UltraTech
Group of Labs

31040/SIT

C-1376

Canada
46390-2049

NVLAP
200093-0

00-034

entela

3000 Bristol Circle,
Oakville, Ontario,
Canada L6H 6G4

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Website: www.ultratech-labs.com
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June 24, 2002

TIMCO ENGINEERING INC.
P O BOX 370
849 N.W. STATE ROAD 45
NEWBERRY, FLORIDA
USA 32669

Subject: **Certification Application under FCC Part 15, Subpart C, Para. 15.249, Low Power Transmitters Operating in the Frequency Band 902-928 MHz.**

Applicant: **Sanyo Canada Inc.**
Product: **SANYO CORDLESS TELEPHONE**
Model: **CLT-9910, CLT-9915, CLT-9922, CLT-9925 and CLT-9935**
FCC ID: **MBH-CLT99XX**

Dear Sir/Madam,

As appointed agent for Sanyo Canada Inc., we would like to submit the application for FCC certification of the above product. Please review all necessary files uploaded to FCC OET site for detailed information.

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

OUR TELEPHONE NO.: 1-877-765-4173

Yours truly,

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

TML/AK

Encl.

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June 24, 2002

Sanyo Canada Inc.
300 Applewood Cres.
Concord, Ontario
Canada, L4K 5C7

Attn.: **Mr. Akio Ichimori**

Subject: **Certification Application under FCC Part 15, Subpart C, Para. 15.249, Low Power Transmitters Operating in the Frequency Band 902-928 MHz.**

Product: **SANYO CORDLESS TELEPHONE**
Model: **CLT-9910, CLT-9915, CLT-9922, CLT-9925 and CLT-9935**
FCC ID: **MBH-CLT99XX**

Dear Mr. Ichimori,

The product sample, as provided by you, has been tested and found to comply with **FCC Part 15, Subpart C, Para. 15.249, Low Power Transmitters operating in the Frequency Band 902-928 MHz.**

Please feel to contact us if you have any further questions.

Best Regards,

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

ENGINEERING TEST REPORT

SANYO CORDLESS TELEPHONE
MODELS: CLT-9910, CLT-9915, CLT-9922, CLT-9925 & CLT-9935

FCC ID: MBH-CLT99XX

Applicant: **Sanyo Canada Inc.**
300 Applewood Cres.
Concord, Ontario
Canada, L4K 5C7

Tested in Accordance With

FCC PART 15, SUBPART C, PARA. 15.249
LOW POWER TRANSMITTERS
OPERATING IN THE FREQUENCY BAND FROM 902 - 928 MHz

UltraTech's File No.: SAN-058FCC15C

This Test report is Issued under the Authority of Tri M. Luu, Professional Engineer, Vice President of Engineering UltraTech Group of Labs Date: June 24, 2002	
Report Prepared by: Tri Luu Issued Date: June 24, 2002	Tested by: Hung Trinh, EMI/RFI Technician Test Dates: June 19-21, 2002

- *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.*

UltraTech

3000 Bristol Circle, Oakville, Ontario, Canada, L6H 6G4
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Website: www.ultratech-labs.com Email: vic@ultratech-labs.com, Email: tri.luu@sympatico.ca

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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 Report - Plots of Measurement Data	Plots # 1 to 14	OK
2	Test Setup Photos	Photos # 1 to 7	OK
3	External Photos of EUT	Photos # 1 to 4	OK
4	Internal Photos of EUT	Photos of 1 to 11	OK
5	Cover Letters	• Letter from Ultratech for Certification Request	OK
6	Attestation Statements	• Letter from the Applicant to appoint Ultratech to act as an agent • Letter from the Applicant to request for Confidentiality Filing • Cordless Phone - Digital Security @ FCC 15.214(d)(1)	OK OK OK
7	ID Label/Location Info	ID Label Location of ID Label	OK OK
8	Block Diagrams		OK
9	Schematic Diagrams		OK
10	Parts List/Tune Up Info		OK
11	Operational Description		OK
12	RF Exposure Info	N/A	N/A
13	Users Manual		OK

EXHIBIT 2. INTRODUCTION

2.1. SCOPE

Reference:	FCC Part 15, Subpart C, Section 15.249
Title	Telecommunication - Code of Federal Regulations, CFR 47, Part 15
Purpose of Test:	To gain FCC Certification Authorization for Low Power Licensed-Exempt Transmitters operating in the Frequency Band 902 - 928 MHz .
Test Procedures	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.
Environmental Classification:	Residential Light-industry, Commercial Industry

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

None

2.3. NORMATIVE REFERENCES

Publication	YEAR	Title
FCC CFR Parts 0-19	2001	Code of Federal Regulations – Telecommunication
ANSI C63.4	1992	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
CISPR 22 & EN 55022	1997 1998	Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment
CISPR 16-1		Specification for Radio Disturbance and Immunity measuring apparatus and methods

EXHIBIT 3. PERFORMANCE ASSESSMENT

3.1. CLIENT INFORMATION

APPLICANT:	
Name:	Sanyo Canada Inc.
Address:	300 Applewood Cres. Concord, Ontario Canada, L4K 5C7
Contact Person:	Mr. Akio Ichimori Phone #: 905-760-4051 Fax #: 905-760-9301 Email Address: aichimori@sanyo.com

MANUFACTURER:	
Name:	IDT Communication Technology Ltd
Address:	The 21 Building, Chentian Industry Village Xixiang, Xin An Town, Baoan Country Shenzhen, China 518102
Contact Person:	Mr. K.S. Chu Phone #: 86-755-793-6020 Fax #: 86-755-793-6930 Email Address: kschu@idthk.com

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	Sanyo Canada Inc.
Product Name	SANYO CORDLESS TELEPHONE
Model Name or Number	CLT-9910, CLT-9915, CLT-9922, CLT-9925 and CLT-9935
Serial Number	Preproduction
Type of Equipment	900 MHz Cordless Phone
Input Power Supply Type	AC Mains using an AC Adapter
Primary User Functions of EUT:	Cordless telephone for voice communication through air.

