ENGINEERING TEST REPORT

UHF Transceiver
Model No.: IC-F43DT/DS
FCC ID: AFJ272105

Applicant:

ICOM Incorporated
1-1-32, Kamiminami, Hirano-ku
Osaka
Japan, 547-0003

Tested in Accordance With

Federal Communications Commission (FCC)
47 CFR, Parts 2 and 90 (Subpart I)

UltraTech's File No.: ICOM-112F90

This Test report is Issued under the Authority of Tri M. Luu, Professional Engineer, Vice President of Engineering UltraTech Group of Labs Date: July 19, 2005	
Report Prepared by: Dan Huynh Issued Date: July 19, 2005	Tested by: Wayne Wu Test Dates: July 5-6 , 2005

- *The results in this Test Report apply only to the sample(s) tested, and the sample tested is randomly selected.*
- *This report must not be used by the client to claim product endorsement by NVLAP or any agency of the US Government.*

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EXHIBIT 1. SUBMITTAL CHECK LIST

Annex No.	Exhibit Type	Description of Contents	Quality Check (OK)
--	Test Report	▪ Exhibit 1: Submittal check lists ▪ Exhibit 2: Introduction ▪ Exhibit 3: Performance Assessment ▪ Exhibit 4: EUT Operation and Configuration during Tests ▪ Exhibit 5: Summary of test Results ▪ Exhibit 6: Measurement Data ▪ Exhibit 7: Measurement Uncertainty ▪ Exhibit 8: Measurement Methods	OK
1	Test Setup Photos	Radiated Emissions Test Setup Photos	N/A
2	External Photos of EUT	External EUT Photos	N/A
3	Internal Photos of EUT	Internal EUT Photos	N/A
4	Cover Letters	Cover Letter	OK
5	Attestation Statements	▪ Letter from the Applicant to Appoint Ultratech to Act as an Agent ▪ Applicant Part 90 Attestation	OK
6	ID Label/Location Info	▪ ID Label ▪ Location of ID Label	N/A
7	Block Diagrams	Block Diagram	N/A
8	Schematic Diagrams	Schematics	N/A
9	Parts List/Tune Up Info	▪ Parts List ▪ Adjustment for IC-F43DT/DS	N/A
10	Operational Description	Circuit Description	N/A
11	RF Exposure Info	See SAR Test Report for Details.	N/A
12	Users Manual	Instruction Manual	N/A

EXHIBIT 2. INTRODUCTION

2.1. SCOPE

Reference:	FCC Parts 2 and 90
Title:	Code of Federal Regulations (CFR), Title 47 Telecommunication – Parts 2 & 90
Purpose of Test:	Class II Permissive Change: 1) The addition of 25 kHz channel spacing. 2) The aggregate of 2 adjacent 6.25 kHz channelization channels to operates under 12.5 kHz channel spacing.
Test Procedures:	Both conducted and radiated emissions measurements were conducted in accordance with TIA/EIA Standard TIA/EIA-603 (01-Nov-2002) – Land Mobile FM or PM Communications Equipment Measurement and performance Standards.

2.2. RELATED SUBMITTAL(S)/GRANT(S)

None.

2.3. NORMATIVE REFERENCES

Publication	Year	Title
FCC CFR Parts 0-19, 80-End	2004	Code of Federal Regulations – Telecommunication
ANSI C63.4	2003	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
TIA/EIA 603, Edition B	01-Nov-2002	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
TIA-102.CAAA-B	October 2004	Digital C4FM/CQPSK Transceiver Measurement Methods.

EXHIBIT 3. PERFORMANCE ASSESSMENT

3.1. CLIENT INFORMATION

APPLICANT	
Name:	ICOM Incorporated
Address:	1-1-32, Kamiminami, Hirano-ku Osaka Japan, 547-0003
Contact Person:	Mr. Takashi Aoki Phone #: +81-66-793-5302 Fax #: +81-66-793-0013 Email Address: export@icom.co.jp

MANUFACTURER	
Name:	ICOM Incorporated
Address:	1-1-32, Kamiminami, Hirano-ku Osaka Japan, 547-0003
Contact Person:	Mr. Takashi Aoki Phone #: +81-66-793-5302 Fax #: +81-66-793-0013 Email Address: export@icom.co.jp

3.2. EQUIPMENT UNDER TEST (EUT) INFORMATION

The following information (with the exception of the Date of Receipt) has been supplied by the applicant.

Brand Name:	ICOM Incorporated
Product Name:	UHF Transceiver
Model Name or Number:	IC-F43DT/DS
Serial Number:	0000001
Type of Equipment:	Licensed Non-Broadcast UHF portable transceiver for voice communication
External Power Supply:	N/A
Transmitting/Receiving Antenna Type:	Non-integral
Primary User Functions of EUT:	Voice communication in occupational environment.

3.3. EUT'S TECHNICAL SPECIFICATIONS

TRANSMITTER	
Equipment Type:	Portable
Intended Operating Environment:	Commercial, Industrial or Business
Power Supply Requirement:	7.2 VDC nominal
RF Output Power Rating:	4 Watts High and 1 Watt Low
Operating Frequency Range:	450-512 MHz
RF Output Impedance:	50 Ohms
Channel Spacing:	25 kHz, 12.5 kHz and 6.25 kHz
Emission Designation*:	16K0F3E 11K0F3E, 11K0F7E, 11K0F7D 4K00F1E, 4K00F1D
Antenna Connector Type:	J Type Connector
Antenna Description:	Manufacturer: ICOM Inc. Antenna Type: Helical antenna Model Number: FA-57U Operating Frequency: 440-470MHz Gain: -3.0dBi

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

For FM Voice Modulation:

Channel Spacing = 25 KHz, D = 5 KHz max, K = 1, M = 3 KHz
B_n = 2M + 2DK = 2(3) + 2(5)(1) = **16 KHz**
Emission designation: 16K0F3E

Channel Spacing = 12.5 KHz, D = 2.5 KHz max, K = 1, M = 3 KHz
B_n = 2M + 2DK = 2(3) + 2(2.5)(1) = **11 KHz**
Emission designation: 11K0F3E

3.4. LIST OF EUT'S PORTS

Port Number	EUT's Port Description	Number of Identical Ports	Connector Type	Cable Type (Shielded/Non-shielded)
1	Antenna	1	J Type	N/A
2	SP/MIC Jack	1	Plug-in Jack	N/A

EXHIBIT 4. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

4.1. CLIMATE TEST CONDITIONS

The climate conditions of the test environment are as follows:

Temperature:	21°C
Humidity:	51%
Pressure:	102 kPa
Power Input Source:	7.2 VDC Nominal

4.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TEST SIGNALS

Operating Modes:	The transmitter was operated in a continuous transmission mode with the carrier modulated as specified in the Test Data.
Special Test Software:	N/A
Special Hardware Used:	N/A
Transmitter Test Antenna:	The EUT is tested with the antenna port terminated to a 50 Ohms RF Load.

Transmitter Test Signals	
Frequency Band(s):	450-512 MHz
Test Frequency(ies): (Near lowest, near middle & near highest frequencies in the frequency range of operation.)	450.05, 485.05 and 511.95 MHz
Transmitter Wanted Output Test Signals: Transmitter Power (measured maximum output power): Normal Test Modulation: Modulating signal source:	 4 Watts High & 1 Watt Low FM Voice and Digital (PN9) External

EXHIBIT 5. SUMMARY OF TEST RESULTS

5.1. LOCATION OF TESTS

All of the measurements described in this report were performed at Ultratech Group of Labs located in the city of Oakville, Province of Ontario, Canada.

Radiated Emissions were performed at the Ultratech's 3 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) and Industry Canada office (Industry Canada File No.: IC2049). Last Date of Site Calibration: January 10, 2005.

