June 05, 1998

FEDERAL COMMUNICATIONS COMMISSION
7435 Oakland Mills Road
Columbia, MD 21046
USA

Subject: **Type Acceptance Application under FCC CFR 47, Parts 2 and 90 - Radio Services Transmitters Operating in the frequency bands 403 - 512 MHz (12.5 kHz Channel Spacing).**

Applicant:	**TEKLOGIX INC.**
Product:	**TEKLOGIX TRX7355 VOICE/DATA FM MODULATED TRANSCEIVER (Base, Mobile & Portable)**
Model:	**TRX7355**
FCC ID:	**GM332D73552356781**

Dear Sir/Madam,

As appointed agent for **TEKLOGIX INC.**, please find enclosed copies of the engineering report, authorization form, application form and all required exhibits. The cheque in the amount of US $450.00 and FCC 159 Form has been con-currently sent to Mellon Bank for this application.

This application is submitted to FCC by an electronic filing system. However, the schematics and user's manual are not available in an electronic files and they are to big to be scanned. Therefore, the hard copies of these documents will be sent to you separately by mail or courier.

If you have any queries, please do not hesitate to contact us by our TOLL FREE numbers:

OUR TELEPHONE NO.: 1-800-263-7670

Yours truly,

Tri Minh Luu, P. Eng.,
V.P., Engineering

TML/AK

Encl.

June 05, 1998

TEKLOGIX INC.
2100 Meadowvale Blvd.
Mississauga, Ontario
Canada, L5N 7J9

Attn.: **Mr. Sada Dharwarkar**

Subject: **Type Acceptance Application under FCC CFR 47, Parts 2 and 90 - Radio Services Transmitters Operating in the frequency bands 403 - 512 MHz (12.5 kHz Channel Spacing).**

Product: **TEKLOGIX TRX7355 VOICE/DATA FM MODULATED TRANSCEIVER (Base, Mobile & Portable)**
Model: **TRX7355**
FCC ID: **GM332D73552356781**

Dear Mr. Dharwarkar,

The product sample, as provided by you, has been tested and found to comply with **FCC Parts 2 & 90, Subpart I, Radio Services Operating in the Frequency Bands 403 - 512 MHz.**

We, UltraTech Engineering Labs Inc., as appointed agent for **TEKLOGIX INC.**, will prepare the application to Federal Communications Commission (F.C.C.) for authorization of this equipment under Certification requirements of F.C.C. Rules. The engineering report and required application documents have been submitted to FCC for inspection.

Enclosed you will find copies of the engineering report. If you have any queries, please do not hesitate to contact us.

Yours truly,

Tri Minh Luu, P. Eng.,
V.P., Engineering

Encl.

ENGINEERING TEST REPORT

TEKLOGIX TRX7355 VOICE/DATA FM MODULATED TRANSCEIVER
(Base, Mobile & Portable)
MODEL NO.: TRX7355

FCC ID: GM332D73552356781

FCC PART 2
&
PART 90, SUBPART I
RADIO SERVICES
FOR
COMMERCIAL/INDUSTRIAL USES

UltraTech's FILE NO.: TEK-122FTX

TESTED FOR:

TEKLOGIX INC.
2100 Meadowvale Blvd.
Mississauga, Ontario
Canada, L5N 7J9

TESTED BY:

UltraTech Engineering Labs Inc.
4181 Sladeview Crescent, Unit 33
Mississauga, Ontario
Canada L5L 5R2

DATE: June 05, 1998

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1. EXHIBIT 1 - SUMMARY OF TEST RESULTS & GENERAL STATEMENT OF CERTIFICATION

FCC PARAGRAPH.	TEST REQUIREMENTS	COMPLIANCE (YES/NO)
90.205 & 2.985	RF Power Output	Yes
90.213 & 2.995	Frequency Stability	Yes
90.242(b)(8) & 2.987(a)	Audio Frequency Response	Yes
90.210 & 2.987(b)	Modulation Limiting	Yes
90.210 & 2.989	Emission Masks	Yes
90.210, 2.997 & 2.991	Emission Limits - Spurious Emissions at Antenna Terminal	Yes
90.210, 2.997 & 2.993	Emission Limits - Field Strength of Spurious Emissions	Yes
90.214	Transient Frequency Behavior	Yes

TEKLOGIX TRX7355 VOICE/DATA FM MODULATED TRANSCEIVER (Base, Mobile & Portable) has also been tested and found to comply with **FCC Part 15, Subpart B - Radio Receivers and Class A Digital Devices** when tested with all of the Teklogix System models: **6040 (Mobile), 7025 (Portable), 7030 (Portable), 8045 (Mobile), 8050 (Mobile), 8055 (Mobile), 8060 (Mobile), 9130 (Base) and 9140 (Base).**

The engineering test report has been documented and kept in file and it is available anytime upon FCC request.

TESTIMONIAL AND STATEMENT OF CERTIFICATION

THIS IS TO CERTIFY:

1) *THAT the application was prepared either by, or under the direct supervision of the undersigned.*

2) *THAT the measurement data supplied with the application was taken under my direction and supervision.*

3) *THAT the data was obtained on representative production units, representative.*

4) *THAT, to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.*

Certified by:

_____

Tri Minh Luu, P. Eng.
V.P., Engineering

DATE: June 05, 1998

1. EXHIBIT 2 - GENERAL INFORMATION

1.1. APPLICANT

TEKLOGIX INC.
2100 Meadowvale Blvd.
Mississauga, Ontario
Canada, L5N 7J9

Applicant's Representative: Mr. Sada Dharwarkar

1.2. MANUFACTURER OF THE RADIO MODULE

JOHNSON DATA TELEMETRY CORPORATION
299 Johnson Ave., P.O. 1733
Waseca, Minnesota
USA 56093-0833

1.3. DESCRIPTION OF EQUIPMENT UNDER TESTS

PRODUCT NAME:	TEKLOGIX TRX7355 VOICE/DATA FM MODULATED TRANSCEIVER (Base, Mobile & Portable)
MODEL NO.:	TRX7355
SERIAL NUMBER:	Pre-production
TYPE OF EQUIPMENT:	Radio Services Transmitters
SERVICES AREAS:	Commercial/Industrial
OPERATING FREQ.:	403 - 512 MHz
CHANNEL SPACINGS:	12.5 kHz
POWER RATING:	2 Watts
OUTPUT IMPEDANCE:	50 Ohms
DUTY CYCLE:	Continuous
NECESSARY BANDWIDTH:	8.8 kHz (Voice), 13.2 kHz (Data)
BAUD RATES:	4800 b/s or 9600 b/s
EMISSION DESIGNATION:	8K8F3E, 8K4F1D

(*) For an average case of commercial telephony, the Necessary Bandwidth is calculated as follows:

(i) For FM Voice Modulation:

- Channel Spacing = 12.5 KHz, D = 1.4 KHz max. as measured, K = 1, M = 3 KHz
  B_n = 2M + 2DK = 2(3) + 2(1.4)(1) = **8.8 KHz**
  emission designation: 8K8F3E

(ii) For FM Digital Modulation:

- Channel Spacing = 12.5 KHz, D = 1.8 KHz max. as measured, K = 1

  M = 9.6/4 kb/s (4 level of FM data modulation)
  B_n = 2M + 2DK = 2(9.6/4) + 2(1.8)(1) = **8.4 KHz**
  emission designation: 8K4F1D

OSC. FREQUENCY(IES): LO1: 52.95 MHz (High Side Injection), LO2: 450 kHz (Low Side Injection), Ref. Osc.: 17.5 MHz

INPUT SUPPLY: 7.2 Vdc nominal

ASSOCIATED DEVICES: N/A

FCC ID: GM332D73552356781

1.4. RELATED SUBMITTALS)/GRANT

Not applicable

1.5. TEST METHODOLOGY

These tests were conducted on a sample of the equipment for the purpose of certification compliance with Code of Federal Regulations, Parts 2 & 90, Subpart I, Radio Services Operating in the Frequency Bands 403 - 512 MHz.

Both conducted and radiated emissions measurements were conducted in accordance with American National Standards Institute ANSI C63.4 - American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

1.6. TEST FACILITY

AC Powerline Conducted Emissions were performed in UltraTech's shielded room, 16'(L) by 12'(W) by 12'(H).

Radiated Emissions were performed at the Ultratech's 3-to-30 Meter Open Field Test Site (OFTS) situated in the Town of Oakville, province of Ontario.

The above sites have been calibrated in accordance with ANSI C63.4, and found to be in compliance with the requirements of Sec. 2.948 of the FCC Rules. The descriptions and site measurement data of the Oakville Open Field Test Site has been filed with FCC office (FCC File No.: 31040/SIT 1300B3). Last Date of Site Calibration: July 16, 1997

The above test site is also filed with Interference Technology International Ltd (ITI - An EC Directive on EMC).

1.7. UNITS OF MEASUREMENTS

Measurements of conducted emissions are reported in units of dB referenced to one microvolt [dB(uV)].

Measurements of radiated emissions are reported in units of dB referenced to one microvolt per meter [dB(uV)/m] at the distance specified in the report, wherever it is applicable.

2. EXHIBIT 3 - SYSTEM TEST CONFIGURATION

2.1. TEST SYSTEM DETAILS

The following peripherals, FCC identifiers and types interconnecting cables were used with the EUT for testing:

EUT: TEKLOGIX INC., TEKLOGIX TRX7355 VOICE/DATA FM MODULATED TRANSCEIVER (Base, Mobile & Portable), Model : TRX7355, S/N: pre-production, OSC. FREQ: LO1: 52.95 MHz (High Side Injection), LO2: 450 kHz (Low Side Injection), Ref. Osc.: 17.5 MHz

This radio will be tested with the following Teklogix Systems:

(1) Teklogix TRX7355 Radio with Teklogix 6040 (Mobile) System

- **Associated Device #1**: 13.8 Vdc Battery or External Power Supply, M/N: PSA0153, S/N: M70400416D2. Power Cable: non-shielded.
- **Peripheral Device #1**: Digital Console (Control terminal), Model VT-220, FCC Class Verifeid. I/O Cable: shielded.
- **Peripheral Device #2**: 50 Ohm, 50 Watts, RF Load. RF Cable: Shielded.

(2) Teklogix TRX7355 Radio with Teklogix 7025 (Portable) System

- **Peripheral Device #1**: Symbol Tech Laser Scanner, M/N: LS-3200ER-1200A, S/N: D126916, FCC Class A Verified, CE Approved. I/O Cable: shielded.
- **Peripheral Device #2**: Johnson Microphone, P.N: 589-0015-020. I/O Cable: shielded
- **Peripheral Device #3**: 50 Ohm, 50 Watts, RF Load. RF Cable: Shielded.

(3) Teklogix TRX7355 Radio with Teklogix 7030 (Portable) System

- **Peripheral Device #1**: Symbol Tech Laser Scanner, M/N: LS-3200ER-1200A, S/N: D126916, FCC Class A Verified, CE Approved. I/O Cable: shielded.
- **Peripheral Device #2**: Johnson Microphone, P.N: 589-0015-020. I/O Cable: shielded
- **Peripheral Device #3**: 50 Ohm, 50 Watts, RF Load. RF Cable: Shielded.

(4) Teklogix TRX7355 Radio with Teklogix 8045 (Mobile) System

- **Associated Device #1**: 13.8 Vdc Battery or External Power Supply, M/N: PSA0153, S/N: M70400416D2. Power Cable: non-shielded.
- **Peripheral Device #1**: Symbol Tech Laser Scanner, M/N: LS-3200ER-1200A, S/N: D126916, FCC Class A Verified, CE Approved. I/O Cable: shielded.
- **Peripheral Device #2**: Johnson Microphone, P.N: 589-0015-020. I/O Cable: shielded
- **Peripheral Device #3**: 50 Ohm, 50 Watts, RF Load. RF Cable: Shielded.

(5) Teklogix TRX7355 Radio with Teklogix 8050 (Mobile) System

- **Associated Device #1**: 13.8 Vdc Battery or External Power Supply, M/N: PSA0153, S/N: M70400416D2. Power Cable: non-shielded.
- **Associated Device #2**: Teklogix 8050 Keyboard. I/O Cable: Shielded
- **Peripheral Device #1**: Symbol Tech Laser Scanner, M/N: LS-3200ER-1200A, S/N: D126916, FCC Class A Verified, CE Approved. I/O Cable: shielded.
- **Peripheral Device #2**: Johnson Microphone, P.N: 589-0015-020. I/O Cable: shielded
- **Peripheral Device #3**: 50 Ohm, 50 Watts, RF Load. RF Cable: Shielded.

(6) Teklogix TRX7355 Radio with Teklogix 8055 (Mobile) System

- **Associated Device #1**: 13.8 Vdc Battery or External Power Supply, M/N: PSA0153, S/N: M70400416D2. Power Cable: non-shielded.
- **Peripheral Device #1**: Symbol Tech Laser Scanner, M/N: LS-3200ER-1200A, S/N: D126916, FCC Class A Verified, CE Approved. I/O Cable: shielded.
- **Peripheral Device #2**: Johnson Microphone, P.N: 589-0015-020. I/O Cable: shielded
- **Peripheral Device #3**: 50 Ohm, 50 Watts, RF Load. RF Cable: Shielded.

(7) Teklogix TRX7355 Radio with Teklogix 8060 (Mobile) System

- **Associated Device #1**: 13.8 Vdc Battery or External Power Supply, M/N: PSA0153, S/N: M70400416D2. Power Cable: non-shielded.
- **Associated Device #2**: Teklogix 8060 Keyboard. I/O Cable: Shielded
- **Peripheral Device #1**: Symbol Tech Laser Scanner, M/N: LS-3200ER-1200A, S/N: D126916, FCC Class A Verified, CE Approved. I/O Cable: shielded.
- **Peripheral Device #2**: Johnson Microphone, P.N: 589-0015-020. I/O Cable: shielded
- **Peripheral Device #3**: 50 Ohm, 50 Watts, RF Load. RF Cable: Shielded.

(8) Teklogix TRX7355 Radio with Teklogix 9130 (Base) System

- **Peripheral Device #1**: Digital Console (Control terminal), Model VT-220, FCC Class Verifeid. I/O Cable: shielded.
- **Peripheral Device #2**: 50 Ohm, 50 Watts, RF Load. RF Cable: Shielded.

(9) Teklogix TRX7355 Radio with Teklogix 9140 (Base) System

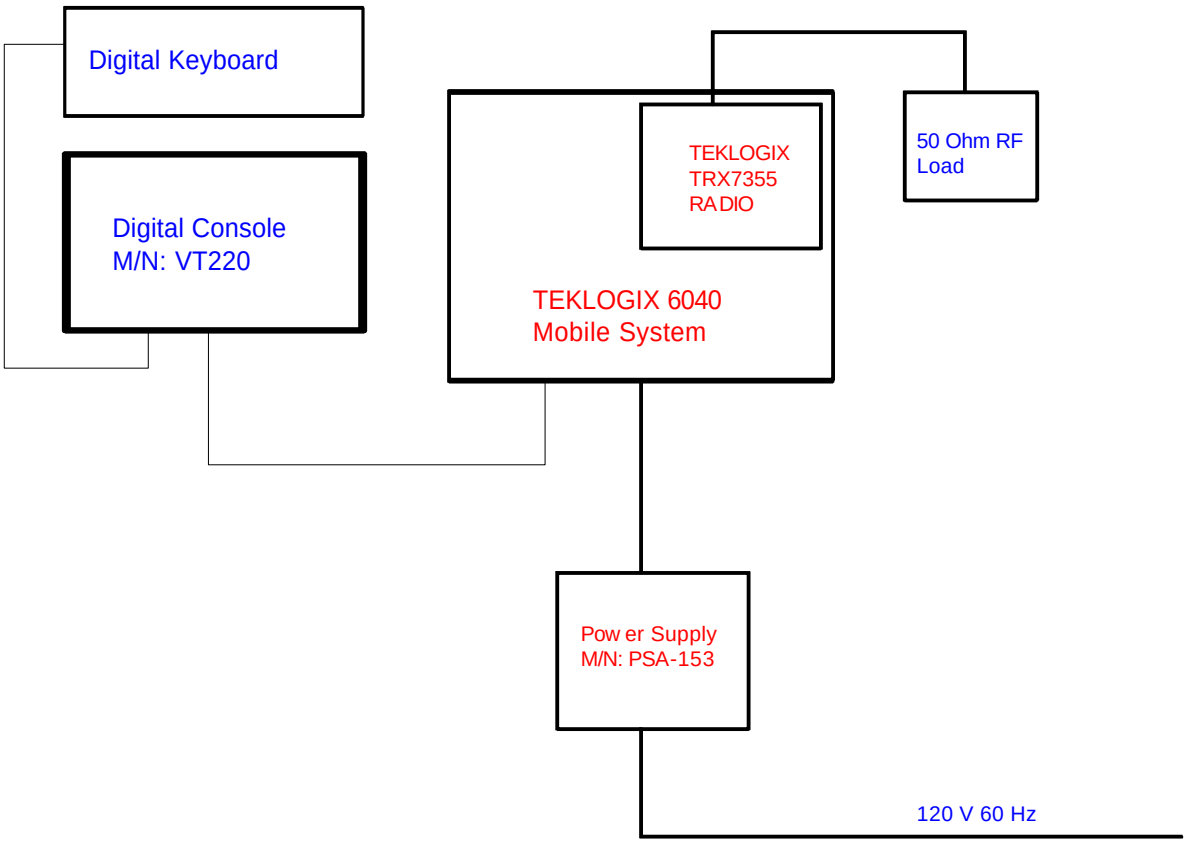
- **Peripheral Device #1**: Digital Console (Control terminal), Model VT-220, FCC Class Verifeid. I/O Cable: shielded.
- **Peripheral Device #2**: 50 Ohm, 50 Watts, RF Load. RF Cable: Shielded.

(10) Teklogix TRX7355 Radio with (Outside any Teklogix System)

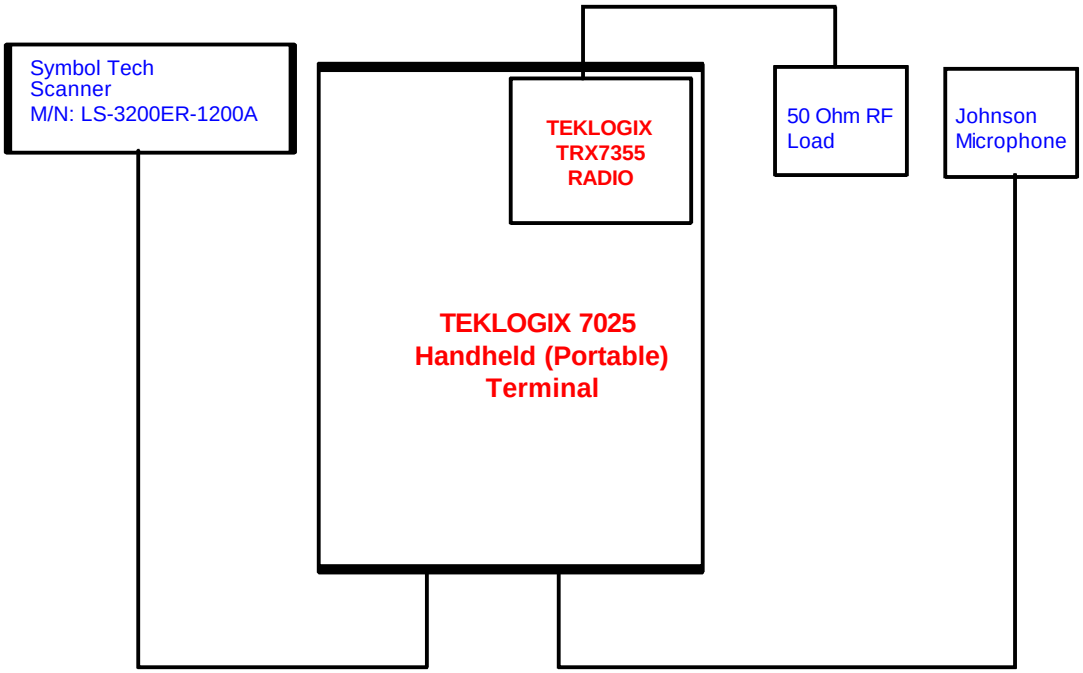
- **Test Jig**: Teklogix Customed Test Jig. I/O Cable: non-shielded.
- **Peripheral Device**: 50 Ohm, 50 Watts, RF Load. RF Cable: Shielded.

2.2. BLOCK DIAGRAMS OF TEST SET-UP

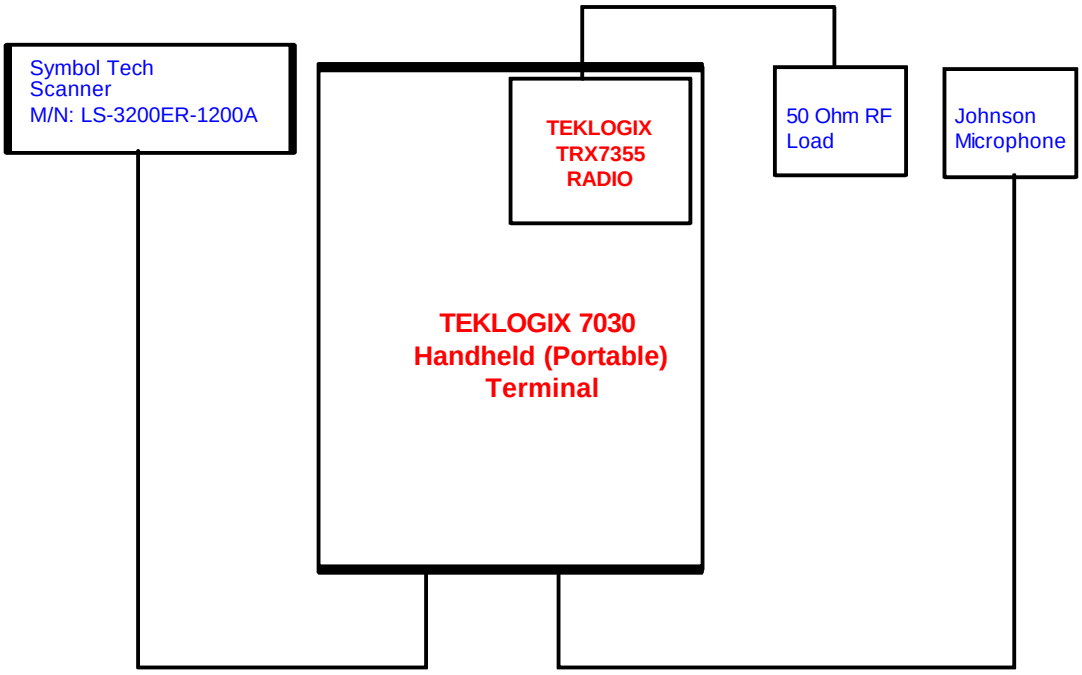
2.2.1. Teklogix TRX7355 Radio with Teklogix 6040 (Mobile) System



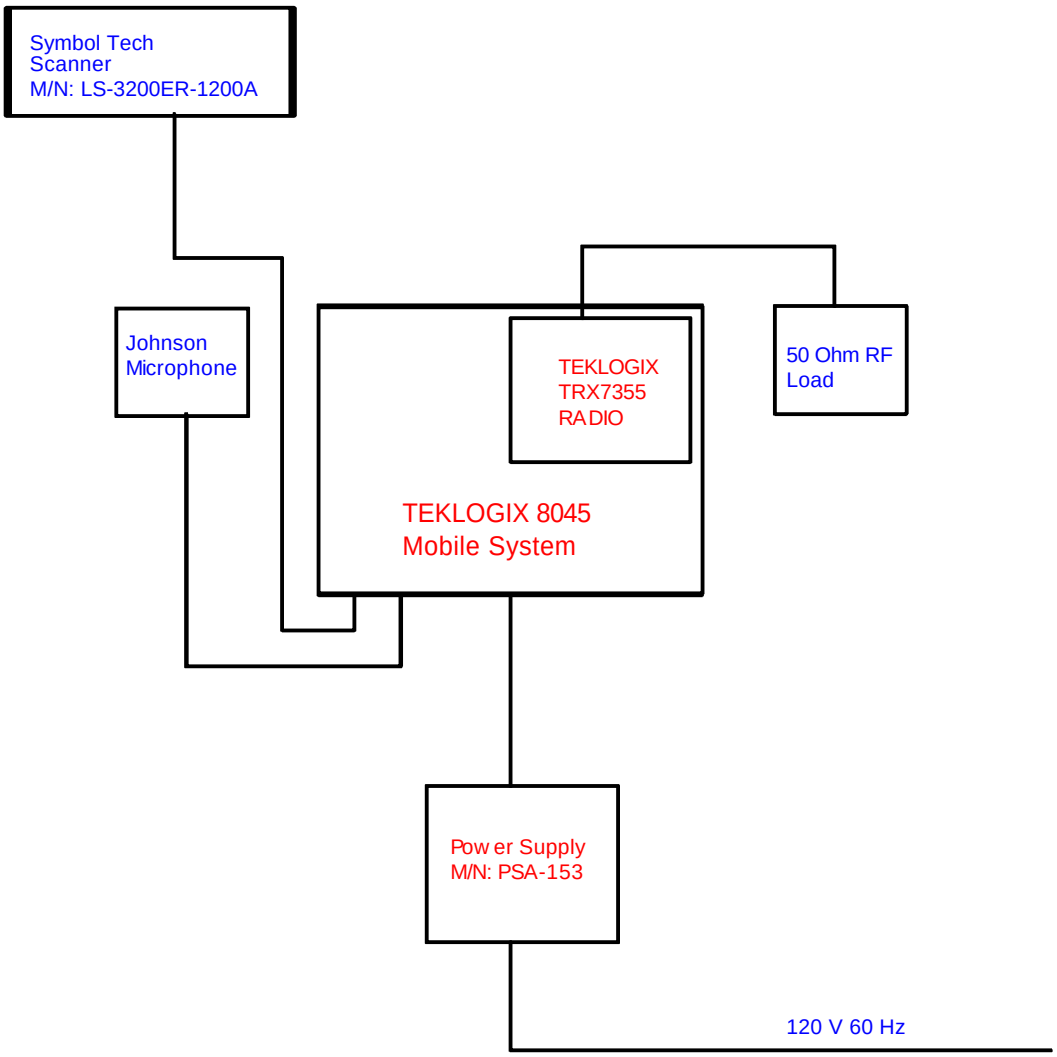
2.2.2. Teklogix TRX7355 Radio with Teklogix 7025 (Portable) System



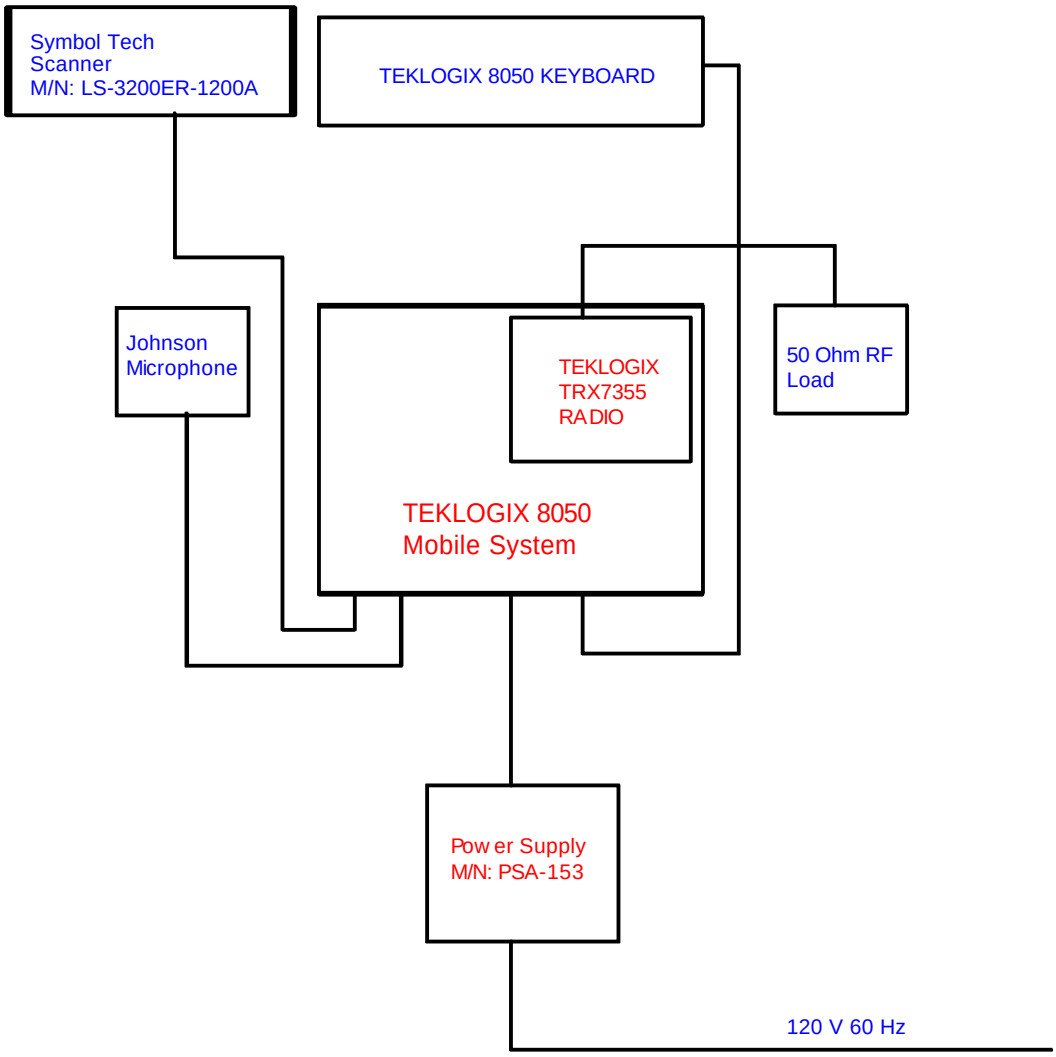
2.2.3. Teklogix TRX7355 Radio with Teklogix 7030 (Portable) System



