

納入仕様書

iAN078-2.5M / iAN078-14.5M

改版履歴

版数	日付	承認者	改版者	改版内容
N1.0	2018 年 1 月 26 日	中嶋	正木	Rev1R0 から更新

■ 適用

本仕様書は、株式会社IDY（以下、「IDY」という）が供給する 3G/LTE/WiMAX および WiMAX2+向けアンテナ iAN078-2.5M 及び iAN078-14.5M の納入仕様書である。

■ 仕様

1. 型名 iAN078-2.5M : アンテナ本体(ケーブル長 2.5m)のみ
 iAN078-14.5M : アンテナ本体(ケーブル長 2.5m) + 12m 延長ケーブル(iEC12M)
2. 用途 3G/LTE/WiMAX および WiMAX2+通信モジュールに接続し使用される。

3. 電気特性

Frequency	704 ~ 960 MHz 1447~1510 MHz 1710 ~ 2700 MHz
V.S.W.R.	<= 3.0 @ 704 ~ 960 MHz <= 2.0 @1447~1510 MHz <= 2.5 @ 1710 ~ 2700 MHz
Peak Gain	- 1.3 dBi @704 ~ 960 MHz (≦+3dBi) - 0.1 dBi @1447~1510 MHz (≦+3dBi) 0.1 dBi @ 1710 ~ 2700 MHz (≦+3dBi)
Polarization	Linear
Impedance	50 Ohm

4. 使用部材

Material of Radiator	PCB
Material of Plastic	PC+ABS(C2950) UL94-V0
Cable Type	RF100 / 2500mm
Connector Type	SMA Male
Connector Pull Test	>= 3 Kg

5. 環境性能

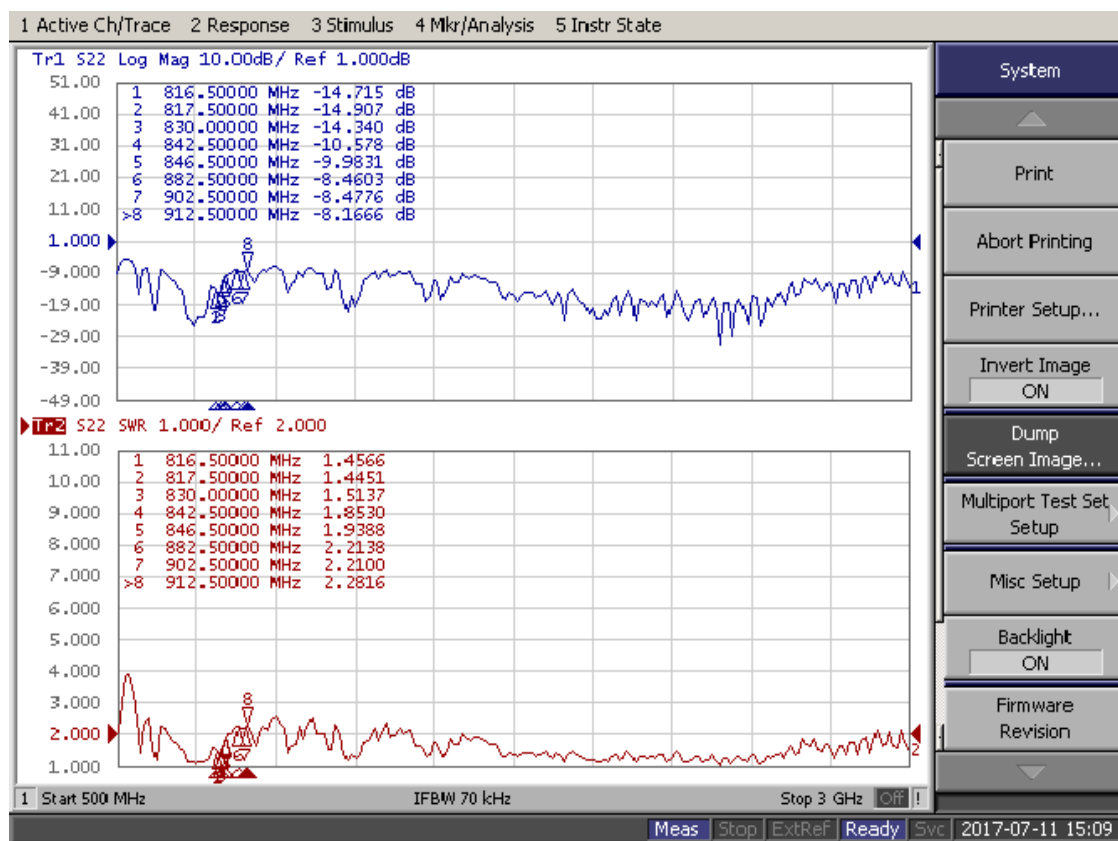
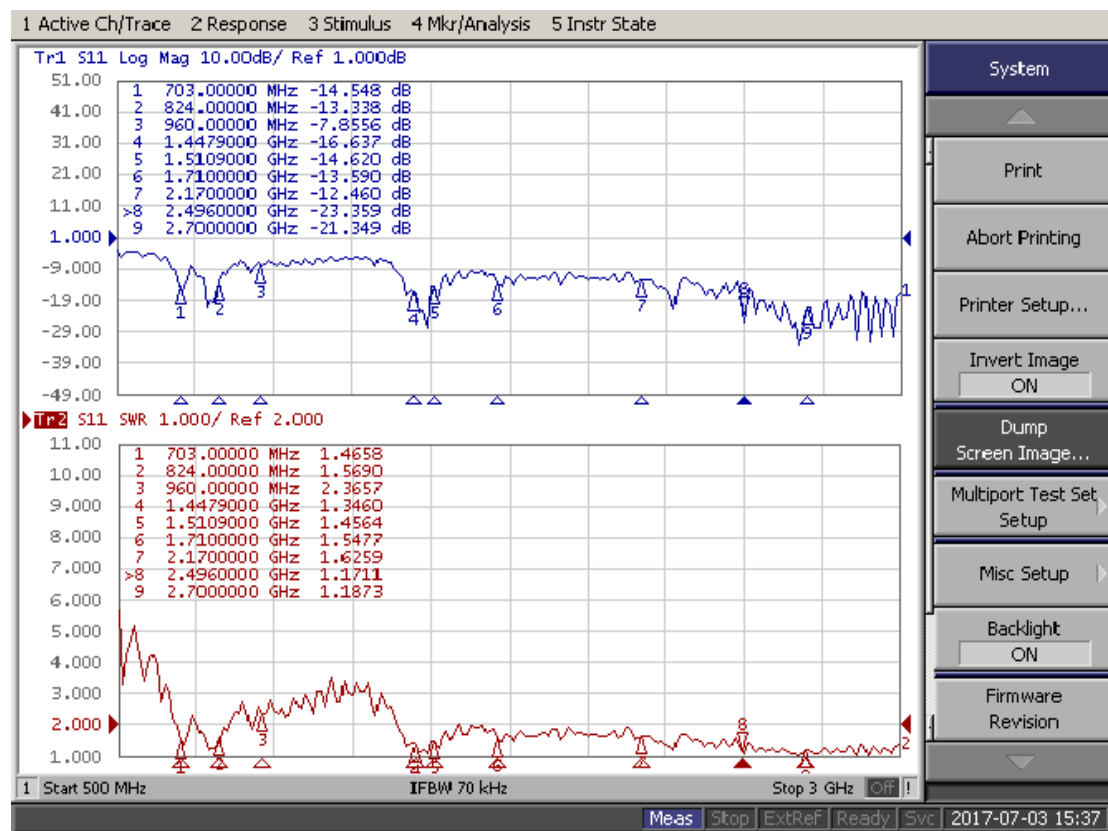
Waterproof	IPX6
Operation Temperature	- 20 °C ~ + 90 °C
Storage Temperature	- 30 °C ~ + 90 °C