5.2. APPLICABILITY & SUMMARY OF EMISSION TEST RESULTS

FCC Section(s)	Test Requirements	Applicability Yes/No)
90.205 & 2.1046	RF Power Output	Yes
1.1307, 1.1310, 2.1091 & 2.1093	RF Exposure Limit	See original filing.
90.213 & 2.1055	Frequency Stability	See original filing.
90.242(b)(8) & 2.1047(a)	Audio Frequency Response	See original filing.
90.210 & 2.1047(b)	Modulation Limiting	See original filing.
90.210 & 2.1049	Emission Limitation & Emission Mask	Yes
90.210, 2.1057 & 2.1051	Emission Limits - Spurious Emissions at Antenna Terminal	See original filing.
90.210, 2.1057 & 2.1053	Emission Limits - Field Strength of Spurious Emissions	See original filing.
90.214	Transient Frequency Behavior	See original filing.

5.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

None.

5.4. DEVIATION OF STANDARD TEST PROCEDURES

None.

EXHIBIT 6. MEASUREMENTS, EXAMINATIONS & TEST DATA FOR EMC EMISSIONS

6.1. TEST PROCEDURES

This section contains test results only. Details of test methods and procedures can be found in Exhibit 8 of this report

6.2. MEASUREMENT UNCERTAINTIES

The measurement uncertainties stated were calculated in accordance with requirements of UKAS Document NIS 81 with a confidence level of 95%. Please refer to Exhibit 7 for Measurement Uncertainties.

6.3. MEASUREMENT EQUIPMENT USED

The measurement equipment used complied with the requirements of the Standards referenced in the Methods & Procedures ANSI C63.4 and CISPR 16-1-1.

6.4. ESSENTIAL/PRIMARY FUNCTIONS AS DECLARED BY THE MANUFACTURER

The essential function of the EUT is to communicate to and from radios over RF link.

6.5. RF POWER OUTPUT [§§ 2.1046 & 90.205]

6.5.1. Limits

Please refer to FCC 47 CFR 90.205 for specification details.

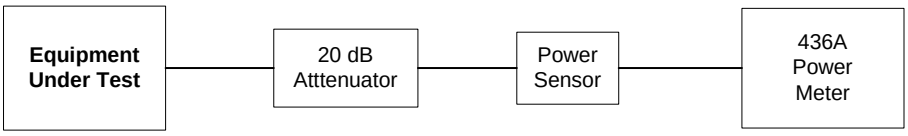
6.5.2. Method of Measurements

Refer to Exhibit 8, Section 8.1 (Conducted) and 8.2 (Radiated) of this report for measurement details

6.5.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Attenuator	Weinschel Corp	23-20-34	BH7876	DC – 18 GHz
Power Meter	Hewlett Packard	436A	2016A07747	100 kHz – 26.5 GHz, sensor dependent
Power Sensor	Hewlett Packard	8481A	2552A51276	10 MHz – 18 GHz

6.5.4. Test Arrangement



6.5.5. Test Data

Fundamental Frequency (MHz)	Measured (Average) Power (dBm)	Power Rating (dBm)
High Power Level, 4 Watts		
450.05	36.16	36
485.05	35.52	36
511.95	35.46	36
Low Power Level, 1 Watt		
450.05	29.96	30
485.05	30.14	30
511.95	29.81	30

6.6. OCCUPIED BANDWIDTH & EMISSION MASK [§§ 2.1049, 90.209 & 90.210]

6.6.1. Limits

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

Frequency Range (MHz)	Maximum Authorized BW (KHz)	Channel Spacing (KHz)	Recommended Frequency Deviation (KHz)	FCC Applicable Mask
421-512	20	25	5	Mask B
421-512	11.25	12.5	2.5	Mask D

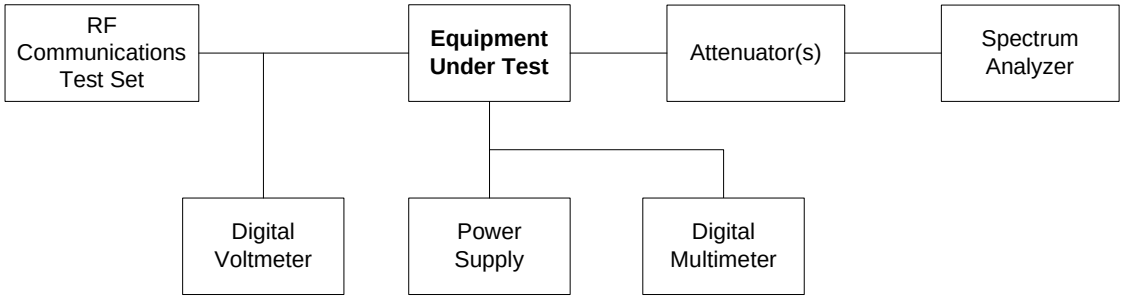
6.6.2. Method of Measurements

Refer to Exhibit 8, Section 8.3 of this report for measurement details and TIA-102.CAAA-B.

6.6.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
RF Communications Test Set	Hewlett Packard	8920B	US39064699	RF 30M-1G AF DC-25KHz
Digital Voltmeter	Hewlett-Packard	3456A	2015A04523	DC-250 KHz
Spectrum Analyzer	Advantest	R3271	15050203	100Hz-26.5GHz
Attenuator	Weinschel Corp	23-20-34	BH7876	DC-18 GHz
Digital Multimeter	Tenma	72-6202	2080027	DC-100 kHz
Power Supply	Tenma	72-6153	--	DC 0-20 V, 0-10A.

