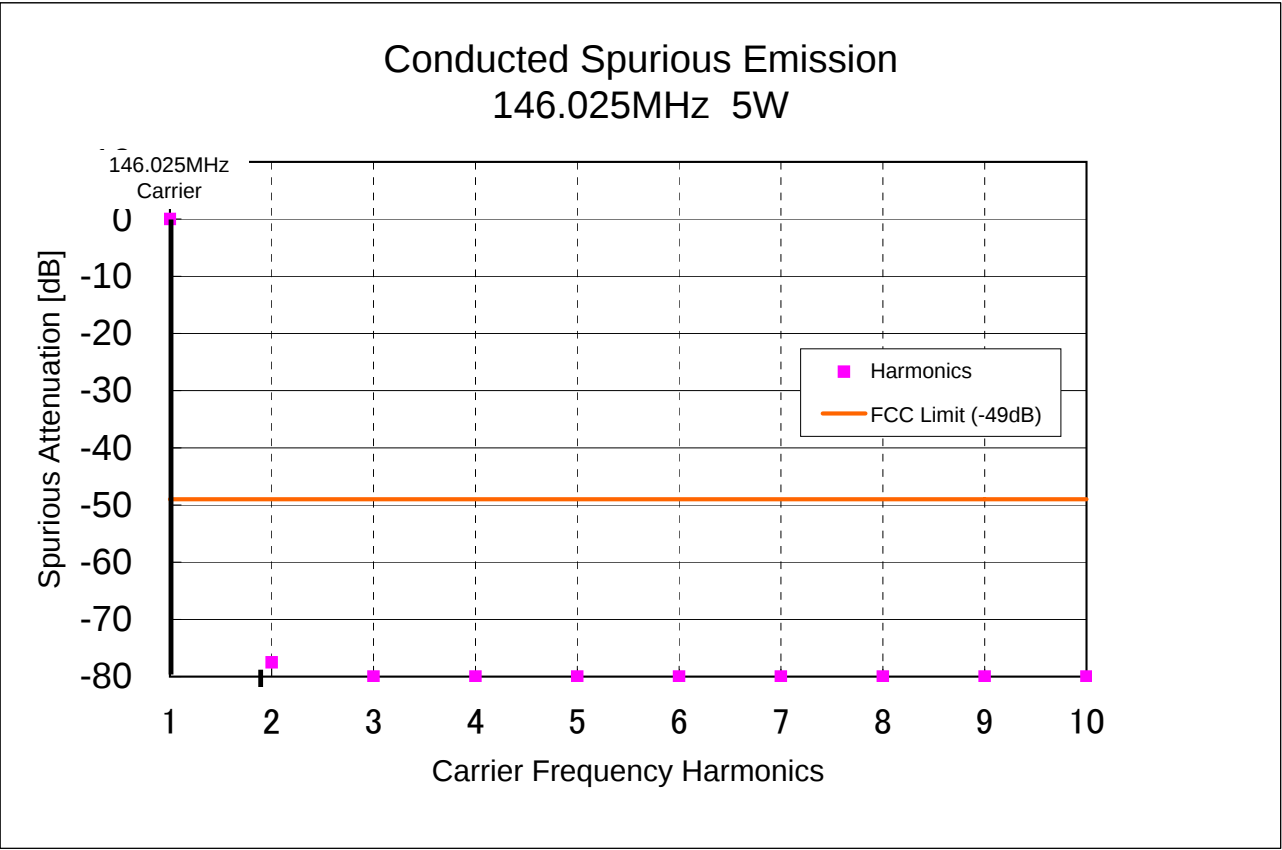
Harmonics	Emission Frequency [MHz]	Spurious Attenuation [dB]	FCC Limit
1	136.025(Carrier)	0.0	-49.0
2	272.050	-76.5	-49.0
3	408.075	-73.3	-49.0
4	544.100	-77.5	-49.0
5	680.100	-80.0	-49.0
6	816.150	-80.0	-49.0
7	952.175	-80.0	-49.0
8	1088.200	-80.0	-49.0
9	1224.225	-80.0	-49.0
10	1360.250	-80.0	-49.0



Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 16K0F3E
Channel Spacing 25[kHz]