Remarks:

All models CLT-9910, CLT-9915, CLT-9922, CLT-9925 and CLT-9935 have exactly the same printed circuits boards and radios, the only differences are optional Electronic Features which is non-related to the radio circuits. Please find the attached Deviation List in Technical Description Folder for details.

Since The Model CLT-9935 has all the options such as Phone Jack Socket, LCD, LCD Back Light LED and Keypad Back Light LED, it is used for testing and represent the worst case.

3.3. EUT'S TECHNICAL SPECIFICATIONS

TRANSMITTER	
Equipment Type:	Portable & Base station
Intended Operating Environment:	Residential Commercial, light industry & heavy industry
Power Supply Requirement:	AC 120V 60Hz using an external AC Adapter
RF Output Power Rating:	• Base: 88.84 dBµV/m at 3 meters • Handset: 92.9 dBµV/m at 3 meters
Operating Frequency Range:	Handset: 925.3-927.25 MHz Base: 902.8 - 904.75 MHz
RF Output Impedance:	50 Ohms
Channel Spacing:	50 kHz
Duty Cycle:	Continuous
20 dB Bandwidth:	• Base: 63.3 kHz • Handset: 42.1 kHz
Modulation Type:	FM analog
Emission Designation:	• Base: 63K0F3E • Handset: 42K1F3E
Antenna Connector Type:	• Integral, permanently attached

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	Teco Line Port	1	RJ-11	Non-shielded

3.5. ANCILLARY EQUIPMENT

None

3.6. GENERAL TEST SETUP

Remarks:

All models CLT-9910, CLT-9915, CLT-9922, CLT-9925 and CLT-9935 have exactly the same printed circuits boards and radios, the only differences are optional Electronic Features which is non-related to the radio circuits. Please find the attached Deviation List in Technical Description Folder for details.

Since The Model CLT-9935 has all the options such as Phone Jack Socket, LCD, LCD Back Light LED and Keypad Back Light LED, it is used for testing and represent the worst case.

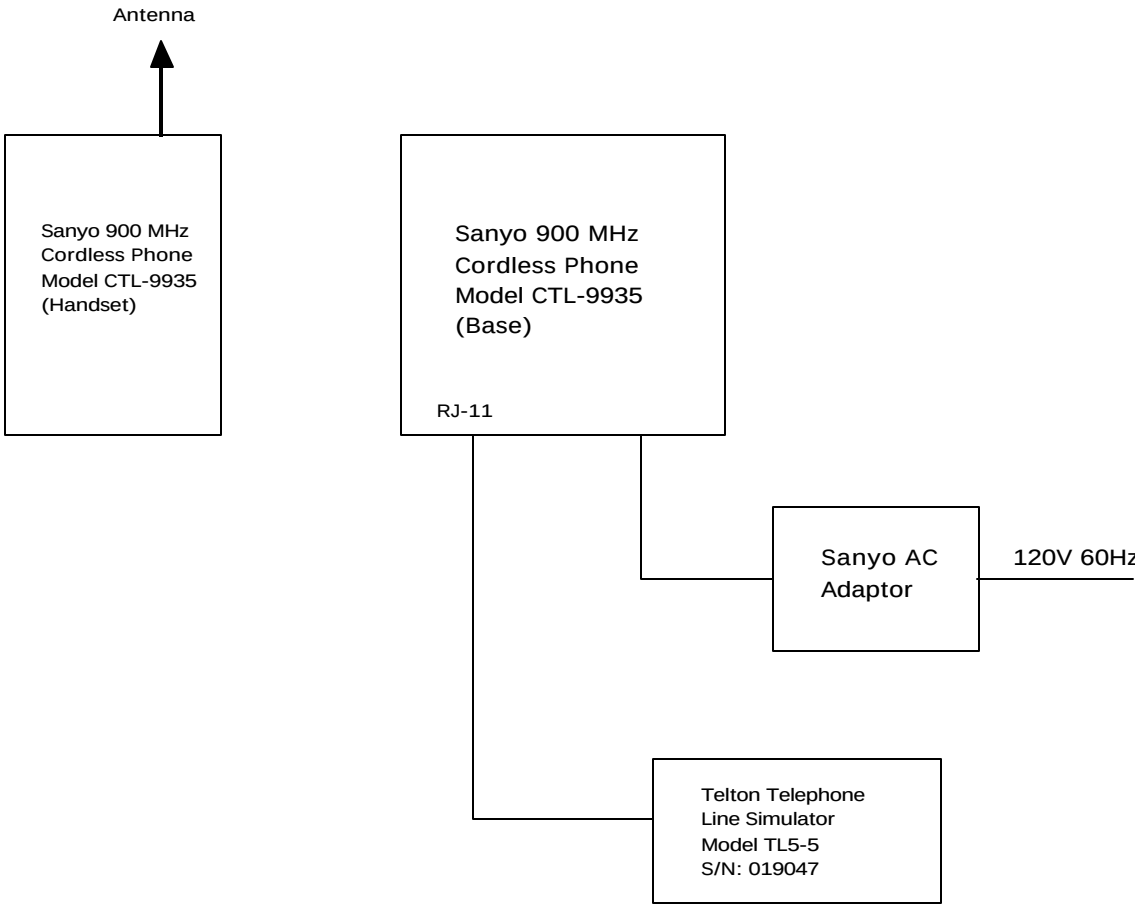

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EXHIBIT 4. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