6.6.4. Test Arrangement



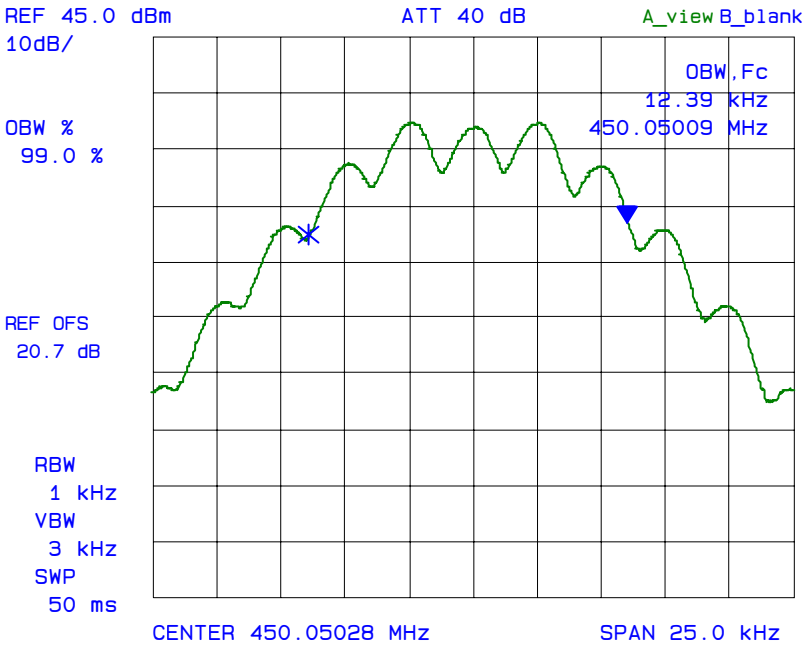
6.6.5. Test Data

6.6.5.1. 99% Occupied Bandwidth

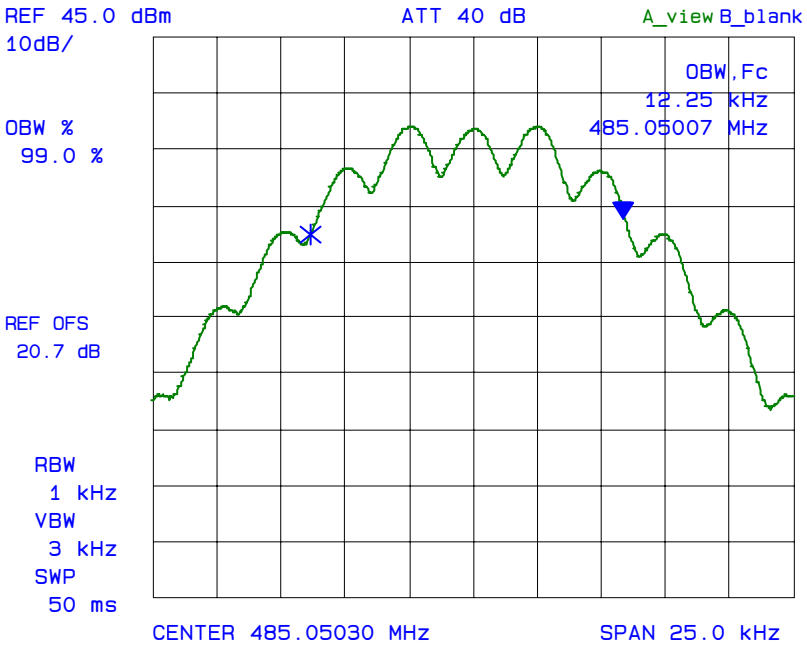
Frequency (MHz)	Channel Spacing (kHz)	Modulation	*Measured 99% OBW at Maximum Freq. Deviation (kHz)	Maximum Authorized Bandwidth (kHz)
405.05	25	FM with 2.5 kHz sine wave signal	12.39	20
485.05	25	FM with 2.5 kHz sine wave signal	12.25	20
511.95	25	FM with 2.5 kHz sine wave signal	12.18	20
405.05	12.5	Digital – PN9	11.01	11.25
485.05	12.5	Digital – PN9	10.93	11.25
511.95	12.5	Digital – PN9	10.84	11.25

*Refer to the following test data plots (1 through 6) for details.

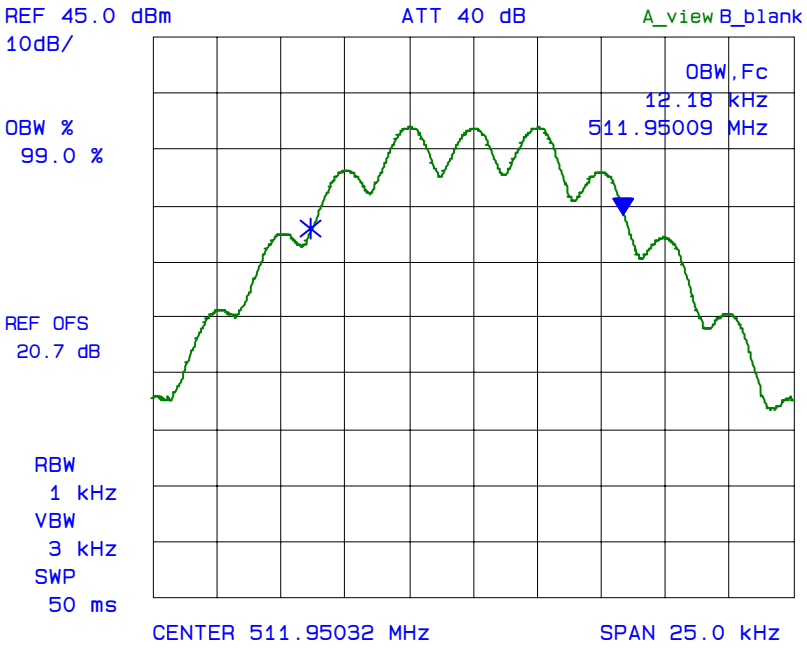
Plot # 1:
Occupied Bandwidth
Carrier Frequency: 405.05 MHz
Channel Spacing: 25 kHz
Power: 4 W
Modulation: FM with 2.5 kHz sine wave signal



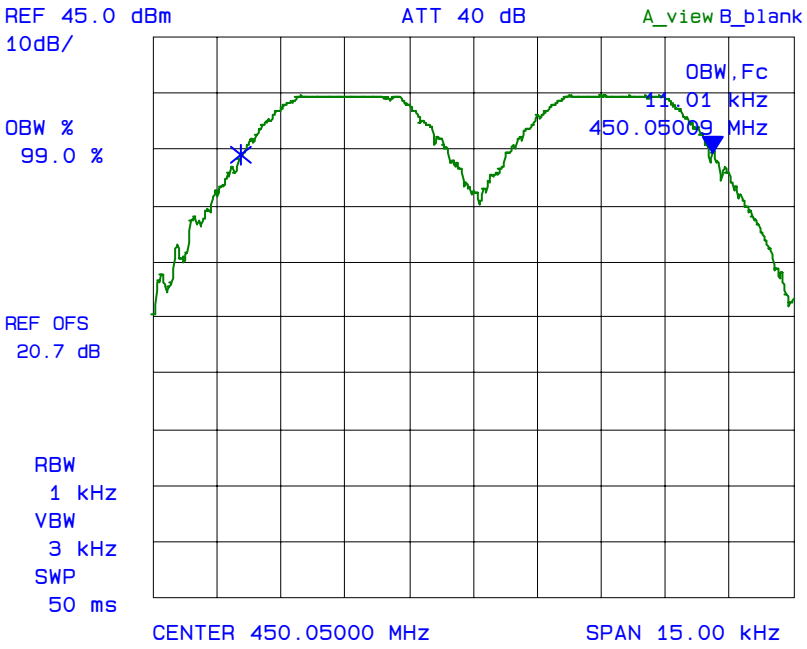
Plot # 2:
Occupied Bandwidth
Carrier Frequency: 485.05 MHz
Channel Spacing: 25 kHz
Power: 4 W
Modulation: FM with 2.5 kHz sine wave signal



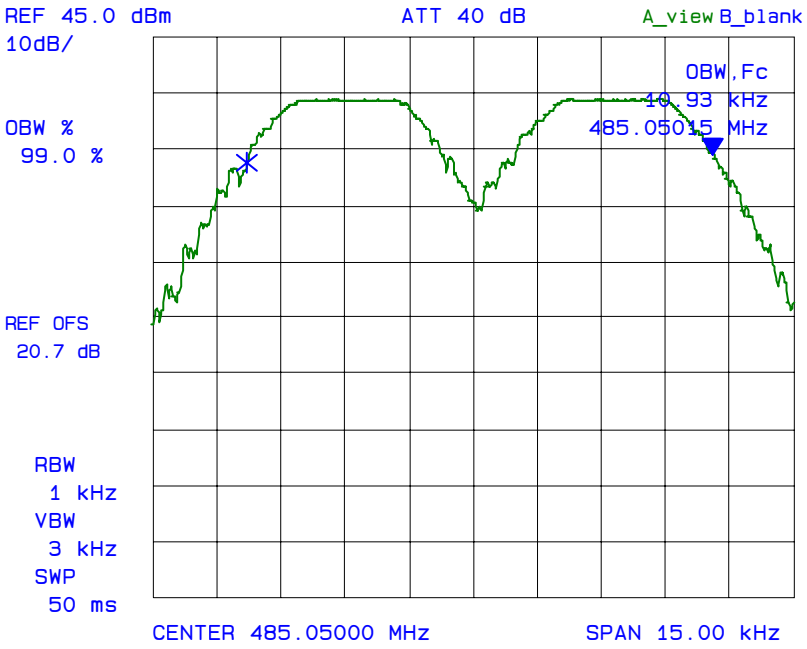
Plot # 3:
Occupied Bandwidth
Carrier Frequency: 511.95 MHz
Channel Spacing: 25 kHz
Power: 4 W
Modulation: FM with 2.5 kHz sine wave signal