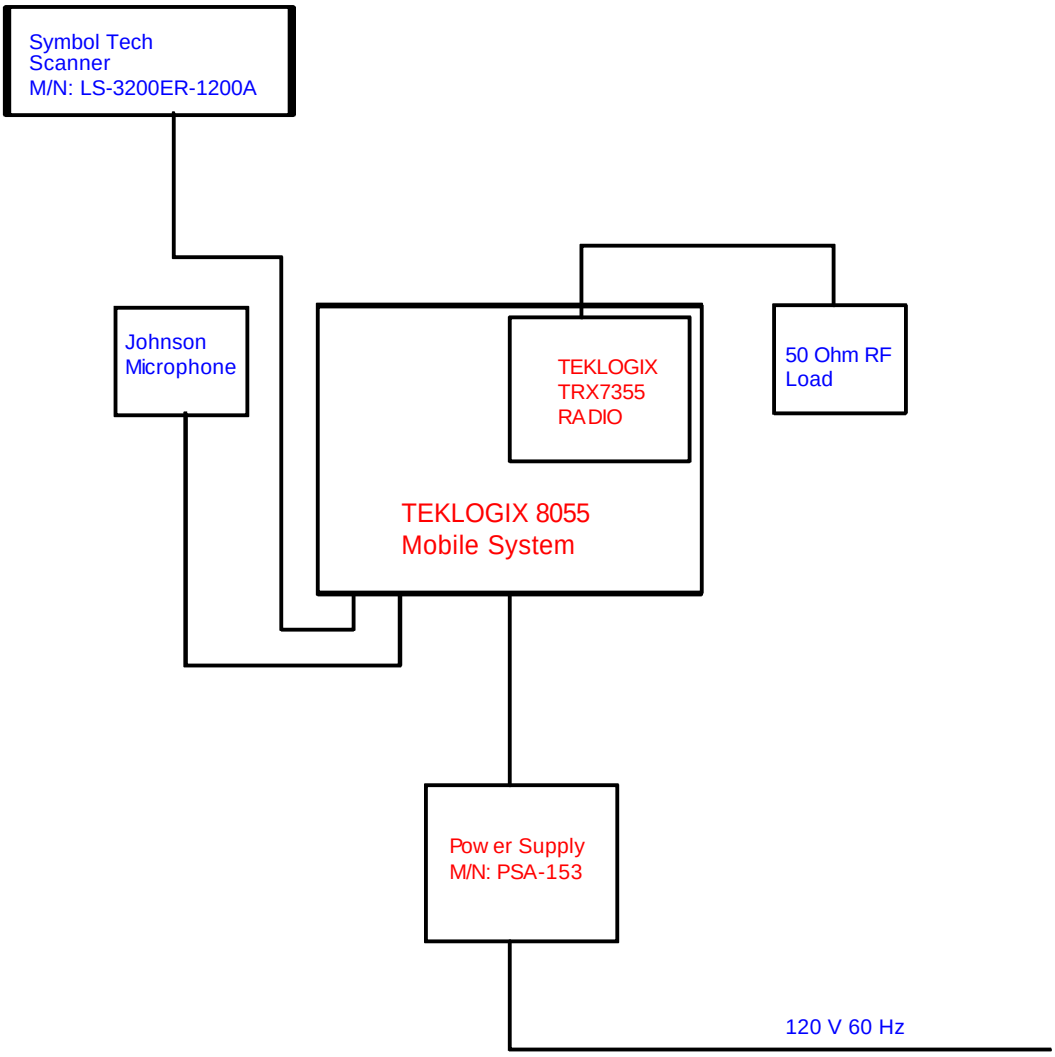
2.2.4. Teklogix TRX7355 Radio with Teklogix 8045 (Mobile) System



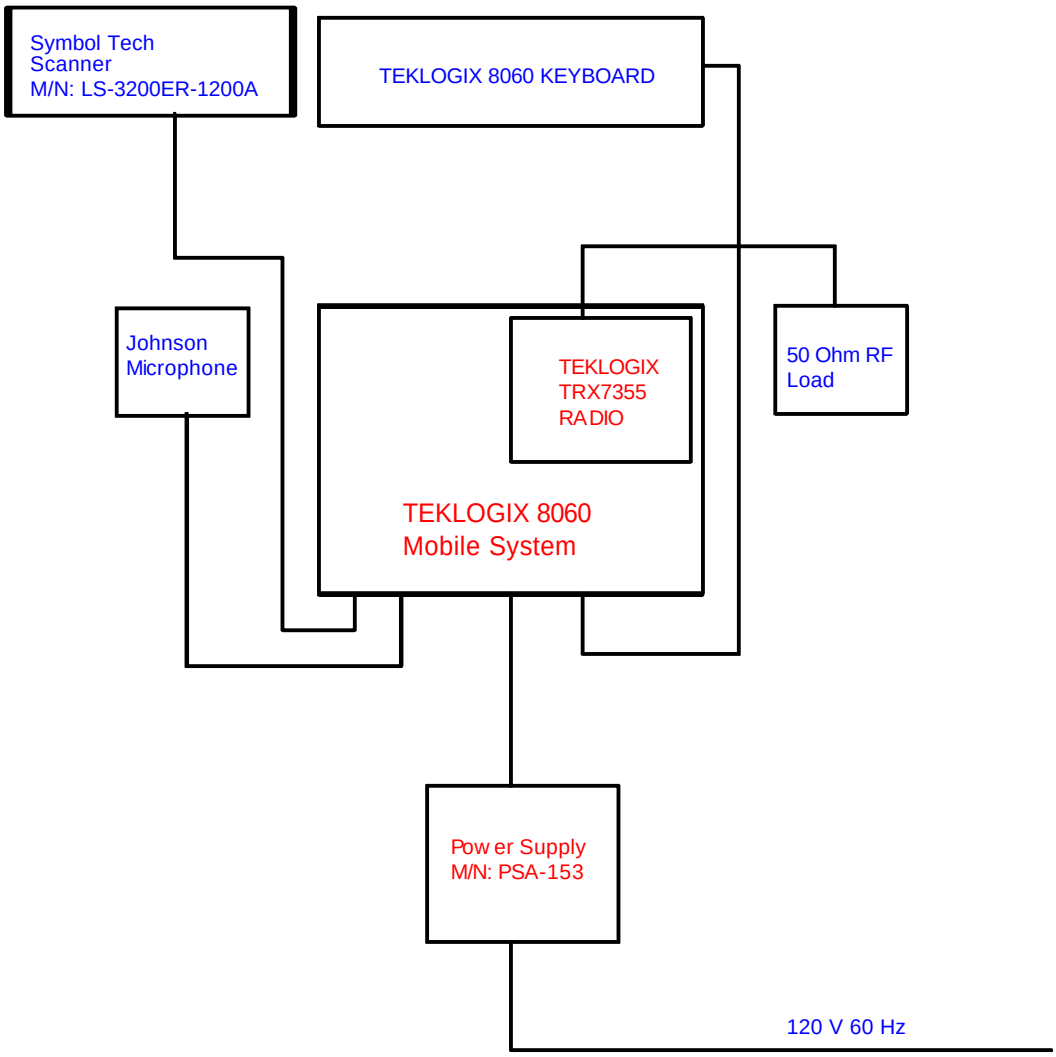
2.2.5. Teklogix TRX7355 Radio with Teklogix 8050 (Mobile) System



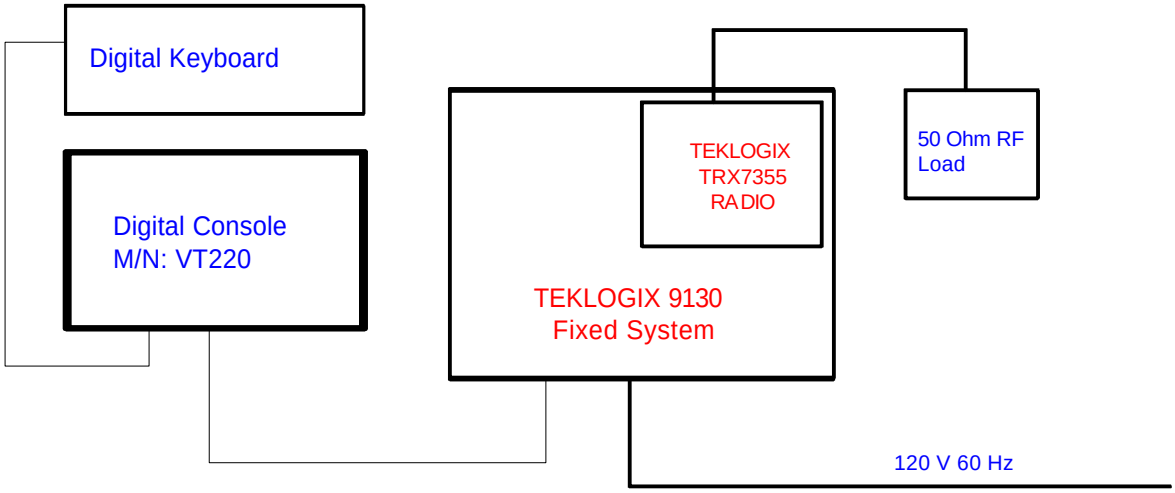
2.2.6. Teklogix TRX7355 Radio with Teklogix 8055 (Mobile) System



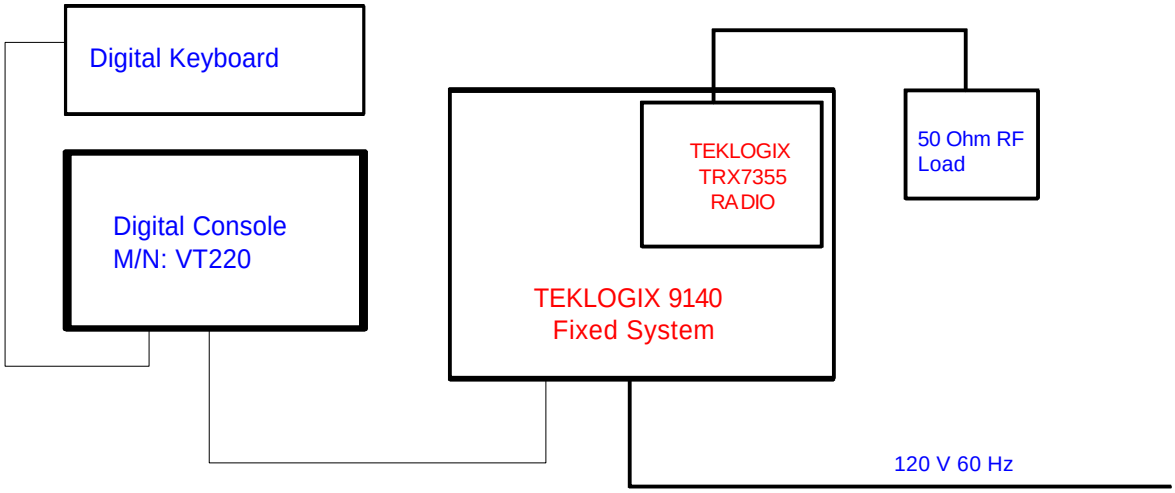
2.2.7. Teklogix TRX7355 Radio with Teklogix 8060 (Mobile) System



2.2.8. Teklogix TRX7355 Radio with Teklogix 9130 (Base) System

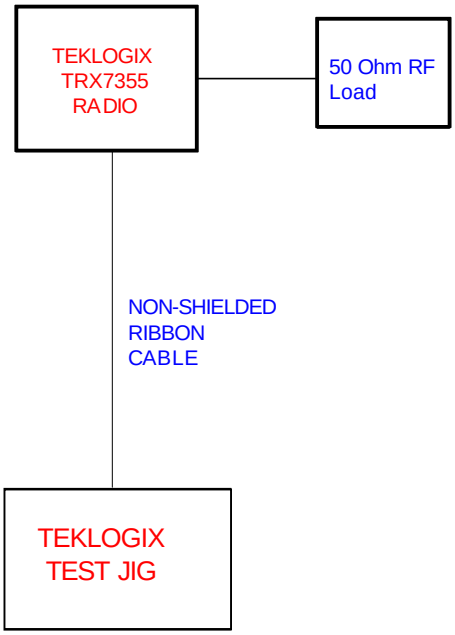


2.2.9. Teklogix TRX7355 Radio with Teklogix 9140 (Base) System



2.2.10. Teklogix TRX7355 Radio (outside any Teklogix system)

The Teklogix test Jig with the radio standing by itself on a wooden table and connected to the test jig using a non-shielded ribbon cable.



2.3. PHOTOGRAPHS FOR TEST SETUP AT OFTS FOR RADIATED EMISSIONS MEASUREMENTS

Tests were performed at the Open Field test Site located in Oakville, Ontario, Canada

2.3.1. Teklogix TRX7355 Radio with Teklogix 6040 (Mobile) System

TEKLOGIX
RF NETWORK
MODEM 6040

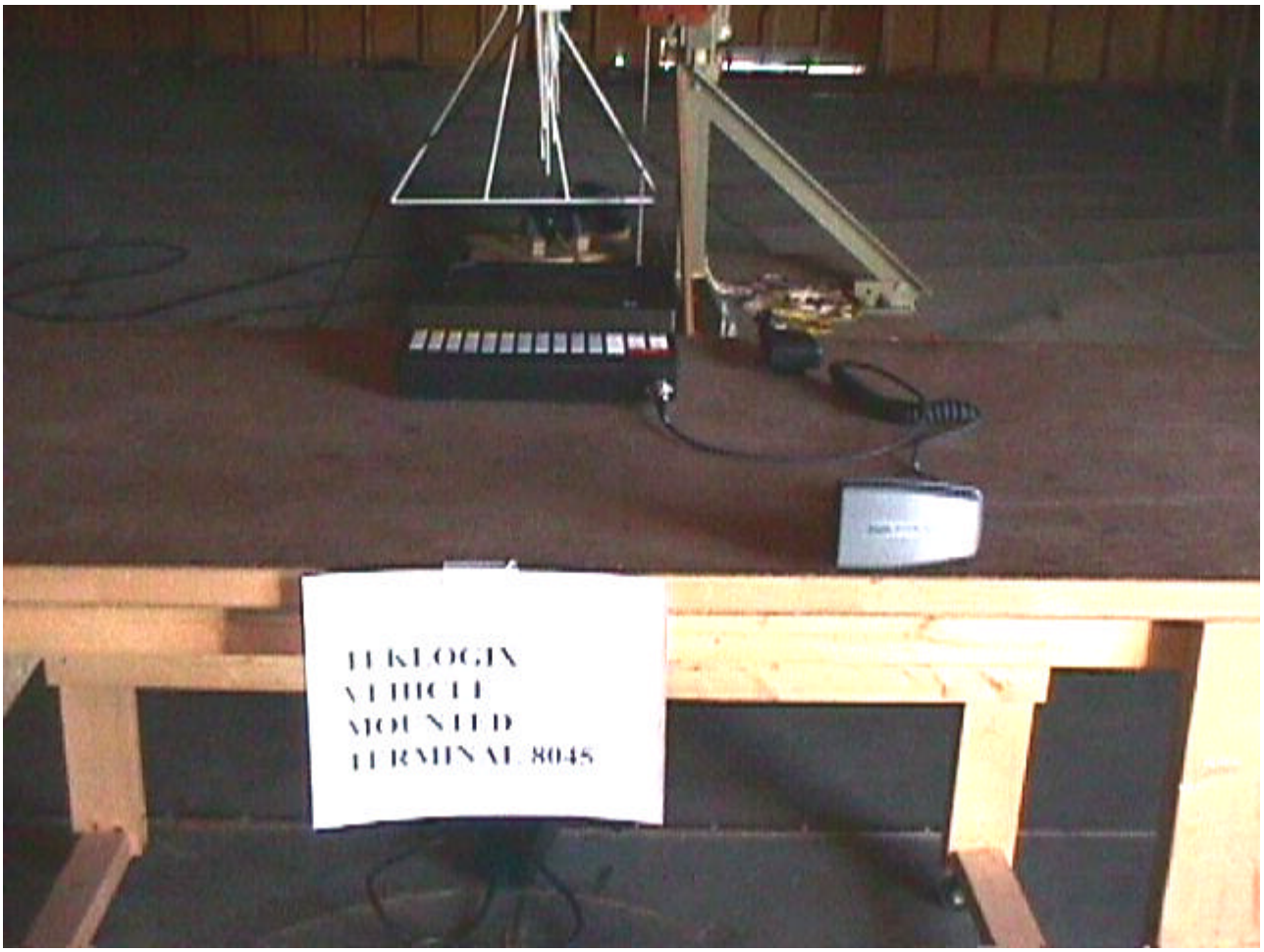
2.3.2. Teklogix TRX7355 Radio with Teklogix 7025 (Portable) System

TEKLOGIX
HANDHELD
TERMINAL 7025

2.3.3. Teklogix TRX7355 Radio with Teklogix 7030 (Portable) System

TEKLOGIX
HANDHELD
TERMINAL 7030

2.3.4. Teklogix TRX7355 Radio with Teklogix 8045 (Mobile) System



TEKLOGIX
VEHICLE
MOUNTED
TERMINAL 8045

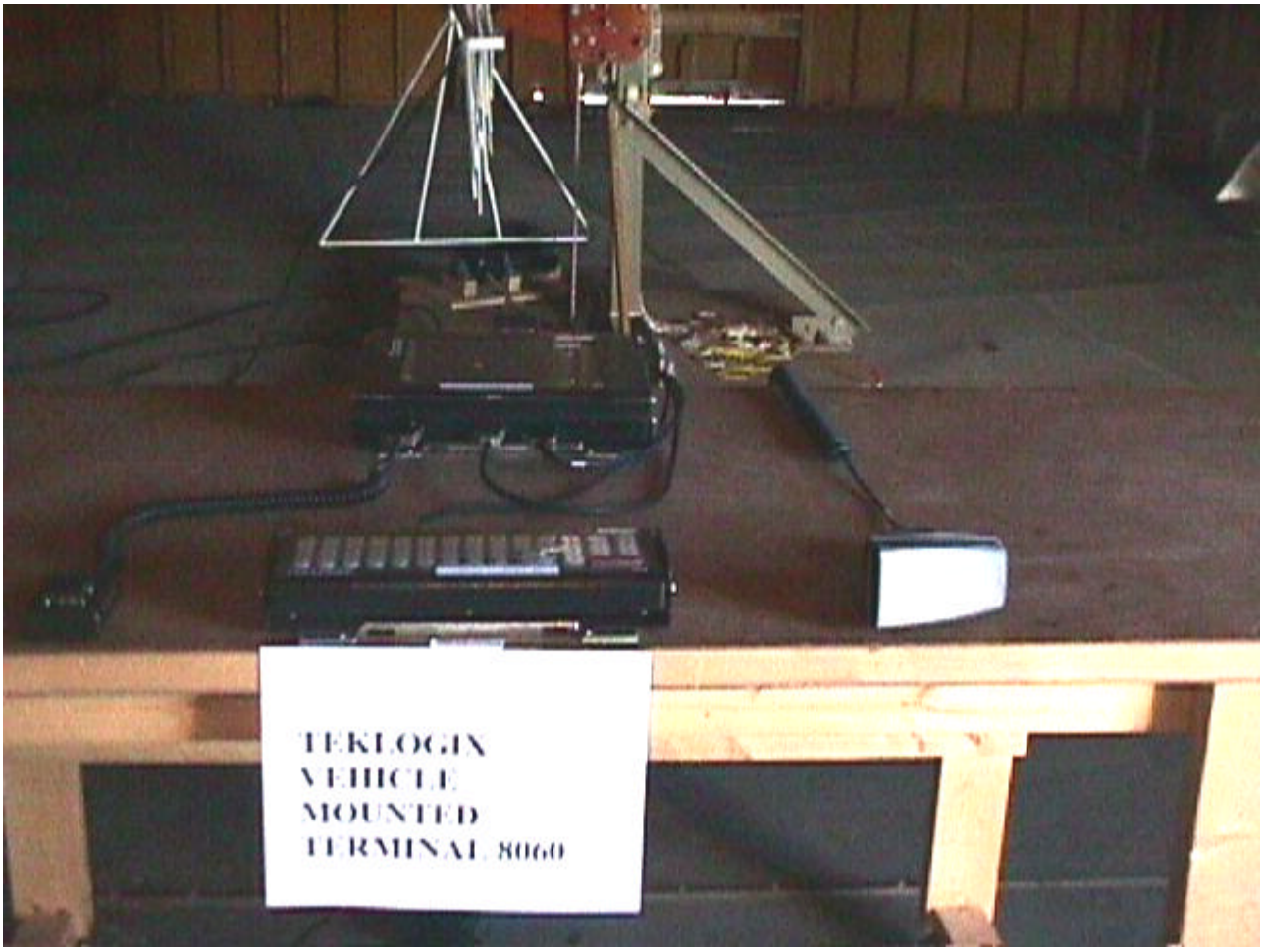
2.3.5. Teklogix TRX7355 Radio with Teklogix 8050 (Mobile) System

TEKLOGIX
VEHICLE
MOUNTED
TERMINAL 8050

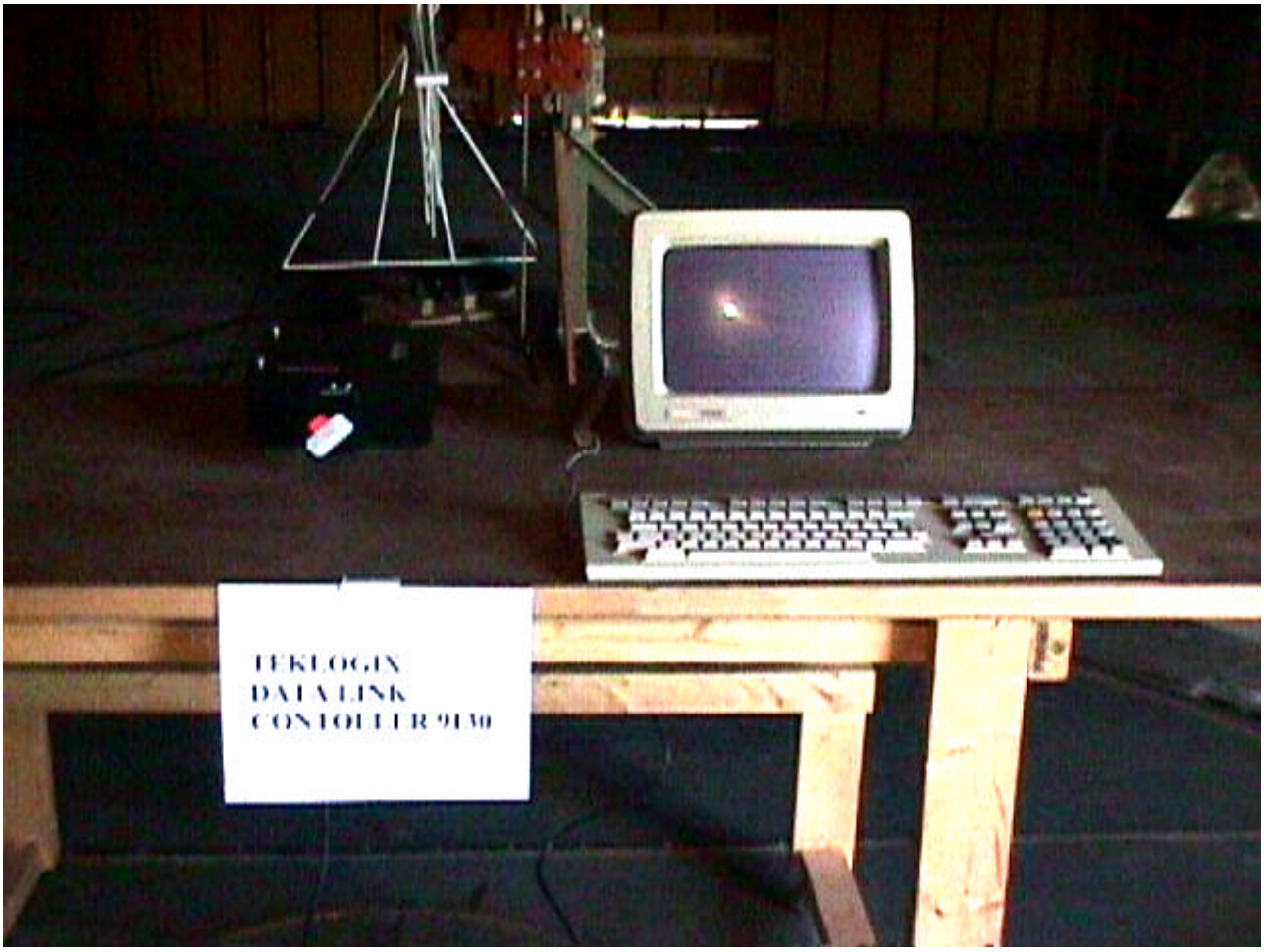
2.3.6. Teklogix TRX7355 Radio with Teklogix 8055 (Mobile) System

TEKLOGIX
VEHICLE
MOUNTED
TERMINAL 8055

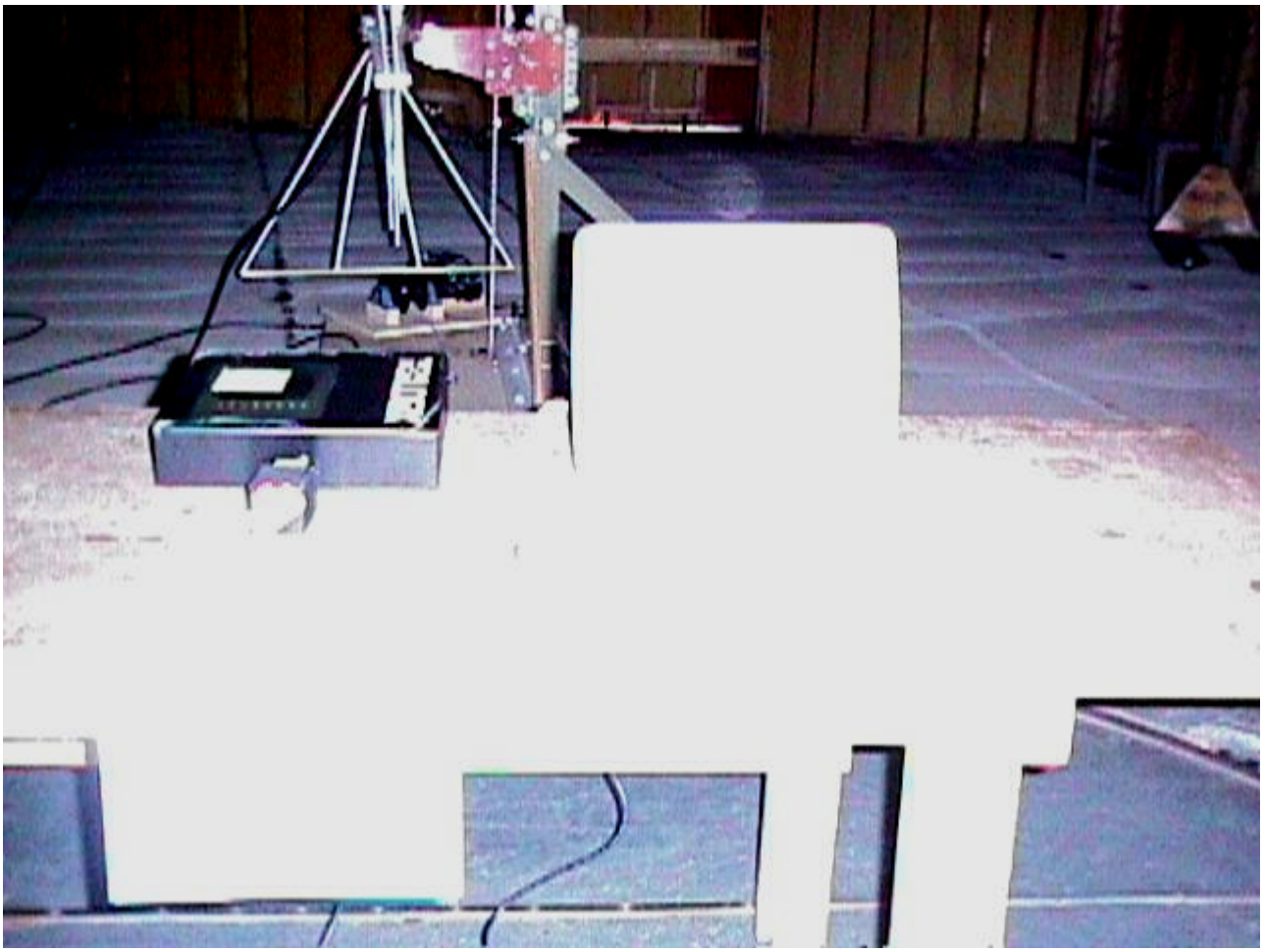
2.3.7. Teklogix TRX7355 Radio with Teklogix 8060 (Mobile) System


TEKLOGIX
VEHICLE
MOUNTED
TERMINAL 8060

2.3.8. Teklogix TRX7355 Radio with Teklogix 9130 (Base) System

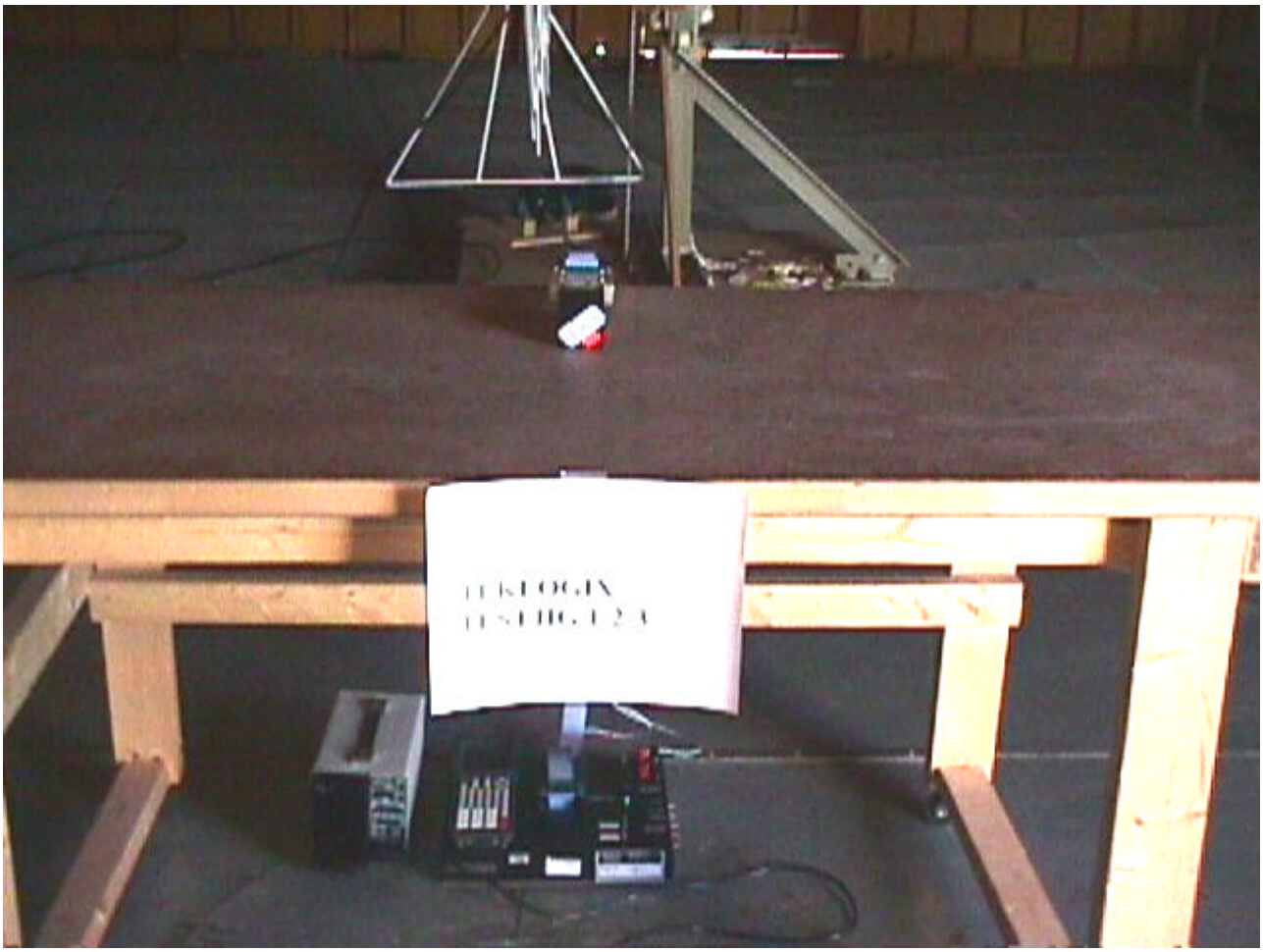


2.3.9. Teklogix TRX7355 Radio with Teklogix 9140 (Base) System



2.3.10. Teklogix TRX7355 Radio (outside any Teklogix system)

The Teklogix test Jig with the radio standing by itself on a wooden table and connected to the test jig using a non-shielded ribbon cable.