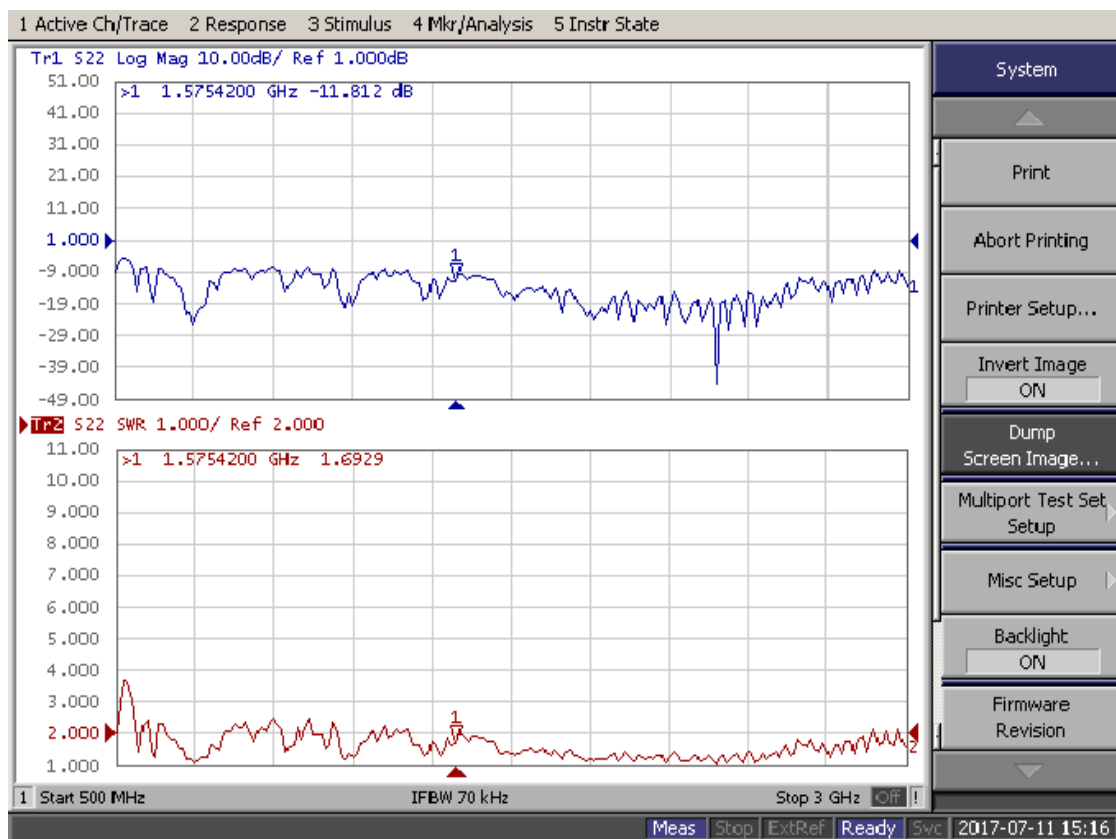
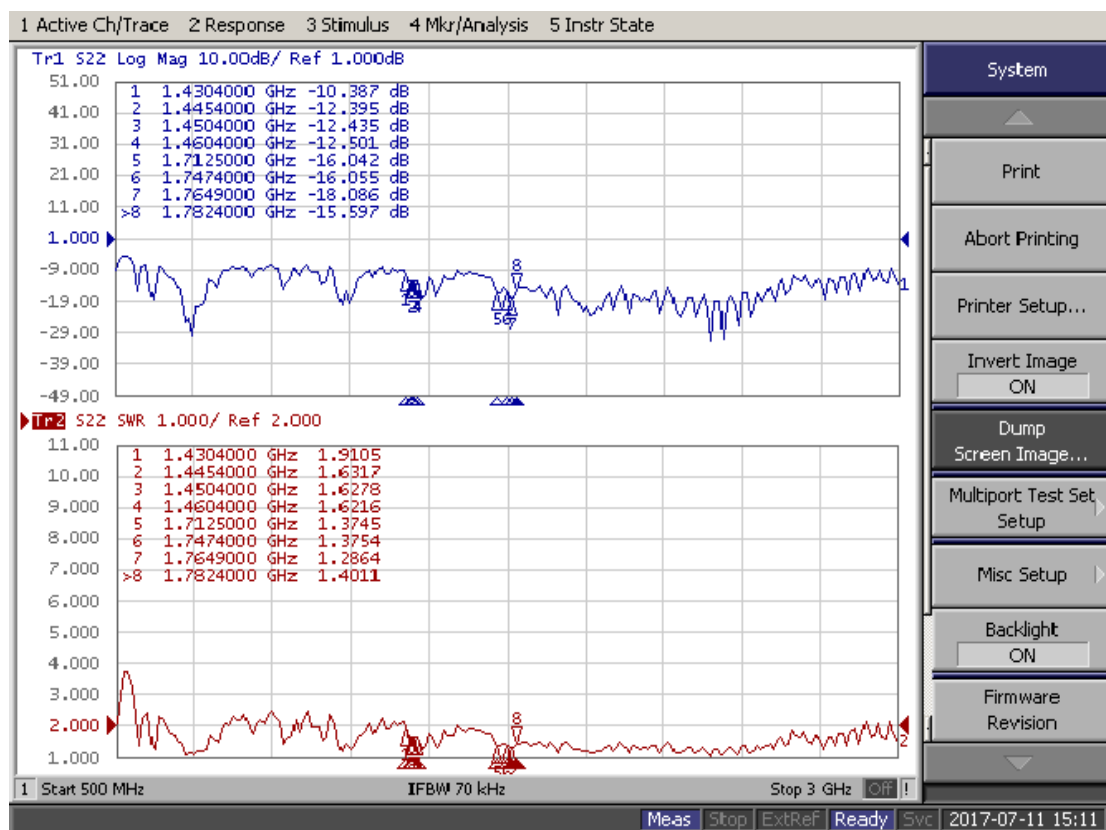
6. 信賴性試驗

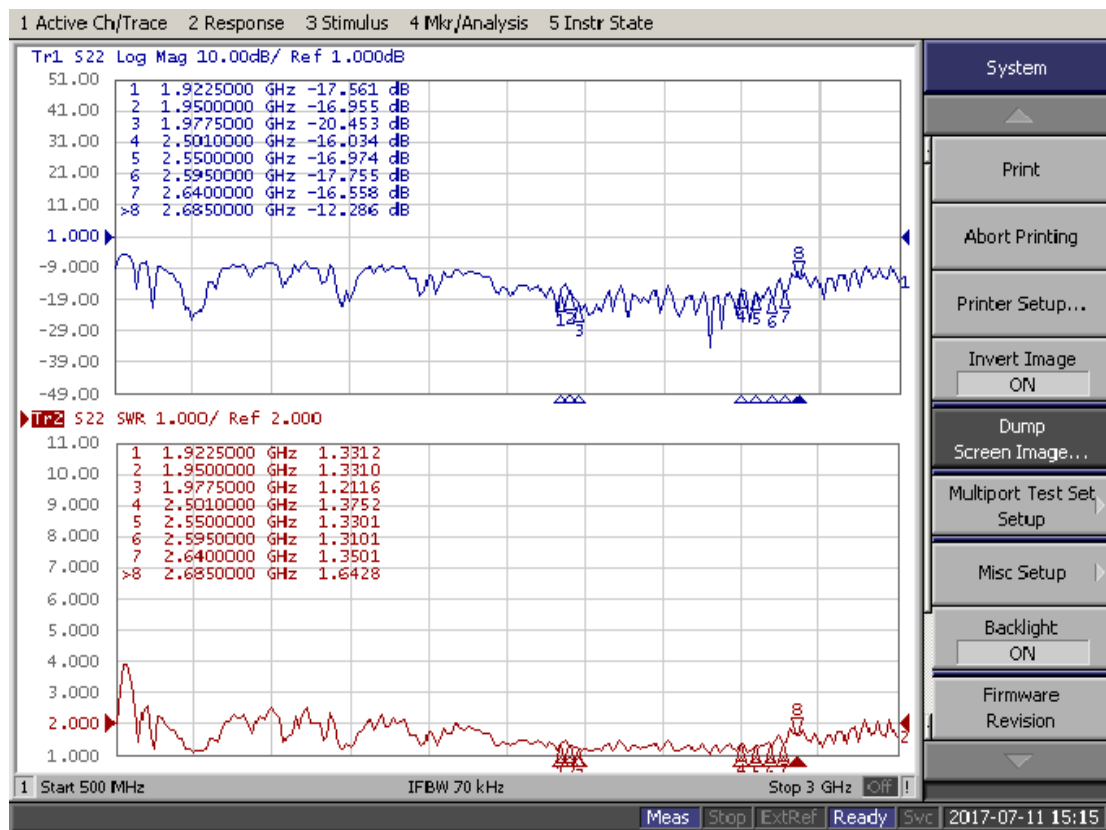
Test Items		Test Condition and Procedure	Requirements
C1	S.W.R.	Set DUT on Network Analyzer; make individual calibration to test	Directive DUT specification
C2	Antenna Gain	Set DUT on Antenna Chamber; make individual calibration to test	Directive DUT specification
M1	Vibration	GB / T2423. 48-1997 Amplitude: 0.03 inch (1.5mm); Freq: 20 to 80 to 20 Hz 3 directions; 2 hours for each direction	1. No Visual Damage 2. Frequency Tol.<= 5%
M2	Random Drop	GB / T2423.8-1995 Height: 1.0 Meter; 3 directions; 1 time for each direction	1. No parts separated 2. Frequency Tol.<= 5%
M3	Solderability	GB 2423. 28- 82 Solder iron: 260±5°C; Duration: 5 seconds	1. Mounted on PCB 2. No Visual Damage
M4	Terminal-Pull Test	Holding with individual specification; force applied to axis of terminal	1. Directive DUT specification 2. Frequency Tol.<= 5%
M5	Terminal-Torque Test	Holding with individual specification; applied clockwise and counterclockwise to the axis of terminal	1. Directive DUT specification 2. Frequency Tol.<= 5%
M6	Dimension	Inspection of dimension, color, material, package, surface process	Directive DUT specification
E1	Salt Spray	GB / T 2423. 17- 93 Temp: 35°C; RH: >= 95%; NaCl solution: >= 5%; Time: 24 hours	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.<= 5%