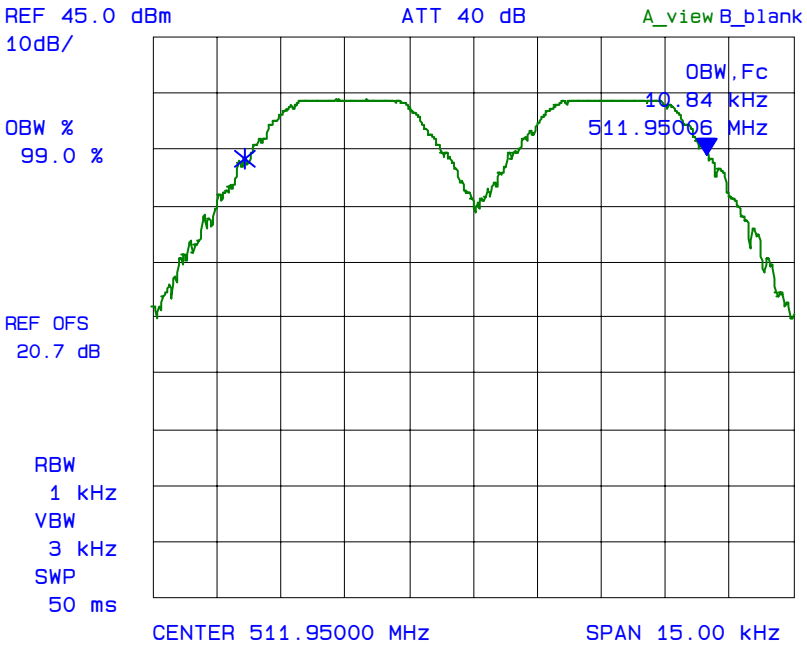
Plot # 4:
Occupied Bandwidth
Carrier Frequency: 405.05 MHz
Channel Spacing: 12.5 kHz
Power: 4 W
Modulation: Digital – PN9



Plot # 5:
Occupied Bandwidth
Carrier Frequency: 485.05 MHz
Channel Spacing: 12.5 kHz
Power: 4 W
Modulation: Digital – PN9



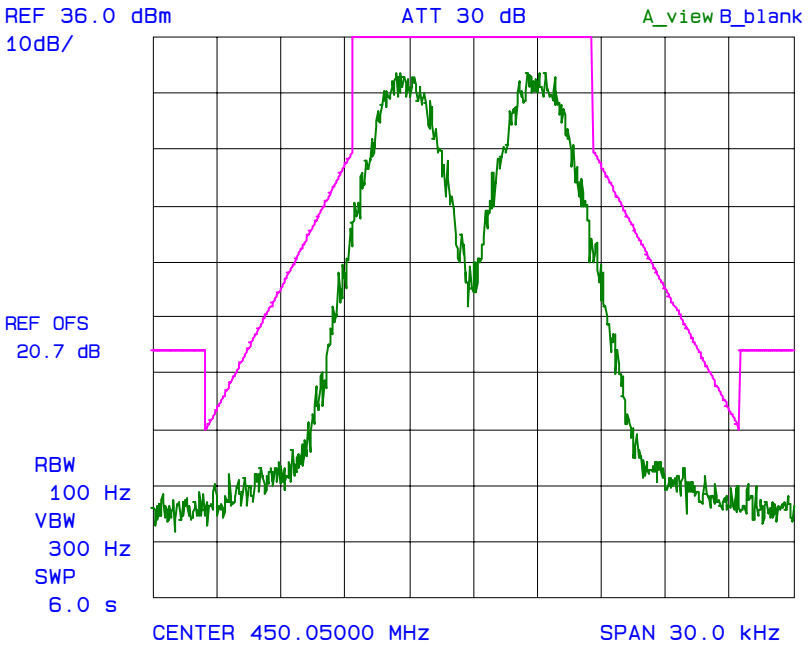
Plot # 6:
Occupied Bandwidth
Carrier Frequency: 511.95 MHz
Channel Spacing: 12.5 kHz
Power: 4 W
Modulation: Digital – PN9



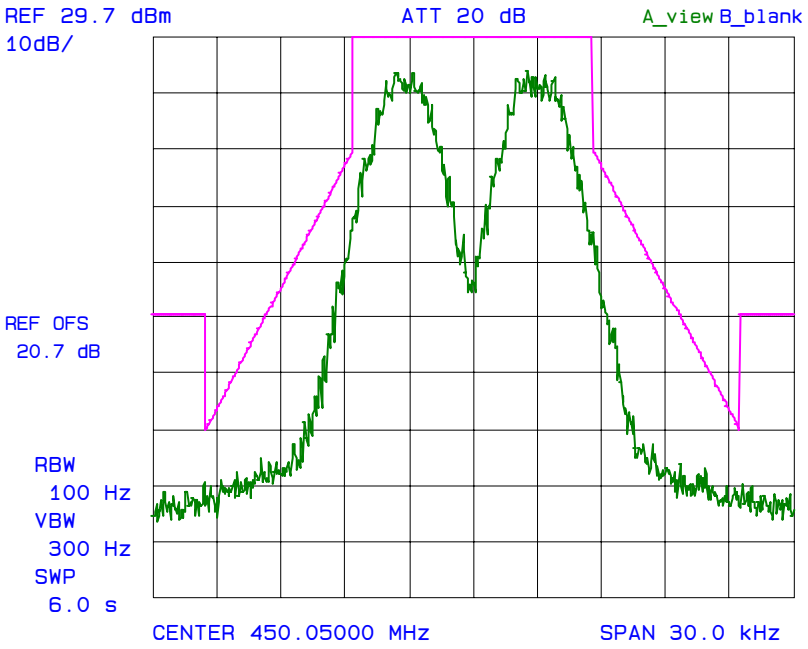
6.6.5.2. Emission Masks

Conform. See the following test data plots (7 - 18) for details.

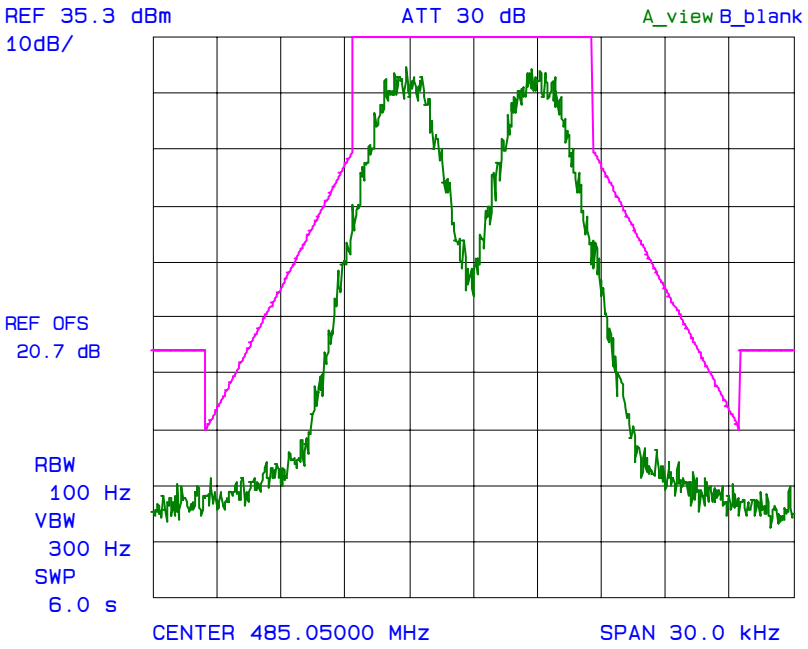
Plot # 7:
Emission Mask D
Carrier Frequency: 450.05 MHz
Channel Spacing: 12.5 kHz
Power: 4 W
Modulation: Digital – PN9