2.4. JUSTIFICATION

No deviation, in both configuration and operation manners, different from normal operation were required.

2.5. EUT OPERATING CONDITION

The EUT was operated in the transmit mode with the transmit-channels selected at lowest, middle and highest frequencies. The RF output was modulated with pseudo random data at 9600 b/s, voice (2.5 kHz Sine Wave Signal) or un-modulated wherever it is required.

2.6. SPECIAL ACCESSORIES

No special accessories were required.

2.7. EQUIPMENT MODIFICATIONS

To achieve compliance, the following change(s) were made by UltraTech's test house during compliance testing:

Not required.

3. EXHIBIT 4 - TEST DATA

3.1. POWER AND ANTENNA HEIGHT @ FCC 90.205

PRODUCT NAME: **TEKLOGIX TRX7355 VOICE/DATA FM MODULATED TRANSCEIVER (Base, Mobile & Portable), Model No.: TRX7355**

FCC REQUIREMENTS:

FCC Part 90, Para. 90.205:- Please refer to FCC CFR 47, Part 80 to End, Para. 90.205 for specification details.

CLIMATE CONDITION:

Standard Temperature and Humidity:

- Ambient temperature: 21 ^{o}C
- Relative humidity: 43%

POWER INPUT:

7.2 Vdc nominal.

TEST EQUIPMENT:

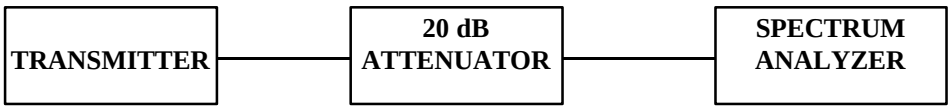
- Advantest Spectrum Analyzer, Model R3271, S/N: 15050203
- Bird Attenuator, 50 Ohm IN/OUT

METHOD OF MEASUREMENTS:

Refer to FCC @ 2.985

(a) For transmitter other than single sideband, independent sideband and controlled carrier radiotelephone, power rf output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of the current and voltage on the circuit elements specified in 2.983(d)(5). The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

TEST ARRANGEMENT



TEST RESULTS: Conforms.

TESTED PERSONNEL: Tri Luu, P.Eng. EngineerTri M. Luu, P.Eng.

DATE: May 25, 1998

MEASUREMENT DATA

PEAK POWER MEASUREMENT

TEST CONFIGURATION

- *The transmitter terminal was coupled to the Spectrum Analyzer through a 20 dB attenuator*
- *Power of the transmitter channel near the lowest, middle and highest of each frequency block/band were measured using the power meter, and the reading was corrected by added the calibrated attenuator's attenuation value and cable loss.*
- *The RF Output was turned on with no modulation.*

TRANSMITTER CHANNEL OUTPUT	FUNDAMENTAL FREQUENCY (MHz)	MEASURED PEAK POWER (Watts)	PEAK POWER RATING (Watts)
Near lowest	406.125	1.5	2.0
Middle	450.000	2.0	2.0
Near highest	470.000	2.0	2.0

ERP Measurements: -Appropriate antenna type, and adjustment of power output for effective radiated power (ERP) to meet FCC limits will be performed by the manufacturer at location of installation.

NOTE: Since all Teklogix Systems (Models 6040, 7025, 7030, 8045, 8050, 8055, 8060, 9130 & 9140) use exactly the same TRX7355 radio transceiver, and the RF output characteristics are exactly the same. This test is required to be tested with only one system and the results shall be the same for all Teklogix systems.

3.2. FREQUENCY STABILITY @ FCC 90.213

PRODUCT NAME: **TEKLOGIX TRX7355 VOICE/DATA FM MODULATED TRANSCEIVER (Base, Mobile & Portable), Model No.: TRX7355**

FCC REQUIREMENTS:

FCC Part 90, Sub. I, Para. 90.213

The carrier frequency of each transmitter shall be maintain within the following tolerances from the assigned frequencies.

FREQUENCY RANGE (MHz)	FIXED & BASE STATIONS (ppm)			MOBILE STATIONS (ppm)					
				> 2 W			≤ 2 W		
	6.25 kHz	12.5 kHz	25 kHz	6.25 kHz	12.5 kHz	25 kHz	6.25 kHz	12.5 kHz	25 kHz
403 – 512 MHz	0.5	1.5	2.5	1.0	2.5	5.0	1.0	2.5	5.0

CLIMATE CONDITION:

Standard Temperature and Humidity: Please refer to Measurement Data

POWER INPUT:

7.2 Vdc nominal.

TEST EQUIPMENT:

- Advantest Spectrum Analyzer, Model R3271, S/N: 15050203
- Tenney Temp. & Humidity Chamber, Model T5, S/N: 9723B
- Bird Attenuator, 50 Ohm IN/OUT

METHOD OF MEASUREMENTS:

Refer to FCC @ 2.995

(a) The frequency stability shall be measured with variation of ambient temperature as follows:

- From -30 to +50 centigrade except that specified in subparagraph (2) & (3) of this paragraph.

(b) Frequency measurements shall be made at extremes of the specified temperature range and at intervals of not more than 10 centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. The short term transient effects on the frequency of the transmitter due to keying (except for broadcast transmitters) and any heating element cycling normally occurring at each ambient temperature level also shall be shown. Only the portion or portions of the transmitter containing the frequency determining and stability circuitry need be subjected to the temperature variation test.

(d) The frequency stability supply shall be measured with variation of primary supply voltage as follows:

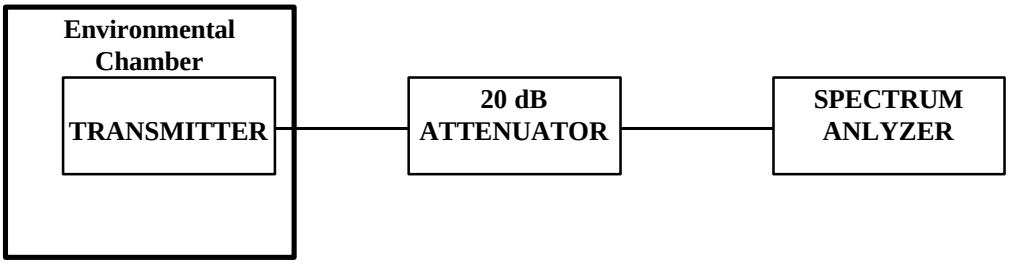
(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.

(3) The supply voltage shall be measured at the input to the cable normally provide with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme also shall be shown.

(e) When deemed necessary, the Commission may require tests of frequency stability under conditions in addition to those specifically set out in paragraphs (a), (b), (c) and (d) of this section. (For example, measurements showing the effect of proximity to large metal objects, or of various types of antennas, may be required for portable equipment).

TEST ARRANGEMENT



TEST RESULTS: Conforms.

TESTED PERSONNEL: Tri Luu, P.Eng. Engineer

DATE: May 27 - 28, 1998

MEASUREMENT DATA

FREQUENCY STABILITY

TEST CONFIGURATION

- *The transmitter was placed inside the environmental chamber, and its output terminal was coupled to the Spectrum Analyzer through a 20 dB attenuator.*
- *One transmitter channel frequency was tested.*
- *The DUT was supplied by a variable power supply.*
- *The environmental chamber was cycled down to -30° C. When the chamber reaches -30° C, the EUT was powered on with the nominal voltage level, with the transmitter keyed off. The terminal remained in the chamber at -30°C for a period of 1 hour. After 1 hour the transmitter was continuously keyed on, at **full power**. The transmitter frequency of the terminal was measured from the spectrum analyzer every minute for a period of 10 minutes.*
- *After 10 minutes the variable power supply was adjusted to supply the EUT with voltage of 85% nominal voltage level and measurement was repeated.*
- *After 10 minutes the variable power supply was adjusted to supply the EUT with voltage of 115% nominal voltage level and measurement was repeated,*
- *When the measurement complete, the transmitter was keyed off and the chamber was cycled up to 10° C steps. The EUT remained powered up (unkeyed) at -20° C for a minimum period of 1 hour, after which the measurements will be made as outlined above.*
- *The above was repeated for -10, 0, 20, 30, 40 and 50 degrees Celsius.*

Product Name **Model No.**	**TEKLOGIX TRX7355 VOICE/DATA FM MODULATED TRANSCEIVER (Base, Mobile & Portable)** **TRX7355**
Centre Frequency	403 MHz
Full Power Level	1.5 Watts
Frequency Tolerance Limit	604 Hz or 0.00015%
Max. Frequency Tolerance Measured	± 230 Hz or ± 0.000057%
Input Voltage Rating	7.2 Vdc

NOTE: Since all Teklogix Systems (Models 6040, 7025, 7030, 8045, 8050, 8055, 8060, 9130 & 9140) use exactly the same TRX7355 radio transceiver, and the RF output characteristics are exactly the same. This test is required to be tested with only one system and the results shall be the same for all Teklogix systems.

		CENTRE FREQUENCY & RF POWER OUTPUT VARIATION					
AMBIENT TEMP. (°C)	KEYED-ON TIME (Minutes)	Supply Voltage (Nominal) 7.2 Volts dc		Supply Voltage (85% of Nominal) 6.1 Volts dc		Supply Voltage (115% of Nominal) 8.3 Volts	
		Hz	dB	Hz	dB	Hz	dB
-30	0	-216	+0.8	N/A	N/A	N/A	N/A
	1	-227	+0.8	N/A	N/A	N/A	N/A
	2	-223	+0.8	N/A	N/A	N/A	N/A
	3	-230	+0.8	N/A	N/A	N/A	N/A
	4	-216	+0.8	N/A	N/A	N/A	N/A
	5	-222	+0.8	N/A	N/A	N/A	N/A
	6	-210	+0.8	N/A	N/A	N/A	N/A
	7	-199	+0.8	N/A	N/A	N/A	N/A
	8	-194	+0.8	N/A	N/A	N/A	N/A
	9	-184	+0.8	N/A	N/A	N/A	N/A
	10	-177	+0.8	N/A	N/A	N/A	N/A
-20	0	-16	+0.5	N/A	N/A	N/A	N/A
	1	-22	+0.5	N/A	N/A	N/A	N/A
	2	-10	+0.5	N/A	N/A	N/A	N/A
	3	-30	+0.5	N/A	N/A	N/A	N/A
	4	-26	+0.5	N/A	N/A	N/A	N/A
	5	-36	+0.5	N/A	N/A	N/A	N/A
	6	-44	+0.5	N/A	N/A	N/A	N/A
	7	-53	+0.5	N/A	N/A	N/A	N/A
	8	-52	+0.5	N/A	N/A	N/A	N/A
	9	-54	+0.5	N/A	N/A	N/A	N/A
	10	-52	+0.5	N/A	N/A	N/A	N/A
-10	0	-44	+0.5	N/A	N/A	N/A	N/A
	1	-44	+0.5	N/A	N/A	N/A	N/A
	2	-44	+0.5	N/A	N/A	N/A	N/A
	3	-37	+0.5	N/A	N/A	N/A	N/A
	4	-54	+0.5	N/A	N/A	N/A	N/A
	5	-47	+0.5	N/A	N/A	N/A	N/A
	6	-43	+0.5	N/A	N/A	N/A	N/A
	7	-43	+0.5	N/A	N/A	N/A	N/A
	8	-42	+0.5	N/A	N/A	N/A	N/A
	9	-42	+0.5	N/A	N/A	N/A	N/A
	10	-47	+0.5	N/A	N/A	N/A	N/A
0	0	+70	+0.3	N/A	N/A	N/A	N/A
	1	+95	+0.3	N/A	N/A	N/A	N/A
	2	+81	+0.3	N/A	N/A	N/A	N/A
	3	+73	+0.3	N/A	N/A	N/A	N/A
	4	+90	+0.3	N/A	N/A	N/A	N/A
	5	+75	+0.3	N/A	N/A	N/A	N/A
	6	+80	+0.3	N/A	N/A	N/A	N/A
	7	+85	+0.3	N/A	N/A	N/A	N/A
	8	+84	+0.3	N/A	N/A	N/A	N/A
	9	+88	+0.3	N/A	N/A	N/A	N/A
	10	+81	+0.3	N/A	N/A	N/A	N/A

		CENTRE FREQUENCY & RF POWER OUTPUT VARIATION					
AMBIENT TEMP. (°C)	KEYED-ON TIME (Minutes)	Supply Voltage (Nominal) 7.2 Volts dc		Supply Voltage (85% of Nominal) 6.1 Volts dc		Supply Voltage (115% of Nominal) 8.3 Volts	
		Hz	dB	Hz	dB	Hz	dB
+10	0	+151	+0.1	N/A	N/A	N/A	N/A
	1	+148	+0.1	N/A	N/A	N/A	N/A
	2	+153	+0.1	N/A	N/A	N/A	N/A
	3	+147	+0.1	N/A	N/A	N/A	N/A
	4	+163	+0.1	N/A	N/A	N/A	N/A
	5	+157	+0.1	N/A	N/A	N/A	N/A
	6	+160	+0.1	N/A	N/A	N/A	N/A
	7	+160	+0.1	N/A	N/A	N/A	N/A
	8	+163	+0.1	N/A	N/A	N/A	N/A
	9	+164	+0.1	N/A	N/A	N/A	N/A
	10	+158	+0.1	N/A	N/A	N/A	N/A
+20	0	+110	0.0	+144	-2.4	+168	+0.9
	1	+130	0.0	+145	-2.4	+163	+0.9
	2	+128	0.0	+141	-2.4	+165	+0.9
	3	+127	0.0	+153	-2.4	+161	+0.9
	4	+134	0.0	+153	-2.4	+170	+0.9
	5	+123	0.0	+145	-2.4	+170	+0.9
	6	+137	0.0	+157	-2.4	+171	+0.9
	7	+138	0.0	+160	-2.4	+181	+0.9
	8	+117	0.0	+154	-2.4	+178	+0.9
	9	+123	0.0	+151	-2.4	+175	+0.9
	10	+121	0.0	+153	-2.4	+187	+0.9
+30	0	+200	0.0	N/A	N/A	N/A	N/A
	1	+214	0.0	N/A	N/A	N/A	N/A
	2	+208	0.0	N/A	N/A	N/A	N/A
	3	+210	0.0	N/A	N/A	N/A	N/A
	4	+205	0.0	N/A	N/A	N/A	N/A
	5	+203	0.0	N/A	N/A	N/A	N/A
	6	+214	0.0	N/A	N/A	N/A	N/A
	7	+230	0.0	N/A	N/A	N/A	N/A
	8	+210	0.0	N/A	N/A	N/A	N/A
	9	+213	0.0	N/A	N/A	N/A	N/A
	10	+197	0.0	N/A	N/A	N/A	N/A
+40	0	-52	-0.5	N/A	N/A	N/A	N/A
	1	-40	-0.5	N/A	N/A	N/A	N/A
	2	-39	-0.5	N/A	N/A	N/A	N/A
	3	-39	-0.5	N/A	N/A	N/A	N/A
	4	-53	-0.5	N/A	N/A	N/A	N/A
	5	-32	-0.5	N/A	N/A	N/A	N/A
	6	-39	-0.5	N/A	N/A	N/A	N/A
	7	-42	-0.5	N/A	N/A	N/A	N/A
	8	-54	-0.5	N/A	N/A	N/A	N/A
	9	-42	-0.5	N/A	N/A	N/A	N/A
	10	-44	-0.5	N/A	N/A	N/A	N/A

		CENTRE FREQUENCY & RF POWER OUTPUT VARIATION					
AMBIENT TEMP. (°C)	KEYED-ON TIME (Minutes)	Supply Voltage (Nominal) 7.2 Volts dc		Supply Voltage (85% of Nominal) 6.1 Volts dc		Supply Voltage (115% of Nominal) 8.3 Volts	
		Hz	dB	Hz	dB	Hz	dB
+50	0	-19	-0.5	N/A	N/A	N/A	N/A
	1	-13	-0.5	N/A	N/A	N/A	N/A
	2	-6	-0.5	N/A	N/A	N/A	N/A
	3	+1	-0.5	N/A	N/A	N/A	N/A
	4	+7	-0.5	N/A	N/A	N/A	N/A
	5	+6	-0.5	N/A	N/A	N/A	N/A
	6	+8	-0.5	N/A	N/A	N/A	N/A
	7	+4	-0.5	N/A	N/A	N/A	N/A
	8	+7	-0.5	N/A	N/A	N/A	N/A
	9	+20	-0.5	N/A	N/A	N/A	N/A
	10	-10	-0.5	N/A	N/A	N/A	N/A
+60	0	+4	-0.9	N/A	N/A	N/A	N/A
	1	+16	-0.9	N/A	N/A	N/A	N/A
	2	+23	-0.9	N/A	N/A	N/A	N/A
	3	+18	-0.9	N/A	N/A	N/A	N/A
	4	+24	-0.9	N/A	N/A	N/A	N/A
	5	+28	-0.9	N/A	N/A	N/A	N/A
	6	+31	-0.9	N/A	N/A	N/A	N/A
	7	+27	-0.9	N/A	N/A	N/A	N/A
	8	+28	-0.9	N/A	N/A	N/A	N/A
	9	+27	-0.9	N/A	N/A	N/A	N/A
	10	+23	-0.9	N/A	N/A	N/A	N/A

3.3. AUDIO FREQUENCY RESPONSE @ FCC 2.987(A)

PRODUCT NAME: **TEKLOGIX TRX7355 VOICE/DATA FM MODULATED TRANSCEIVER (Base, Mobile & Portable), Model No.: TRX7355**

FCC REQUIREMENTS:

FCC Part 2, Sub. J, Para. 2.987(a)

Compliance limit is not applicable. The following limit is a guideline for the audio lowpass filter but it is not the requirement.

The attenuation of lowpass filter between the frequencies of 3 KHz and 20 KHz shall be greater than the attenuation at 1KHz by at least: $60\text{Log}_{10}(f/3)$ decibels where "f" is the frequency in KHz. At frequency above 20 KHz, the attenuation shall be 50 dB greater than the attenuation at 1 KHz.

CLIMATE CONDITION:

Standard Temperature and Humidity:

- Ambient temperature: 21 ^{o}C
- Relative humidity: 43%

POWER INPUT:

7.2 Vdc nominal.

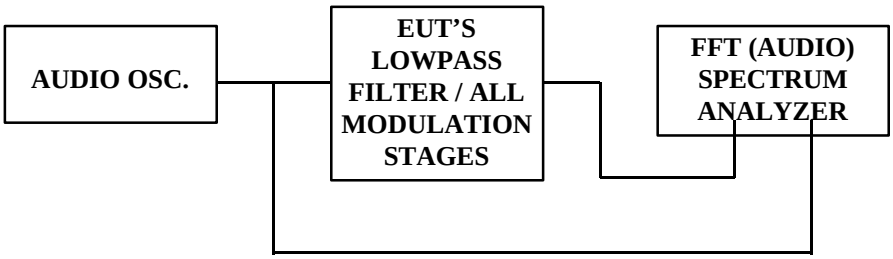
TEST EQUIPMENT:

- Audio Oscillator, HP, Model 204C, OUT FREQ.: 0-1.2 MHz, S/N: 0989A08798
- FFT (Audio) Spectrum Analyzer, Advantest, Model R9211E, Input Impedance: 1M-Ohms, Freq. Range: 10 mHz - 100 kHz.

METHOD OF MEASUREMENTS:

The rated audio input signal was applied to the input of the audio lowpass filter (or of all modulation stages) using an audio oscillator, this input signal level and its corresponding output signal of audio lowpass filter (or of all modulation stages) were then measured and recorded using the FFT (Audio) spectrum analyzer. Tests were repeated at different audio signal frequencies from 0 to 50 kHz.

TEST ARRANGEMENT



TEST RESULTS: Conforms.

TESTED PERSONNEL: Tri Luu, P.Eng. Engineer

DATE: May 28, 1998

MEASUREMENT DATA

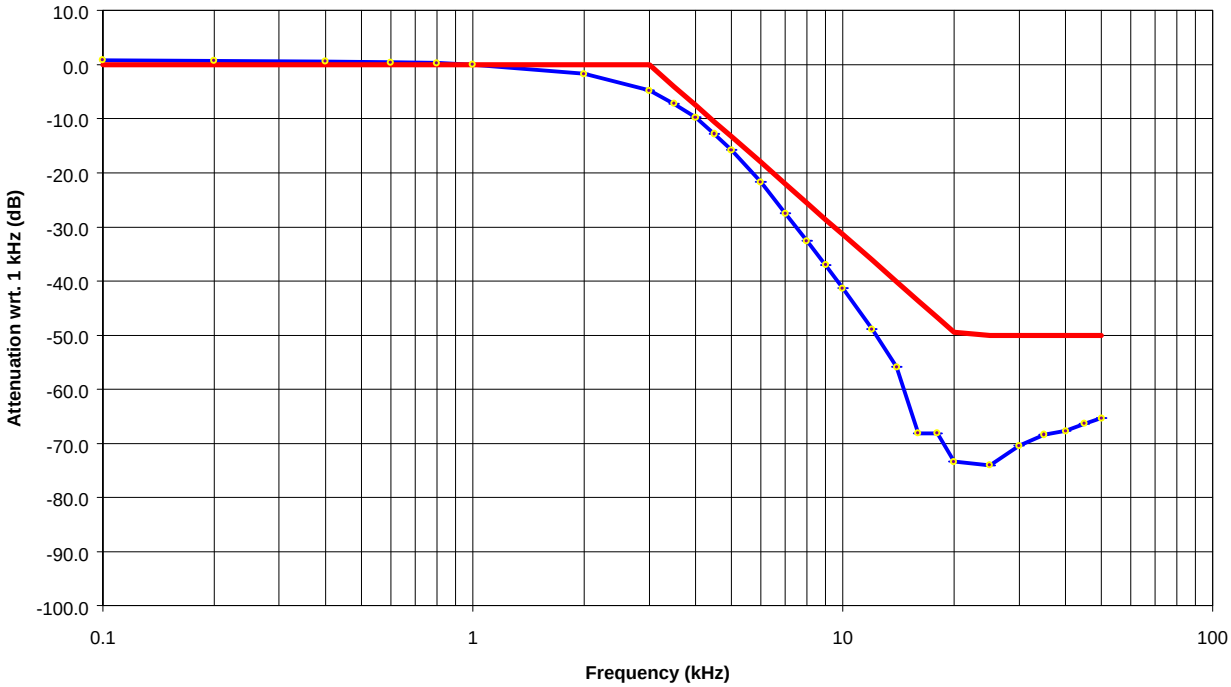
NOTE: Since all Teklogix Systems (Models 6040, 7025, 7030, 8045, 8050, 8055, 8060, 9130 & 9140) use exactly the same TRX7355 radio transceiver, and the RF output characteristics are exactly the same. This test is required to be tested with only one system and the results shall be the same for all Teklogix systems.

AUDIO FREQUENCY RESPONSE OF THE LOWPASS FILTER

Audio Input Rating: 1 Vrms

FREQUENCY (kHz)	AUDIO IN (dBV)	AUDIO OUT (dBV)	ATTEN. (OUT - IN) (dB)	ATTEN. wrt. 1 kHz (dB)	FCC LIMIT @2.987(a) (dB)	PASS/ FAIL
0.1	0.0	-5.1	-5.1	0.8	0	PASS
0.20	0.0	-5.2	-5.2	0.7	0.0	PASS
0.40	0.0	-5.3	-5.3	0.6	0.0	PASS
0.60	0.0	-5.5	-5.5	0.4	0.0	PASS
0.80	0.0	-5.6	-5.6	0.3	0.0	PASS
1.00	0.0	-5.9	-5.9	0.0	0.0	PASS
2.00	0.0	-7.6	-7.6	-1.7	0.0	PASS
3.00	0.0	-10.7	-10.7	-4.8	0.0	PASS
3.50	0.0	-13.1	-13.1	-7.2	-4.0	PASS
4.00	0.0	-15.7	-15.7	-9.8	-7.5	PASS
4.50	0.0	-18.7	-18.7	-12.8	-10.6	PASS
5.00	0.0	-21.7	-21.7	-15.8	-13.3	PASS
6.00	0.0	-27.6	-27.6	-21.7	-18.1	PASS
7.00	0.0	-33.4	-33.4	-27.5	-22.1	PASS
8.00	0.0	-38.5	-38.5	-32.6	-25.6	PASS
9.00	0.0	-42.9	-42.9	-37.0	-28.6	PASS
10.00	0.0	-47.2	-47.2	-41.3	-31.4	PASS
12.00	0.0	-54.8	-54.8	-48.9	-36.1	PASS
14.00	0.0	-61.8	-61.8	-55.9	-40.1	PASS
16.00	0.0	-74.0	-74.0	-68.1	-43.6	PASS
18.00	0.0	-74.0	-74.0	-68.1	-46.7	PASS
20.00	0.0	-79.3	-79.3	-73.4	-49.4	PASS
25.00	0.0	-79.9	-79.9	-74.0	-50.0	PASS
30.00	0.0	-76.3	-76.3	-70.4	-50.0	PASS
35.00	0.0	-74.3	-74.3	-68.4	-50.0	PASS
40.00	0.0	-73.6	-73.6	-67.7	-50.0	PASS
45.00	0.0	-72.2	-72.2	-66.3	-50.0	PASS
50.00	0.0	-71.2	-71.2	-65.3	-50.0	PASS

LOWPASS FILTER - AUDIO FREQUENCY REPSONSE wrt. 1 kHz
@ FCC 2.987(a) - 12.5 kHz Channel Spacing
TEKLOGIX TRX7355 VOICE/DATA RADIO TRANSCEIVER



3.4. MODULATION LIMITING @ FCC 90.210

PRODUCT NAME: **TEKLOGIX TRX7355 VOICE/DATA FM MODULATED TRANSCEIVER (Base, Mobile & Portable), Model No.: TRX7355**

FCC REQUIREMENTS:

FCC Part 2, Sub. J, Para. 2.987(b) & FCC Part 90, Subpart I, Para. 90.210

The EUT shall be installed with a modulation limiter which limits the deviation of the FM carrier less than 1.25 kHz for 6.25 kHz Channel Spacing System, 2.5 kHz for 12.5 kHz Channel Spacing , and 5 kHz for 25 kHz Channel Spacing System.

CLIMATE CONDITION:

Standard Temperature and Humidity:

- Ambient temperature: 21 ^{o}C
- Relative humidity: 43%

POWER INPUT:

7.2 Vdc nominal.

TEST EQUIPMENT:

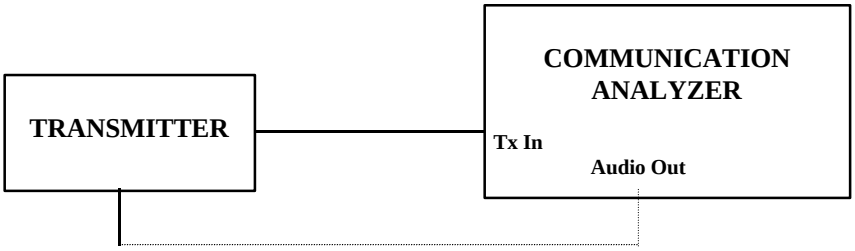
- Communication Analyzer, Rohde & Schawrz, Model SMFO2, S/N: 879988/057, 0.4 - 1000 MHz including AF & RF Signal Generators, SINAD, DISTORTION, DEVIATION meters and etc...

METHOD OF MEASUREMENTS:

For Audio Transmitter:- The carrier frequency deviation was measured with the tone input signal level varied from 0 Vp to audio input rating level plus 16 dB at frequencies 0.1, 0.5, 1.0, 3.0 and 5.0 kHz. The maximum deviation was recorded at each test condition.

For Data Transmitter with Maximum Frequency Deviation set by Factory:- The EUT was set at maximum frequency deviation, and its peak frequency deviation was then measured using EUT's internal random data source.

TEST ARRANGEMENT



TEST RESULTS: Conforms.

TESTED PERSONNEL: Tri Luu, P.Eng. Engineer

DATE: May 27, 1998

MEASUREMENT DATA

NOTE: Since all Teklogix Systems (Models 6040, 7025, 7030, 8045, 8050, 8055, 8060, 9130 & 9140) use exactly the same TRX7355 radio transceiver, and the RF output characteristics are exactly the same. This test is required to be tested with only one system and the results shall be the same for all Teklogix systems.

MODULATION LIMITING FOR DATA TRANSMITTER

Modulation: FM modulation with random data and Modulation Limiter set at a Maximum Frequency Deviation (Factory Setting).