E2	Humidity	GB / T 2423. 4 - 93 Temp: 80°C / 12 H; -40°C / 12H RH: >= 90%; Time: 24 hours	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.<= 5%
E3	Thermal Shock	GB / T 2423. 22 - 87 1 Cycle: - 40°C (30 minutes) to + 80°C (30 minutes) Cycles: 24	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.<= 5%
E4	Life (High Temp.)	GB / T 2423. 2 - 89 Temp: 80°C; Time: 24 hours	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.<= 5%
R1	RoHS	With Reference to IEC 62321:2008 with flow chart	Directive RoHS 2002/95/EC
R2	PFOS	With Reference to USA EPA 3540C:1996 by LC/MS	Directive RoHS 2006/122/EC
R3	PFOA	With Reference to USA EPA 3540C:1996 by LC/MS	Directive RoHS 2006/122/EC

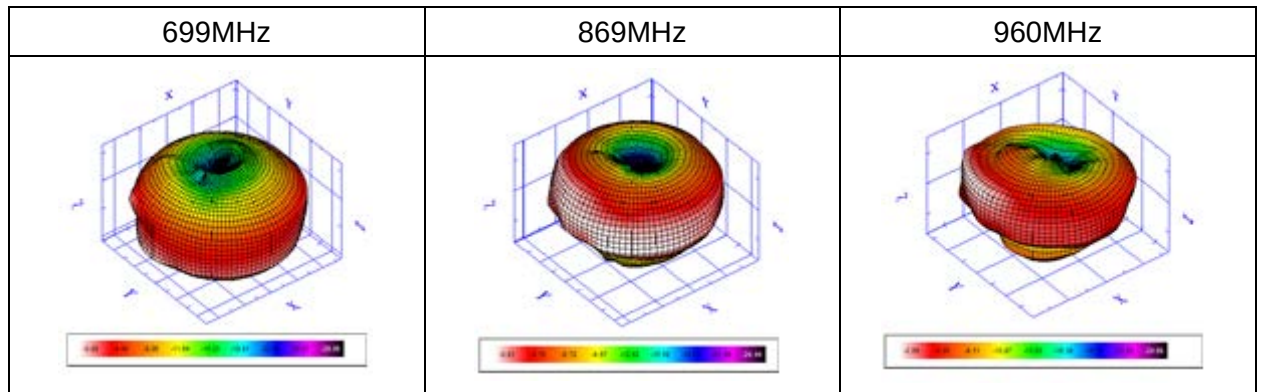
7. パラメータテスト結果



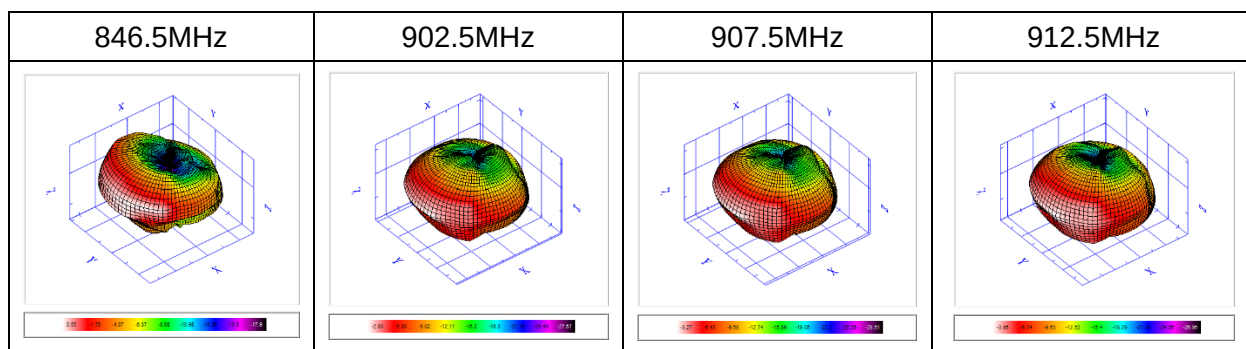
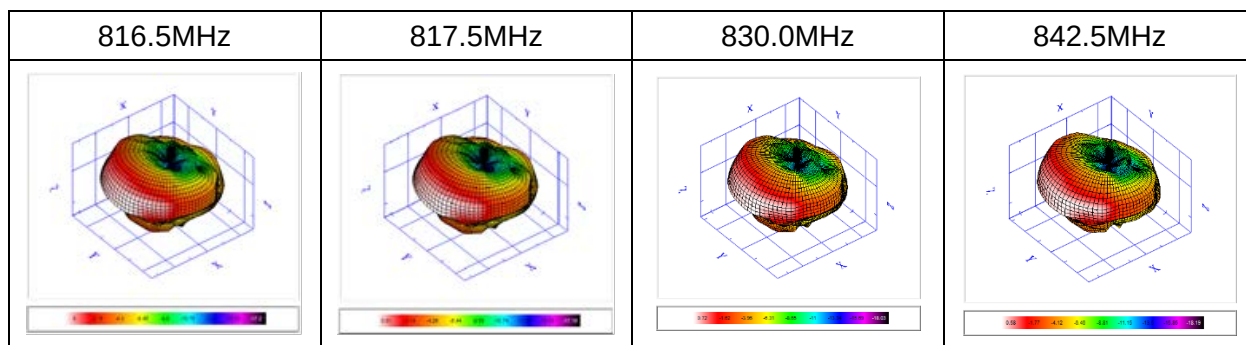