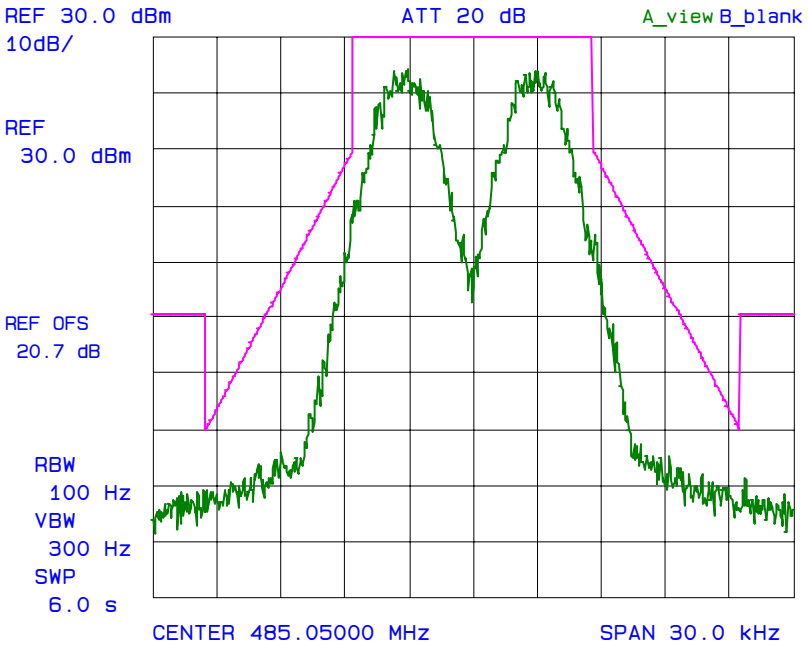
Plot # 8:
Emission Mask D
Carrier Frequency: 450.05 MHz
Channel Spacing: 12.5 kHz
Power: 1 W
Modulation: Digital – PN9



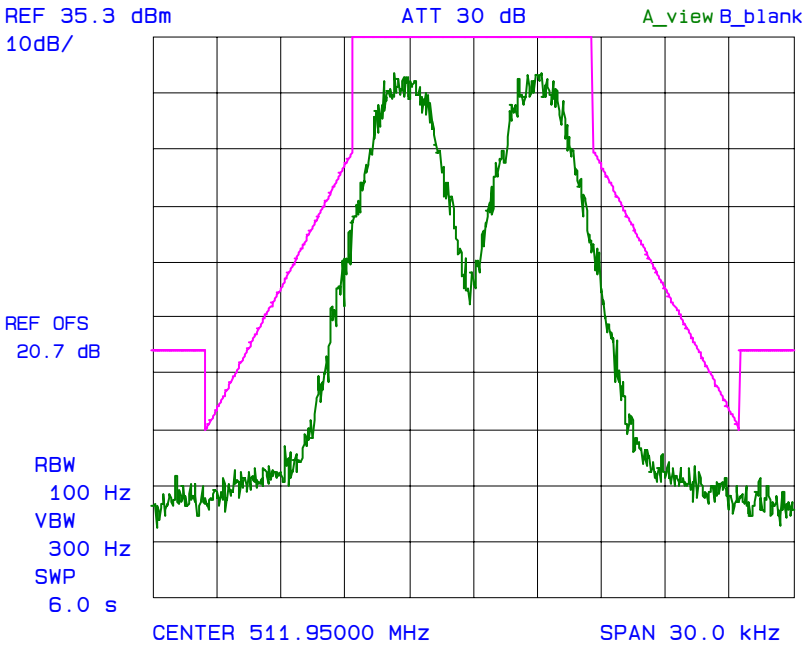
Plot # 9:
Emission Mask D
Carrier Frequency: 485.05 MHz
Channel Spacing: 12.5 kHz
Power: 4 W
Modulation: Digital – PN9



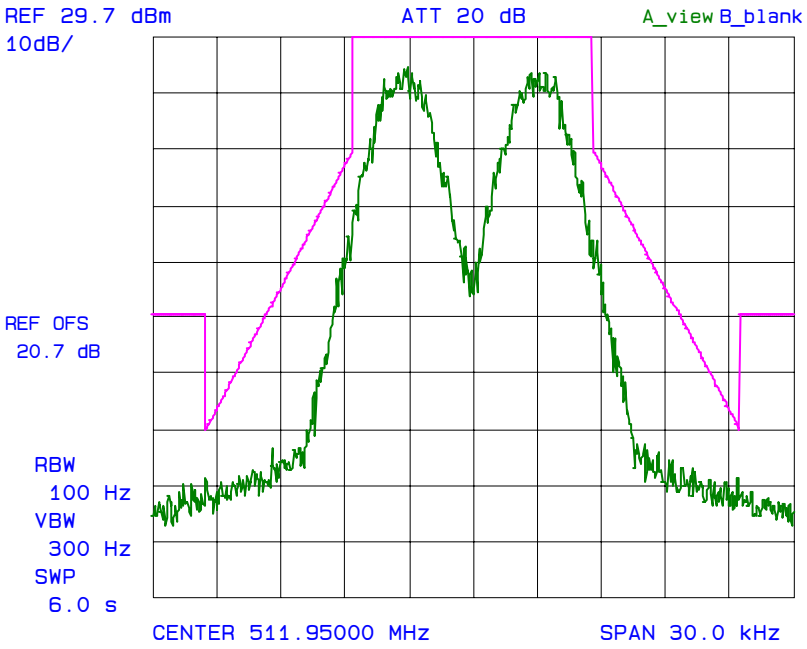
Plot # 10:
Emission Mask D
Carrier Frequency: 485.05 MHz
Channel Spacing: 12.5 kHz
Power: 1 W
Modulation: Digital – PN9



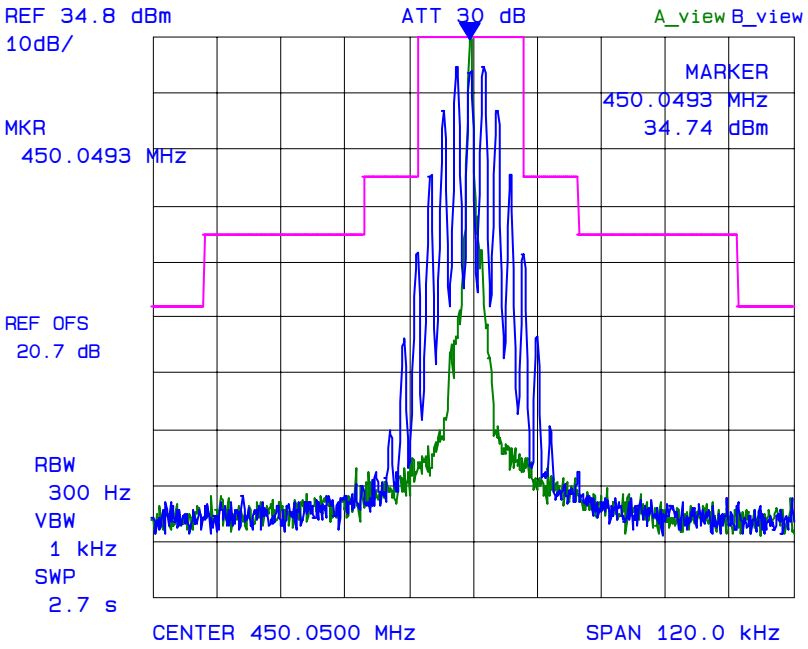
Plot # 11:
Emission Mask D
Carrier Frequency: 511.95 MHz
Channel Spacing: 12.5 kHz
Power: 4 W
Modulation: Digital – PN9