18. Conducted Spurious Emission, 146.025MHz@5W (PARAGRAPH 18)

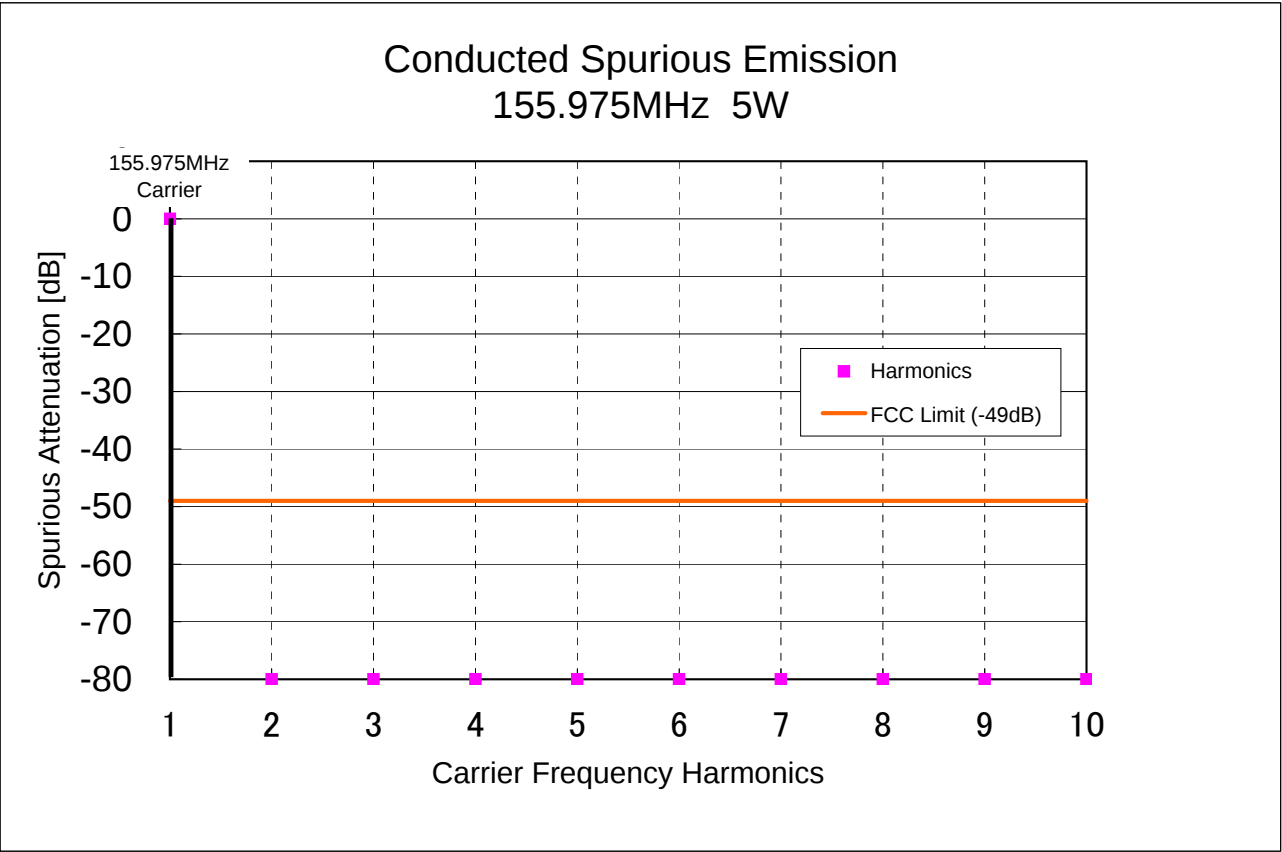
Harmonics	Emission Frequency [MHz]	Spurious Attenuation [dB]	FCC Limit
1	146.025(Carrier)	0.0	-49.0
2	292.050	-77.5	-49.0
3	438.075	-80.0	-49.0
4	584.100	-80.0	-49.0
5	730.125	-80.0	-49.0
6	876.150	-80.0	-49.0
7	1022.175	-80.0	-49.0
8	1168.200	-80.0	-49.0
9	1314.225	-80.0	-49.0
10	1460.250	-80.0	-49.0



Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 16K0F3E
Channel Spacing 25[kHz]