DATA BAUD RATE	PEAK DEVIATION (KHz)	MAXIMUM LIMIT (KHz)
4800	1.8	2.5
9600	1.8	2.5

MODULATION LIMITING FOR AN AUDIO TRANSMITTER

Audio Input Rating: 10mVrms

MODULATING SIGNAL LEVEL	PEAK FREQUENCY DEVIATION (kHz) at the following modulating frequency:					MAXIMUM LIMIT
(Vrms)	0.1 KHz	0.5 KHz	1.0 KHz	3.0 KHz	5.0 KHz	(KHz)
1	0.1	0.1	0.2	0.3	0.2	2.5
2	0.1	0.2	0.3	0.5	0.3	2.5
4	0.1	0.3	0.6	1.0	0.5	2.5
6	0.1	0.5	0.8	1.2	0.5	2.5
8	0.1	0.6	1.1	1.2	0.5	2.5
10	0.1	0.8	1.3	1.2	0.5	2.5
12	0.1	0.9	1.4	1.2	0.5	2.5
14	0.1	1.1	1.4	1.2	0.5	2.5
16	0.1	1.2	1.4	1.2	0.5	2.5
18	0.1	1.4	1.4	1.2	0.5	2.5
20	0.1	1.4	1.4	1.2	0.5	2.5
25	0.1	1.4	1.4	1.2	0.5	2.5
30	0.1	1.4	1.4	1.2	0.5	2.5
40	0.1	1.4	1.4	1.2	0.5	2.5
50	0.1	1.4	1.4	1.2	0.5	2.5

MODULATION LIMITING FOR AN AUDIO TRANSMITTER

Voice Signal Input Level = STD MOD Level + 16 dB = -48 dBVrms + 16 dB = **-22 dBVrms**

MODULATING FREQUENCY (KHz)	PEAK FREQUENCY DEVIATION (KHz)	MAXIMUM LIMIT (KHz)
0.1	0.0	2.5
0.2	0.3	2.5
0.4	1.4	2.5
0.6	1.4	2.5
0.8	1.4	2.5
1.0	1.4	2.5
1.2	1.4	2.5
1.4	1.4	2.5
1.6	1.4	2.5
1.8	1.4	2.5
2.0	1.4	2.5
2.5	1.3	2.5
3.0	1.2	2.5
3.5	1.0	2.5
4.0	0.8	2.5
4.5	0.7	2.5
5.0	0.6	2.5
6.0	0.4	2.5
7.0	0.2	2.5
8.0	0.1	2.5
9.0	0.1	2.5
10.0	0.1	2.5

3.5. EMISSION MASKS @ FCC 90.210

PRODUCT NAME: **TEKLOGIX TRX7355 VOICE/DATA FM MODULATED TRANSCEIVER (Base, Mobile & Portable), Model No.: TRX7355**

FCC REQUIREMENTS:

FCC Part 90, Sub. I, Para. 90.210

Emissions shall be attenuated below the mean output power of the transmitter as follows:

FREQUENCY RANGE (MHz)	MAXIMUM OBW (KHz)	CHANNEL SPACING (KHz)	MAX. FREQ. DEVIATION (KHz)	FCC APPLICABLE MASK
403 – 512	10.0	12.5	2.5	90.210(d): Mask D – Voice & Data

FCC RULES	FREQUENCY RANGE	ATTENUATION LIMIT (dBc)
90.210(d): Mask D – Voice & Data	> Fc – 5.625 kHz - < FC + 5.625 kHz Fc ± 5.625 kHz - Fc ± 12.5 kHz > Fc – 12.5 kHz - < Fc + 12.5 kHz	0 7.27(fd-2.88 kHz) $50 + 10\log_{10}(P)$ or 70 dB whichever is less.

CLIMATE CONDITION:

Standard Temperature and Humidity:

- Ambient temperature: 21 ^{o}C
- Relative humidity: 43%

POWER INPUT:

7.2 Vdc nominal.

TEST EQUIPMENT:

- Advantest Spectrum Analyzer, Model R3271, S/N: 15050203
- Bird Attenuator, 50 Ohm IN/OUT
- Audio Oscillator, HP, Model 204C, SN: 0989A08798, Output: 0-1.2 MHz, 5 Vrms.

METHOD OF MEASUREMENTS:

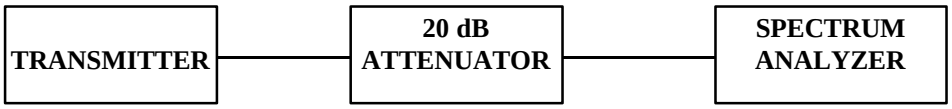
FCC CFR 47, Para. 2.989 - Out-of-Band Emissions:

The Emission Masks was measured with the Spectrum Analyzer controls set as shown on the test results (RBW $\geq$ 300 Hz, VBW $\geq$ 300 Hz and SWEEP TIME = AUTO). The transmitter was operated at a full rated power output, and modulated as follows:

Voice or Digital Modulation Through a Voice Input Port @ 2.989(c)(1):- The transmitter was modulated by a 2.5 KHz tone signal at an input level 16 dB greater than that required to produce 50% modulation (e.g.: $\pm$2.5 KHz peak deviation at 1 KHz modulating frequency). The input level was established at the frequency of maximum response of the audio modulating circuit.

Digital Modulation Through a Data Input Port @ 2.989(h):- Transmitters employing digital modulation techniques - when modulated by an input signal such that its amplitude and symbol rate represent the maximum rated conditions under which the equipment will be operated. The signal shall be applied through any filter networks, pseudo-random generators or other devices required in normal service. Additionally, the Emission Masks shall be shown for operation with any devices used for modifying the spectrum when such devices are operational at the descretion of the user.

TEST ARRANGEMENT



TEST RESULTS: Conforms.

TESTED PERSONNEL: Tri Luu, P.Eng. Engineer

DATE: May 26, 1998

MEASUREMENT DATA

Please see attached plots for detailed measurements.

NOTE: Since all Teklogix Systems (Models 6040, 7025, 7030, 8045, 8050, 8055, 8060, 9130 & 9140) use exactly the same TRX7355 radio transceiver, and the RF output characteristics are exactly the same. This test is required to be tested with only one system and the results shall be the same for all Teklogix systems.

3.6. TRANSMITTER ANTENNA POWER SPURIOUS/HARMONIC CONDUCTED EMISSIONS @ FCC 90.210

PRODUCT NAME: **TEKLOGIX TRX7355 VOICE/DATA FM MODULATED TRANSCEIVER (Base, Mobile & Portable), Model No.: TRX7355**

FCC REQUIREMENTS:

FCC Part 90, Sub. I, Para. 90.210

Emissions shall be attenuated below the mean output power of the transmitter as follows:

FREQUENCY RANGE (MHz)	MAXIMUM OBW (KHz)	CHANNEL SPACING (KHz)	MAX. FREQ. DEVIATION (KHz)	FCC SPECIFICATION LIMITS (Para. No.)
403-512	10.0	12.5	2.5	90.210(d): Mask D – Audio & Voice

FCC RULES	FREQUENCY RANGE	ATTENUATION LIMIT (dBc)
90.210(d): Mask D - Voice & Data	Lowest frequency generated from the transmitter circuit to 10th harmonic of the fundamental frequency	$50 + 10\log_{10}(P)$ or 70 dB whichever is less

CLIMATE CONDITION:

Standard Temperature and Humidity:

- Ambient temperature: 21 ^{o}C
- Relative humidity: 43%

POWER INPUT:

7.2 Vdc nominal.

TEST EQUIPMENT:

- Advantest Spectrum Analyzer, Model R3271, S/N: 15050203
- Bird Attenuator, 50 Ohm IN/OUT
- Hihpass Filter, Microphase, P/N: CR220HIB, S/N: IITI11000AB, cut-off freq.: 600 MHz.
- Audio Oscillator, HP, Model 204C, SN: 0989A08798, Output: 0-1.2 MHz, 5 Vrms.

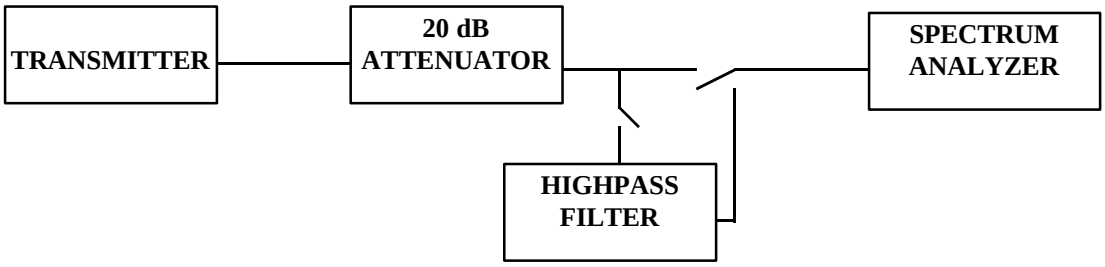
METHOD OF MEASUREMENTS:

With transmitter modulation characteristics described in Out-of-Band Emissions measurements @ 2.989, the transmitter spurious and harmonic emissions were scanned. The spurious and harmonic emissions were measured with the Spectrum Analyzer controls set as RBW = 100 kHz, VBW = 100 kHz and SWEEP TIME = AUTO). The transmitter was operated at a full rated power output, and modulated as follows:

FCC CFR 47, Para. 2.997 - Frequency spectrum to be investigated:- The spectrum was investigated from the lowest radio generated in the equipment up to at least the 10th harmonic of the carrier frequency or to the highest frequency practicable in the present state of the art of measuring techniques, whichever is lower. Particular attention should be paid to harmonics and subharmonics of the carrier frequency. Radiation at the frequencies of multiplier stages should be checked. The
amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

FCC CFR 47, Para. 2.991 - Spurious Emissions at Antenna Terminal:- The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of the harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in 2.989 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.

TEST ARRANGEMENT



TEST RESULTS: Conforms.

TESTED PERSONNEL: Hung Trinh, EMI/RFI Technician

DATE: June 02, 1998

MEASUREMENT DATA

SPURIOUS & HARMONIC EMISSIONS AT THE TRANSMITTER ANTENNA TERMINAL

TEST CONFIGURATION

- *The transmitter was coupled to the Spectrum Analyzer through a 20 dB attenuator.*
- *The insertion loss between the transmitter output terminal and the spectrum analyzer was measured to be 20 dB*
- *The channel frequencies (Low, Middle and High) was established on the extreme edges of the operating band, both upper and lower at its full rated output power. The emissions was investigated up to the tenth harmonic of the fundamental emissions in each case.*

NOTE: Since all Teklogix Systems (Models 6040, 7025, 7030, 8045, 8050, 8055, 8060, 9130 & 9140) use exactly the same TRX7355 radio transceiver, and the RF output characteristics are exactly the same. This test is required to be tested with only one system and the results shall be the same for all Teklogix systems.

Fundamental Frequency: 406.125 MHz
RF Output Power: 1.5 Watts
Modulation: FM modulation with 9600 b/s random data

FREQUENCY (MHz)	RF LEVEL 100 kHz BW (dBm)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
202.0	-33.5	-20.0	-13.5	PASS

The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 20 dB below the limits were recorded.

Fundamental Frequency: 406.125 MHz
RF Output Power: 1.5 Watts
Modulation: FM modulation with 2.5 kHz Sine Wave Signal

FREQUENCY (MHz)	RF LEVEL 100 kHz BW (dBm)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
202.0	-33.2	-20.0	-13.2	PASS

The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 20 dB below the limits were recorded.

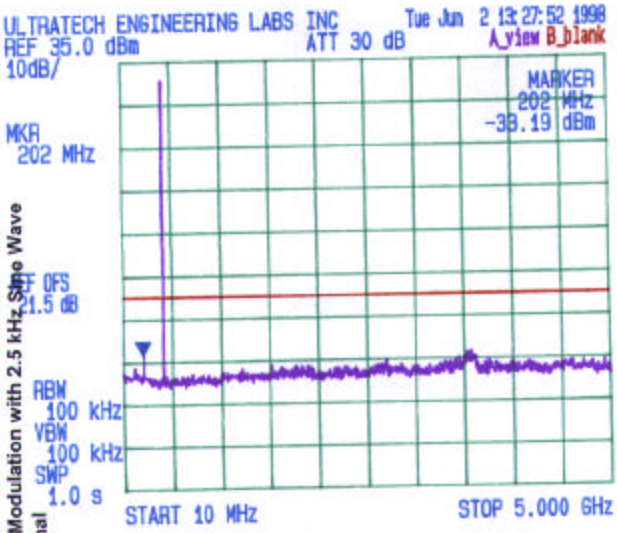
UltraTech Engineering Labs Inc.

TEKLOGIX TRX7355 VOICE/DATA MODULATED TRANSMITTER

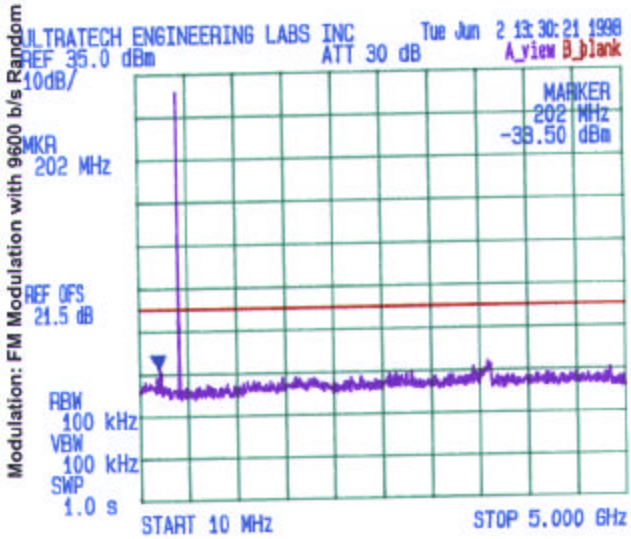
Tx Frequency: 406.125 RF Power: 1.5 Watts

Date: June 02, 1998
Tested by: Tri Luu

Modulation: FM Modulation with 2.5 kHz Sine Wave Signal



Modulation: FM Modulation with 9600 b/s Random Data



Fundamental Frequency: 450.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600 b/s random data

FREQUENCY (MHz)	RF LEVEL 100 kHz BW (dBm)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
202.0	-34.1	-20.0	-14.1	PASS

The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 20 dB below the limits were recorded.

Fundamental Frequency: 450.00 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 2.5 kHz Sine Wave Signal

FREQUENCY (MHz)	RF LEVEL 100 kHz BW (dBm)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
202.0	-34.7	-20.0	-14.7	PASS

The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 20 dB below the limits were recorded.

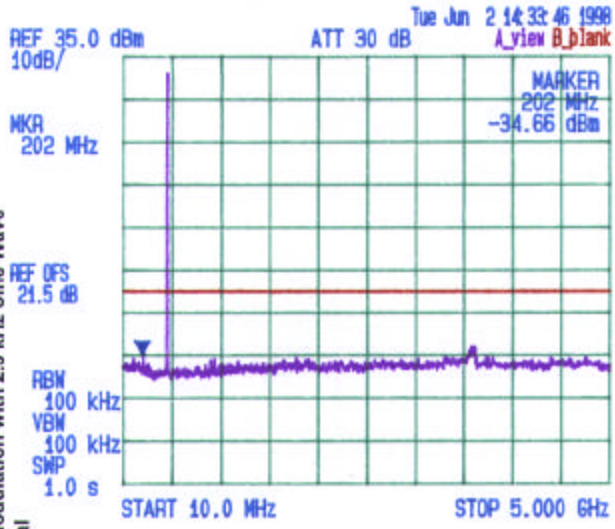
UltraTech Engineering Labs Inc.

TEKLOGIX TRX7355 VOICE/DATA MODULATED TRANSMITTER

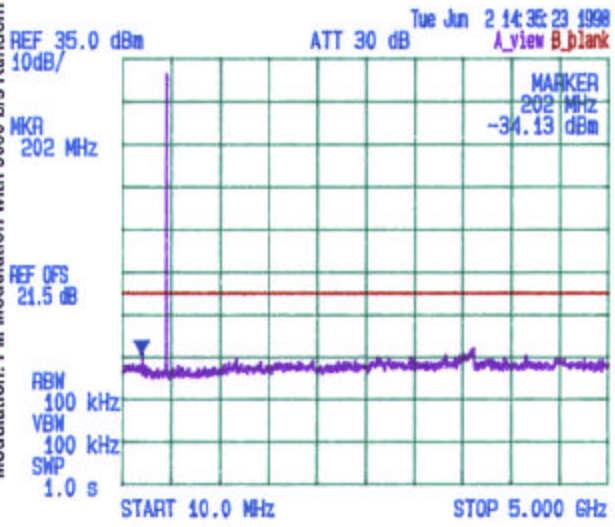
Tx Frequency: 450 , RF Power: 2 Watts

Date: June 02, 1998
Tested by: Tri Luu

Modulation: FM Modulation with 2.5 kHz Sine Wave Signal



Modulation: FM Modulation with 9600 b/s Random Data



Fundamental Frequency: 470.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600 b/s random data

FREQUENCY (MHz)	RF LEVEL 100 kHz BW (dBm)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
202.0	-34.8	-20.0	-14.8	PASS

The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 20 dB below the limits were recorded.

Fundamental Frequency: 470.00 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 2.5 kHz Sine Wave Signal

FREQUENCY (MHz)	RF LEVEL 100 kHz BW (dBm)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
202.0	-33.6	-20.0	-13.6	PASS

The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 20 dB below the limits were recorded.

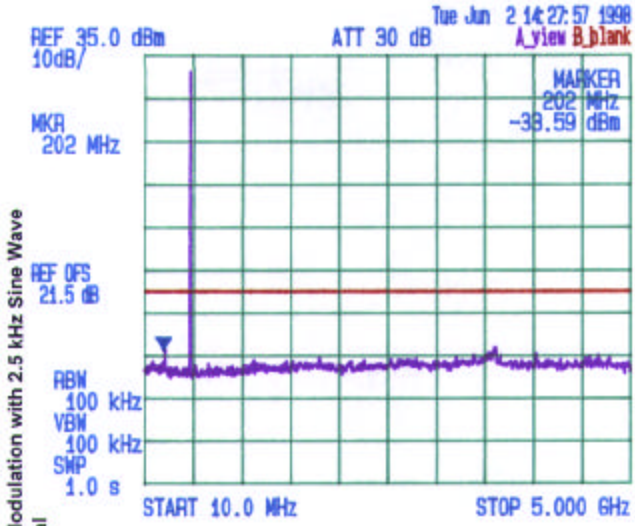
UltraTech Engineering Labs Inc.

TEKLOGIX TRX7355 VOICE/DATA MODULATED TRANSMITTER

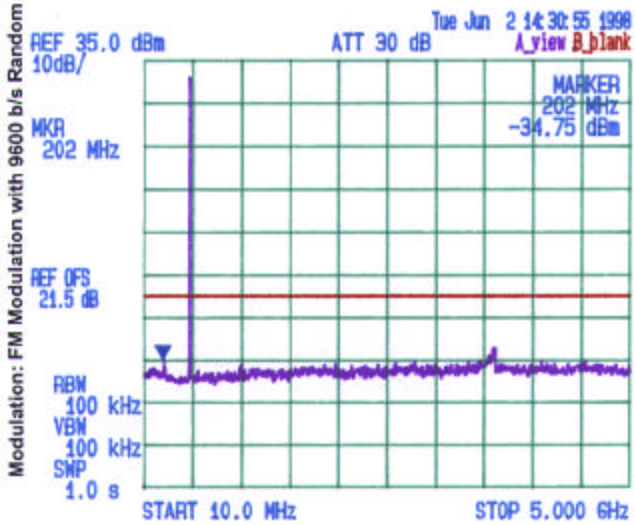
Tx Frequency: 470 RF Power: 2 Watts

Date: June 02, 1998
Tested by: Tri Lau

Modulation: FM Modulation with 2.5 kHz Sine Wave Signal



Modulation: FM Modulation with 9600 b/s Random Data



3.7. TRANSMITTER SPURIOUS/HARMONIC RADIATED EMISSIONS @ FCC 90.210

PRODUCT NAME: **TEKLOGIX TRX7355 VOICE/DATA FM MODULATED TRANSCEIVER (Base, Mobile & Portable), Model No.: TRX7355**

FCC REQUIREMENTS:

FCC Part 90, Sub. I, Para. 90.210

Emissions shall be attenuated below the mean output power of the transmitter as follows:

FREQUENCY RANGE (MHz)	MAXIMUM OBW (KHz)	CHANNEL SPACING (KHz)	MAX. FREQ. DEVIATION (KHz)	FCC SPECIFICATION LIMITS (Para. No.)
403-512	10.0	12.5	2.5	90.210(d): Mask D – Audio & Voice

FCC RULES	FREQUENCY RANGE	ATTENUATION LIMIT (dBc)
90.210(d): Mask D - Voice & Data	Lowest frequency generated from the transmitter circuit to 10th harmonic of the fundamental frequency	$50 + 10\log_{10}(P)$ or 70 dB whichever is less

CLIMATE CONDITION:

Standard Temperature and Humidity:

- Ambient temperature: 21 °C
- Relative humidity: 43%

POWER INPUT:

7.2 Vdc nominal.

TEST EQUIPMENT:

1. EMI Receiver System/Spectrum Analyzer, Hewlett Packard, Model 8546A, Input +25dBm max., 9KHz-5.6GHz, 50 Ohms, built-in Peak, Quasi-Peak & Average Detectors, Pre-Amplifier and Tracking Signal Generator. This System includes: (1) HP 85460A RF Filter Section, S/N: 3448A00236 and (2) HP 85462A Receiver RF Section/Display, S/N: 3520A00248.
2. Spectrum Analyzer, Advantest, Model R3271, S/N: 15050203, 100 Hz to 32 GHz)
3. Microwave Amplifier, HP, Model 83017A, Frequency Range 1 to 22GHz, 30dB gain nominal, low noise floor type.
4. Active Loop Antenna, Emco, Model 6502, SN 9104-2611, Frequency Range 1 KHz - 30 MHz, @ 50 Ohms.
5. BiconiLog Antenna, Emco, Model 3142, SN 10005, 30-2000 MHz @ 50 Ohms.
6. Log Periodic Antenna, AH System, Model SAS-200/518, SN: 343, Frequency Range: 1GHz-18GHz.
7. FCC Listed Open Field Test Site.
8. Audio Oscillator, HP, Model 204C, SN: 0989A08798, Output: 0-1.2 MHz, 5 Vrms.

METHOD OF MEASUREMENTS:

Refer to **ANSI 63.4**, Para. 8 for detailed radiated emissions measurement procedures.

With transmitter modulation characteristics described in Out-of-Band Emissions measurements @ 2.989, the transmitter spurious and harmonic emissions were scanned. The spurious and harmonic emissions were measured with the Spectrum Analyzer controls set as RBW = 100 kHz, VBW = 100 kHz and SWEEP TIME = AUTO). The transmitter was operated at a full rated power output, and modulated as follows:

FCC CFR 47, Para. 2.997 - Frequency spectrum to be investigated

The spectrum was investigated from the lowest radio generated in the equipment up to at least the 10th harmonic of the carrier frequency or to the highest frequency practicable in the present state of the art of measuring techniques, whichever is lower. Particular attention should be paid to harmonics and subharmonics of the carrier frequency. Radiation at the frequencies of multiplier stages should be checked. The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

FCC CFR 47, Para. 2.993 - Field Strength Spurious Emissions

(a) Measurements was made to detect spurious emissions radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data were supplied showing the magnitude of each harmonic and other spurious emission. For this test, single sideband, independent sideband, and controlled carrier transmitters shall be modulated under the conditions specified in paragraph 2.989(c) as appropriate. For equipment operating on frequencies below 1 GHz , an Open Field Test is normally required, with the measuring instrument antenna located in the far field at all test frequencies. In event it is either impractical or impossible to make open field measurements (e.g. a broadcast transmitter installed in a building) measurement will be accepted of the equipment as installed. Such measurements must be accompanied by a description of the site where the measurements were made showing the location of any possible source of reflections which might distort the field strength measurements. Information submitted shall include the relative radiated power of each spurious emission with the reference to the rated power output of the transmitter, assuming all emissions are radiated from half-wave dipole antennas.

(b) Measurements specified in paragraph (a) of this section shall be made for the following equipment:

(1) Those in which the spurious emission are required to be 60 dB or more below the mean power of the transmitter.
(2) All equipment operating on frequencies higher than 25 MHz
(3) All equipment where the antenna is an integral part of, and attached directly to the transmitter.
(4) Other types of equipment as required, when deemed necessary by the Commission.

METHOD OF CALCULATION FOR TRANSMITTED POWER (P) FROM THE MEASURED FIELD STRENGTH LEVEL (E):

According to IEC 801-3, the power density can be calculated as follows:

$S = P / (4xPIxD^2)$ Where: S: Power density in watts per square feet
P: Transmitted power in watts
PI: 13.1415
D: Distance in meters

The power density S (W/m^2) and electric field E (V/m) is related by:

$S = E^2/(120xPI)$

Accordingly, the field intensity of isotropic radiator in free space can be expressed as follows:

$E = (30xP)^{1/2}/D = 5.5x(P)^{1/2}/D$

For Halfwave dipole antenna or other antennas correlated to dipole in direction of maximum radiation:

$S = (1.64xP)/(4xPIxD^2)$
$E = (49.2xP)^{1/2}xD = 7.01x(P)^{1/2}/D$

$$P = (ExD/7.01)^2$$

Calculation of transmitted power P (dBM) given a measured field intensity E (dBuV/m):

$P(W) = [E(V/m)xD/7.01]^2$
$P(mW) = P(W)x1000$
=> $P(dBm) = 10logP(mW)$
$= 20logE(V/m) + 20log(D) - 20log(7.01) + 10log1000$
$= E(dBV/m) + 20logD + 13$
$= E(dBuV/m) - 120 + 20log(D) + 13$
$= E(dBuV/m) + 20log(D) - 107$

The Transmitted Power @ D = 3 Meters

P(dBm) = E(dBuV/m) - 97.5

TEST RESULTS: Conforms.

TESTED PERSONNEL: Hung Trinh, EMI/RFI Technician & Tri Luu, P.Eng. Engineer

DATE: May 25 - June 01, 1998

MEASUREMENT DATA

RADIATED EMISSIONS MEASUREMENTS @ 3 METERS

TEST CONFIGURATION

- *The channel frequencies (Low, Middle and High) was established at its full rated output power. The emissions was investigated up to the tenth harmonic of the fundamental emissions in each case. the measured level of the carrier was recorded and compared to the level of the emissions as required in Part 90.238(a). The absolute level of each emission shall not be greater than -13 dBm.*
- *For measuring radiated emissions at frequencies below 1 GHz, the Spectrum Analyzer was set as 100 kHz RBW, 100 KHz VBW, SWEEP TIME: AUTO, PEAK DETECTOR.*
- *For measuring radiated emissions at frequencies above 1 GHz, the Spectrum Analyzer was set as 1 MHz RBW, 1 MHz VBW, SWEEP TIME: AUTO, PEAK DETECTOR.*
- *All rf emissions from the lowest frequency generated by the transmitter (...) upto the 10th harmonic of fundamental were scanned, and only emissions less than 20 dB below the limits (-13 dBm) were recorded.*

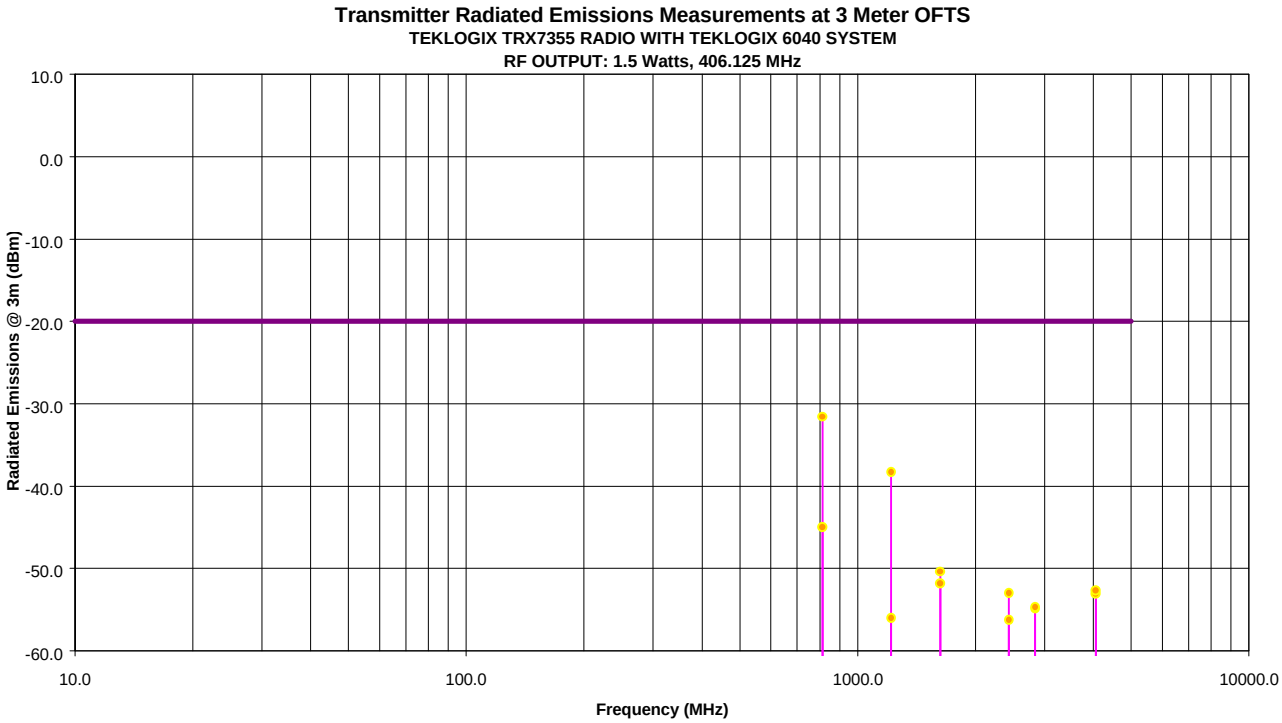
Remarks: According to our measurement inspection (rf conducted emissions at the antenna terminal and radiated emissions with the TRX7355 radio outside the case), the transmitter radiated emissions with the rf output FM modulated with data or voice are identical. The following test data recorded with the rf output modulated with data and they shall be the same for those modulated with voice.

3.7.1. Teklogix TRX7355 Radio with Teklogix 6040 (Mobile) System

Fundamental Frequency: 406.125 MHz
RF Output Power: 1.5 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
812.25	52.5	-45.0	PEAK	V	-20.0	-25.0	PASS
812.25	65.9	-31.6	PEAK	H	-20.0	-11.6	PASS
1218.38	41.5	-56.0	PEAK	V	-20.0	-36.0	PASS
1218.38	59.2	-38.3	PEAK	H	-20.0	-18.3	PASS
1624.50	45.7	-51.8	PEAK	V	-20.0	-31.8	PASS
1624.50	47.1	-50.4	PEAK	H	-20.0	-30.4	PASS
2436.75	41.3	-56.3	PEAK	V	-20.0	-36.3	PASS
2436.75	44.5	-53.0	PEAK	H	-20.0	-33.0	PASS
2842.88	42.6	-54.9	PEAK	V	-20.0	-34.9	PASS
2842.88	42.8	-54.7	PEAK	H	-20.0	-34.7	PASS
4061.25	44.4	-53.1	PEAK	V	-20.0	-33.1	PASS
4061.25	44.8	-52.7	PEAK	H	-20.0	-32.7	PASS

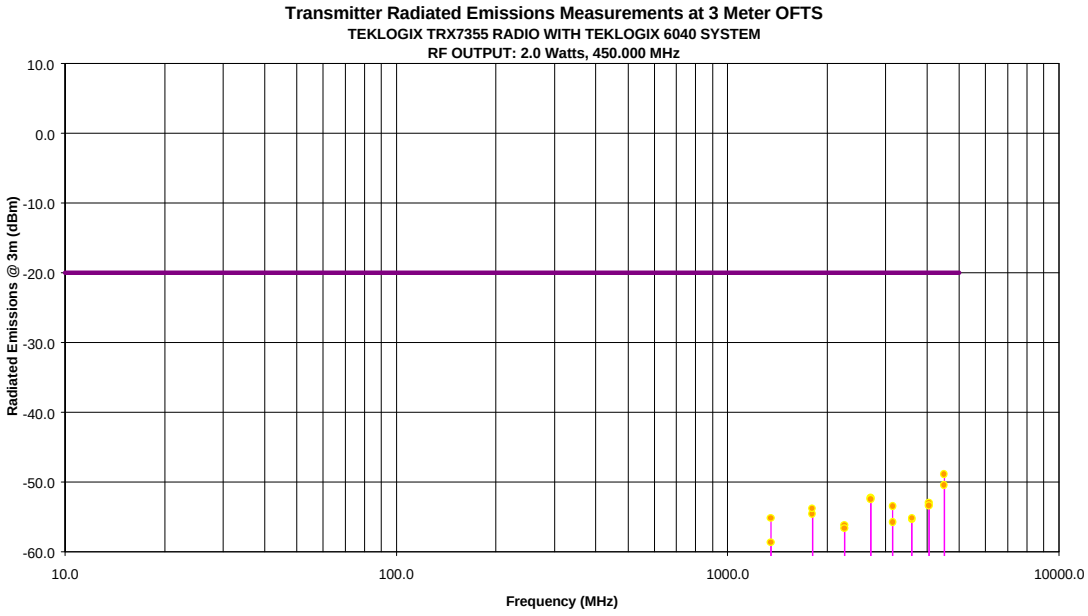
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.