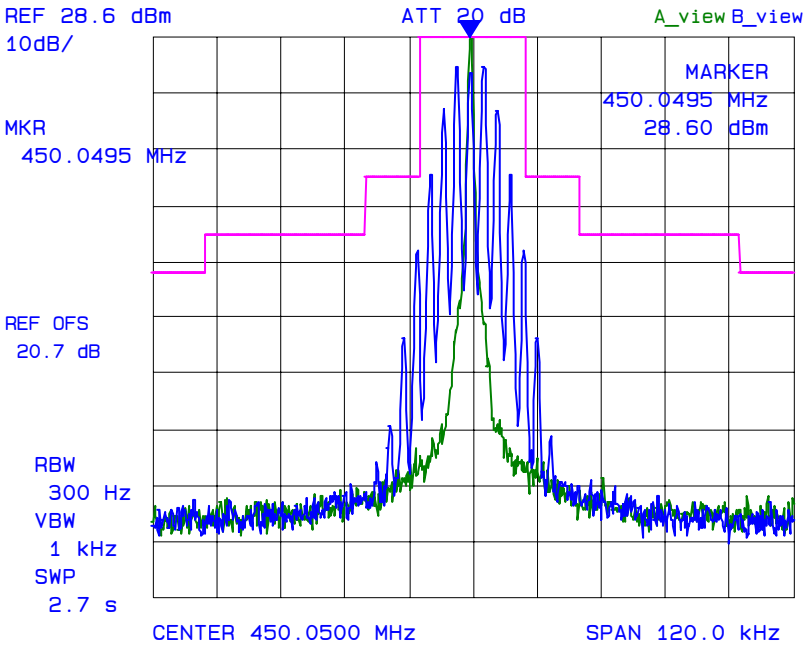
Plot # 12:
Emission Mask D
Carrier Frequency: 511.95 MHz
Channel Spacing: 12.5 kHz
Power: 1 W
Modulation: Digital – PN9



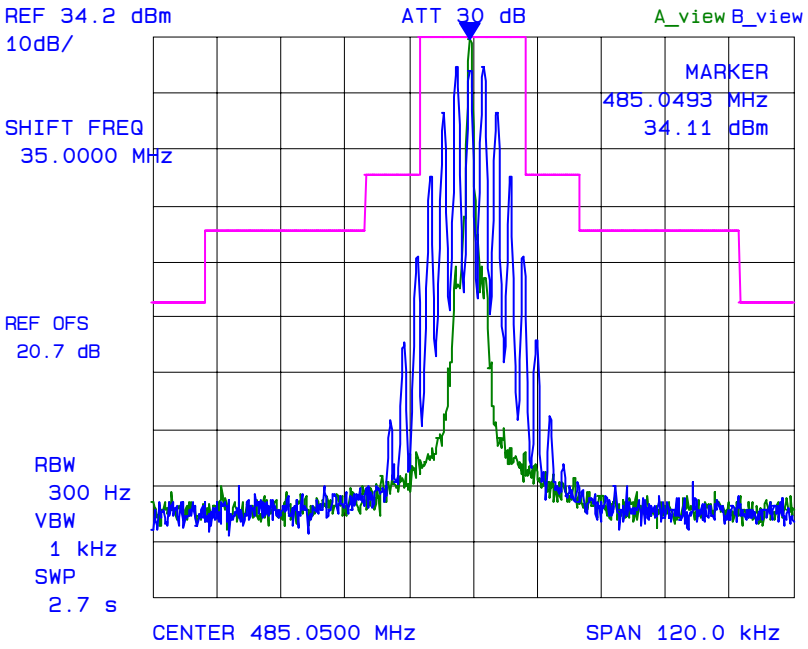
Plot # 13:
Emission Mask B
Carrier Frequency: 450.05 MHz
Channel Spacing: 25 kHz
Power: 4 W
Modulation: FM with 2.5 kHz sine wave signal



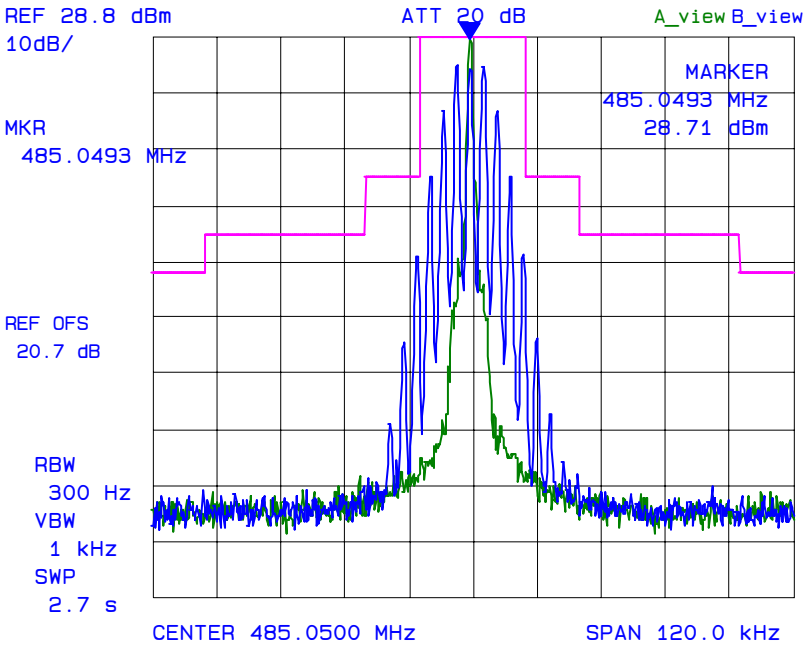
Plot # 14:
Emission Mask B
Carrier Frequency: 450.05 MHz
Channel Spacing: 25 kHz
Power: 1 W
Modulation: FM with 2.5 kHz sine wave signal



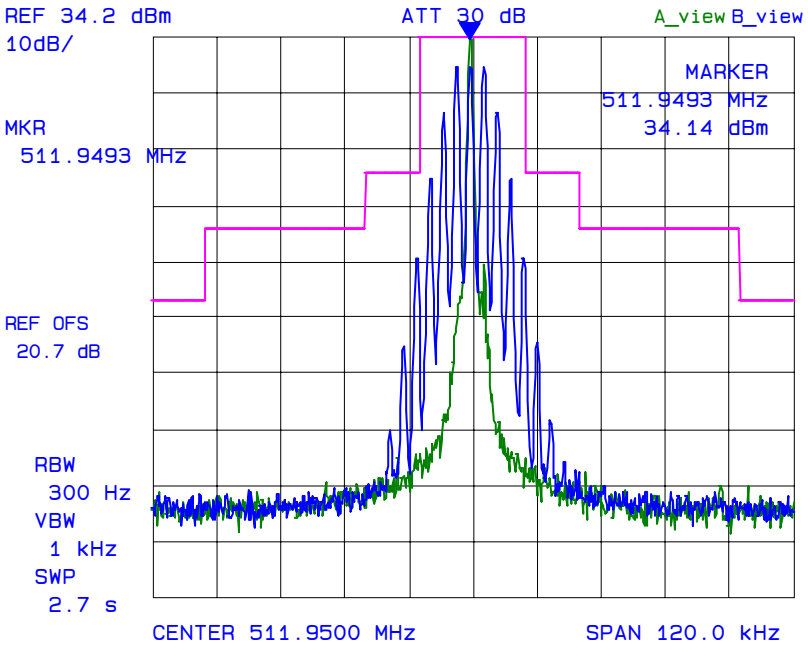
Plot # 15:
Emission Mask B
Carrier Frequency: 485.05 MHz
Channel Spacing: 25 kHz
Power: 4 W
Modulation: FM with 2.5 kHz sine wave signal