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:	AC 120V 60Hz using an external AC Adapter

4.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TESTS

Operating Modes:	Each of lowest and highest channel frequencies of each sub-bands transmits continuously for emissions measurements.
Special Test Software:	None
Special Hardware Used:	None
Transmitter Test Antenna:	The EUT is tested with the antenna fitted in a manner typical of normal intended use as an integral antenna equipment.

Transmitter Test Signals:	
Frequencies: • 902.8 - 904.75 MHz band (Base): • 925.30 - 927.25 MHz (Handset):	Lowest and highest channel frequencies of each sub-bands tested: • 902.8 MHz and 904.75 MHz (Base) • 925.30 MHz and 927.25 MHz (Handset)
Transmitter Wanted Output Test Signals: • RF Power Output (measured maximum output power): • Normal Test Modulation • Modulating signal source:	 • Base: 88.84 dBµV/m at 3 meters & Handset: 92.9 dBµV/m at 3 meters • FM with 2.5 kHz sine wave signal • 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.
- 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 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: Aug. 08, 2001.

5.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

FCC PARAGRAPH.	TEST REQUIREMENTS	COMPLIANCE (YES/NO)
15.107(a) & 15.207	AC Power Conducted Emissions	Yes
	20 dB Bandwidth	Yes
15.249(a), 15.209, 15.205 & 1.1310	Transmitter Radiated Emissions, Harmonic Emissions and RF Exposure Limit	Yes
15.109	Radiated Emissions for Class B Unintentional Radiators	Yes. Test report will be available upon request.
FCC 15.214 (b) / Part 68	Terminal Attachment	Yes. Test report will be available upon request.

5.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

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 7 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 6 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 C64-3:1992, FCC 15.249 and CISPR 16-1.

6.4. ESSENTIAL/PRIMARY FUNCTIONS AS DECLARED BY THE MANUACTURER:

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

6.5. AC POWERLINE CONDUCTED EMISSIONS @ FCC PART 15, SUBPARTS B & C, PARA. 15.107(A) & 15.207

6.5.1. LIMITS

The equipment shall meet the limits of the following table:

Test Frequency Range	Test Limits	EMI Detector Used	Measuring Bandwidth
0.45 to 30 MHz	48 dBµV 51 dBµV	Quasi-Peak (Narrow band) Quasi-Peak (Broad band)	B = 10 kHz B = 10 kHz

6.5.2. METHOD OF MEASUREMENTS

Refer to Exhibit 7, Sec. 7.2 of this test report & ANSI C63-4:1992

6.5.3. TEST EQUIPMENT LIST

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Hewlett Packard	HP 8593EM	3412A00103	9 kHz – 26.5 GHz
Transient Limiter	Hewlett Packard	11947A	*310701998*	9 kHz – 200 MHz 10 dB attenuation
L.I.S.N.	EMCO	3825/2	*89071531*	9 kHz – 200 MHz 50 Ohms / 50 µH
12'x16'x12' RF Shielded Chamber	RF Shielding	…	..	…

6.5.4. PHOTOGRAPHS OF TEST SETUP

Refer to the Photographs #3 & #4 in Annex 2 for setup and arrangement of equipment under tests and its ancillary equipment.

6.5.5. TEST DATA

The RF voltage was scanned from 450 kHz to 30 MHz on each AC lines (hot and neutral) of the Model CLT-9935 Base Unit and no significant emissions were found in this frequency band. Please refer to Plots 1 to 2 in Annex 1 for detailed measurements

6.6. 20 DB BANDWIDTH

6.6.1. LIMITS

No limit. Tests were performed for information only

6.6.2. METHOD OF MEASUREMENTS

Refer to ANSI C63-4:1992

The transmitter output was connected to the spectrum analyzer through an attenuator. the bandwidth of the fundamental frequency was measured with the spectrum analyzer using RBW = 1% of approximate 26dB BW, VBW > RBW, Span = approx. 3x26dB BW. The 20 dB Bandwidth was measured and recorded.

6.6.3. TEST EQUIPMENT LIST

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Hewlett Packard	HP 8593EM	3412A00103	9 kHz – 26.5 GHz

6.6.4. PLOTS

Please refer to Plots # 3 to 6 in Annex 1 for Measurements data

6.6.5. TEST DATA

EUT Tested	CHANNEL FREQUENCY (MHz)	20 dB Bandwidth (KHz)
BASE UNIT	902.80	63.3
	904.75	62.9
HANDSET	925.30	42.1
	927.25	39.1

6.7. TRANSMITTER SPURIOUS EMISSIONS (RADIATED @ 3 METERS), FCC CFR 47, PARA. 15.249(A), 15.249 & 15.205

6.7.1. LIMITS

- The Field Strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

FUNDAMENTAL FREQUENCY (MHz)	FIELD STRENGTH LIMIT @10m OF FUNDMENTAL (mV/m)	FIELD STRENGTH LIMIT @ 10m OF HARMONICS (µV/m)
902 - 928	50	500
2400 - 2483.5	50	500
5725 - 5875	50	500
24.0 - 24.25	250	2500

- The fundamental frequency shall not fall within any restricted frequency band specified in 15.205 All rf other emissions that fall in the restricted bands shall not exceed the general radiated emission limits specified in @ 15.209(a).