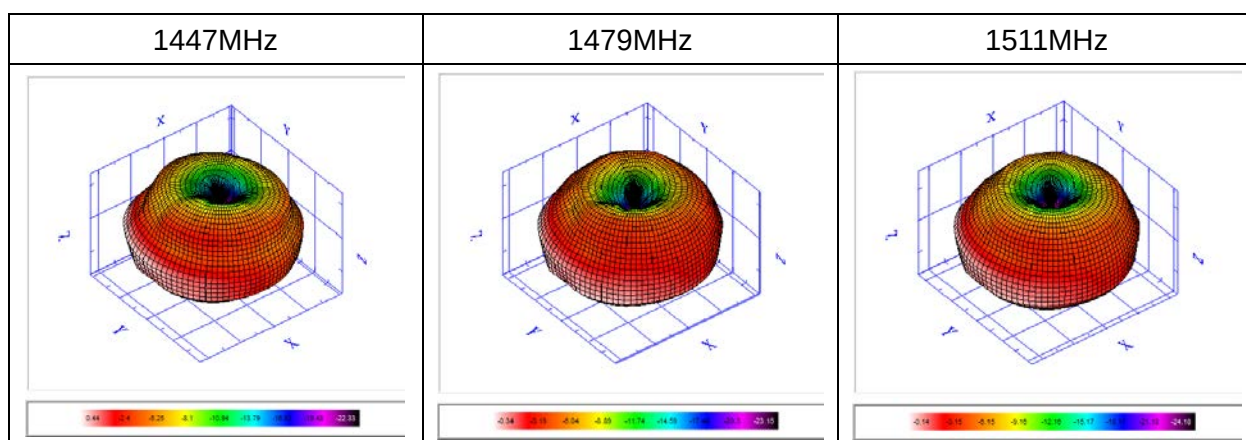
8. 放射特性



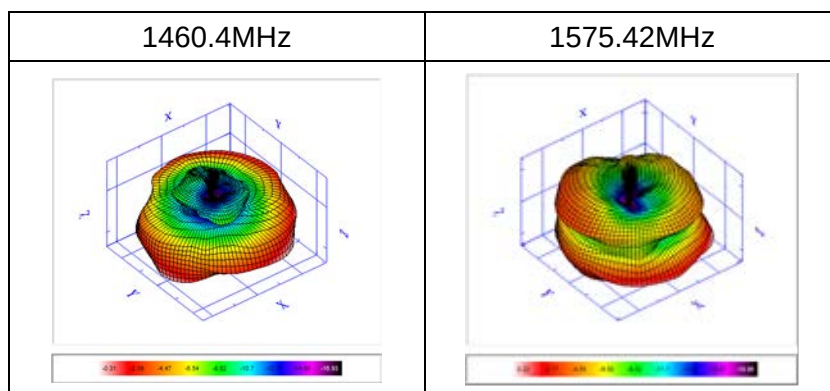
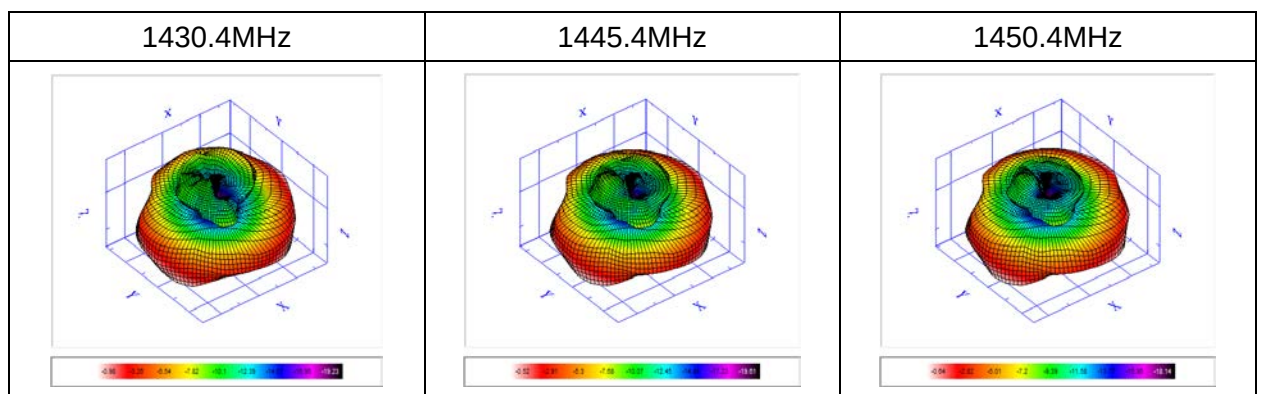
周波数 (MHz)	699	724	782	824	839	854	869	884	899	914	929	944	960
最大利得 (dBi)	-0.89	-0.77	0.7	2.61	1.93	1.6	-0.81	-2.47	-3.03	-4.22	-4.7	-4.09	-2.59
放射効率 (%)	25.65	21.31	36.56	49.26	48.61	50.67	33.07	23.91	21.86	18.04	13.92	12.63	14.68
平均利得 (dBi)	-5.91	-6.71	-4.37	-3.08	-3.13	-2.95	-4.81	-6.21	-6.6	-7.44	-8.56	-8.99	-8.33



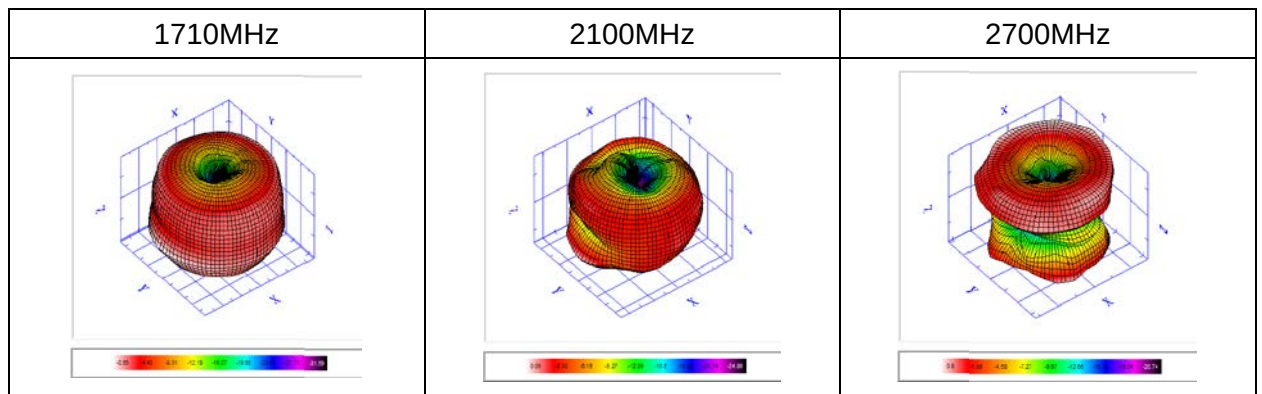
周波数 (MHz)	816.5	817.5	830	842.5	846.5	882.5	902.5	907.5	912.5
最大利得 (dBi)	0	0.01	0.72	0.58	0.55	-1.42	-2.83	-3.27	-3.86
放射効率 (%)	36.9	36.96	41.03	37.56	38.12	21.11	13.69	12.37	12.55
平均利得 (dBi)	-4.33	-4.32	-3.87	-4.25	-4.19	-6.75	-8.64	-9.07	-9.01



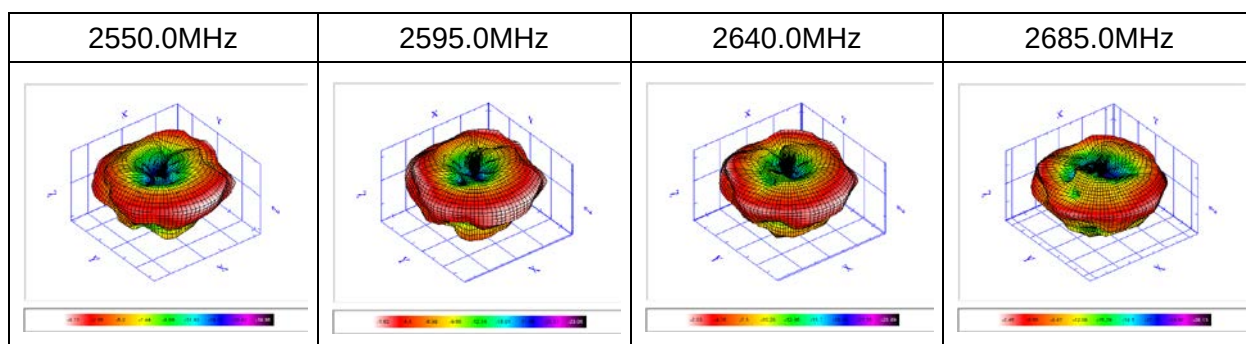
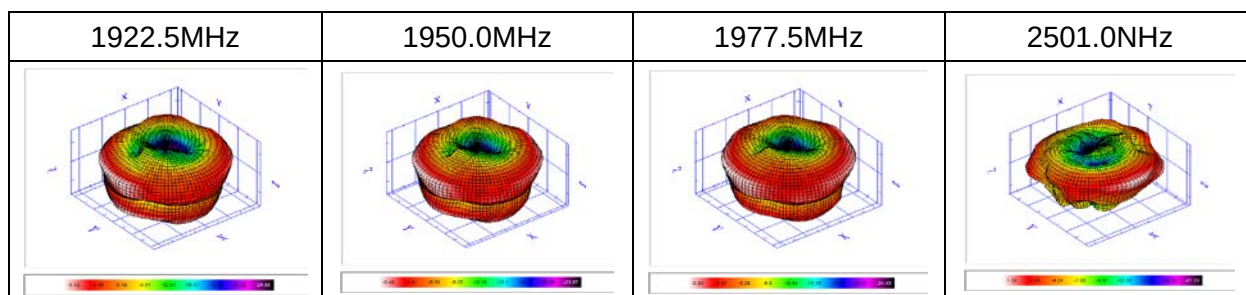
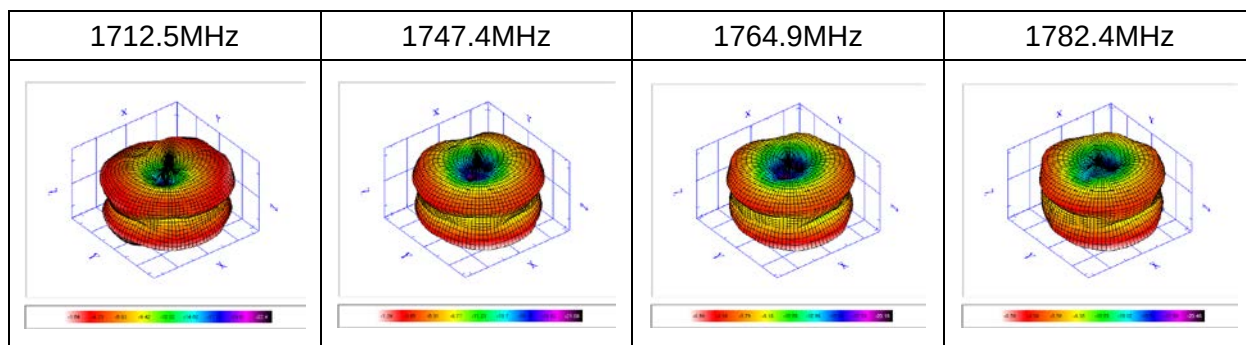
周波数 (MHz)	1427	1447	1463	1479	1495	1511
最大利得 (dBi)	-0.4	0.44	0.03	-0.34	-0.24	-0.14
放射効率 (%)	37.57	40.72	38.76	37.36	37.84	38.41
平均利得 (dBi)	-4.25	-3.9	-4.12	-4.28	-4.22	-4.16