Plot # 16:
Emission Mask B
Carrier Frequency: 485.05 MHz
Channel Spacing: 25 kHz
Power: 1 W
Modulation: FM with 2.5 kHz sine wave signal



Plot # 17:
Emission Mask B
Carrier Frequency: 511.95 MHz
Channel Spacing: 25 kHz
Power: 4 W
Modulation: FM with 2.5 kHz sine wave signal



Plot # 18:
Emission Mask B
Carrier Frequency: 511.95 MHz
Channel Spacing: 25 kHz
Power: 1 W
Modulation: FM with 2.5 kHz sine wave signal

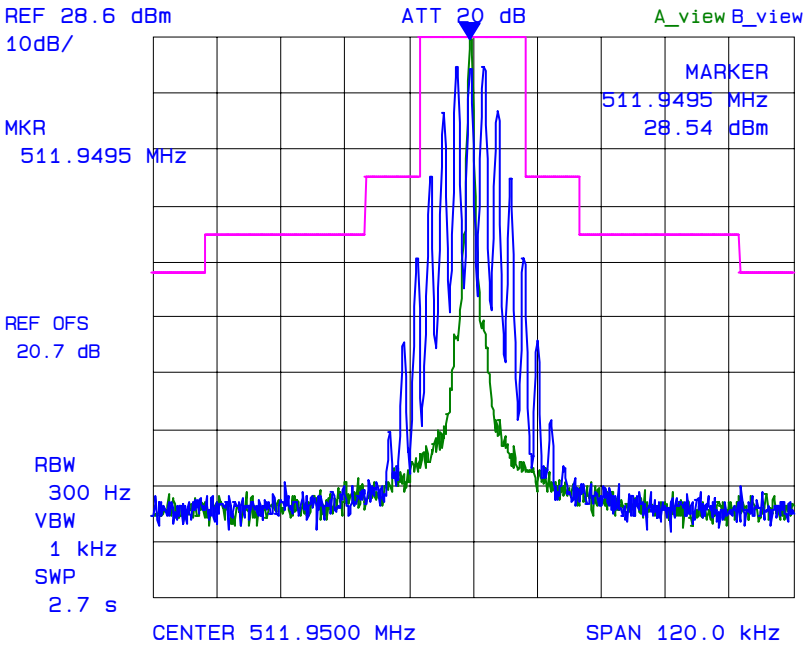


EXHIBIT 7. MEASUREMENT UNCERTAINTY

The measurement uncertainties stated were calculated in accordance with the requirements of NIST Technical Note 1297 and NIS 81 (1994).

7.1. RADIATED EMISSION MEASUREMENT UNCERTAINTY

CONTRIBUTION (Radiated Emissions)	PROBABILITY DISTRIBUTION	UNCERTAINTY (± dB)	
		3 m	10 m
Antenna Factor Calibration	Normal (k=2)	±1.0	±1.0
Cable Loss Calibration	Normal (k=2)	±0.3	±0.5
EMI Receiver specification	Rectangular	±1.5	±1.5
Antenna Directivity	Rectangular	+0.5	+0.5
Antenna factor variation with height	Rectangular	±2.0	±0.5
Antenna phase center variation	Rectangular	0.0	±0.2
Antenna factor frequency interpolation	Rectangular	±0.25	±0.25
Measurement distance variation	Rectangular	±0.6	±0.4
Site imperfections	Rectangular	±2.0	±2.0
Mismatch: Receiver VRC Γ_1 = 0.2 Antenna VRC Γ_R = 0.67(Bi) 0.3 (Lp) Uncertainty limits 20Log(1±$\Gamma_1\Gamma_R$)	U-Shaped	+1.1 -1.25	±0.5
System repeatability	Std. Deviation	±0.5	±0.5
Repeatability of EUT		-	-
Combined standard uncertainty	Normal	+2.19 / -2.21	+1.74 / -1.72
Expanded uncertainty U	Normal (k=2)	+4.38 / -4.42	+3.48 / -3.44

Calculation for maximum uncertainty when 3m biconical antenna including a factor of k = 2 is used:

$U = 2u_c(y) = 2x(+2.19) = +4.38$ dB And $U = 2u_c(y) = 2x(-2.21) = -4.42$ dB

EXHIBIT 8. MEASUREMENT METHODS

8.1. CONDUCTED POWER MEASUREMENTS

- The following shall be applied to the combination(s) of the radio device and its intended antenna(e).
- I f the RF level is user adjustable, all measurements shall be made with the highest power level available to the user for that combination.
- The following method of measurement shall apply to both conducted and radiated measurements.
- The radiated measurements are performed at the Ultratech Calibrated Open Field Test Site.
- The measurement shall be performed using normal operation of the equipment with modulation.

Test procedure shall be as follows:

Step 1: Duty Cycle measurements if the transmitter's transmission is transient

- Using a EMI Receiver with the frequency span set to 0 Hz and the sweep time set at a suitable value to capture the envelope peaks and the duty cycle of the transmitter output signal;
- The duty cycle of the transmitter, x = Tx on / (Tx on + Tx off) with 0<x<1, is measure and recorded in the test report. For the purpose of testing, the equipment shall be operated with a duty cycle that is equal or more than 0.1.

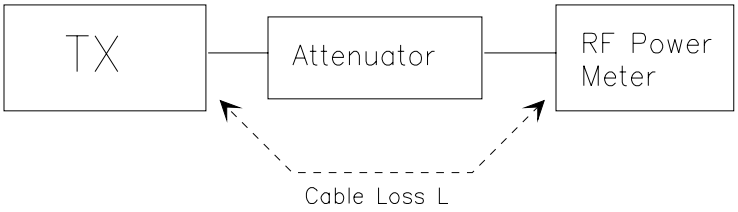
Step 2: Calculation of Average EIRP. See Figure 1

- The average output power of the transmitter shall be determined using a wideband, calibrated RF average power meter with the power sensor with an integration period that exceeds the repetition period of the transmitter by a factor 5 or more. The observed value shall be recorded as "A" (in dBm);
- The e.i.r.p. shall be calculated from the above measured power output "A", the observed duty cycle x, and the applicable antenna assembly gain "G" in dBi, according to the formula:

EIRP = A + G + 10log(1/x)

{X = 1 for continuous transmission => 10log(1/x) = 0 dB}

Figure 1.



8.2. RADIATED POWER MEASUREMENTS (ERP & EIRP) USING SUBSTITUTION METHOD

8.2.1. MAXIMIZING RF EMISSION LEVEL (E-FIELD)

(a) The measurements were performed with full rf output power and modulation.
(b) Test was performed at listed 3m open area test site (listed with FCC, IC, ITI, NVLAP, ACA & VCCI).
(c) The transmitter under test was placed at the specified height on a non-conducting turntable (80 cm height)
(d) The BICONILOG antenna (20 MHz to 1 GHz) or HORN antenna (1 GHz to 18 GHz) was used for measuring.
(e) Load an appropriate correction factors file in EMI Receiver for correcting the field strength reading level

Total Correction Factor recorded in the EMI Receiver = Cable Loss + Antenna Factor
E (dBμV/m) = Reading (dBμV) + Total Correction Factor (dB/m)

(f) Set the EMI Receiver and #2 as follows:

Center Frequency:	test frequency
Resolution BW:	100 kHz
Video BW:	same
Detector Mode:	positive
Average:	off
Span:	3 x the signal bandwidth

(g) The test antenna was lowered or raised from 1 to 4 meters until the maximum signal level was detected.
(h) The transmitter was rotated through 360^{o} about a vertical axis until a higher maximum signal was received.
(i) The test antenna was lowered or raised again from 1 to 4 meters until a maximum was obtained. This level was recorded.
(j) The recorded reading was corrected to the true field strength level by adding the antenna factor, cable loss and subtracting the pre-amplifier gain.
(k) The above steps were repeated with both transmitters' antenna and test receiving antenna placed in vertical and horizontal polarization. Both readings with the antennas placed in vertical and horizontal polarization shall be recorded.
(l) Repeat for all different test signal frequencies.