Transmitter Radiated Emissions Measurements at 3 Meter OFTS
TEKLOGIX TRX7355 RADIO WITH TEKLOGIX 6040 SYSTEM
RF OUTPUT: 1.5 Watts, 406.125 MHz
Radiated Emissions @ 3m (dBm)
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
10.0
100.0
1000.0
10000.0
Frequency (MHz)

Fundamental Frequency: 450.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
900.00	31.6	-65.9	PEAK	V	-20.0	-45.9	PASS
900.00	33.6	-63.9	PEAK	H	-20.0	-43.9	PASS
1350.00	38.8	-58.7	PEAK	V	-20.0	-38.7	PASS
1350.00	42.3	-55.2	PEAK	H	-20.0	-35.2	PASS
1800.00	42.9	-54.6	PEAK	V	-20.0	-34.6	PASS
1800.00	43.7	-53.8	PEAK	H	-20.0	-33.8	PASS
2250.00	41.3	-56.2	PEAK	V	-20.0	-36.2	PASS
2250.00	40.8	-56.7	PEAK	H	-20.0	-36.7	PASS
2700.00	45.2	-52.3	PEAK	V	-20.0	-32.3	PASS
2700.00	45.0	-52.5	PEAK	H	-20.0	-32.5	PASS
3150.00	44.0	-53.5	PEAK	V	-20.0	-33.5	PASS
3150.00	41.7	-55.8	PEAK	H	-20.0	-35.8	PASS
3600.00	42.1	-55.4	PEAK	V	-20.0	-35.4	PASS
3600.00	42.3	-55.2	PEAK	H	-20.0	-35.2	PASS
4050.00	44.5	-53.0	PEAK	V	-20.0	-33.0	PASS
4050.00	44.1	-53.4	PEAK	H	-20.0	-33.4	PASS
4500.00	48.6	-48.9	PEAK	V	-20.0	-28.9	PASS
4500.00	47.0	-50.5	PEAK	H	-20.0	-30.5	PASS

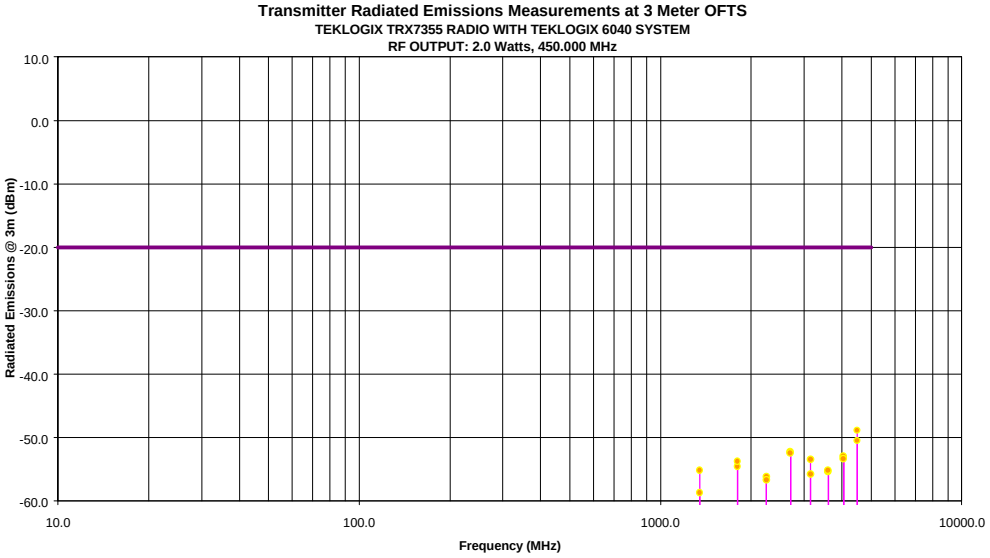
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 470.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
940.00	40.6	-56.9	PEAK	V	-20.0	-36.9	PASS
940.00	63.4	-34.1	PEAK	H	-20.0	-14.1	PASS
1410.00	41.8	-55.7	PEAK	V	-20.0	-35.7	PASS
1410.00	35.5	-62.0	PEAK	H	-20.0	-42.0	PASS
1880.00	44.0	-53.5	PEAK	V	-20.0	-33.5	PASS
1880.00	47.0	-50.5	PEAK	H	-20.0	-30.5	PASS
2350.00	41.8	-55.7	PEAK	V	-20.0	-35.7	PASS
2350.00	42.1	-55.4	PEAK	H	-20.0	-35.4	PASS
2820.00	51.4	-46.1	PEAK	V	-20.0	-26.1	PASS
2820.00	41.1	-56.4	PEAK	H	-20.0	-36.4	PASS
4230.00	49.7	-47.8	PEAK	V	-20.0	-27.8	PASS
4230.00	45.7	-51.8	PEAK	H	-20.0	-31.8	PASS
4700.00	46.7	-50.8	PEAK	V	-20.0	-30.8	PASS
4700.00	45.0	-52.5	PEAK	H	-20.0	-32.5	PASS

The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.

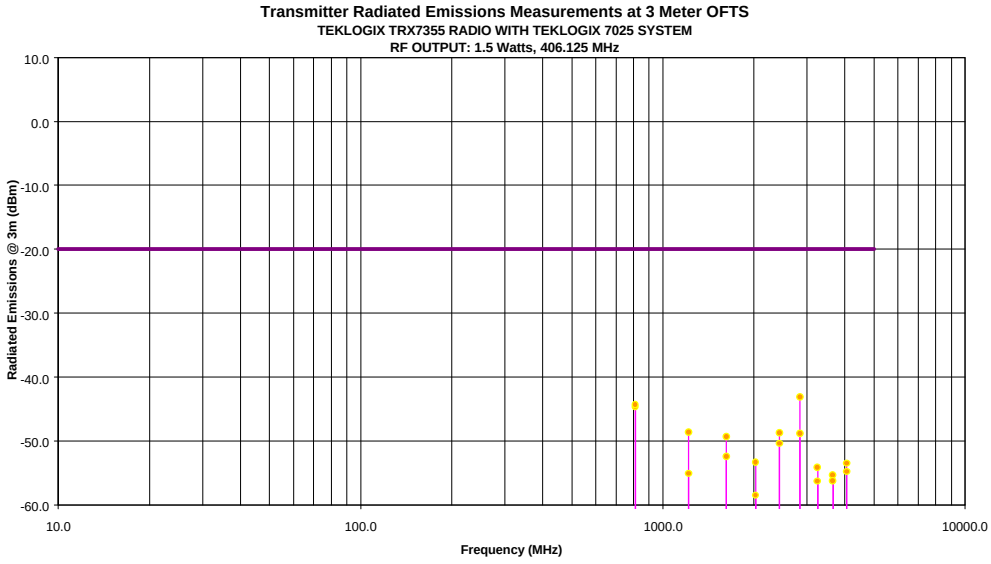


3.7.2. Teklogix TRX7355 Radio with Teklogix 7025 (Portable) System

Fundamental Frequency: 406.125 MHz
RF Output Power: 1.5 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
812.25	52.8	-44.7	PEAK	V	-20.0	-24.7	PASS
812.25	53.2	-44.3	PEAK	H	-20.0	-24.3	PASS
1218.38	48.9	-48.6	PEAK	V	-20.0	-28.6	PASS
1218.38	42.4	-55.1	PEAK	H	-20.0	-35.1	PASS
1624.50	48.2	-49.3	PEAK	V	-20.0	-29.3	PASS
1624.50	45.1	-52.4	PEAK	H	-20.0	-32.4	PASS
2030.00	44.2	-53.3	PEAK	V	-20.0	-33.3	PASS
2030.00	39.0	-58.5	PEAK	H	-20.0	-38.5	PASS
2436.75	48.8	-48.8	PEAK	V	-20.0	-28.8	PASS
2436.75	47.1	-50.4	PEAK	H	-20.0	-30.4	PASS
2842.88	54.4	-43.1	PEAK	V	-20.0	-23.1	PASS
2842.88	48.7	-48.8	PEAK	H	-20.0	-28.8	PASS
3249.00	43.4	-54.1	PEAK	V	-20.0	-34.1	PASS
3249.00	41.2	-56.3	PEAK	H	-20.0	-36.3	PASS
3655.13	42.2	-55.3	PEAK	V	-20.0	-35.3	PASS
3655.13	41.3	-56.3	PEAK	H	-20.0	-36.3	PASS
4061.25	44.0	-53.5	PEAK	V	-20.0	-33.5	PASS
4061.25	42.7	-54.8	PEAK	H	-20.0	-34.8	PASS

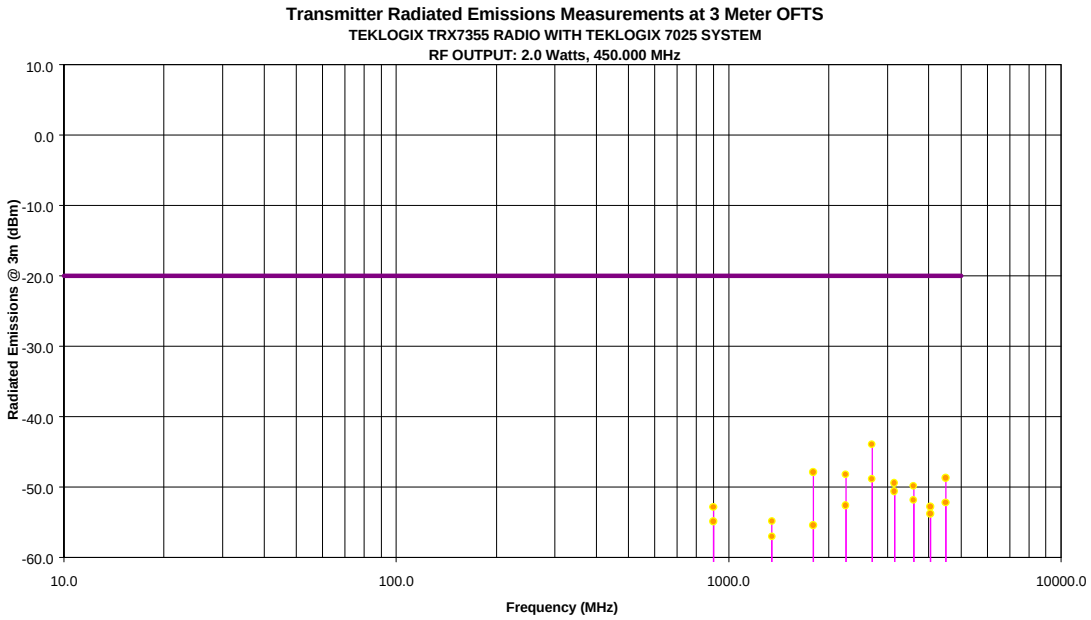
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 450.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
900.00	44.7	-52.8	PEAK	V	-20.0	-32.8	PASS
900.00	42.6	-54.9	PEAK	H	-20.0	-34.9	PASS
1350.00	42.7	-54.8	PEAK	V	-20.0	-34.8	PASS
1350.00	40.5	-57.0	PEAK	H	-20.0	-37.0	PASS
1800.00	49.6	-47.9	PEAK	V	-20.0	-27.9	PASS
1800.00	42.1	-55.4	PEAK	H	-20.0	-35.4	PASS
2250.00	49.3	-48.2	PEAK	V	-20.0	-28.2	PASS
2250.00	44.9	-52.6	PEAK	H	-20.0	-32.6	PASS
2700.00	53.6	-43.9	PEAK	V	-20.0	-23.9	PASS
2700.00	48.7	-48.8	PEAK	H	-20.0	-28.8	PASS
3150.00	48.1	-49.4	PEAK	V	-20.0	-29.4	PASS
3150.00	46.9	-50.6	PEAK	H	-20.0	-30.6	PASS
3600.00	47.7	-49.8	PEAK	V	-20.0	-29.8	PASS
3600.00	45.7	-51.8	PEAK	H	-20.0	-31.8	PASS
4050.00	44.7	-52.8	PEAK	V	-20.0	-32.8	PASS
4050.00	43.7	-53.8	PEAK	H	-20.0	-33.8	PASS
4500.00	48.8	-48.7	PEAK	V	-20.0	-28.7	PASS
4500.00	45.3	-52.2	PEAK	H	-20.0	-32.2	PASS

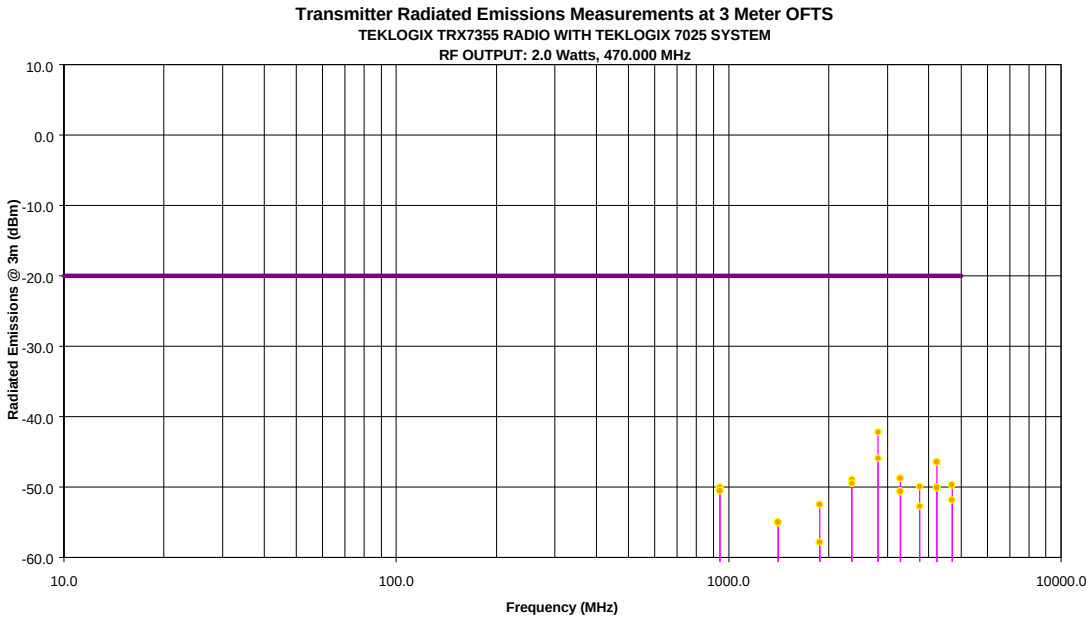
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 470.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
940.00	47.5	-50.0	PEAK	V	-20.0	-30.0	PASS
940.00	47.0	-50.5	PEAK	H	-20.0	-30.5	PASS
1410.00	42.4	-55.1	PEAK	V	-20.0	-35.1	PASS
1410.00	42.5	-55.0	PEAK	H	-20.0	-35.0	PASS
1880.00	45.0	-52.5	PEAK	V	-20.0	-32.5	PASS
1880.00	39.7	-57.8	PEAK	H	-20.0	-37.8	PASS
2350.00	48.5	-49.0	PEAK	V	-20.0	-29.0	PASS
2350.00	48.0	-49.5	PEAK	H	-20.0	-29.5	PASS
2820.00	55.3	-42.2	PEAK	V	-20.0	-22.2	PASS
2820.00	51.6	-45.9	PEAK	H	-20.0	-25.9	PASS
3290.00	48.8	-48.8	PEAK	V	-20.0	-28.8	PASS
3290.00	46.9	-50.6	PEAK	H	-20.0	-30.6	PASS
3760.00	47.6	-49.9	PEAK	V	-20.0	-29.9	PASS
3760.00	44.8	-52.8	PEAK	H	-20.0	-32.8	PASS
4230.00	51.1	-46.4	PEAK	V	-20.0	-26.4	PASS
4230.00	47.5	-50.0	PEAK	H	-20.0	-30.0	PASS
4700.00	47.8	-49.7	PEAK	V	-20.0	-29.7	PASS
4700.00	45.7	-51.8	PEAK	H	-20.0	-31.8	PASS

The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.

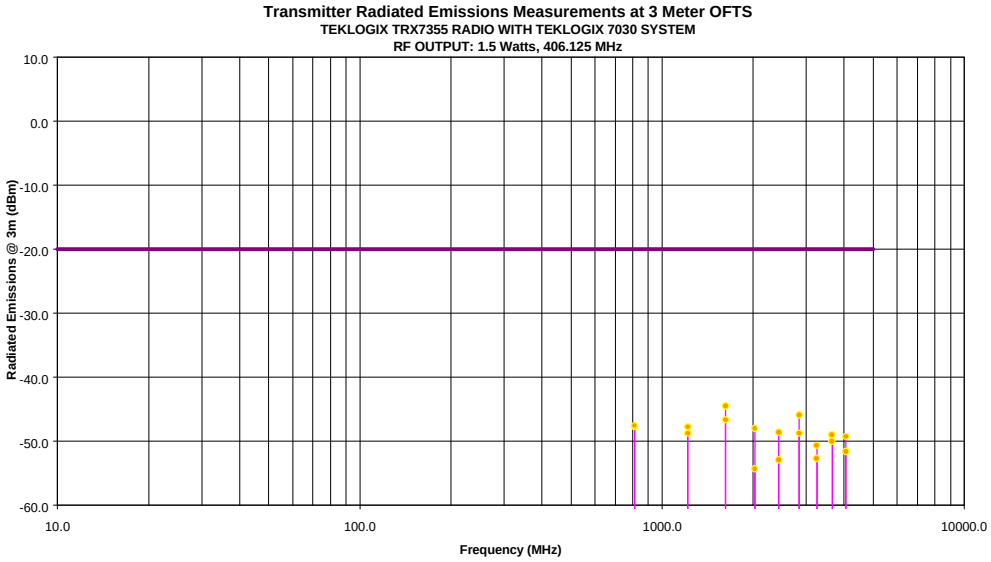


3.7.3. Teklogix TRX7355 Radio with Teklogix 7030 (Portable) System

Fundamental Frequency: 406.125 MHz
RF Output Power: 1.5 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
812.25	49.7	-47.8	PEAK	V	-20.0	-27.8	PASS
812.25	49.9	-47.6	PEAK	H	-20.0	-27.6	PASS
1218.38	49.7	-47.8	PEAK	V	-20.0	-27.8	PASS
1218.38	48.7	-48.8	PEAK	H	-20.0	-28.8	PASS
1624.50	52.9	-44.6	PEAK	V	-20.0	-24.6	PASS
1624.50	50.8	-46.7	PEAK	H	-20.0	-26.7	PASS
2030.63	49.5	-48.0	PEAK	V	-20.0	-28.0	PASS
2030.63	43.2	-54.3	PEAK	H	-20.0	-34.3	PASS
2436.75	48.8	-48.7	PEAK	V	-20.0	-28.7	PASS
2436.75	44.6	-52.9	PEAK	H	-20.0	-32.9	PASS
2842.88	51.5	-46.0	PEAK	V	-20.0	-26.0	PASS
2842.88	48.7	-48.8	PEAK	H	-20.0	-28.8	PASS
3249.00	46.8	-50.7	PEAK	V	-20.0	-30.7	PASS
3249.00	44.8	-52.8	PEAK	H	-20.0	-32.8	PASS
3655.13	48.4	-49.1	PEAK	V	-20.0	-29.1	PASS
3655.13	47.4	-50.1	PEAK	H	-20.0	-30.1	PASS
4061.25	48.2	-49.3	PEAK	V	-20.0	-29.3	PASS
4061.25	45.8	-51.7	PEAK	H	-20.0	-31.7	PASS

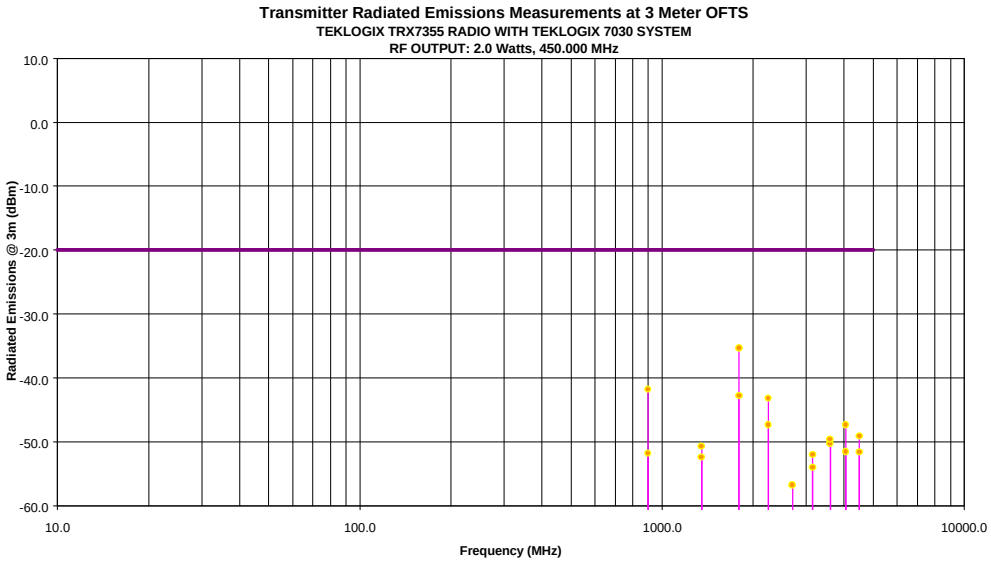
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 450.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
900.00	55.7	-41.8	PEAK	V	-20.0	-21.8	PASS
900.00	45.7	-51.8	PEAK	H	-20.0	-31.8	PASS
1350.00	45.1	-52.4	PEAK	V	-20.0	-32.4	PASS
1350.00	46.8	-50.7	PEAK	H	-20.0	-30.7	PASS
1800.00	62.2	-35.3	PEAK	V	-20.0	-15.3	PASS
1800.00	54.8	-42.8	PEAK	H	-20.0	-22.8	PASS
2250.00	54.3	-43.2	PEAK	V	-20.0	-23.2	PASS
2250.00	50.2	-47.3	PEAK	H	-20.0	-27.3	PASS
2700.00	40.8	-56.8	PEAK	H	-20.0	-36.8	PASS
3150.00	43.5	-54.0	PEAK	V	-20.0	-34.0	PASS
3150.00	45.5	-52.0	PEAK	H	-20.0	-32.0	PASS
3600.00	47.3	-50.3	PEAK	V	-20.0	-30.3	PASS
3600.00	47.9	-49.6	PEAK	H	-20.0	-29.6	PASS
4050.00	46.0	-51.5	PEAK	V	-20.0	-31.5	PASS
4050.00	50.2	-47.3	PEAK	H	-20.0	-27.3	PASS
4500.00	48.4	-49.1	PEAK	V	-20.0	-29.1	PASS
4500.00	45.9	-51.6	PEAK	H	-20.0	-31.6	PASS

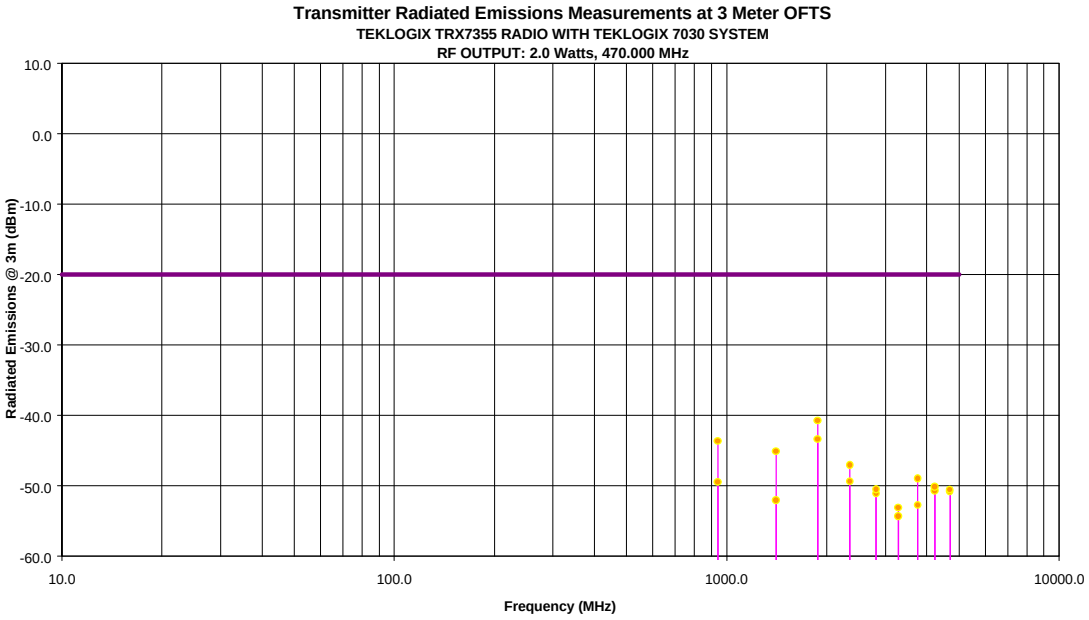
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 470.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
940.00	53.8	-43.7	PEAK	V	-20.0	-23.7	PASS
940.00	48.0	-49.5	PEAK	H	-20.0	-29.5	PASS
1410.00	52.4	-45.1	PEAK	V	-20.0	-25.1	PASS
1410.00	45.4	-52.1	PEAK	H	-20.0	-32.1	PASS
1880.00	54.1	-43.4	PEAK	V	-20.0	-23.4	PASS
1880.00	56.8	-40.8	PEAK	H	-20.0	-20.8	PASS
2350.00	50.4	-47.1	PEAK	V	-20.0	-27.1	PASS
2350.00	48.1	-49.4	PEAK	H	-20.0	-29.4	PASS
2820.00	46.4	-51.1	PEAK	V	-20.0	-31.1	PASS
2820.00	47.0	-50.5	PEAK	H	-20.0	-30.5	PASS
3290.00	44.4	-53.1	PEAK	V	-20.0	-33.1	PASS
3290.00	43.2	-54.3	PEAK	H	-20.0	-34.3	PASS
3760.00	48.5	-49.0	PEAK	V	-20.0	-29.0	PASS
3760.00	44.8	-52.8	PEAK	H	-20.0	-32.8	PASS
4230.00	46.8	-50.7	PEAK	V	-20.0	-30.7	PASS
4230.00	47.3	-50.2	PEAK	H	-20.0	-30.2	PASS
4700.00	46.7	-50.8	PEAK	V	-20.0	-30.8	PASS
4700.00	46.9	-50.6	PEAK	H	-20.0	-30.6	PASS

The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.