周波数 (MHz)	1430.4	1445.4	1450.4	1460.4	1575.42
最大利得 (dBi)	-0.98	-0.52	-0.64	-0.31	0.22
放射効率 (%)	25.54	26.7	26.3	26.01	33.27
平均利得 (dBi)	-5.93	-5.73	-5.8	-5.85	-4.78



周波数 (MHz)	1710	1880	1920	1990	2000	2100	2200	2300	2400	2500	2600	2700
最大利得 (dBi)	-0.55	-0.39	0.19	0.42	0.71	0.09	0.12	-0.14	-0.12	-0.04	0.01	0.8
放射効率 (%)	36.13	33.34	36.09	29.25	30.29	33.5	31.7	28.76	31.38	36.9	36.26	34.35
平均利得 (dBi)	-4.42	-4.77	-4.43	-5.34	-5.19	-4.75	-4.99	-5.41	-5.03	-4.33	-4.41	-4.64



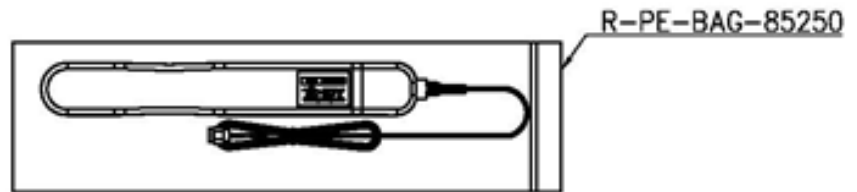
周波数 (MHz)	1712.5	1747.4	1764.9	1782.4	1922.5	1950	1977.5	2501	2550	2595	2640	2685
最大利得 (dBi)	-1.64	-1.39	-0.99	-0.59	-0.43	-0.48	-0.23	1.39	-0.71	-1.62	-2.03	-2.45
放射効率 (%)	29.4	29.05	29.41	30.16	40.22	38.96	41.15	35.19	27.27	26.18	21.86	16.7
平均利得 (dBi)	-5.32	-5.37	-5.31	-5.21	-3.96	-4.09	-3.86	-4.54	-5.64	-5.82	-6.6	-7.77

10. 梱包仕様

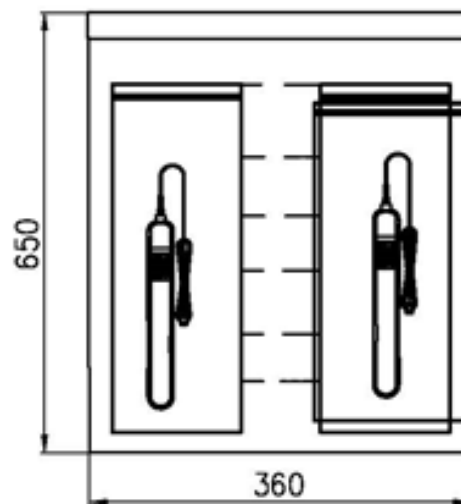
1 PCS/per Product



1 PCS/per Bag



20 PCS/per Bag



80PCS/per Carton



11. RoHS 指令調查結果

禁止 6 物質問題なし

序號	物料型號	物料各構成名稱	各構成物料的材料	測試報告裡RoHS對應物質測試結果						檢測報告編號	測試日期	測試名稱	測試機構名稱
				Cd	Pb	Hg	Cr(VI)	PBBs	PBDEs				
1	COV-AB78B-01B COV-AB78B-02B	Top Cover Bottom Cover	PC+ABS	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CE201712447	2017.01.18	PC/ABS ALLOYS	SGS
2	PB-AB78B-01FB	PCB	FR4	N.D.	9	N.D.	N.D.	N.D.	N.D.	SHAEC1628430701	2017.01.03	Laminate (FR-4.0)	SGS
3	R-CB-LMR100B-01	Cable	PVC	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CANEC1620824301	2016.10.27	PVC GRAIN (BLACK).	SGS
4			PE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	SCL011043591001R1	2016.05.27	HDPE	CTI
5			AL	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CANEC1624955902	2016.12.23	Al/Pet	SGS
6			鍍銅銅	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CANEC1625621201	2016.12.30	Tin Plated copper	SGS
7			裸銅線	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CANEC1625621202	2016.12.30	Bare copper	SGS
8	GS-AB78	Adhesive	3M4951	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	SHAEC1623900501	2016.11.04	3M4951	SGS
9	SMA927-CGT574-A	SMA Male	銅	9	29249	N.D.	N.D.			CANEC1702542001	2017.03.01	COPPER	SGS
10			鍍金	N.D.	N.D.	N.D.	N.D.			SCL01101900001C	2016.11.15	鍍金液	CTI
11			PTFE	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	ECL01J008104001	2017.02.23	PTFE Products	CTI
12	R-HSTUBE-004T R-HSTUBE-0079N-1	Shrink Tube	EVA	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	CANEC1700014303	2017.01.16	HEAT SHRINKABLE	SGS
13	R-CB-PL-F100B	Bundle	PET	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	SCL01J021511003	2017.04.14	CABLE TIES	CTI