8.2.2. Measuring the EIRP of Spurious/Harmonic Emissions using Substitution Method

(a) Set the EMI Receiver (for measuring E-Field) and Receiver #2 (for measuring EIRP) as follows:

Center Frequency:	equal to the signal source
Resolution BW:	10 kHz
Video BW:	same
Detector Mode:	positive
Average:	off
Span:	3 x the signal bandwidth

(b) Load an appropriate correction factors file in EMI Receiver for correcting the field strength reading level

Total Correction Factor recorded in the EMI Receiver = Cable Loss + Antenna Factor
E (dBuV/m) = Reading (dBuV) + Total Correction Factor (dB/m)

(c) Select the frequency and E-field levels obtained in the Section 8.2.1 for ERP/EIRP measurements.
(d) Substitute the EUT by a signal generator and one of the following transmitting antenna (substitution antenna):
- ♦ DIPOLE antenna for frequency from 30-1000 MHz or
- ♦ HORN antenna for frequency above 1 GHz }.

(e) Mount the transmitting antenna at 1.5 meter high from the ground plane.
(f) Use one of the following antenna as a receiving antenna:
- ♦ DIPOLE antenna for frequency from 30-1000 MHz or
- ♦ HORN antenna for frequency above 1 GHz }.

(g) If the DIPOLE antenna is used, tune it's elements to the frequency as specified in the calibration manual.
(h) Adjust both transmitting and receiving antenna in a VERTICAL polarization.
(i) Tune the EMI Receivers to the test frequency.
(j) Lower or raise the test antenna from 1 to 4 meters until the maximum signal level was detected.
(k) The transmitter was rotated through 360^{o} about a vertical axis until a higher maximum signal was received.
(l) Lower or raise the test antenna from 1 to 4 meters until the maximum signal level was detected.
(m) Adjust input signal to the substitution antenna until an equal or a known related level to that detected from the transmitter was obtained in the test receiver.
(n) Record the power level read from the Average Power Meter and calculate the ERP/EIRP as follows:

P = P1 - L1 = (P2 + L2) – L1 = P3 + A + L2 - L1
EIRP = P + G1 = P3 + L2 - L1 + A + G1
ERP = EIRP – 2.15 dB
Total Correction factor in EMI Receiver # 2 = L2 – L1 + G1

Where:	P:	Actual RF Power fed into the substitution antenna port after corrected.
	P1:	Power output from the signal generator
	P2:	Power measured at attenuator A input
	P3:	Power reading on the Average Power Meter
	EIRP:	EIRP after correction
	ERP:	ERP after correction

(o) Adjust both transmitting and receiving antenna in a HORIZONTAL polarization, then repeat step (k) to (o)
(p) Repeat step (d) to (o) for different test frequency
(q) Repeat steps (c) to (j) with the substitution antenna oriented in horizontal polarization.
(r) Actual gain of the EUT's antenna is the difference of the measured EIRP and measured RF power at the RF port. Correct the antenna gain if necessary.

Figure 2

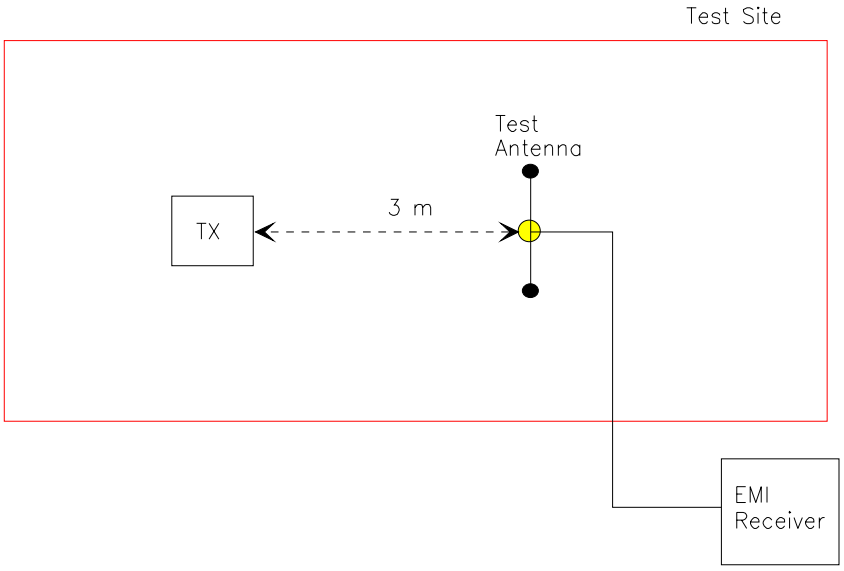
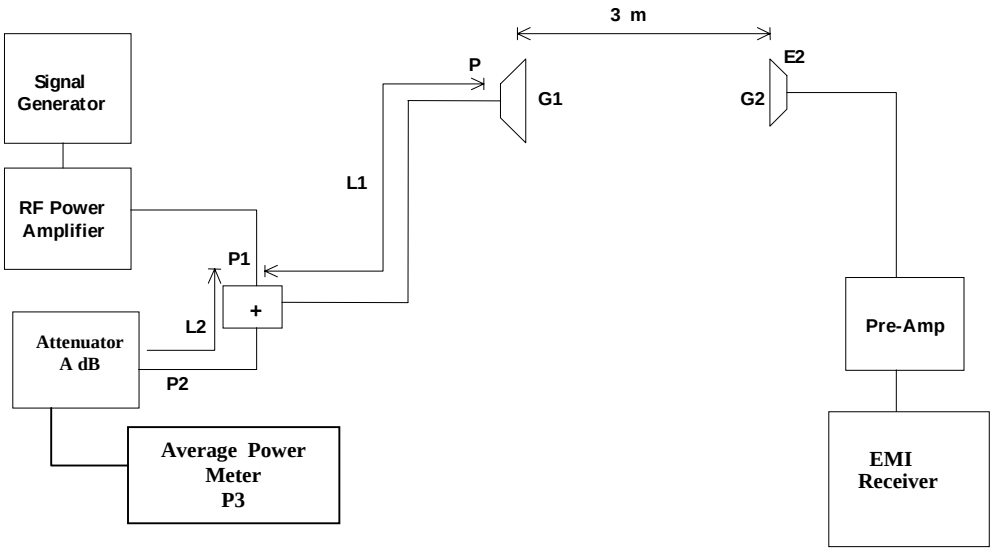


Figure 3



8.3. EMISSION MASK

Voice or Digital Modulation Through a Voice Input Port @ 2.1049(c)(i):- 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.: ±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 @ 2.1049(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 discretion of the user.

The following EMI Receiver bandwidth shall be used for measurement of Emission Mask/Out-of-Band Emission Measurements:

(1) For 25 kHz Channel Spacing: RBW = 300 Hz
(2) For 12.5 kHz or 6.25 kHz Channel Spacings: RBW = 100 Hz

The all cases the Video Bandwidth shall be equal or greater than the measuring bandwidth.