FCC CFR 47, Part 15, Subpart C, Para. 15.205(a) - Restricted Frequency Bands

MHz	MHz	MHz	GHz
0.090 - 0.110	162.0125 - 167.17	2310 - 2390	9.3 - 9.5
0.49 – 0.51	167.72 - 173.2	2483.5 - 2500	10.6 - 12.7
2.1735 - 2.1905	240 - 285	2655 - 2900	13.25 - 13.4
8.362 - 8.366	322 - 335.4	3260 - 3267	14.47 - 14.5
13.36 - 13.41	399.9 - 410	3332 - 3339	14.35 - 16.2
25.5 – 25.67	608 - 614	3345.8 - 3358	17.7 - 21.4
37.5 – 38.25	960 - 1240	3600 - 4400	22.01 - 23.12
73 - 75.4	1300 - 1427	4500 - 5250	23.6 - 24.0
108 – 121.94	1435 - 1626.5	5350 - 5460	31.2 - 31.8
123 – 138	1660 - 1710	7250 - 7750	36.43 - 36.5
149.9 – 150.05	1718.8 - 1722.2	8025 - 8500	Above 38.6
156.7 – 156.9	2200 - 2300	9000 - 9200	

FCC CFR 47, Part 15, Subpart C, Para. 15.209(a)
-- Field Strength Limits within Restricted Frequency Bands --

FREQUENCY (MHz)	FIELD STRENGTH LIMITS (µV/m)	DISTANCE (Meters)
0.009 - 0.490	2,400 / F (KHz)	300
0.490 - 1.705	24,000 / F (KHz)	30
1.705 - 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 – 960	200	3
Above 960	500	3

6.7.2. METHOD OF MEASUREMENTS

Refer to Exhibit 8, Sec. 8.3 of this test report and **ANSI 63.4-1992, Para. 8** for detailed radiated emissions measurement procedures.

The following measurement procedures were also applied:

- Applies to harmonics/spurious that fall in the restricted bands listed in Section 15.205. the maximum permitted average field strength is listed in Section 15.209. A Pre-Amp and highpass filter are used for this measurement.
- For 9 kHz $\leq$ frequencies $\leq$ 150 kHz: RBW = 1 KHz, VBW $\geq$ 1 KHz, SWEEP=AUTO.
- For 150 MHz $\leq$ frequencies $\leq$ 30 MHz: RBW = 10 KHz, VBW $\geq$ 10 KHz, SWEEP=AUTO.
- For 30 MHz $\leq$ frequencies $\leq$ 1 GHz: RBW = 100 KHz, VBW $\geq$ 100 KHz, SWEEP=AUTO.
- For frequencies $\geq$ 1 GHz: RBW = 1 MHz, VBW = 1 MHz (Peak) & VBW = 10 Hz (Average), SWEEP=AUTO.

6.7.3. TEST EQUIPMENT LIST

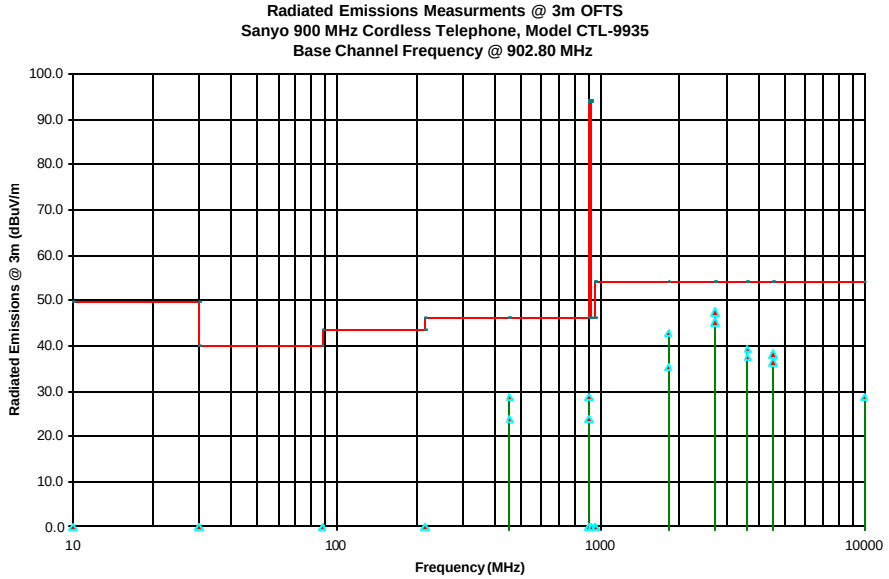
Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Advantest	R3271	15050203	100 Hz to 32 GHz with external mixer for frequency above 32 GHz
Microwave Amplifier	Hewlett Packard	HP 83017A		1 GHz to 26.5 GHz
Active Loop Antenna	EMCO	6507	8906-1167	1 kHz – 30 MHz
Biconilog Antenna	EMCO	3143	1029	20 MHz to 2 GHz
Horn Antenna	EMCO	3155	9701-5061	1 GHz – 18 GHz
Horn Antenna	EMCO	3160-09	..	18 GHz – 26.5 GHz
Horn Antenna	EMCO	3160-10	..	26.5 GHz – 40 GHz
Mixer	Tektronix	118-0098-00	..	18 GHz – 26.5 GHz
Mixer	Tektronix	119-0098-00	..	26.5 GHz – 40 GHz