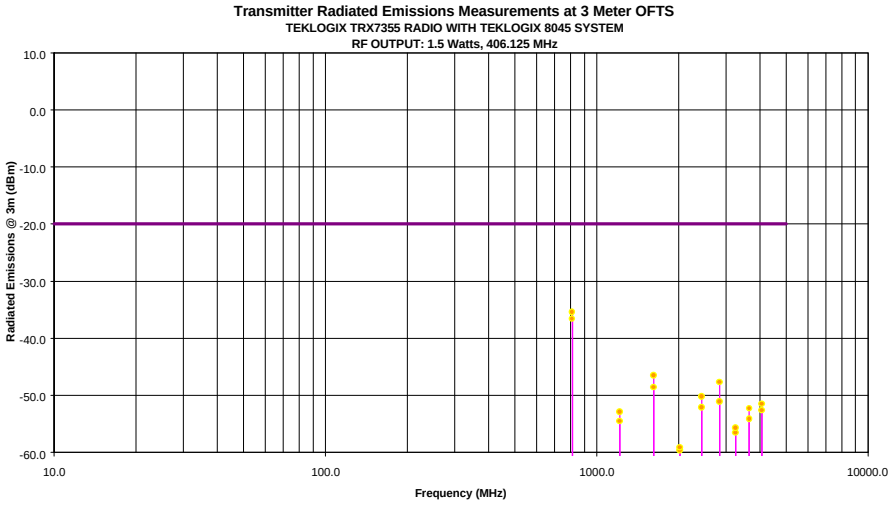


3.7.4. Teklogix TRX7355 Radio with Teklogix 8045 (Mobile) System

Fundamental Frequency: 406.125 MHz
RF Output Power: 1.5 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
812.25	60.9	-36.6	PEAK	V	-20.0	-16.6	PASS
812.25	62.1	-35.4	PEAK	H	-20.0	-15.4	PASS
1218.38	43.0	-54.5	PEAK	V	-20.0	-34.5	PASS
1218.38	44.6	-52.9	PEAK	H	-20.0	-32.9	PASS
1624.50	51.0	-46.5	PEAK	V	-20.0	-26.5	PASS
1624.50	48.9	-48.6	PEAK	H	-20.0	-28.6	PASS
2030.63	37.9	-59.6	PEAK	V	-20.0	-39.6	PASS
2030.63	38.4	-59.1	PEAK	H	-20.0	-39.1	PASS
2436.75	45.4	-52.1	PEAK	V	-20.0	-32.1	PASS
2436.75	47.3	-50.2	PEAK	H	-20.0	-30.2	PASS
2842.88	46.4	-51.1	PEAK	V	-20.0	-31.1	PASS
2842.88	49.8	-47.7	PEAK	H	-20.0	-27.7	PASS
3249.00	41.0	-56.5	PEAK	V	-20.0	-36.5	PASS
3249.00	41.8	-55.7	PEAK	H	-20.0	-35.7	PASS
3655.00	43.4	-54.1	PEAK	V	-20.0	-34.1	PASS
3655.00	45.2	-52.3	PEAK	H	-20.0	-32.3	PASS
4061.25	44.9	-52.6	PEAK	V	-20.0	-32.6	PASS
4061.25	46.0	-51.5	PEAK	H	-20.0	-31.5	PASS
5000.00	0.0	-97.5	PEAK	H	-20.0	-77.5	PASS

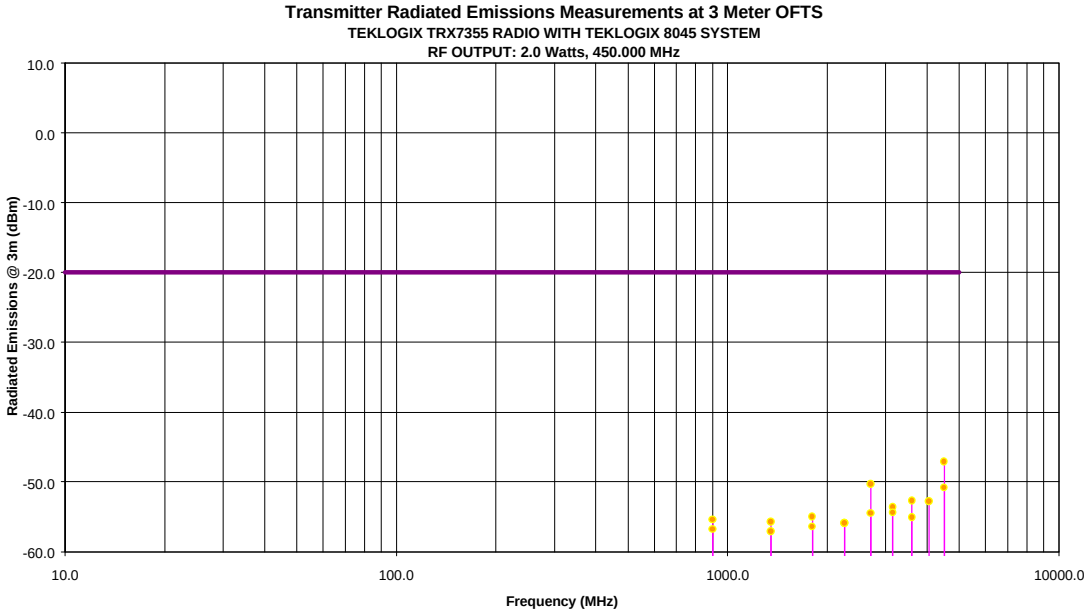
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 450.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
900.00	40.7	-56.8	PEAK	V	-20.0	-36.8	PASS
900.00	42.1	-55.4	PEAK	H	-20.0	-35.4	PASS
1350.00	40.4	-57.1	PEAK	V	-20.0	-37.1	PASS
1350.00	41.8	-55.7	PEAK	H	-20.0	-35.7	PASS
1800.00	41.1	-56.4	PEAK	V	-20.0	-36.4	PASS
1800.00	42.5	-55.0	PEAK	H	-20.0	-35.0	PASS
2250.00	41.6	-55.9	PEAK	V	-20.0	-35.9	PASS
2250.00	41.6	-55.9	PEAK	H	-20.0	-35.9	PASS
2700.00	47.2	-50.3	PEAK	V	-20.0	-30.3	PASS
2700.00	43.0	-54.5	PEAK	H	-20.0	-34.5	PASS
3150.00	43.9	-53.6	PEAK	V	-20.0	-33.6	PASS
3150.00	43.1	-54.4	PEAK	H	-20.0	-34.4	PASS
3600.00	44.8	-52.7	PEAK	V	-20.0	-32.7	PASS
3600.00	42.4	-55.1	PEAK	H	-20.0	-35.1	PASS
4050.00	44.7	-52.8	PEAK	V	-20.0	-32.8	PASS
4500.00	50.4	-47.1	PEAK	V	-20.0	-27.1	PASS
4500.00	46.7	-50.8	PEAK	H	-20.0	-30.8	PASS

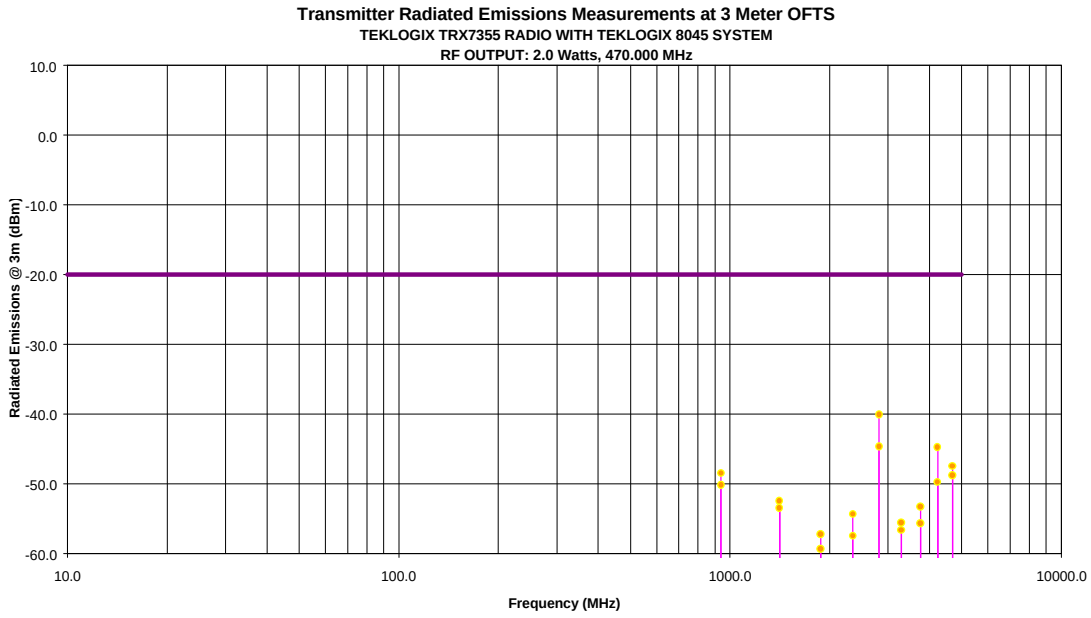
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 470.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
940.00	49.0	-48.5	PEAK	V	-20.0	-28.5	PASS
940.00	47.3	-50.2	PEAK	H	-20.0	-30.2	PASS
1410.00	45.0	-52.5	PEAK	V	-20.0	-32.5	PASS
1410.00	44.0	-53.5	PEAK	H	-20.0	-33.5	PASS
1880.00	38.1	-59.4	PEAK	V	-20.0	-39.4	PASS
1880.00	40.2	-57.3	PEAK	H	-20.0	-37.3	PASS
2350.00	43.1	-54.4	PEAK	V	-20.0	-34.4	PASS
2350.00	40.0	-57.5	PEAK	H	-20.0	-37.5	PASS
2820.00	57.4	-40.1	PEAK	V	-20.0	-20.1	PASS
2820.00	52.8	-44.7	PEAK	H	-20.0	-24.7	PASS
3290.00	41.9	-55.6	PEAK	V	-20.0	-35.6	PASS
3290.00	40.8	-56.7	PEAK	H	-20.0	-36.7	PASS
3760.00	44.2	-53.3	PEAK	V	-20.0	-33.3	PASS
3760.00	41.8	-55.7	PEAK	H	-20.0	-35.7	PASS
4230.00	52.7	-44.8	PEAK	V	-20.0	-24.8	PASS
4230.00	47.7	-49.8	PEAK	H	-20.0	-29.8	PASS
4700.00	50.0	-47.5	PEAK	V	-20.0	-27.5	PASS
4700.00	48.7	-48.8	PEAK	H	-20.0	-28.8	PASS

The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.

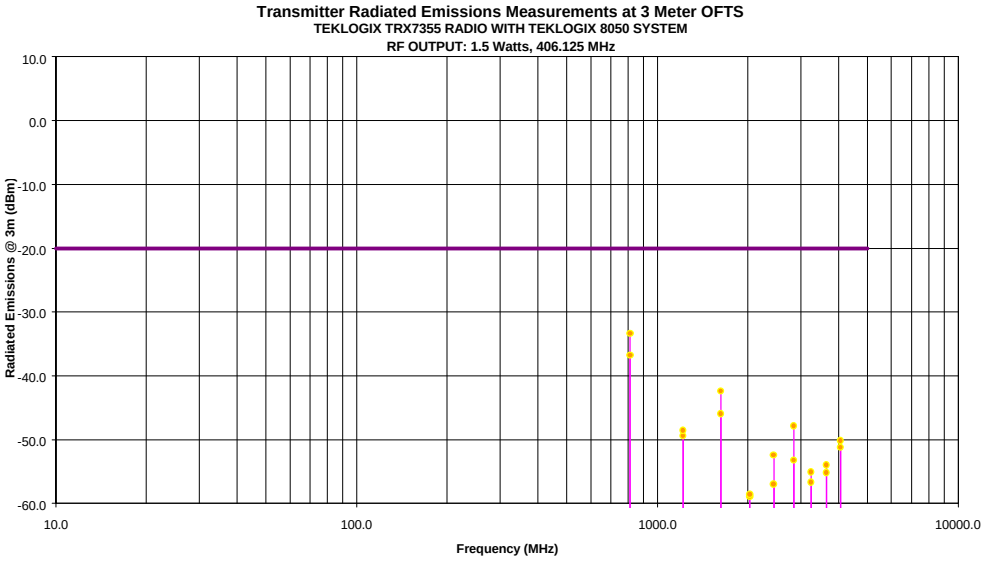


3.7.5. Teklogix TRX7355 Radio with Teklogix 8050 (Mobile) System

Fundamental Frequency: 406.125 MHz
RF Output Power: 1.5 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
812.25	60.7	-36.8	PEAK	V	-20.0	-16.8	PASS
812.25	64.1	-33.4	PEAK	H	-20.0	-13.4	PASS
1218.38	48.1	-49.4	PEAK	V	-20.0	-29.4	PASS
1218.38	48.9	-48.6	PEAK	H	-20.0	-28.6	PASS
1624.50	55.1	-42.4	PEAK	V	-20.0	-22.4	PASS
1624.50	51.5	-46.0	PEAK	H	-20.0	-26.0	PASS
2030.63	38.6	-58.9	PEAK	V	-20.0	-38.9	PASS
2030.63	38.9	-58.6	PEAK	H	-20.0	-38.6	PASS
2436.75	45.1	-52.4	PEAK	V	-20.0	-32.4	PASS
2436.75	40.5	-57.0	PEAK	H	-20.0	-37.0	PASS
2842.88	49.6	-47.9	PEAK	V	-20.0	-27.9	PASS
2842.88	44.3	-53.3	PEAK	H	-20.0	-33.3	PASS
3249.00	42.4	-55.1	PEAK	V	-20.0	-35.1	PASS
3249.00	40.8	-56.7	PEAK	H	-20.0	-36.7	PASS
3655.00	43.5	-54.0	PEAK	V	-20.0	-34.0	PASS
3655.00	42.3	-55.2	PEAK	H	-20.0	-35.2	PASS
4061.25	47.3	-50.2	PEAK	V	-20.0	-30.2	PASS
4061.25	46.3	-51.2	PEAK	H	-20.0	-31.2	PASS

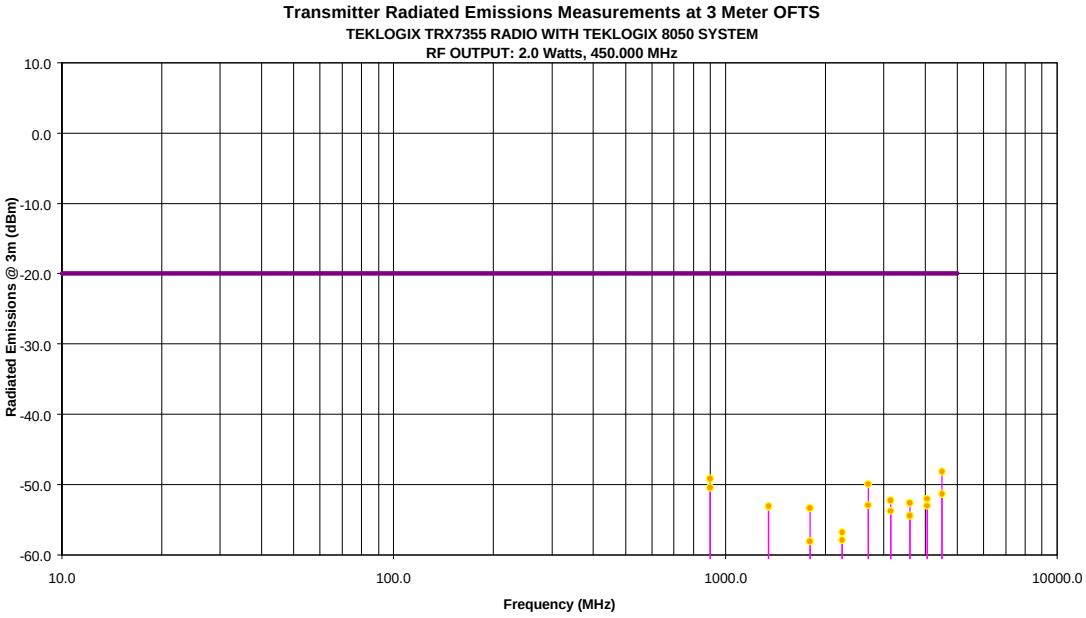
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 450.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
900.00	47.0	-50.5	PEAK	V	-20.0	-30.5	PASS
900.00	48.3	-49.2	PEAK	H	-20.0	-29.2	PASS
1350.00	44.2	-53.3	PEAK	V	-20.0	-33.3	PASS
1350.00	44.4	-53.1	PEAK	H	-20.0	-33.1	PASS
1800.00	44.1	-53.4	PEAK	V	-20.0	-33.4	PASS
1800.00	39.4	-58.1	PEAK	H	-20.0	-38.1	PASS
2250.00	40.7	-56.8	PEAK	V	-20.0	-36.8	PASS
2250.00	39.6	-57.9	PEAK	H	-20.0	-37.9	PASS
2700.00	47.5	-50.0	PEAK	V	-20.0	-30.0	PASS
2700.00	44.5	-53.0	PEAK	H	-20.0	-33.0	PASS
3150.00	45.2	-52.3	PEAK	V	-20.0	-32.3	PASS
3150.00	43.7	-53.8	PEAK	H	-20.0	-33.8	PASS
3600.00	44.8	-52.7	PEAK	V	-20.0	-32.7	PASS
3600.00	43.0	-54.5	PEAK	H	-20.0	-34.5	PASS
4050.00	45.4	-52.1	PEAK	V	-20.0	-32.1	PASS
4050.00	44.4	-53.1	PEAK	H	-20.0	-33.1	PASS
4500.00	49.3	-48.2	PEAK	V	-20.0	-28.2	PASS
4500.00	46.1	-51.4	PEAK	H	-20.0	-31.4	PASS

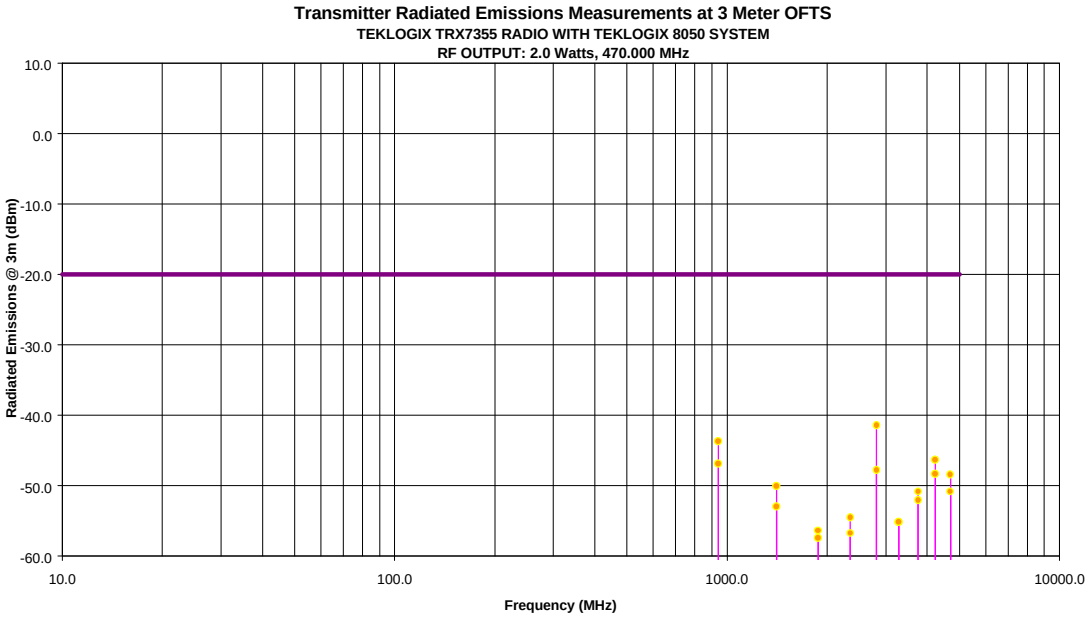
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 470.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
940.00	53.8	-43.7	PEAK	V	-20.0	-23.7	PASS
940.00	50.6	-46.9	PEAK	H	-20.0	-26.9	PASS
1410.00	47.4	-50.1	PEAK	V	-20.0	-30.1	PASS
1410.00	44.5	-53.0	PEAK	H	-20.0	-33.0	PASS
1880.00	41.1	-56.4	PEAK	V	-20.0	-36.4	PASS
1880.00	40.1	-57.4	PEAK	H	-20.0	-37.4	PASS
2350.00	43.0	-54.5	PEAK	V	-20.0	-34.5	PASS
2350.00	40.8	-56.8	PEAK	H	-20.0	-36.8	PASS
2820.00	56.1	-41.4	PEAK	V	-20.0	-21.4	PASS
2820.00	49.7	-47.8	PEAK	H	-20.0	-27.8	PASS
3290.00	42.3	-55.2	PEAK	V	-20.0	-35.2	PASS
3290.00	42.3	-55.2	PEAK	H	-20.0	-35.2	PASS
3760.00	46.7	-50.8	PEAK	V	-20.0	-30.8	PASS
3760.00	45.4	-52.1	PEAK	H	-20.0	-32.1	PASS
4230.00	51.2	-46.3	PEAK	V	-20.0	-26.3	PASS
4230.00	49.2	-48.3	PEAK	H	-20.0	-28.3	PASS
4700.00	49.1	-48.4	PEAK	V	-20.0	-28.4	PASS
4700.00	46.7	-50.8	PEAK	H	-20.0	-30.8	PASS

The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.

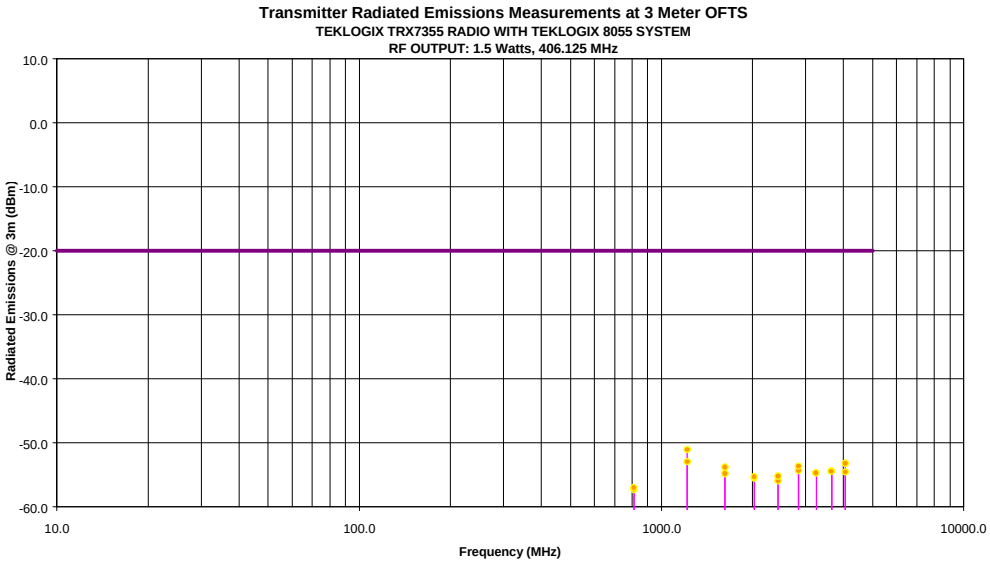


3.7.6. Teklogix TRX7355 Radio with Teklogix 8055 (Mobile) System

Fundamental Frequency: 406.125 MHz
RF Output Power: 1.5 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
812.25	40.2	-57.3	PEAK	V	-20.0	-37.3	PASS
812.25	40.5	-57.0	PEAK	H	-20.0	-37.0	PASS
1218.38	44.5	-53.0	PEAK	V	-20.0	-33.0	PASS
1218.38	46.4	-51.1	PEAK	H	-20.0	-31.1	PASS
1624.50	42.7	-54.8	PEAK	V	-20.0	-34.8	PASS
1624.50	43.7	-53.8	PEAK	H	-20.0	-33.8	PASS
2030.63	41.9	-55.6	PEAK	V	-20.0	-35.6	PASS
2030.63	42.2	-55.3	PEAK	H	-20.0	-35.3	PASS
2436.75	41.5	-56.0	PEAK	V	-20.0	-36.0	PASS
2436.75	42.2	-55.3	PEAK	H	-20.0	-35.3	PASS
2842.88	43.2	-54.3	PEAK	V	-20.0	-34.3	PASS
2842.88	43.8	-53.7	PEAK	H	-20.0	-33.7	PASS
3249.00	42.7	-54.8	PEAK	V	-20.0	-34.8	PASS
3655.00	43.1	-54.4	PEAK	V	-20.0	-34.4	PASS
3655.00	43.0	-54.5	PEAK	H	-20.0	-34.5	PASS
4061.25	44.2	-53.3	PEAK	V	-20.0	-33.3	PASS
4061.25	42.9	-54.6	PEAK	H	-20.0	-34.6	PASS

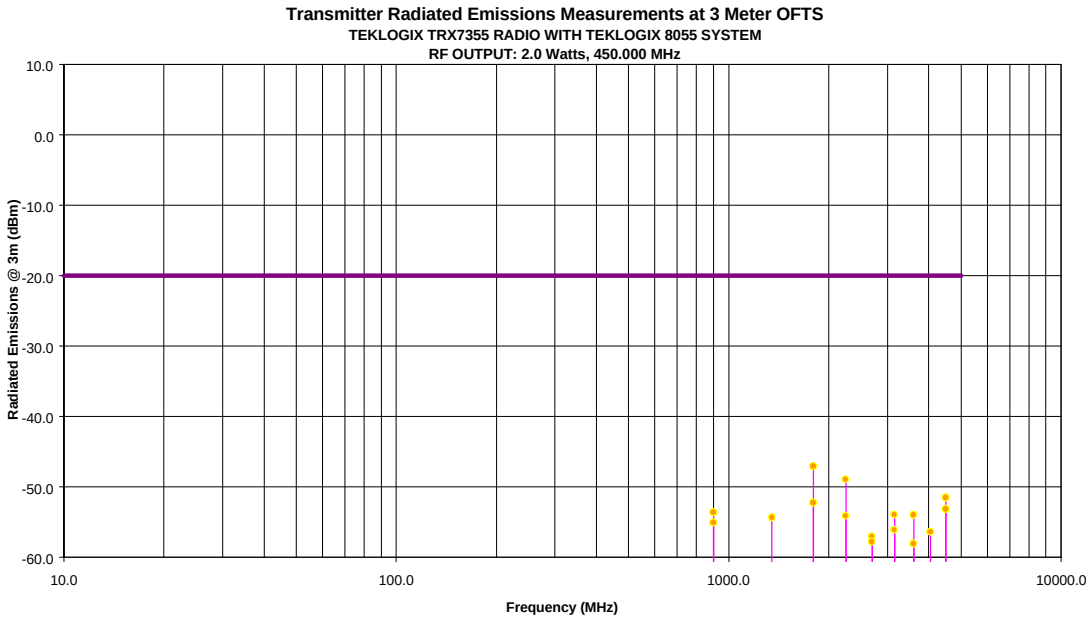
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 450.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
900.00	43.9	-53.6	PEAK	V	-20.0	-33.6	PASS
900.00	42.4	-55.1	PEAK	H	-20.0	-35.1	PASS
1350.00	43.2	-54.3	PEAK	V	-20.0	-34.3	PASS
1350.00	35.7	-61.8	PEAK	H	-20.0	-41.8	PASS
1800.00	50.5	-47.0	PEAK	V	-20.0	-27.0	PASS
1800.00	45.3	-52.2	PEAK	H	-20.0	-32.2	PASS
2250.00	48.6	-48.9	PEAK	V	-20.0	-28.9	PASS
2250.00	43.4	-54.1	PEAK	H	-20.0	-34.1	PASS
2700.00	40.5	-57.0	PEAK	V	-20.0	-37.0	PASS
2700.00	39.7	-57.8	PEAK	H	-20.0	-37.8	PASS
3150.00	43.6	-53.9	PEAK	V	-20.0	-33.9	PASS
3150.00	41.4	-56.1	PEAK	H	-20.0	-36.1	PASS
3600.00	43.5	-54.0	PEAK	V	-20.0	-34.0	PASS
3600.00	39.4	-58.1	PEAK	H	-20.0	-38.1	PASS
4050.00	41.1	-56.4	PEAK	V	-20.0	-36.4	PASS
4500.00	46.0	-51.5	PEAK	V	-20.0	-31.5	PASS
4500.00	44.3	-53.2	PEAK	H	-20.0	-33.2	PASS

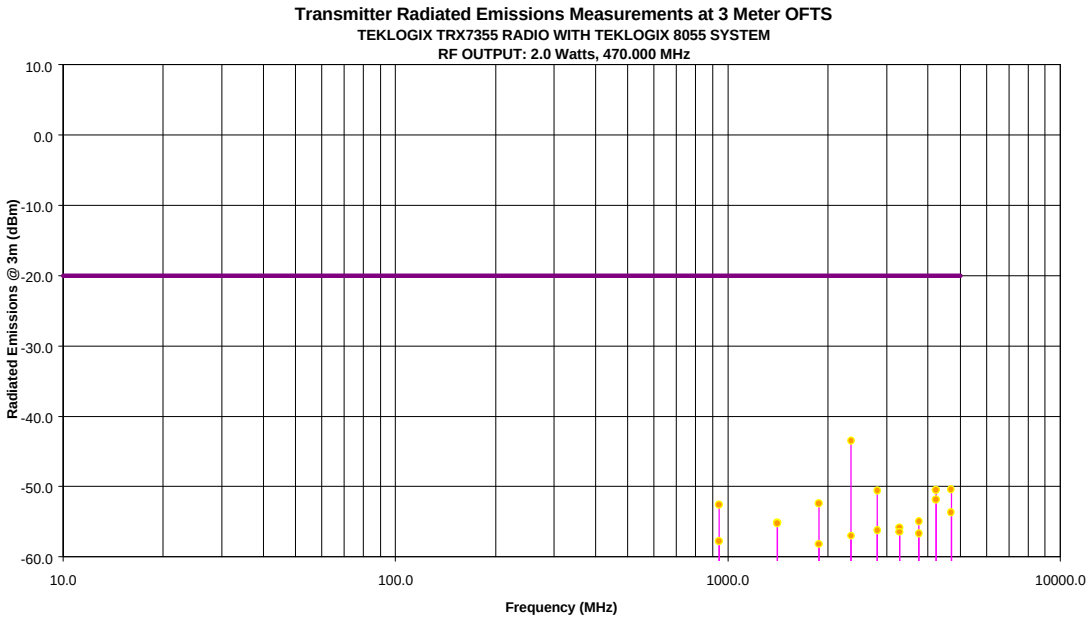
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 470.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
940.00	44.9	-52.6	PEAK	V	-20.0	-32.6	PASS
940.00	39.7	-57.8	PEAK	H	-20.0	-37.8	PASS
1410.00	42.4	-55.1	PEAK	V	-20.0	-35.1	PASS
1410.00	42.3	-55.2	PEAK	H	-20.0	-35.2	PASS
1880.00	45.1	-52.4	PEAK	V	-20.0	-32.4	PASS
1880.00	39.3	-58.2	PEAK	H	-20.0	-38.2	PASS
2350.00	54.0	-43.5	PEAK	V	-20.0	-23.5	PASS
2350.00	40.5	-57.0	PEAK	H	-20.0	-37.0	PASS
2820.00	46.9	-50.6	PEAK	V	-20.0	-30.6	PASS
2820.00	41.3	-56.2	PEAK	H	-20.0	-36.2	PASS
3290.00	41.7	-55.8	PEAK	V	-20.0	-35.8	PASS
3290.00	41.1	-56.4	PEAK	H	-20.0	-36.4	PASS
3760.00	42.5	-55.0	PEAK	V	-20.0	-35.0	PASS
3760.00	40.8	-56.7	PEAK	H	-20.0	-36.7	PASS
4230.00	47.0	-50.5	PEAK	V	-20.0	-30.5	PASS
4230.00	45.6	-51.9	PEAK	H	-20.0	-31.9	PASS
4700.00	47.1	-50.4	PEAK	V	-20.0	-30.4	PASS
4700.00	43.8	-53.7	PEAK	H	-20.0	-33.7	PASS

The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.