根據測試報告如實填寫鉛、鎘、汞、六價鉻、PBBs和PBDEs六項禁用物質的含量

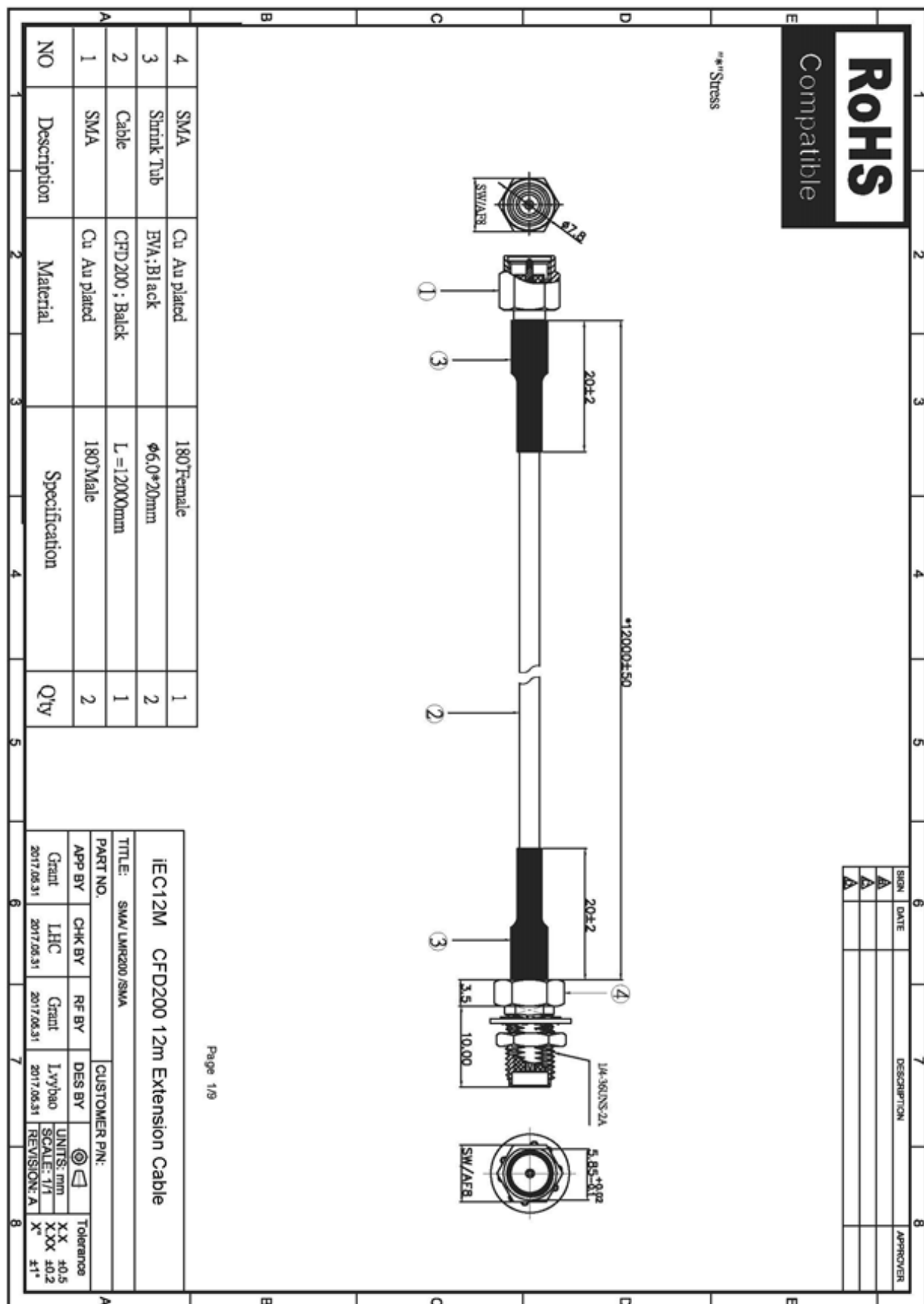
包裝材料中鉛、鎘、汞、六價鉻總含量不超過100ppm，鎘的允許濃度為5ppm

歐盟ROHS指令豁免條款2009/95/EC、鋼中含金元素中的鉛含量達0.35%、鉛含量達0.4%、銅合金中的鉛含量達4%

12. 同軸ケーブル諸元

CUSTOMER'S NO 客戶編號	CUSTOMER'S PRODUCT NO 客戶料號	R-CB-LMR100B-01	工程規格書	ENGINEERING SPECIFICATION	版次EDITION	變更記錄	MODIFY NOTE	日期DATE																																																						
截面图示CONSTRUCTION:					A0																																																									
				Specification 规格说明 Product NO. RF-100 <table border="1"> <thead> <tr> <th>Item</th> <th>Unit</th> <th>Dimension</th> </tr> </thead> <tbody> <tr> <td>SIZE</td> <td>AWG</td> <td>24AWG</td> </tr> <tr> <td>Composition 结构</td> <td>PCS/MM</td> <td>1/0.46±0.01mm</td> </tr> <tr> <td>Conductor 导体</td> <td>density 密度</td> <td>/</td> </tr> <tr> <td>Material 材料</td> <td>/</td> <td>裸铜 Copper</td> </tr> <tr> <td>Insulation 绝缘体</td> <td>Material 材料</td> <td>交联PE XLPE(270℃-300℃)</td> </tr> <tr> <td>Diameter 线径</td> <td>mm</td> <td>1.5±0.05mm</td> </tr> <tr> <td>Color 颜色</td> <td>/</td> <td>本色Nature</td> </tr> <tr> <td>Average Thick 平均厚度</td> <td>mm/mils</td> <td>0.5mm/19.6mils</td> </tr> <tr> <td>Shield 编织</td> <td>Construction 结构</td> <td>0.10±0.008MM/5*16=80#±AF</td> </tr> <tr> <td>Material 材料</td> <td>/</td> <td>镀锡铜 Tinned Copper</td> </tr> <tr> <td>density 密度</td> <td>/</td> <td>遮蔽率 12Picks/Inch (Cobertura 95%)</td> </tr> <tr> <td>AL/Mylar 铝箔</td> <td>mm</td> <td>单面铝箔 AF 6MM 38U</td> </tr> <tr> <td>Jacket 外皮</td> <td>Material 材料</td> <td>60P 低毒 NC-PVC</td> </tr> <tr> <td>Pvc Colour 颜色</td> <td>/</td> <td>黑色BLACK NF-B22025-BK</td> </tr> <tr> <td>Diameter 线径</td> <td>mm</td> <td>ø2.8±0.1MM</td> </tr> <tr> <td>Average thick 平均厚度</td> <td>mm/mils</td> <td>0.40mm/15.7mils</td> </tr> <tr> <td>Marking 印字内容</td> <td colspan="2">LOW LOSS 100 PVC COAXIAL CABLE HYT MICROWAVE SYSTEM/NFC</td> </tr> </tbody> </table>					Item	Unit	Dimension	SIZE	AWG	24AWG	Composition 结构	PCS/MM	1/0.46±0.01mm	Conductor 导体	density 密度	/	Material 材料	/	裸铜 Copper	Insulation 绝缘体	Material 材料	交联PE XLPE(270℃-300℃)	Diameter 线径	mm	1.5±0.05mm	Color 颜色	/	本色Nature	Average Thick 平均厚度	mm/mils	0.5mm/19.6mils	Shield 编织	Construction 结构	0.10±0.008MM/5*16=80#±AF	Material 材料	/	镀锡铜 Tinned Copper	density 密度	/	遮蔽率 12Picks/Inch (Cobertura 95%)	AL/Mylar 铝箔	mm	单面铝箔 AF 6MM 38U	Jacket 外皮	Material 材料	60P 低毒 NC-PVC	Pvc Colour 颜色	/	黑色BLACK NF-B22025-BK	Diameter 线径	mm	ø2.8±0.1MM	Average thick 平均厚度	mm/mils	0.40mm/15.7mils	Marking 印字内容	LOW LOSS 100 PVC COAXIAL CABLE HYT MICROWAVE SYSTEM/NFC	
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*ALL MATERIAL COMPLIANT ROHS <table border="1"> <tr> <td>Rated Voltage: 额定电压</td> <td>30V</td> </tr> <tr> <td>Rating Temperature: 额定温度</td> <td>80℃</td> </tr> <tr> <td>Conductor Resistance: 导体电阻</td> <td>AT 20℃ MAX 89.4 Ω/km</td> </tr> <tr> <td>Insulation Resistance: 绝缘电阻</td> <td>AT 20℃ MIN 100MΩ/km</td> </tr> <tr> <td>Impedance: 特性阻抗</td> <td>100MHZ—50±5 OHM</td> </tr> <tr> <td>Capacitance: 电容容量</td> <td>105±3 pF/M</td> </tr> <tr> <td>Attenuation: 衰减</td> <td>2000HZ—130dB/100M</td> </tr> <tr> <td>Frequency: 频率</td> <td>300-2500MHZ<1.2</td> </tr> <tr> <td>Adhesion: 附着力</td> <td>Jacket—shield:2-5KG/30MM Conductor—Insulation:>0.5KG/30MM</td> </tr> <tr> <td>Bending: 弯曲</td> <td>DEGREE:500degrees ANGLE:±90° WEIGHT:300G FRE QUENCY:20degrees/min BREAK OFF:NO break Bending Radius: Min six times Diameter</td> </tr> </table>				Rated Voltage: 额定电压	30V	Rating Temperature: 额定温度	80℃	Conductor Resistance: 导体电阻	AT 20℃ MAX 89.4 Ω/km	Insulation Resistance: 绝缘电阻	AT 20℃ MIN 100MΩ/km	Impedance: 特性阻抗	100MHZ—50±5 OHM	Capacitance: 电容容量	105±3 pF/M	Attenuation: 衰减	2000HZ—130dB/100M	Frequency: 频率	300-2500MHZ<1.2	Adhesion: 附着力	Jacket—shield:2-5KG/30MM Conductor—Insulation:>0.5KG/30MM	Bending: 弯曲	DEGREE:500degrees ANGLE:±90° WEIGHT:300G FRE QUENCY:20degrees/min BREAK OFF:NO break Bending Radius: Min six times Diameter	APPROVED RESULT 客户确认结果 APPROVED 客户确认者																																						
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Frequency: 频率	300-2500MHZ<1.2																																																													
Adhesion: 附着力	Jacket—shield:2-5KG/30MM Conductor—Insulation:>0.5KG/30MM																																																													
Bending: 弯曲	DEGREE:500degrees ANGLE:±90° WEIGHT:300G FRE QUENCY:20degrees/min BREAK OFF:NO break Bending Radius: Min six times Diameter																																																													
FILE NO 文件编码	NF-C116-W022-4	PRODUCT NO 业务号		CUSTOMER'S PRODUCT NO. 品名规格	RF-100																																																									
Issue Date 制定日期	2014.12.24	Unit 单位	mm	核准 APPROVAL	业务 SALE	审核 REVIEW	工程 ENGINEERING	制作 DRAWING																																																						
Page 页码	1/1	View 视图																																																												
				NICE FOUNTAIN WIRE ELECTRONIC LTD 东莞宝信电线有限公司 广东省东莞市石碣管理区四村第二工业区 TEL: 0769-86638517 FAX: 0769-86638507																																																										