6.8. TEST DATA

6.8.1.1. Transmitter Radiated Emissions from Base Transmitter @ Lowest Channel Frequency: 902.80 MHz

FREQUENCY (MHz)	PEAL E-FIELD @3m (dBuV/m)	AVERAGE E-FIELD @3m (dBuV/m)	ANTENNA PLANE (V/H)	AVERAGE LIMIT @3m (dBuV/m)	Pass/Fail Margin (dB)	MARGIN (Pass/Fail)
451.40	28.7	--	V	46.0	-17.3	PASS
451.40	23.9	--	H	46.0	-22.1	PASS
902.80	86.2	28.7	V	94.0	-65.3	PASS
902.80	84.3	23.9	H	94.0	-70.1	PASS
1805.60	45.9	42.7	V	54.0	-11.3	PASS
1805.60	42.2	35.4	H	54.0	-18.6	PASS
2708.40	48.3	45.3	V	54.0	-8.7	PASS
2708.40	50.5	47.4	H	54.0	-6.6	PASS
3611.20	46.7	37.4	V	54.0	-16.6	PASS
3611.20	47.8	39.3	H	54.0	-14.7	PASS
4514.00	46.8	36.4	V	54.0	-17.6	PASS
4514.00	46.3	38.2	H	54.0	-15.8	PASS

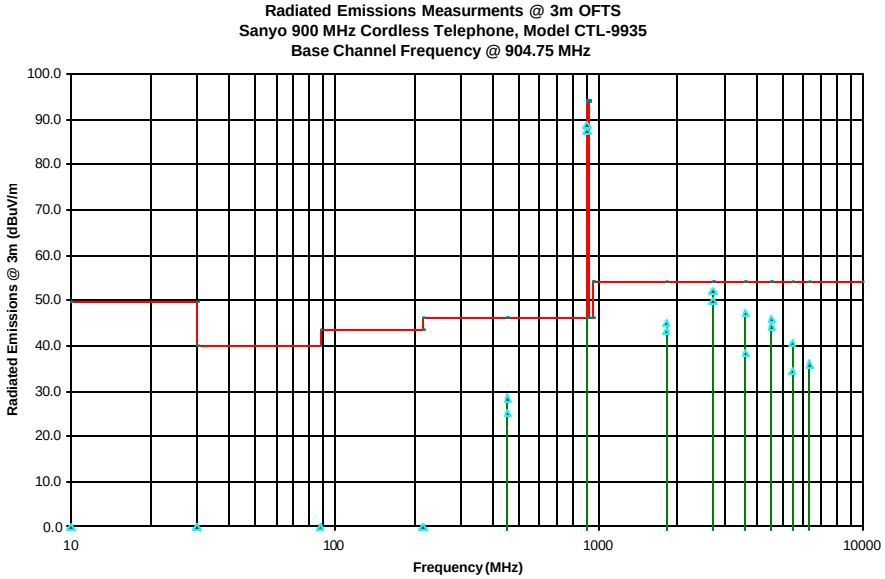
- The emissions were scanned from 10 kHz to 10 GHz and all emissions within 20 dB below the limits were recorded.
- Please refer to Plot # 7 & 8 for Band-edge of the Fundamental Emissions
- Please refer to Photos # 3 to 4 in Annex 2 for details of Test Set Up.



6.8.1.2. Transmitter Radiated Emissions from Base Transmitter @ Highest Channel Frequency: 904.75 MHz

FREQUENCY (MHz)	PEAK E-FIELD @3m (dBuV/m)	ANTENNA PLANE (V/H)	AVERAGE LIMIT @3m (dBuV/m)	Pass/Fail Margin (dB)	MARGIN (Pass/Fail)
452.37	28.5	V	46.0	-17.5	PASS
452.37	25.1	H	46.0	-20.9	PASS
904.75	88.8	V	94.0	-5.2	PASS
904.75	87.3	H	94.0	-6.7	PASS
1809.50	47.5	V	54.0	-9.1	PASS
1809.50	46.3	H	54.0	-10.8	PASS
2714.25	52.3	V	54.0	-4.0	PASS
2714.25	53.9	H	54.0	-1.8	PASS
3619.00	45.8	V	54.0	-15.6	PASS
3619.00	50.9	H	54.0	-6.9	PASS
4523.75	49.3	V	54.0	-9.6	PASS
4523.75	50.6	H	54.0	-8.0	PASS
5428.50	45.7	V	54.0	-19.7	PASS
5428.50	48.4	H	54.0	-13.5	PASS
6333.25	47.2	H	54.0	-18.0	PASS