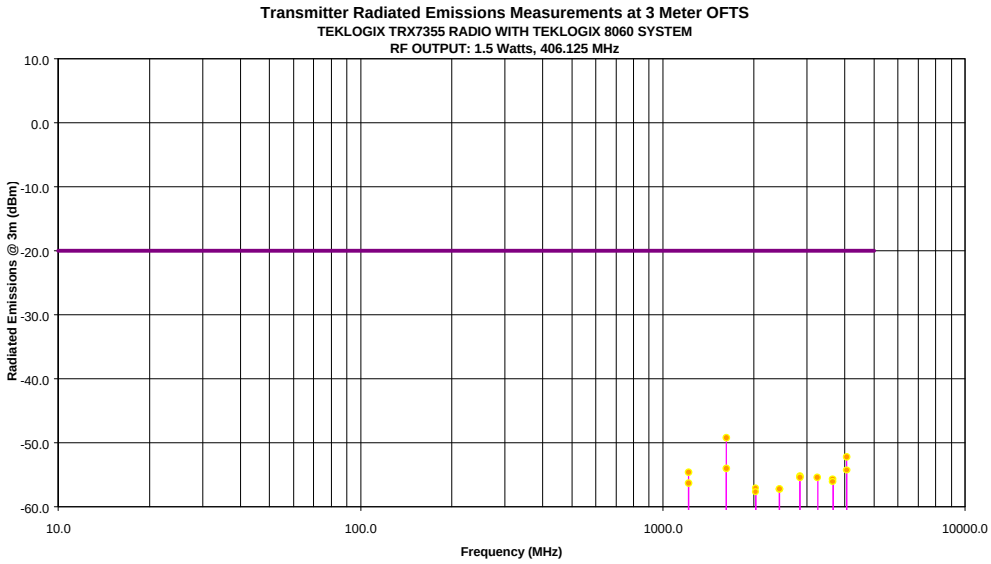


3.7.7. Teklogix TRX7355 Radio with Teklogix 8060 (Mobile) System

Fundamental Frequency: 406.125 MHz
RF Output Power: 1.5 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
812.25	34.1	-63.4	PEAK	V	-20.0	-43.4	PASS
812.25	35.4	-62.1	PEAK	H	-20.0	-42.1	PASS
1218.38	42.8	-54.7	PEAK	V	-20.0	-34.7	PASS
1218.38	41.2	-56.3	PEAK	H	-20.0	-36.3	PASS
1624.50	48.3	-49.3	PEAK	V	-20.0	-29.3	PASS
1624.50	43.4	-54.1	PEAK	H	-20.0	-34.1	PASS
2030.63	40.4	-57.1	PEAK	V	-20.0	-37.1	PASS
2030.63	39.8	-57.7	PEAK	H	-20.0	-37.7	PASS
2436.75	40.2	-57.3	PEAK	V	-20.0	-37.3	PASS
2436.75	40.3	-57.2	PEAK	H	-20.0	-37.2	PASS
2842.88	42.2	-55.3	PEAK	V	-20.0	-35.3	PASS
2842.88	42.1	-55.4	PEAK	H	-20.0	-35.4	PASS
3249.00	42.0	-55.5	PEAK	V	-20.0	-35.5	PASS
3655.00	41.8	-55.7	PEAK	V	-20.0	-35.7	PASS
3655.00	41.4	-56.1	PEAK	H	-20.0	-36.1	PASS
4061.25	45.3	-52.3	PEAK	V	-20.0	-32.3	PASS
4061.25	43.2	-54.3	PEAK	H	-20.0	-34.3	PASS

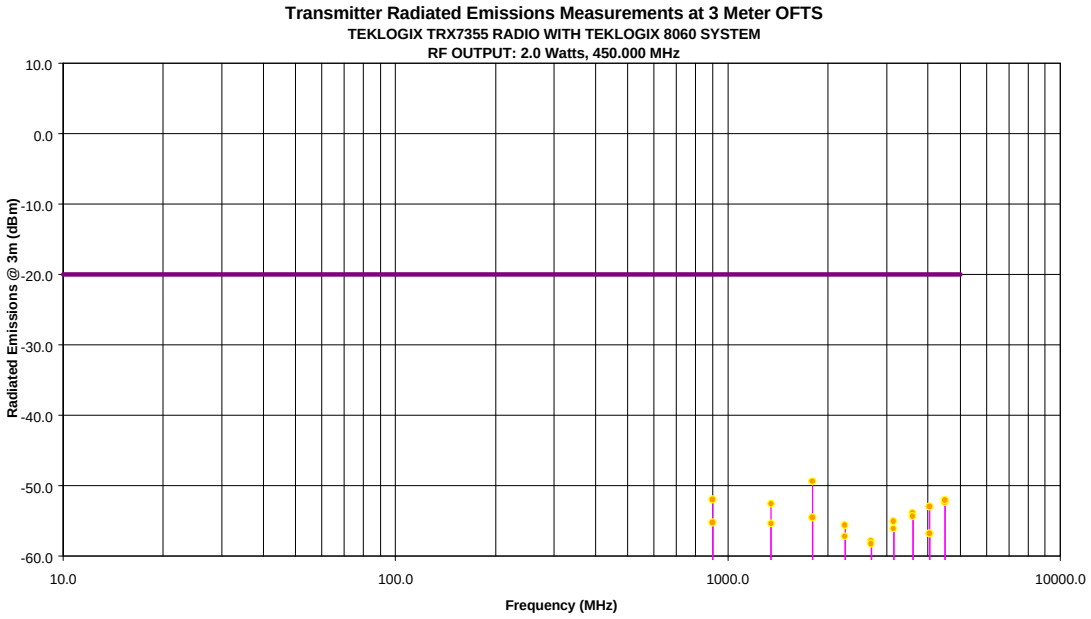
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 450.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
900.00	45.5	-52.0	PEAK	V	-20.0	-32.0	PASS
900.00	42.3	-55.2	PEAK	H	-20.0	-35.2	PASS
1350.00	44.9	-52.6	PEAK	V	-20.0	-32.6	PASS
1350.00	42.1	-55.4	PEAK	H	-20.0	-35.4	PASS
1800.00	48.1	-49.4	PEAK	V	-20.0	-29.4	PASS
1800.00	43.0	-54.5	PEAK	H	-20.0	-34.5	PASS
2250.00	41.9	-55.6	PEAK	V	-20.0	-35.6	PASS
2250.00	40.3	-57.2	PEAK	H	-20.0	-37.2	PASS
2700.00	39.7	-57.8	PEAK	V	-20.0	-37.8	PASS
2700.00	39.3	-58.2	PEAK	H	-20.0	-38.2	PASS
3150.00	41.4	-56.1	PEAK	V	-20.0	-36.1	PASS
3150.00	42.4	-55.1	PEAK	H	-20.0	-35.1	PASS
3600.00	43.7	-53.8	PEAK	V	-20.0	-33.8	PASS
3600.00	43.2	-54.3	PEAK	H	-20.0	-34.3	PASS
4050.00	40.7	-56.8	PEAK	V	-20.0	-36.8	PASS
4050.00	44.5	-53.0	PEAK	H	-20.0	-33.0	PASS
4500.00	45.2	-52.3	PEAK	V	-20.0	-32.3	PASS
4500.00	45.5	-52.0	PEAK	H	-20.0	-32.0	PASS

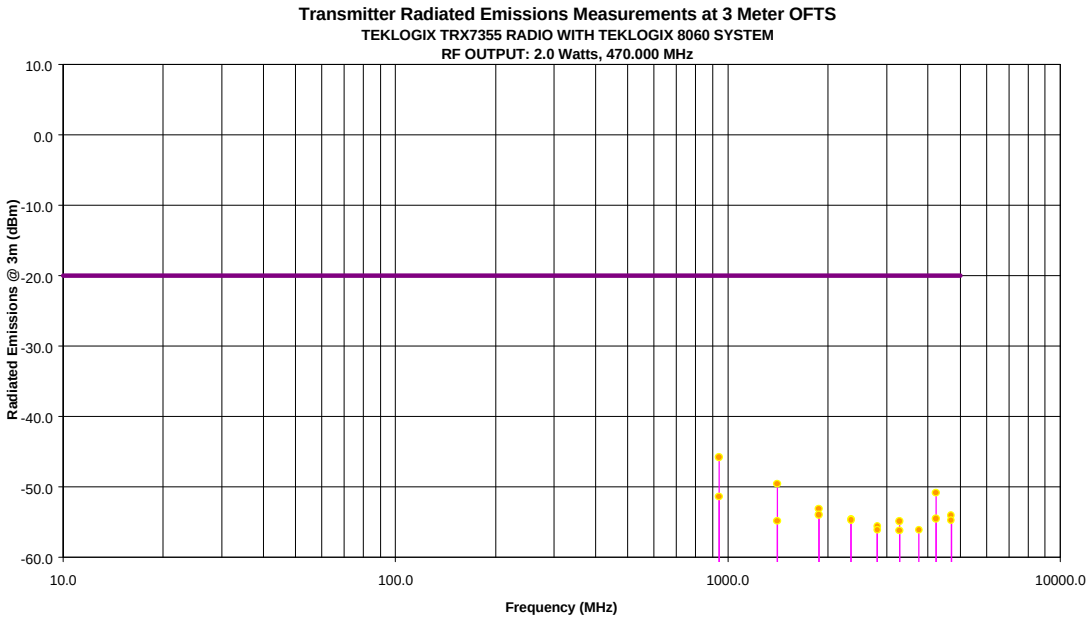
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 470.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
940.00	51.7	-45.8	PEAK	V	-20.0	-25.8	PASS
940.00	46.1	-51.4	PEAK	H	-20.0	-31.4	PASS
1410.00	47.9	-49.6	PEAK	V	-20.0	-29.6	PASS
1410.00	42.7	-54.8	PEAK	H	-20.0	-34.8	PASS
1880.00	44.4	-53.1	PEAK	V	-20.0	-33.1	PASS
1880.00	43.5	-54.0	PEAK	H	-20.0	-34.0	PASS
2350.00	42.9	-54.6	PEAK	V	-20.0	-34.6	PASS
2350.00	42.8	-54.7	PEAK	H	-20.0	-34.7	PASS
2820.00	41.9	-55.6	PEAK	V	-20.0	-35.6	PASS
2820.00	41.4	-56.1	PEAK	H	-20.0	-36.1	PASS
3290.00	42.6	-54.9	PEAK	V	-20.0	-34.9	PASS
3290.00	41.3	-56.2	PEAK	H	-20.0	-36.2	PASS
3760.00	41.4	-56.1	PEAK	V	-20.0	-36.1	PASS
4230.00	46.7	-50.8	PEAK	V	-20.0	-30.8	PASS
4230.00	43.0	-54.5	PEAK	H	-20.0	-34.5	PASS
4700.00	43.4	-54.1	PEAK	V	-20.0	-34.1	PASS
4700.00	42.8	-54.8	PEAK	H	-20.0	-34.8	PASS

The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.

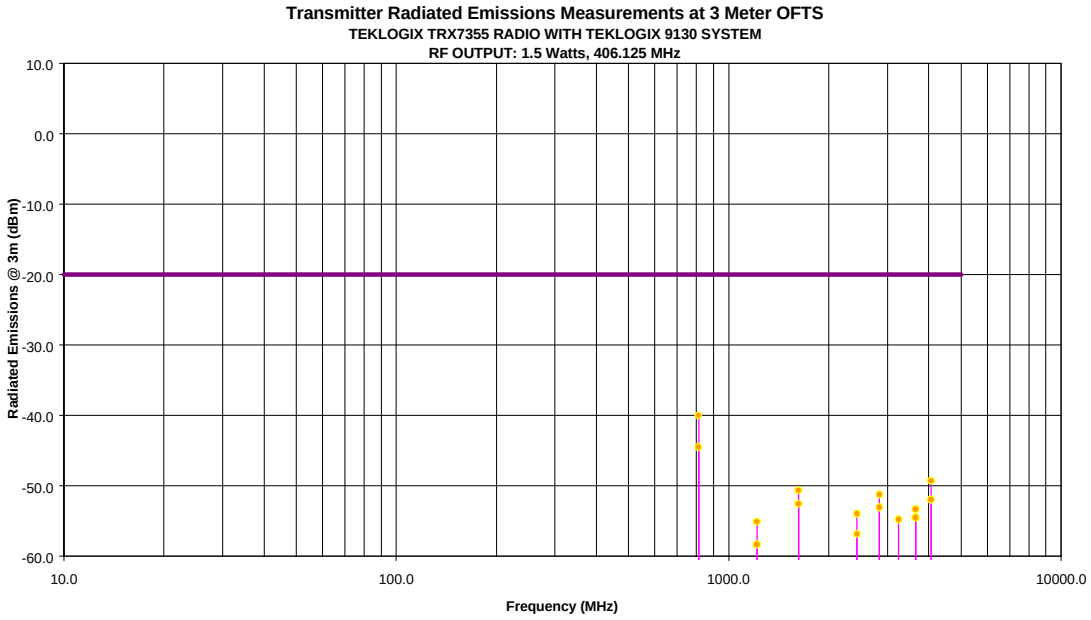


3.7.8. Teklogix TRX7355 Radio with Teklogix 9130 (Base) System

Fundamental Frequency: 406.125 MHz
RF Output Power: 1.5 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
812.25	57.5	-40.0	PEAK	V	-20.0	-20.0	PASS
812.25	53.0	-44.5	PEAK	H	-20.0	-24.5	PASS
1218.38	42.4	-55.1	PEAK	V	-20.0	-35.1	PASS
1218.38	39.2	-58.3	PEAK	H	-20.0	-38.3	PASS
1624.50	46.8	-50.7	PEAK	V	-20.0	-30.7	PASS
1624.50	45.0	-52.5	PEAK	H	-20.0	-32.5	PASS
2436.75	43.5	-54.0	PEAK	V	-20.0	-34.0	PASS
2436.75	40.7	-56.8	PEAK	H	-20.0	-36.8	PASS
2842.88	44.4	-53.1	PEAK	V	-20.0	-33.1	PASS
2842.88	46.3	-51.3	PEAK	H	-20.0	-31.3	PASS
3249.00	42.7	-54.8	PEAK	H	-20.0	-34.8	PASS
3655.00	44.2	-53.3	PEAK	V	-20.0	-33.3	PASS
3655.00	43.0	-54.5	PEAK	H	-20.0	-34.5	PASS
4061.25	48.2	-49.3	PEAK	V	-20.0	-29.3	PASS
4061.25	45.5	-52.0	PEAK	H	-20.0	-32.0	PASS

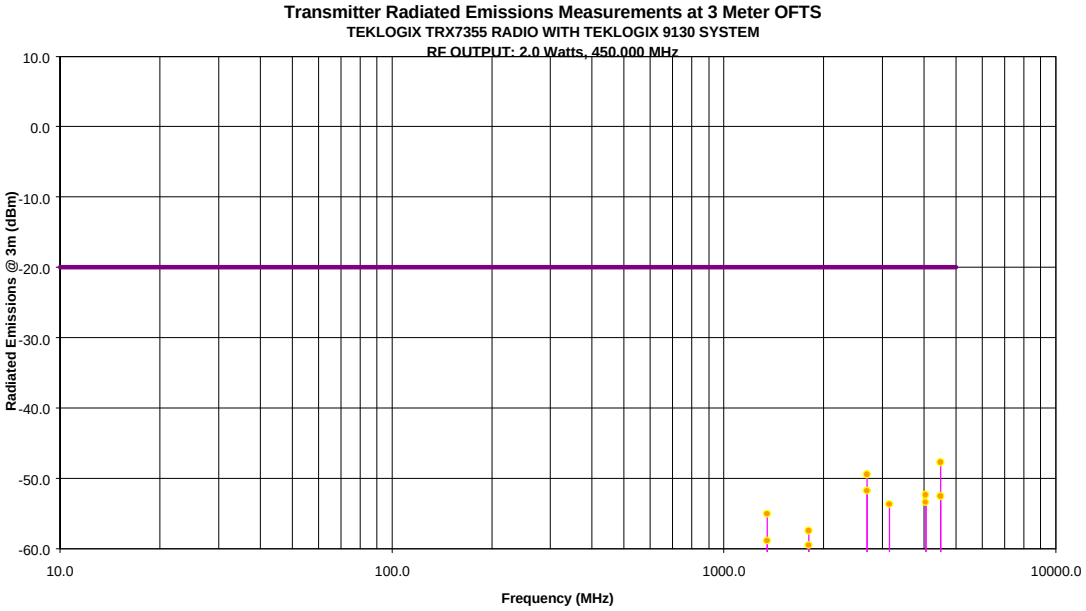
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 450.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
900.00	34.3	-63.2	PEAK	V	-20.0	-43.2	PASS
900.00	34.3	-63.3	PEAK	H	-20.0	-43.3	PASS
1350.00	42.4	-55.1	PEAK	V	-20.0	-35.1	PASS
1350.00	38.6	-58.9	PEAK	H	-20.0	-38.9	PASS
1800.00	40.0	-57.5	PEAK	V	-20.0	-37.5	PASS
1800.00	38.0	-59.5	PEAK	H	-20.0	-39.5	PASS
2700.00	48.0	-49.5	PEAK	V	-20.0	-29.5	PASS
2700.00	45.7	-51.8	PEAK	H	-20.0	-31.8	PASS
3150.00	43.8	-53.7	PEAK	V	-20.0	-33.7	PASS
4050.00	45.1	-52.4	PEAK	V	-20.0	-32.4	PASS
4050.00	44.1	-53.4	PEAK	H	-20.0	-33.4	PASS
4500.00	49.8	-47.8	PEAK	V	-20.0	-27.8	PASS
4500.00	44.9	-52.6	PEAK	H	-20.0	-32.6	PASS

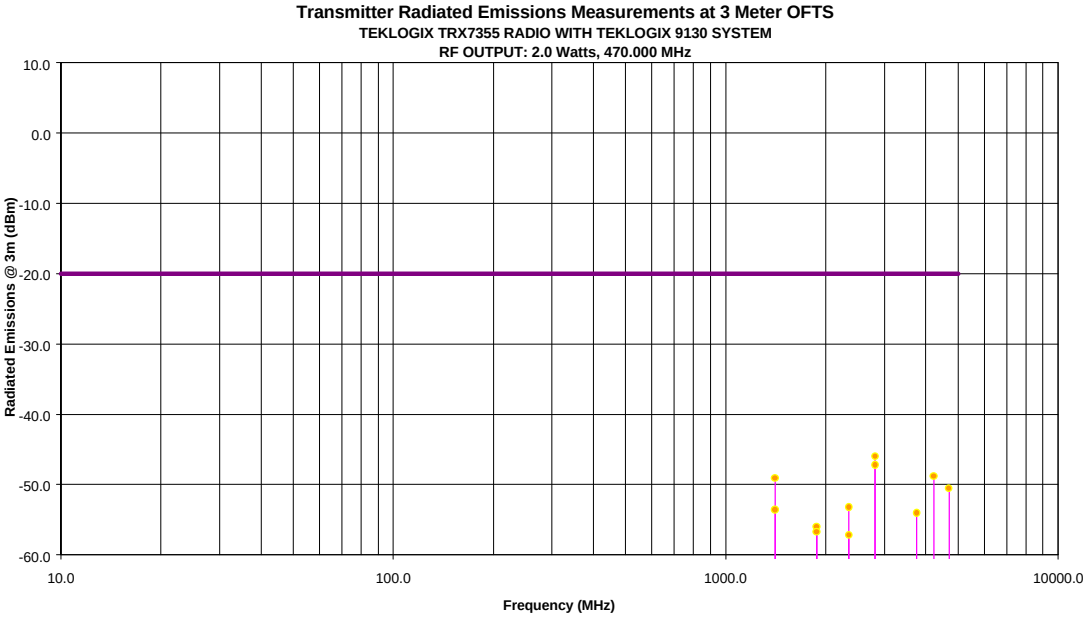
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 470.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
940.00	31.7	-65.8	PEAK	V	-20.0	-45.8	PASS
940.00	31.6	-65.9	PEAK	H	-20.0	-45.9	PASS
1410.00	48.4	-49.1	PEAK	V	-20.0	-29.1	PASS
1410.00	43.9	-53.6	PEAK	H	-20.0	-33.6	PASS
1880.00	41.5	-56.0	PEAK	V	-20.0	-36.0	PASS
1880.00	40.8	-56.8	PEAK	H	-20.0	-36.8	PASS
2350.00	44.3	-53.2	PEAK	V	-20.0	-33.2	PASS
2350.00	40.3	-57.2	PEAK	H	-20.0	-37.2	PASS
2820.00	50.3	-47.2	PEAK	V	-20.0	-27.2	PASS
2820.00	51.5	-46.0	PEAK	H	-20.0	-26.0	PASS
3760.00	43.4	-54.1	PEAK	H	-20.0	-34.1	PASS
4230.00	48.7	-48.8	PEAK	H	-20.0	-28.8	PASS
4700.00	47.0	-50.5	PEAK	H	-20.0	-30.5	PASS

The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.

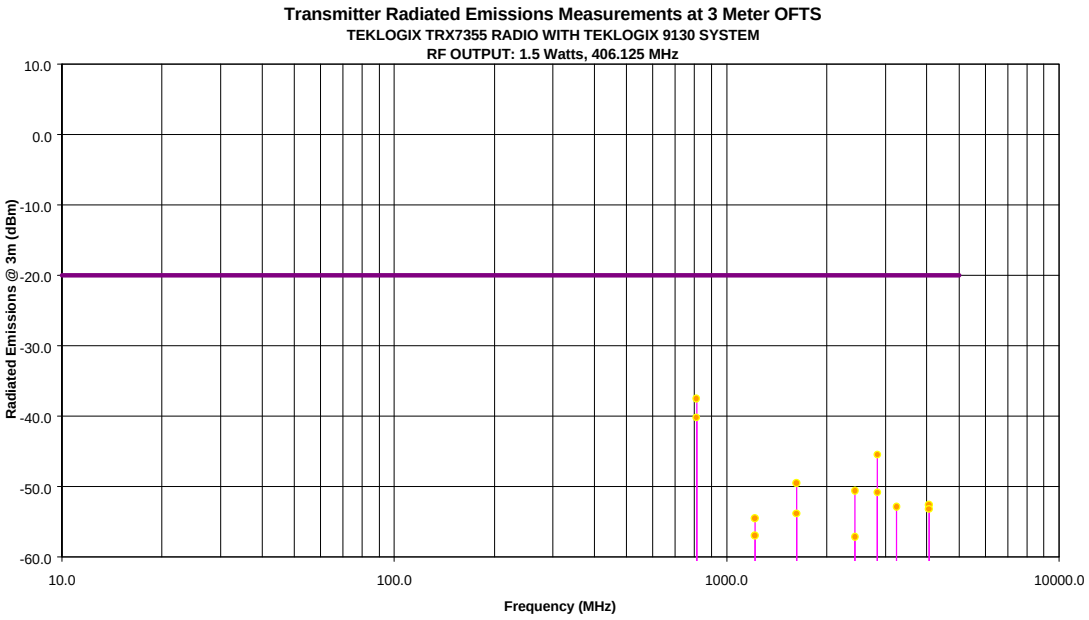


3.7.9. Teklogix TRX7355 Radio with Teklogix 9140 (Base) System

Fundamental Frequency: 406.125 MHz
RF Output Power: 1.5 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
812.25	57.3	-40.2	PEAK	V	-20.0	-20.2	PASS
812.25	60.0	-37.5	PEAK	H	-20.0	-17.5	PASS
1218.38	43.0	-54.5	PEAK	V	-20.0	-34.5	PASS
1218.38	40.6	-57.0	PEAK	H	-20.0	-37.0	PASS
1624.50	48.0	-49.5	PEAK	V	-20.0	-29.5	PASS
1624.50	43.7	-53.8	PEAK	H	-20.0	-33.8	PASS
2436.75	46.9	-50.6	PEAK	V	-20.0	-30.6	PASS
2436.75	40.3	-57.2	PEAK	H	-20.0	-37.2	PASS
2842.88	52.0	-45.5	PEAK	V	-20.0	-25.5	PASS
2842.88	46.7	-50.8	PEAK	H	-20.0	-30.8	PASS
3249.00	44.6	-52.9	PEAK	V	-20.0	-32.9	PASS
4061.25	44.9	-52.6	PEAK	V	-20.0	-32.6	PASS
4061.25	44.3	-53.2	PEAK	H	-20.0	-33.2	PASS

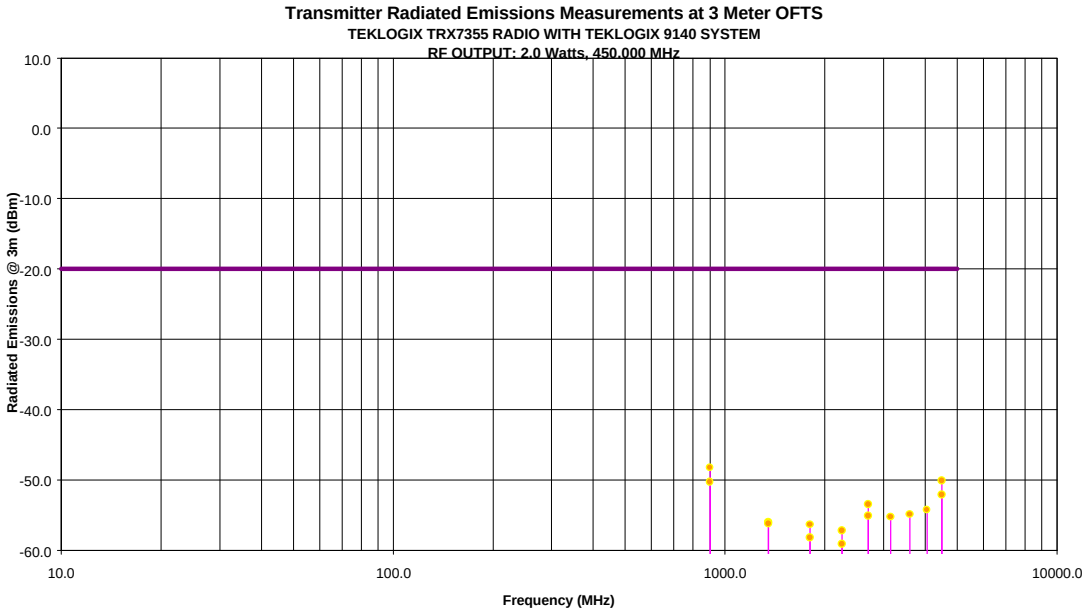
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 450.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
900.00	47.2	-50.3	PEAK	V	-20.0	-30.3	PASS
900.00	49.3	-48.3	PEAK	H	-20.0	-28.3	PASS
1350.00	41.5	-56.0	PEAK	V	-20.0	-36.0	PASS
1350.00	41.3	-56.2	PEAK	H	-20.0	-36.2	PASS
1800.00	41.2	-56.3	PEAK	V	-20.0	-36.3	PASS
1800.00	39.3	-58.2	PEAK	H	-20.0	-38.2	PASS
2250.00	40.3	-57.2	PEAK	V	-20.0	-37.2	PASS
2250.00	38.4	-59.1	PEAK	H	-20.0	-39.1	PASS
2700.00	42.4	-55.1	PEAK	V	-20.0	-35.1	PASS
2700.00	44.0	-53.5	PEAK	H	-20.0	-33.5	PASS
3150.00	42.3	-55.3	PEAK	V	-20.0	-35.3	PASS
3600.00	42.6	-54.9	PEAK	V	-20.0	-34.9	PASS
4050.00	43.3	-54.3	PEAK	V	-20.0	-34.3	PASS
4500.00	47.4	-50.1	PEAK	V	-20.0	-30.1	PASS
4500.00	45.4	-52.1	PEAK	H	-20.0	-32.1	PASS

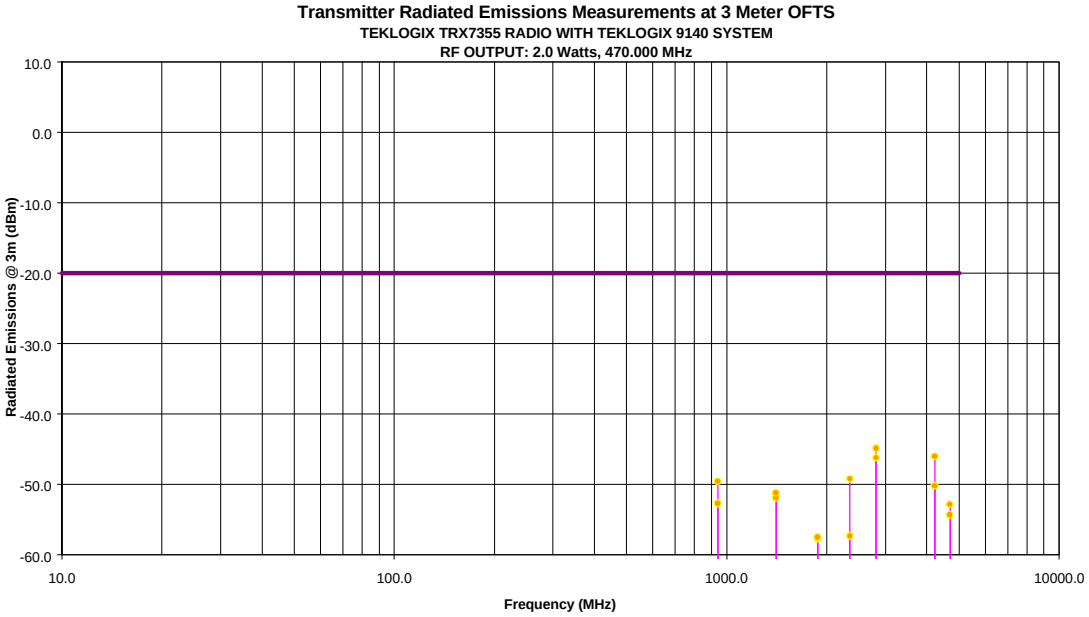
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 470.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
940.00	44.8	-52.7	PEAK	V	-20.0	-32.7	PASS
940.00	47.9	-49.6	PEAK	H	-20.0	-29.6	PASS
1410.00	45.6	-51.9	PEAK	V	-20.0	-31.9	PASS
1410.00	46.3	-51.2	PEAK	H	-20.0	-31.2	PASS
1880.00	39.8	-57.7	PEAK	V	-20.0	-37.7	PASS
1880.00	40.0	-57.5	PEAK	H	-20.0	-37.5	PASS
2350.00	40.2	-57.3	PEAK	V	-20.0	-37.3	PASS
2350.00	48.3	-49.2	PEAK	H	-20.0	-29.2	PASS
2820.00	52.6	-44.9	PEAK	V	-20.0	-24.9	PASS
2820.00	51.3	-46.2	PEAK	H	-20.0	-26.2	PASS
4230.00	51.5	-46.0	PEAK	V	-20.0	-26.0	PASS
4230.00	47.3	-50.2	PEAK	H	-20.0	-30.2	PASS
4700.00	44.7	-52.8	PEAK	V	-20.0	-32.8	PASS
4700.00	43.2	-54.3	PEAK	H	-20.0	-34.3	PASS

The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



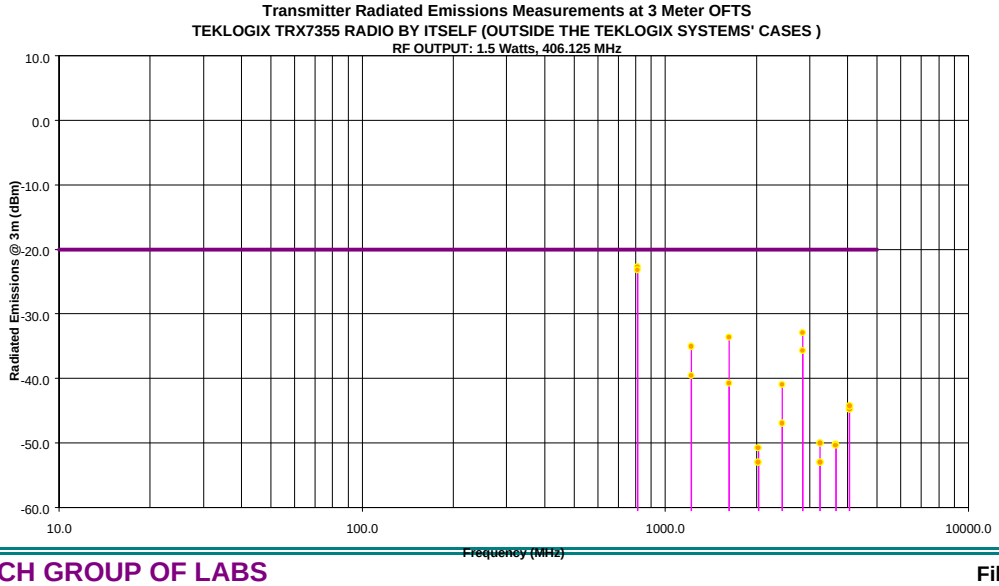
3.7.10. Teklogix TRX7355 Radio (outside any Teklogix system)

The Teklogix test Jig with the radio standing by itself on a wooden table and connected to the test jig using a non-shielded ribbon cable. This is only for verification purpose for the radio shielding effectiveness, realistically, this configuration is never provided for sales or uses.