13. 延長ケーブル(iEC12M)外観仕様



14. 延長ケーブル(iEC12M)同軸ケーブル諸元

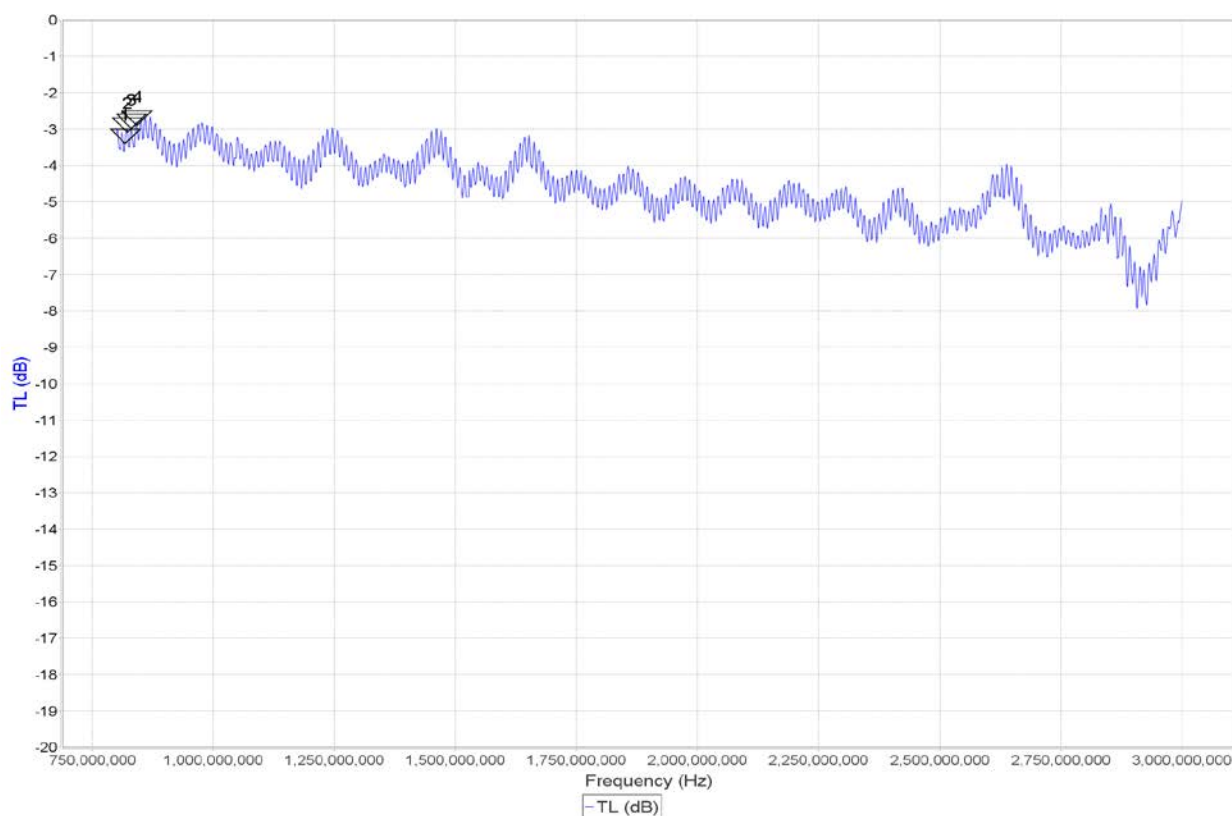
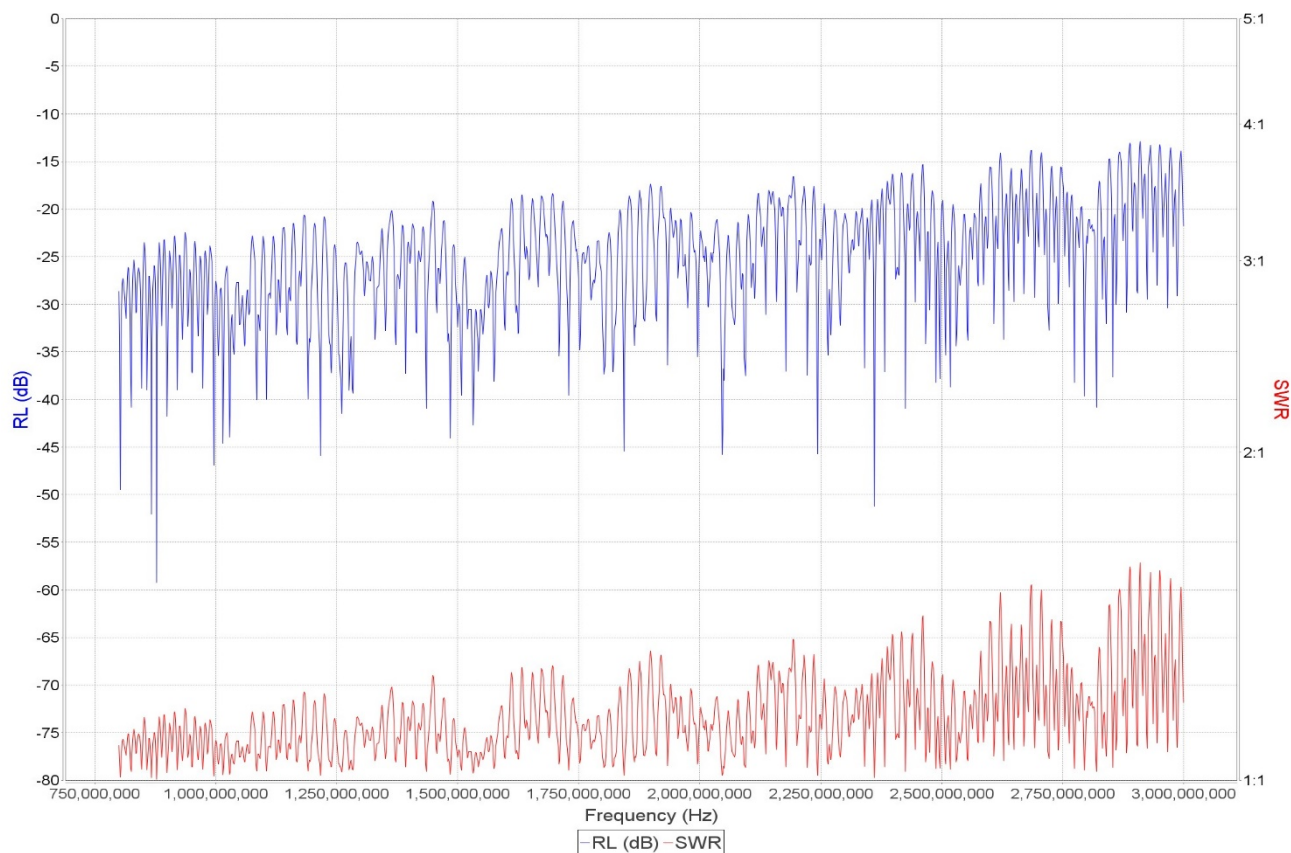
STYLE	COAXIAL CABLE		DOCUMENT NO:	
SIZE	CFD200		ESTABLISHED DATE : 2014 / 11 / 10	
UL STYLE			UL FILES NO.:	
STANDARD:				
CONDUCTOR 導體	SIZE	規 格	18 AWG	
	MATERIAL	導體材質	BC	
	CONSTRUCTION	導體結構	1/1.120±0.03 mm	
INSULATION 絕 緣	STD. THICKNESS	標準厚度	1.0 mm	
	MIN. THICKNESS	最小厚度	0.84 mm	
	DIAMETER	完成外徑	3.10±0.10 mm	
	MATERIAL	材 質	FOAM PE	
	COLOR	顏 色	NATURE	
BRAID 編 織	MATERIAL	材 質	TC	
	CONSTRUCTION	編織結構	16x7/0.120±0.008 mmx13 目	
JACKET 外 被	STD. THICKNESS	標準厚度	0.71 mm	
	MIN. THICKNESS	最小厚度	0.57 mm	
	DIAMETER	完成外徑	5.0±0.15 mm	
	MATERIAL	材 質	P.V.C.	
	COLOR	顏 色	BLACK	
ELECTRICAL PROPERTIES :				
Conductor Resistance 導體電阻		17.6	Ω/km@20℃ max.	
Impedance 特性阻抗		50±5	Ω	
Capacitance 靜電容量		80	pF/m nom.	
Dielectric Strength 耐 電 壓		DC. 1000	V/1MIN. no breakdown	
Attenuation 衰 減 量		30MHz	6.3	dB/100m nom.
		50MHz	8.2	dB/100m nom.
		150MHz	14.4	dB/100m nom.
		200MHz	17.5	dB/100m nom.
		450MHz	25.0	dB/100m nom.
		900MHz	35.8	dB/100m nom.
		1500MHz	46.6	dB/100m nom.
		1800MHz	51.2	dB/100m nom.
		2000MHz	54.2	dB/100m nom.
		2500MHz	60.9	dB/100m nom.
		5800MHz	95.1	dB/100m nom.
MARKING 印字內容				
圖 示	CONSTRUCTION DRAWING			
				