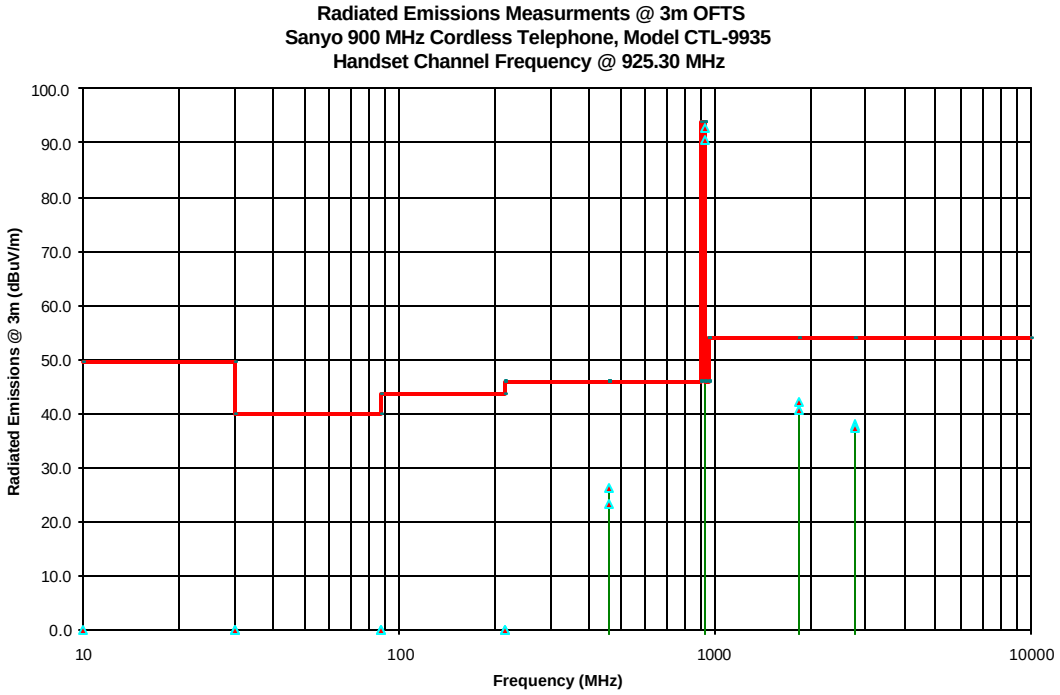
- The emissions were scanned from 10 kHz to 10 GHz and all emissions within 20 dB below the limits were recorded.
- Please refer to Plot # 9 & 10 for Band-edge of the Fundamental Emissions
- Please refer to Photos # 3 to 4 in Annex 2 for details of Test Set Up.



6.8.1.3. Transmitter Radiated Emissions from Handset Transmitter @ Lowest Channel Frequency: 925.30 MHz

FREQUENCY (MHz)	PEAK E-FIELD @3m (dBuV/m)	ANTENNA PLANE (V/H)	AVERAGE LIMIT @3m (dBuV/m)	Pass/Fail Margin (dB)	MARGIN (Pass/Fail)
462.65	26.1	V	46.0	-19.9	PASS
462.65	23.4	H	46.0	-22.6	PASS
925.30	90.6	V	94.0	-3.4	PASS
925.30	92.9	H	94.0	-1.1	PASS
1850.60	46.2	V	54.0	-11.7	PASS
1850.60	45.6	H	54.0	-13.5	PASS
2775.90	44.3	V	54.0	-16.1	PASS
2775.90	44.0	H	54.0	-16.8	PASS

- The emissions were scanned from 10 kHz to 10 GHz and all emissions within 20 dB below the limits were recorded.
- Please refer to Plot # 11 & 12 for Band-edge of the Fundamental Emissions
- Highest measurements were recorded when the transmitter was tested with 3 different orthogonal positions as shown in Photos # 5 to 7 in Annex 2.



6.8.1.4. Transmitter Radiated Emissions from Handset Transmitter @ Highest Channel Frequency: 927.25 MHz

FREQUENCY (MHz)	PEAK E-FIELD @3m (dBuV/m)	ANTENNA PLANE (V/H)	AVERAGE LIMIT @3m (dBuV/m)	Pass/Fail Margin (dB)	MARGIN (Pass/Fail)
463.63	25.7	V	46.0	-20.3	PASS
463.63	23.4	H	46.0	-22.6	PASS
927.25	88.8	V	94.0	-5.2	PASS
927.25	91.4	H	94.0	-2.6	PASS
1854.50	44.5	V	54.0	-15.7	PASS
1854.50	43.6	H	54.0	-14.9	PASS
2781.75	44.6	V	54.0	-15.6	PASS
2781.75	45.4	H	54.0	-15.8	PASS

- The emissions were scanned from 10 kHz to 10 GHz and all emissions within 20 dB below the limits were recorded.
- Please refer to Plot # 13 & 14 for Band-edge of the Fundamental Emissions
- Highest measurements were recorded when the transmitter was tested with 3 different orthogonal positions as shown in Photos # 5 to 7 in Annex 2.