19. Conducted Spurious Emission, 155.975MHz@5W (PARAGRAPH 19)

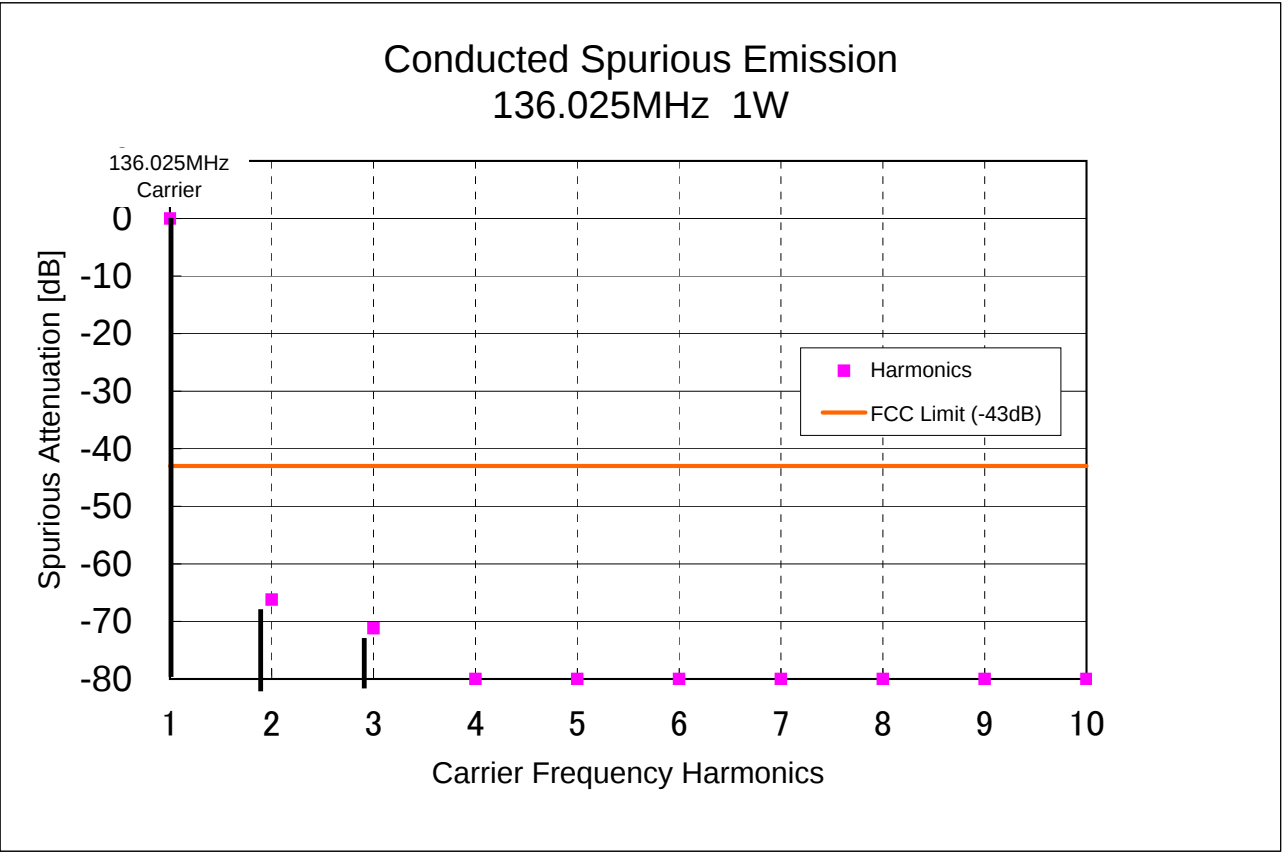
Harmonics	Emission Frequency [MHz]	Spurious Attenuation [dB]	FCC Limit
1	155.975(Carrier)	0.0	-49.0
2	311.950	-80.0	-49.0
3	467.925	-80.0	-49.0
4	623.900	-80.0	-49.0
5	779.975	-80.0	-49.0
6	935.850	-80.0	-49.0
7	1091.825	-80.0	-49.0
8	1247.800	-80.0	-49.0
9	1403.775	-80.0	-49.0
10	1559.750	-80.0	-49.0



Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 16K0F3E
Channel Spacing 25[kHz]