Fundamental Frequency: 406.125 MHz
RF Output Power: 1.5 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
812.25	74.8	-22.8	PEAK	V	-20.0	-2.8	PASS
812.25	74.3	-23.2	PEAK	H	-20.0	-3.2	PASS
1218.38	62.4	-35.1	PEAK	V	-20.0	-15.1	PASS
1218.38	57.9	-39.6	PEAK	H	-20.0	-19.6	PASS
1624.50	63.9	-33.6	PEAK	V	-20.0	-13.6	PASS
1624.50	56.7	-40.8	PEAK	H	-20.0	-20.8	PASS
2030.63	46.7	-50.8	PEAK	V	-20.0	-30.8	PASS
2030.63	44.5	-53.0	PEAK	H	-20.0	-33.0	PASS
2436.75	56.5	-41.0	PEAK	V	-20.0	-21.0	PASS
2436.75	50.5	-47.0	PEAK	H	-20.0	-27.0	PASS
2842.88	64.6	-32.9	PEAK	V	-20.0	-12.9	PASS
2842.88	61.8	-35.7	PEAK	H	-20.0	-15.7	PASS
3249.00	47.4	-50.1	PEAK	V	-20.0	-30.1	PASS
3249.00	44.4	-53.1	PEAK	H	-20.0	-33.1	PASS
3655.00	47.3	-50.3	PEAK	V	-20.0	-30.3	PASS
3655.00	47.1	-50.4	PEAK	H	-20.0	-30.4	PASS
4061.25	52.7	-44.8	PEAK	V	-20.0	-24.8	PASS
4061.25	53.2	-44.3	PEAK	H	-20.0	-24.3	PASS

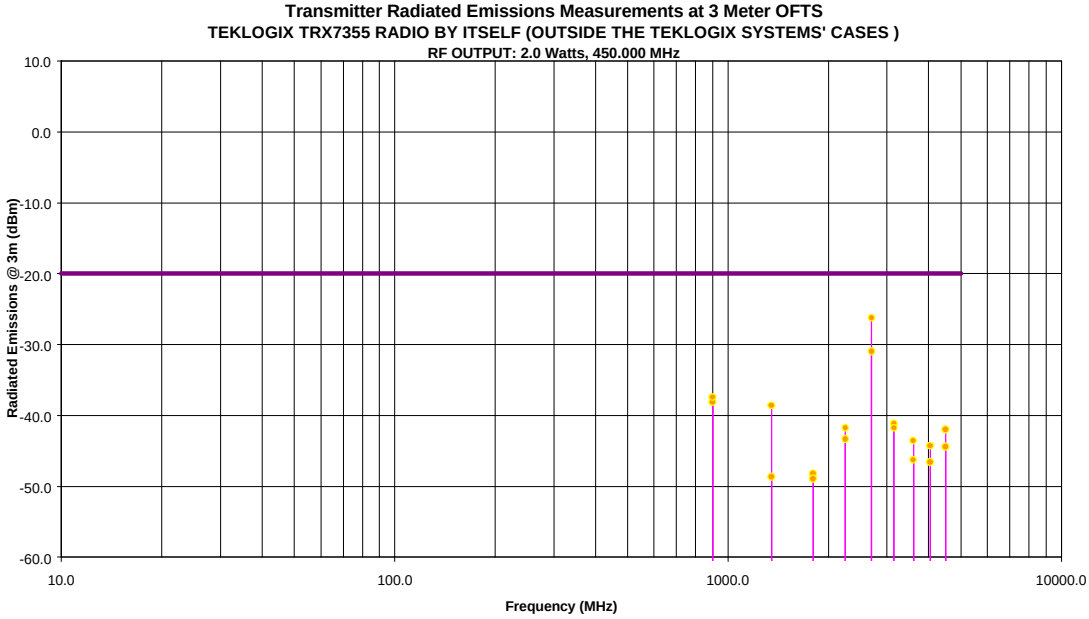
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 450.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
900.00	59.4	-38.1	PEAK	V	-20.0	-18.1	PASS
900.00	60.1	-37.4	PEAK	H	-20.0	-17.4	PASS
1350.00	58.9	-38.6	PEAK	V	-20.0	-18.6	PASS
1350.00	48.8	-48.7	PEAK	H	-20.0	-28.7	PASS
1800.00	49.3	-48.3	PEAK	V	-20.0	-28.3	PASS
1800.00	48.6	-48.9	PEAK	H	-20.0	-28.9	PASS
2250.00	55.7	-41.8	PEAK	V	-20.0	-21.8	PASS
2250.00	54.1	-43.4	PEAK	H	-20.0	-23.4	PASS
2700.00	71.3	-26.3	PEAK	V	-20.0	-6.3	PASS
2700.00	66.5	-31.0	PEAK	H	-20.0	-11.0	PASS
3150.00	56.3	-41.2	PEAK	V	-20.0	-21.2	PASS
3150.00	55.7	-41.8	PEAK	H	-20.0	-21.8	PASS
3600.00	53.9	-43.6	PEAK	V	-20.0	-23.6	PASS
3600.00	51.2	-46.3	PEAK	H	-20.0	-26.3	PASS
4050.00	50.9	-46.6	PEAK	V	-20.0	-26.6	PASS
4050.00	53.2	-44.3	PEAK	H	-20.0	-24.3	PASS
4500.00	55.5	-42.0	PEAK	V	-20.0	-22.0	PASS
4500.00	53.0	-44.5	PEAK	H	-20.0	-24.5	PASS

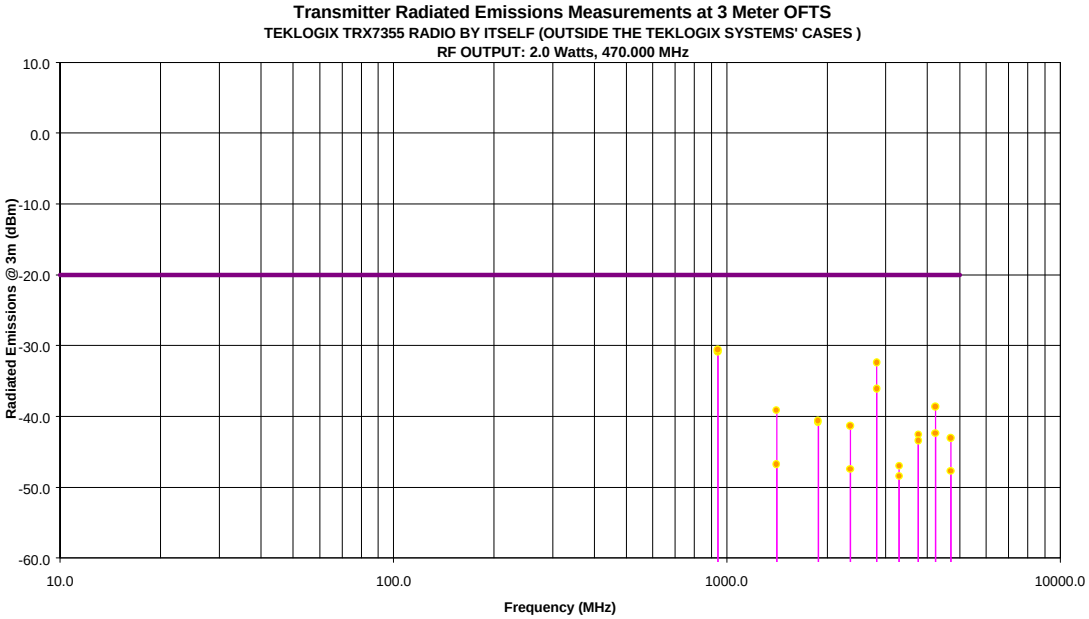
The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



Fundamental Frequency: 470.000 MHz
RF Output Power: 2.0 Watts
Modulation: FM modulation with 9600b/s pseudo random data

FREQUENCY (MHz)	RF Field Strength Level (dBuV/m)	RF Power Level (dBm)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBm)	MARGIN (dB)	PASS/ FAIL
940.00	66.6	-30.9	PEAK	V	-20.0	-10.9	PASS
940.00	66.9	-30.6	PEAK	H	-20.0	-10.6	PASS
1410.00	58.3	-39.2	PEAK	V	-20.0	-19.2	PASS
1410.00	50.7	-46.8	PEAK	H	-20.0	-26.8	PASS
1880.00	56.7	-40.8	PEAK	V	-20.0	-20.8	PASS
1880.00	56.9	-40.6	PEAK	H	-20.0	-20.6	PASS
2350.00	56.1	-41.4	PEAK	V	-20.0	-21.4	PASS
2350.00	50.1	-47.4	PEAK	H	-20.0	-27.4	PASS
2820.00	65.1	-32.4	PEAK	V	-20.0	-12.4	PASS
2820.00	61.4	-36.1	PEAK	H	-20.0	-16.1	PASS
3290.00	50.5	-47.0	PEAK	V	-20.0	-27.0	PASS
3290.00	49.1	-48.4	PEAK	H	-20.0	-28.4	PASS
3760.00	54.9	-42.6	PEAK	V	-20.0	-22.6	PASS
3760.00	54.1	-43.4	PEAK	H	-20.0	-23.4	PASS
4230.00	58.8	-38.7	PEAK	V	-20.0	-18.7	PASS
4230.00	55.1	-42.4	PEAK	H	-20.0	-22.4	PASS
4700.00	54.4	-43.1	PEAK	V	-20.0	-23.1	PASS
4700.00	49.8	-47.7	PEAK	H	-20.0	-27.7	PASS

The emissions were scanned form 10 MHz to 5 GHz and all emissions less than 40 dB below the limits were recorded.



3.8. TRANSIENT FREQUENCY BEHAVIOR

PRODUCT NAME: **TEKLOGIX TRX7355 VOICE/DATA FM MODULATED TRANSCEIVER (Base, Mobile & Portable), Model No.: TRX7355**

FCC REQUIREMENTS:

FCC Part 90, Sub. I, Para. 90.214

Transient frequencies must be within the maximum frequency difference limits during the time intervals indicated:

Transient Frequency Behavior for equipment Designed to Operate on 12.5 KHz Channels

		All Equipment
Time Interval [1,2]	**Maximum Frequency Difference [3]**	**421 to 512 MHz**
t1[4]	± 12.5.0 KHz	10.0 ms
t2	± 6.5 KHz	25.0 ms
t3[4]	± 12.5 KHz	10.0 ms

(1) ton: the instant when a 1 KHz test signal is completely suppressed, including any capture time due to phasing.
t1: tme period immediately after ton
t2: time period after t1
t3: time period from the instant when the transmitter is turned off until toff
toff: the instant when the 1 KHz test signal starts to rise.

(2) During the time from the end of t2 to the beginning of t3, the frequency differnce must not exceed the limits specified in @ 90.213

(3) Difference between the actual transmitter frequency and assigned transmitter frequency.

(4) If the transmitter carrier output power rating is 6 watts or less, the frequency difference during this time period may exceed the maximum frequency difference for this time period.

CLIMATE CONDITION:

Standard Temperature and Humidity:

- Ambient temperature: 21 ^{o}C
- Relative humidity: 43%

POWER INPUT:

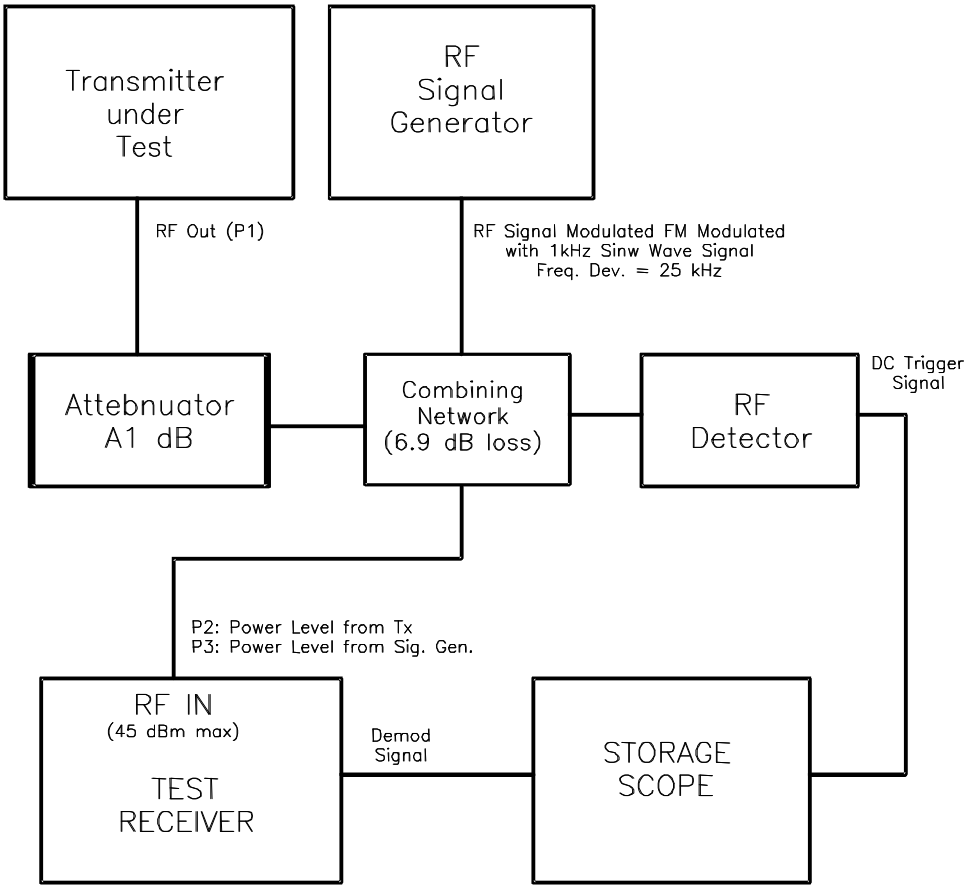
7.2 Vdc nominal.

TEST EQUIPMENT:

1) **RF Synthesized RF Signal Generator**, Fluke, Model 6061A, frequency range 10KHz-1050MHz, power output 13dBm max.
2) **Communication Analyzer (Test Receiver)**, Rohde & Schwarz, SMFP2, SN 879988/047, 0.4-1000 MHz, including SINAD, S/N, Modulation meters, AF & RF signal generators and etc....
3) **Network Combiner**, Minicircuit, P/N: 15542 (7dB loss)
4) **Digital Storage Oscilloscope**, by Phillips, model 3320A, SN DQ 646.
5) **67297 RF Detector**, by Herotex, P/N: DZ122-553, S/N: 63400

METHOD OF MEASUREMENTS:

Refer to ANSI/TIA/EIA - 603 - 1992, Sec. 2.2.19, Page 83



1. Connect the transmitter under tests as shown in the above block diagram
2. Set the signal generator to the assigned frequency and modulate with a 1 kHz tone at ±25 kHz deviation and its output level to be 50 dB below the transmitter rf output at the test receiver end.
3. Set th horizontal sweep rate on the storage scope to 10 milliseconds per division and adjust the display to continuously view the 1000 Hz tone from the Demodulator Output Port (DOP) of the Test Receiver. Adjust the vertical scale aplitude control of the scope to display the 1000 Hz at ±4 divisions vertical centre at the display.
4. Adjust the scope so it will trigger on an increasing magnitude from the RF trigger signal of the transmitter under test when the transmitter was turned on. Set the controls to store the display.
5. The output at the DOP, due to the change in the ratio of the power between the signal generator input power and transmitter output power will, because of the capture effect of the test receiver, produce a change in display: For the first part of the sweep it will show the 1 KHz test signal. Then once the receiver's demodulator has been captured by the transmitter power, the display will show the frequency difference from the assigned frequency to the actual transmitter frequency versus time. The instant when the 1 kHz test signal is completely suppressed (including any capture time due to phasing) is considered to be t_{on}. The trace should be maintained within the allowed divisions during the period t_1 and t_2.
6. During the time from the end of t_2 to the beginning of t_3 the frequency difference should not exceed the limits set by the FCC in Part 90.214 and the outlined in the Carrier Frequency Stability sections. The allowed limit is equal to the transmitter frequency times its FCC frequency tolerance times ±4 display divisions divided by 25 kHz (eg. at tarnsmitter assigned frequency of 460 MHz, limit = 460 x 0.005 x 4 / 25 = 0.37 div.
7. Repeat the above steps when the transmitter was turned off for measuring t_3.

TEST RESULTS: Conforms.

TESTED PERSONNEL: Tri M. Luu, P.Eng.

DATE: May 29, 1998

MEASUREMENT DATA

NOTE: Since all Teklogix Systems (Models 6040, 7025, 7030, 8045, 8050, 8055, 8060, 9130 & 9140) use exactly the same TRX7355 radio transceiver, and the RF output characteristics are exactly the same. This test is required to be tested with only one system and the results shall be the same for all Teklogix systems.

Attenuator A1 = 30 dB
Measured Transmitter RF Output P1: 33 dBm
Measured Transmitter RF Ouput @ Standard Test Receiver (Max. RF IN: 45 dBm): 3.9 dBm
Measured Signal generator Output P3: -16.1 dBm

- **Modulation: Unmodulated**

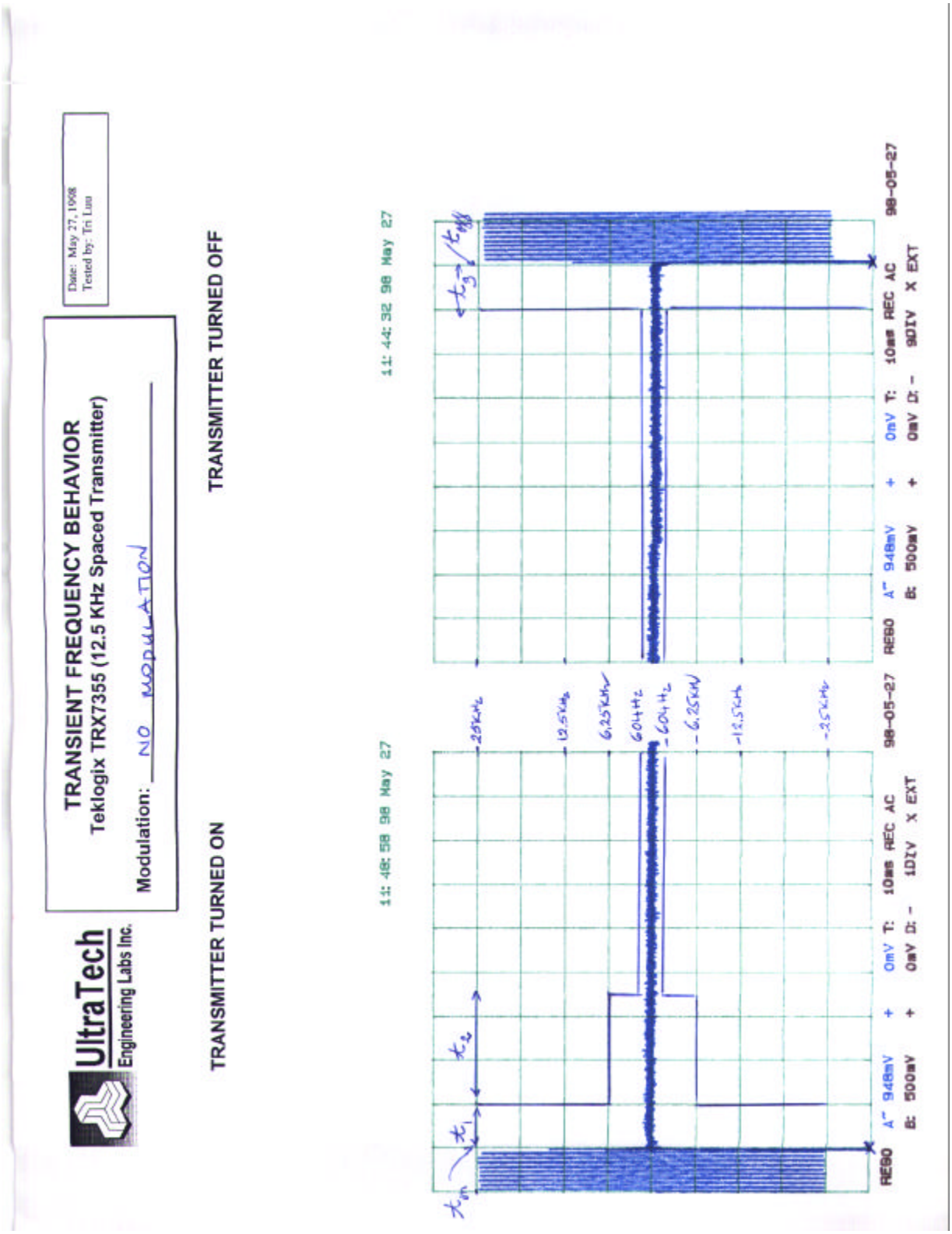
Time Interval	Transient Frequency	Transient Frequency Limit
t1 (10 mS) SWITCH ON CONDITION	0.0 kHz	12.5 KHz
t2 (25 mS) SWITCH ON CONDITION	0.0 kHz	6.25 KHz
After t2 (10 mS) SWITCH ON CONDITION	0.0 kHz	FCC Limit = ± 604 Hz (0.00015% @403 MHz)
Before t3 (10 mS) SWITCH OFF CONDITION	0.0 kHz	FCC Limit = ± 604 Hz (0.00015% @403 MHz)
t3 (10 mS) SWITCH OFF CONDITION	0.0 kHz	12.5 KHz

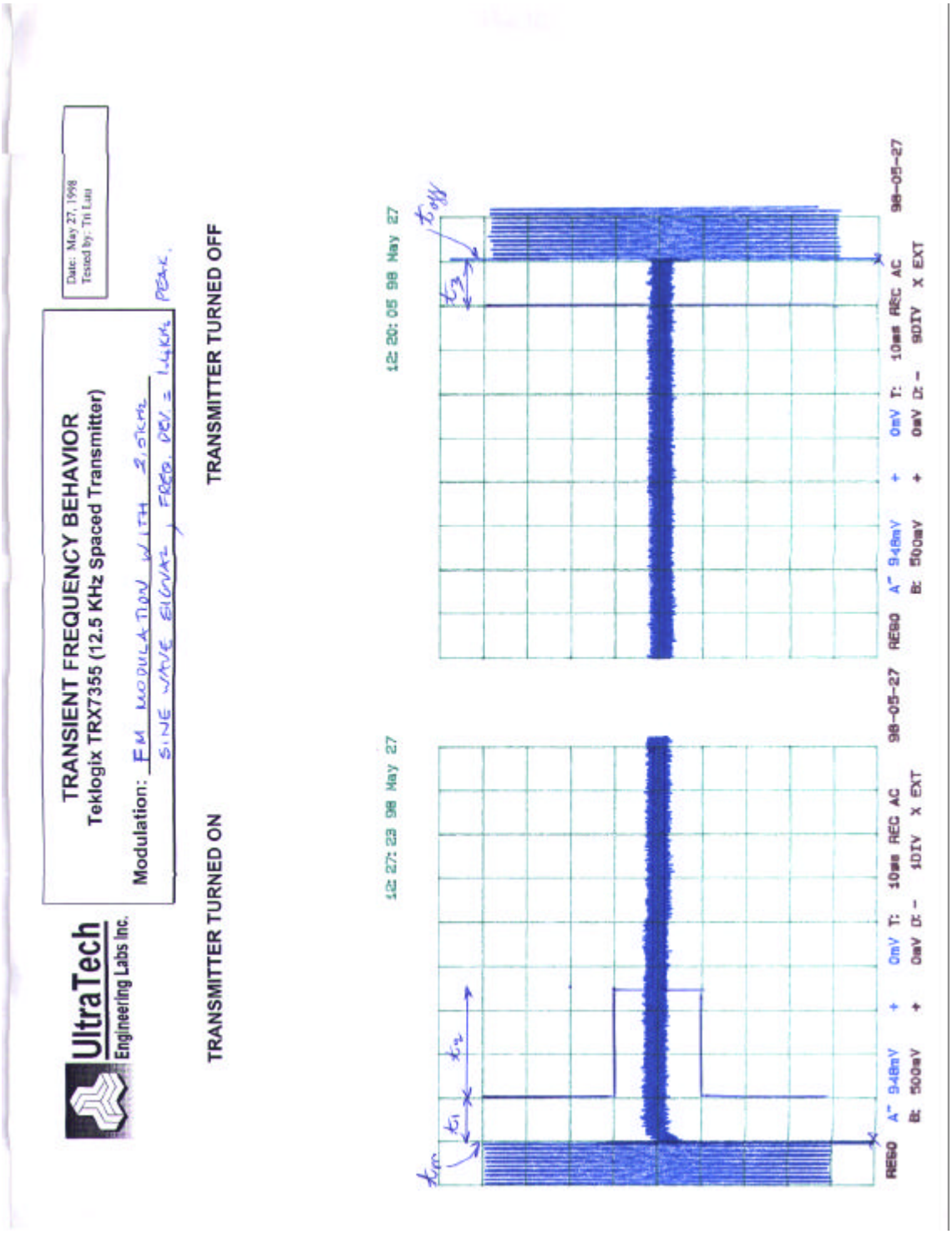
- **Modulation: FM modulation with 2.5 KHz Sine Wave, Freq. Dev.: ±1.3 KHz max.**

Time Interval	Transient Frequency	Transient Frequency Limit
t1 (10 mS) SWITCH ON CONDITION	0.0 kHz	12.5 KHz
t2 (25 mS) SWITCH ON CONDITION	0.0 kHz	6.25 KHz
After t2 (10 mS) SWITCH ON CONDITION	0.0 kHz	FCC Limit = ± 604 Hz (0.00015% @403 MHz)
Before t3 (10 mS) SWITCH OFF CONDITION	0.0 kHz	FCC Limit = ± 604 Hz (0.00015% @403 MHz)
t3 (10 mS) SWITCH OFF CONDITION	0.0 kHz	12.5 KHz

- **Modulation: FM modulation with 9600 b/s pseudo random data, , Freq. Dev.: ±1.8 KHz**

Time Interval	Transient Frequency	Transient Frequency Limit
t1 (10 mS) SWITCH ON CONDITION	0.0 kHz	12.5 KHz
t2 (25 mS) SWITCH ON CONDITION	0.0 kHz	6.25 KHz
After t2 (10 mS) SWITCH ON CONDITION	0.0 kHz	FCC Limit = ± 604 Hz (0.00015% @403 MHz)
Before t3 (10 mS) SWITCH OFF CONDITION	0.0 kHz	FCC Limit = ± 604 Hz (0.00015% @403 MHz)
t3 (10 mS) SWITCH OFF CONDITION	0.0 kHz	12.5 KHz

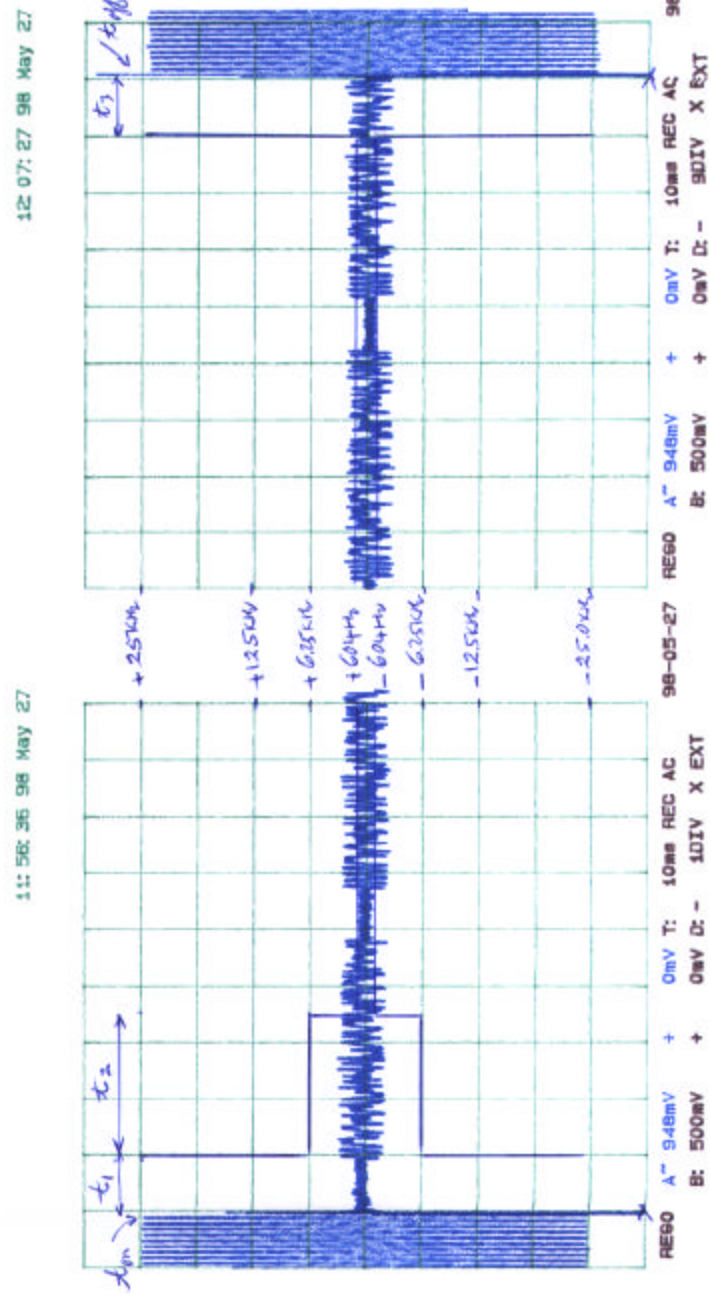

UltraTech
Engineering Labs Inc.
TRANSIENT FREQUENCY BEHAVIOR
Teklogix TRX7355 (12.5 KHz Spaced Transmitter)
Modulation: NO MODULATION
Date: May 27, 1998
Tested by: Tri Luu
TRANSMITTER TURNED ON
TRANSMITTER TURNED OFF
11: 48: 58 98 May 27
11: 44: 32 98 May 27
98-05-27
REGO A 948mV + 0mV T: 10ms REC AC
B: 500mV + 0mV D: - 1DIV X EXT
98-05-27
REGO A 948mV + 0mV T: 10ms REC AC
B: 500mV + 0mV D: - 9DIV X EXT


UltraTech
Engineering Labs Inc.
TRANSIENT FREQUENCY BEHAVIOR
Teklogix TRX7355 (12.5 KHz Spaced Transmitter)
Modulation: FM MODULATION WITH 2.5KHz SINE WAVE SIGNAL, FREQ. DEV = 1.4KHz PEAK.
Date: May 27, 1998
Tested by: Ti Lau
TRANSMITTER TURNED ON
TRANSMITTER TURNED OFF
12 27: 23 98 May 27
12 20: 05 98 May 27
REF60 A" 948mV + 0mV T: 10ms REC AC 98-05-27
B: 500mV + 0mV D: - 1DIV X EXT

UltraTech Engineering Labs Inc.

TRANSIENT FREQUENCY BEHAVIOR
Teklogix TRX7355 (12.5 KHz Spaced Transmitter)
Modulation: FM MODULATION WITH 9600 b/s RANDOM DATA, FILTER, DEV. = 1.8 KHz PEAK.

Date: May 27, 1998
Tested by: Tri Lam

TRANSMITTER TURNED ON

TRANSMITTER TURNED OFF