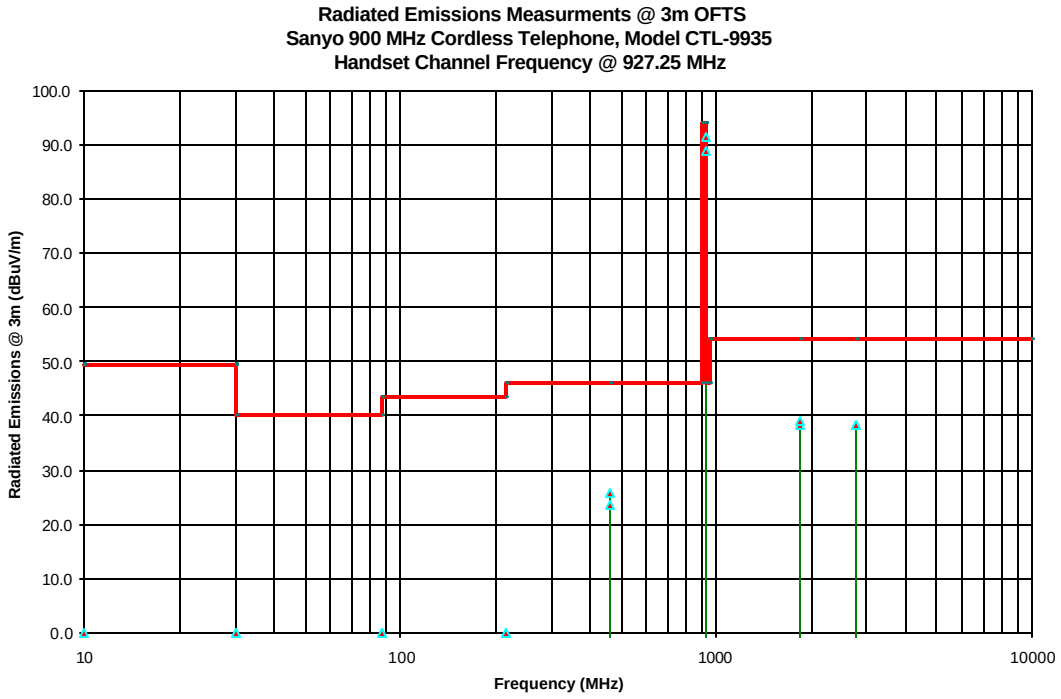


EXHIBIT 7. GENERAL TEST PROCEDURES

7.1. GENERAL TEST CONDITIONS

The following test conditions shall be applied throughout the tests covered in this report.

7.2. NORMAL TEMPERATURE AND HUMIDITY

Normal temperature: +15°C to +35°C
Relative Humidity: +20% to 75%

The actual values during tests shall be recorded in the test report.

7.2.1. NORMAL POWER SOURCE

7.2.1.1. Mains Voltage

The nominal test voltage of the equipment to be connected to mains shall be the nominal mains voltage which is the declared voltage or any of the declared voltages for which the equipment was designed.
The frequency of test power source corresponding to the AC mains shall be between 59 Hz and 61 Hz.

7.2.1.2. Battery Power Source.

For operation from battery power sources, the nominal test voltage shall be as declared by the equipment manufacturer. This shall be recorded in the test report.

7.2.2. OPERATING CONDITION OF EQUIPMENT UNDER TEST

- All tests were carried out while the equipment operated at :
  - the lowest, middle and highest channel frequencies if the operating frequency band is greater than 10 MHz
  - the lowest and highest channel frequencies if the operating frequency band is from 1 to 10 MHz.
  - the middle channel frequency if the operating frequency band is less than 1 MHz.
- Modulation were applied using the Test Data sequence
- The transmitter was operated at the highest output power, or in the case the equipment able to operate at more than one power level, at the lowest and highest output powers.

7.3. METHOD OF MEASUREMENTS - AC MAINS CONDUCTED EMISSIONS

- AC Mains conducted emissions measurements were performed in accordance with the standard against appropriate limits for each detector function.
- The test was performed in the shielded room, 16'(L) by 16'(W) by 12'(H).
- The test was performed were made over the frequency range from 450 kHz to 30 MHz to determine the line-to-ground radio noise voltage which was conducted from the EUT power-input terminals that were directly connected to a public power network.
- The EUT normally received power from another device that connects to the public utility ac power lines, measurements would be made on that device with the EUT in operation to ensure that the device continues to comply with the appropriate limits while providing the EUT with power.
- If the EUT operates only from internal or dedicated batteries, with no provisions for connection to the public utility ac power lines, AC Mains conducted measurements are not required.
- Table-top devices were placed on a platform of nominal size 1 m by 1.5m raised 80 cm above the conducting ground plane.
- The EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the power source. All unused 50-Ohm connectors of the LISN was terminated in 50-ohm when not connected to the measuring instruments.
- The line cord of the EUT connected to one LISN which was connected to the measuring instrument. Those power cords for the units of devices not under measurement were connected to a separate multiple ac outlet. Drawings and photographs of typically conducted emission test setups were shown in the Test Report. Each current-carrying conductor of the EUT shall be individually tested.
- The EUT was normally operated with a ground (safety) connection, the EUT was connected to the ground at the LISN through a conductor provided in the lead from the ac power mains to the LISN.
- The excess length of the power cord was folded back and forth in an 8-shape on a wooden strip with a vertical prong located on the top of the LISN case.
- The EUT was set-up in its typical configuration and operated in its various modes as described in 3.2 of the test report.
- A preliminary scan was made by using spectrum analyzer system with the detector function set to PEAK mode (9 KHz RBW, VBW > RBW), frequency span 450 kHz to 30 MHz.

- The maximum conducted emission for a given mode of operation was found by using the following step-by-step procedure:

  Step 1: Monitor the frequency range of interest at a fixed EUT azimuth.
  Step 2: Manipulate the system cables and peripheral devices to produce highest amplitude signal relative to the limit. Note the amplitude and frequency of the suspect signal.
  Step 3: The effects of various modes of operation is examined. This is done by varying equipment operation modes as step 2 is being performed.
  Step 4: After completing step 1 through 3, record EUT and peripheral device configuration, mode of operation, cable configuration, signal levels and frequencies for final test.