20. Conducted Spurious Emission, 136.025MHz@1W (PARAGRAPH 20)

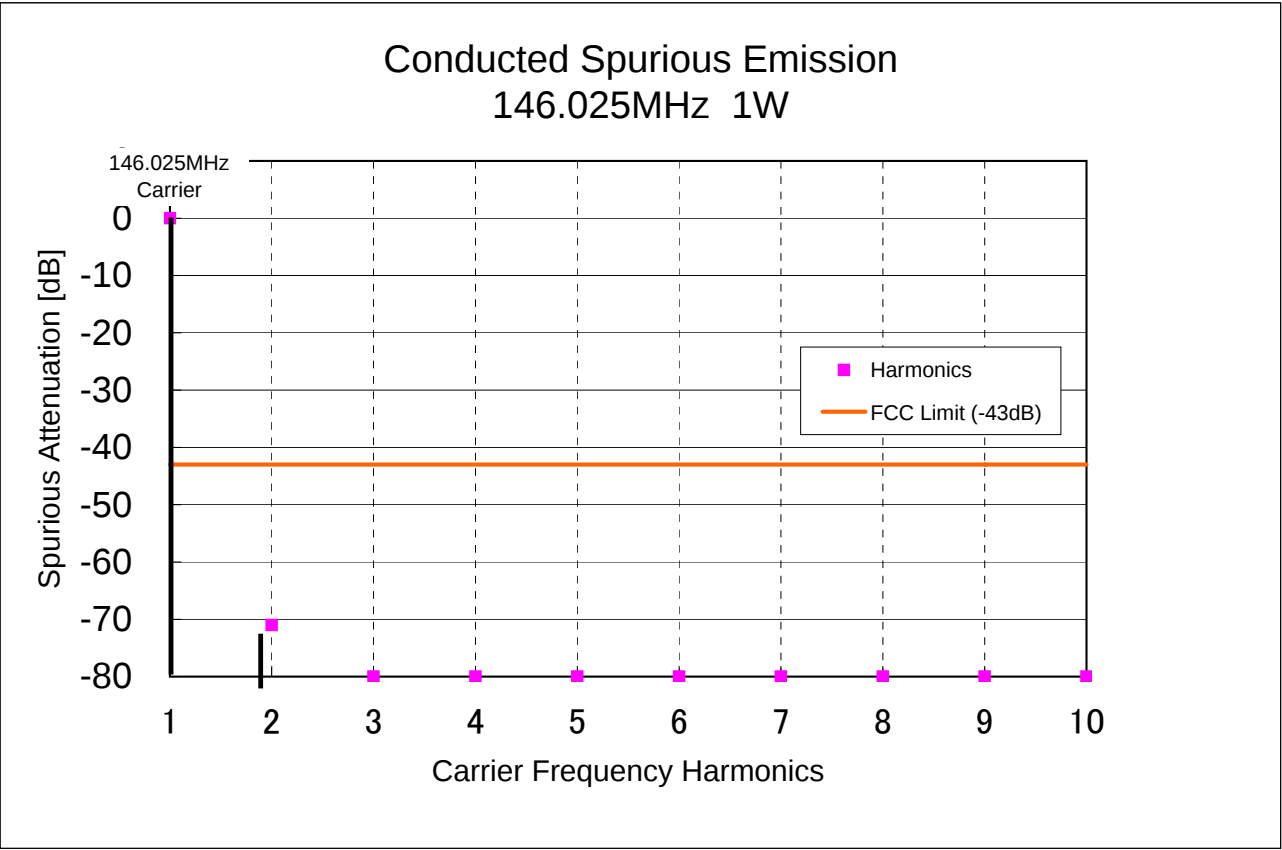
Harmonics	Emission Frequency [MHz]	Spurious Attenuation [dB]	FCC Limit
1	136.025(Carrier)	0.0	-43.0
2	272.050	-66.2	-43.0
3	408.075	-71.2	-43.0
4	544.100	-80.0	-43.0
5	680.100	-80.0	-43.0
6	816.150	-80.0	-43.0
7	952.175	-80.0	-43.0
8	1088.200	-80.0	-43.0
9	1224.225	-80.0	-43.0
10	1360.250	-80.0	-43.0



Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 16K0F3E
Channel Spacing 25[kHz]

21. Conducted Spurious Emission, 146.025MHz@1W (PARAGRAPH 21)

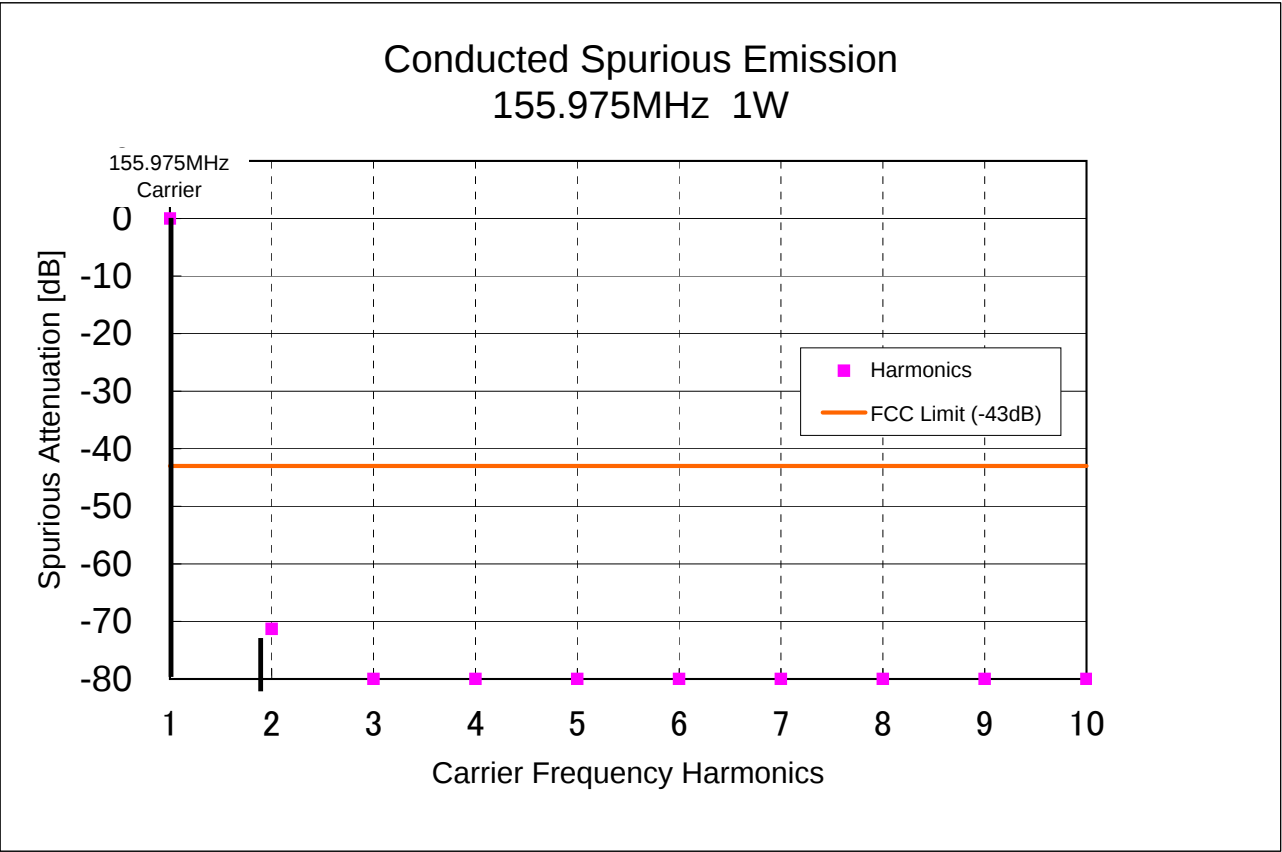
Harmonics	Emission Frequency [MHz]	Spurious Attenuation [dB]	FCC Limit
1	146.025(Carrier)	0.0	-43.0
2	292.050	-71.0	-43.0
3	438.075	-80.0	-43.0
4	584.100	-80.0	-43.0
5	730.125	-80.0	-43.0
6	876.150	-80.0	-43.0
7	1022.175	-80.0	-43.0
8	1168.200	-80.0	-43.0
9	1314.225	-80.0	-43.0
10	1460.250	-80.0	-43.0



Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 16K0F3E
Channel Spacing 25[kHz]

22. Conducted Spurious Emission, 155.975MHz@1W (PARAGRAPH 22)

Harmonics	Emission Frequency [MHz]	Spurious Attenuation [dB]	FCC Limit
1	155.975(Carrier)	0.0	-43.0
2	311.950	-71.3	-43.0
3	467.925	-80.0	-43.0
4	623.900	-80.0	-43.0
5	779.975	-80.0	-43.0
6	935.850	-80.0	-43.0
7	1091.825	-80.0	-43.0
8	1247.800	-80.0	-43.0
9	1403.775	-80.0	-43.0
10	1559.750	-80.0	-43.0



Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 16K0F3E
Channel Spacing 25[kHz]
Frequency 146.025[MHz]

23. Conducted Spurious Emission @Receiver (Paragraph 23)

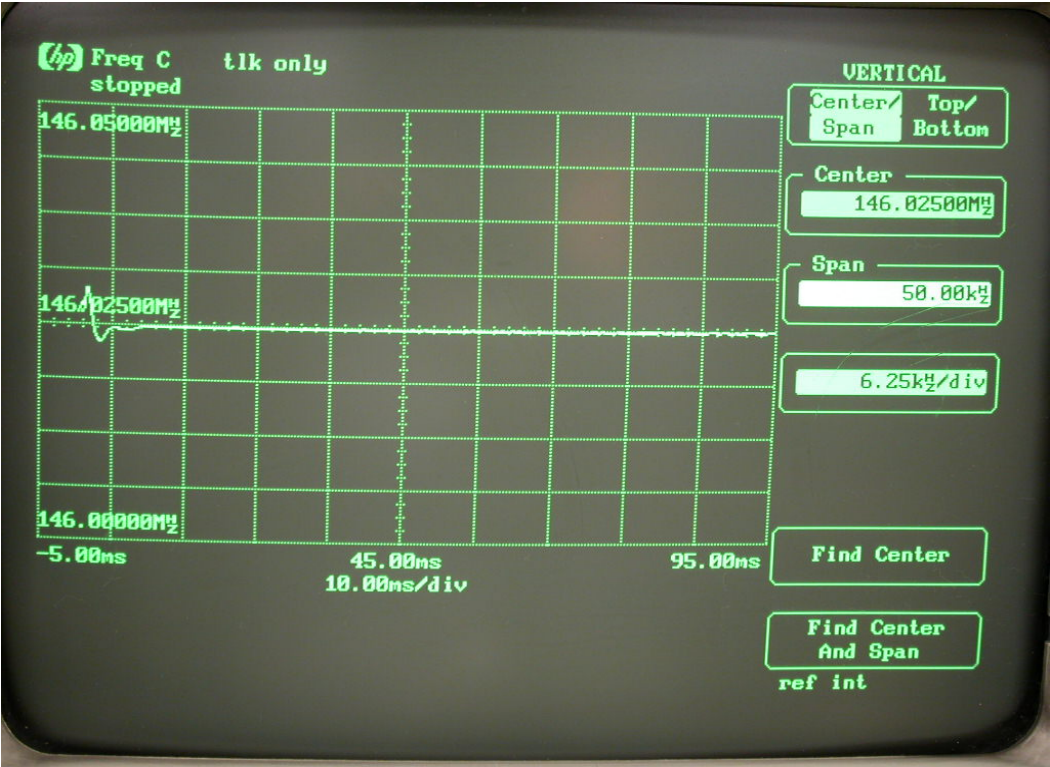
Frequency Tuned [MHz]	Frequency Emission [MHz]	Level [dBm]
146.025	190.975	---
146.025	381.950	---
146.025	572.925	---
146.025	763.900	---
146.025	954.875	---
146.025	1145.850	---
146.025	1336.825	---
146.025	1527.800	---
146.025	1718.775	---
146.025	1909.750	---

* Less than -80dBm

Model Name SC-280A, SC-281A
FCC ID O78SC280A
Serial Number SAMPLE1
Emission Type 16K0F3E
Channel Spacing 25[kHz]
Frequency 146.025[MHz]

24.Transient Behavior (Paragraph 24)

Switch on condition



Switch off condition