- Each highest signal level at the maximized test configuration was zoomed in a small frequency span on the spectrum analyzer's display (the manipulation of cables and peripheral devices and EUT operation modes might have to be repeated to obtain the highest signal level with the spectrum analyzer set to PEAK detector mode 10 KHz RBW and VBW > RBW). The spectrum analyzer was then set to CISPR QUASI-PEAK detector mode (9 KHz RBW, 1 MHz VBW) and AVERAGE detector mode (10 kHz RBW, 1 Hz VBW). The final highest RF signal levels and frequencies were record.

- ***Broad-band ac Powerline conducted emissions***:- If the EUT exhibits ac Powerline conducted emissions that exceed the limit with the instrument set to the quasi-peak mode, then measurements should be made in the average mode. If the amplitude measured in the quasi-peak mode is at least 20 dB higher than the amplitude measured in the average mode, the level measured in quasi peak mode may be reduced by 13 dB before comparing it to the limit.

7.4. SPURIOUS EMISSIONS (CONDUCTED & RADIATED)

For both conducted and radiated measurements, the spurious emissions were scanned from the lowest frequency generated by the EUT or 10 MHz whichever is lower to 10^{th} harmonic of the highest frequency generated by the EUT.

7.4.1. SPURIOUS EMISSIONS (CONDUCTED)

- The radio was connected to the measuring equipment via a suitable attenuator.
- The spectrum analyzer were used and set as follows:

- Resolution BW: 100 kHz
- Video BW: same or greater
- Detector Mode: Positive Peak
- Averaging: Off
- Span: 100 MHz
- Amplitude: Adjust for middle of the instrument's range
- Sweep Time: Auto

7.4.2. SPURIOUS EMISSIONS (RADIATED)

- The radiated emission measurements were performed at the UltraTech's 3 Meter Open Field Test Site (OFTS) situated in the Town of Oakville, province of Ontario. The Attenuation Characteristics of OFTS have been filed to FCC, Industry Canada, ACA/Austel, NVLap and ITI.
- Radiated emissions measurements were made using the following test instruments:

  - Calibrated EMCO BiconiLog antenna in the frequency range from 30 MHz to 2000 MHz.
  - Calibrated Emco Horn antennas in the frequency range above 1000 MHz (1GHz - 40 GHz).
  - Calibrated Advantest spectrum analyzer and pre-selector were used. The spectrum analyzer would be used as follows:

    For frequencies below 1 GHz:
    - Resolution BW: 100 kHz
    - Video BW: same or greater
    - Detector Mode: Positive Peak
    - Averaging: Off
    - Span: 100 MHz
    - Amplitude: Adjust for middle of the instrument's range
    - Sweep Time: Auto

    For frequencies above 1 GHz:
    - Resolution BW: 1 MHz
    - Video BW: same or greater
    - Detector Mode: Positive Peak
    - Averaging: Off
    - Span: 500 MHz
    - Amplitude: Adjust for middle of the instrument's range
    - Sweep Time: Auto

- The frequencies of emissions were first detected. Then the amplitude of the emissions was measured at the specified measurement distance using required antenna height, polarization, and detector characteristics.
- During this process, cables and peripheral devices were manipulated within the range of likely configuration.
- For each mode of operation required to be tested, the frequency spectrum was monitored. Variations in antenna heights (from 1 meter to 4 meters above the ground plane), antenna polarization (horizontal plane and vertical plane), cable placement and peripheral placement were explored to produce the highest amplitude signal relative to the limit.
- The maximum radiated emission for a given mode of operation was found by using the following step-by-step procedure:
  - Monitor the frequency range of interest at a fixed antenna height and EUT azimuth.
  - Manipulate the system cables to produce highest amplitude signal relative to the limit. Note the amplitude and frequency of the suspect signal.
  - Rotate the EUT 360 degrees to maximize the suspected highest amplitude signal. If the signal or another at a different frequency is observed to exceed the previously noted highest amplitude signal by 1 dB or more, go back to the azimuth and repeat Step 2. Otherwise, orient the EUT azimuth to repeat the highest amplitude observation and proceed.

- Move the antenna over its full allowable range of travel (1 to 4 meters) to maximize the suspected highest amplitude signal. If the signal or another at a different frequency is observed to exceed the previously noted highest amplitude signal by 1 dB or more, return to Step 2 with the highest amplitude observation and proceed.
- Change the polarization of the antenna and repeat Step 2 through 4. Compare the resulting suspected highest amplitude signal with that found for the other polarization. Select and note the higher of the two signals. This signal is termed the highest observed signal with respect to the limit for this EUT operational mode.
- The effects of various modes of operation is examined. This is done by varying the equipment modes as steps 2 through 5 are being performed.
- After completing steps 1 through 6, record the final highest emission level, frequency, antenna polarization and detector mode of the measuring instrument.

Calculation of Field Strength:

The field strength is calculated by adding the calibrated antenna factor and cable factor, and subtracting the Amplifier gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where	FS	=	Field Strength
	RA	=	Receiver/Analyzer Reading
	AF	=	Antenna Factor
	CF	=	Cable Attenuation Factor
	AG	=	Amplifier Gain

Example: If a receiver reading of 60.0 dBuV is obtained, the antenna factor of 7.0 dB/m and cable factor of 1.0 dB are added, and the amplifier gain of 30 dB is subtracted. The actual field strength will be:.

Field Level = 60 + 7.0 + 1.0 - 30 = 38.0 dBuV/m.

Field Level = $10^{(38/20)}$ = 79.43 uV/m.