	CONDUCTOR	INSULATION	BRAID	JACKET
	_1/1.120BC	_FOAM PE	_16x7/0.120TCx13 目	_P.V.C.
Note	REV 0	DESCRIPTION PRODUCTION RELEASE		DATE 2014/11/10

核准:

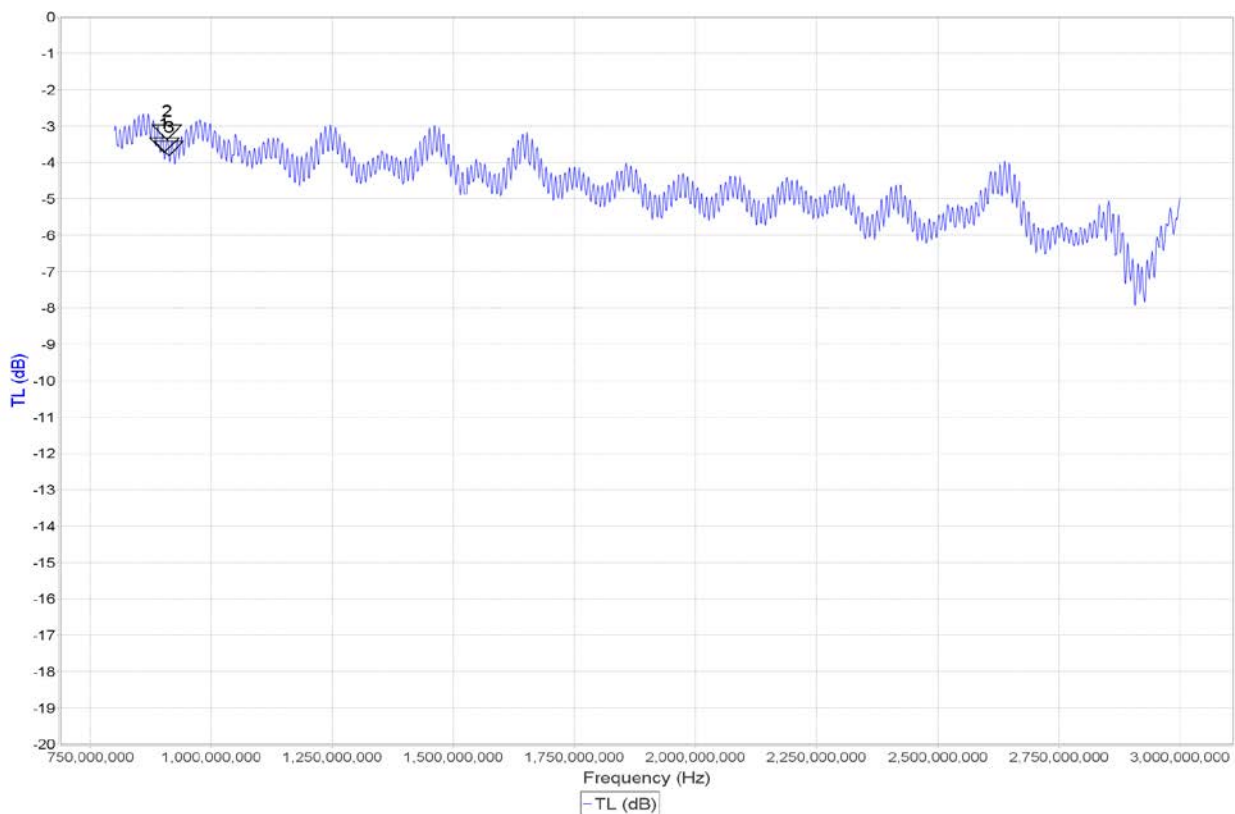
確認:

製表:

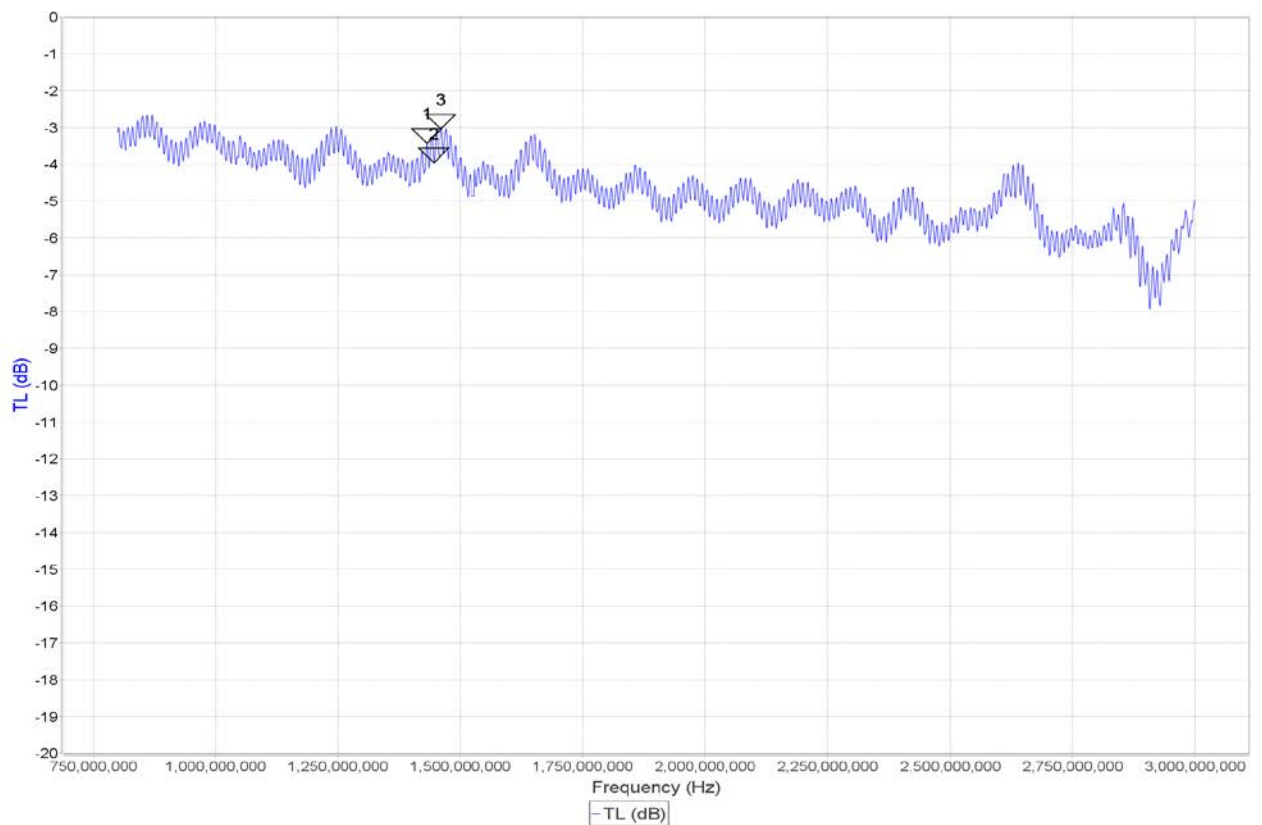
15. 延長ケーブル(iEC12M)周波数特性



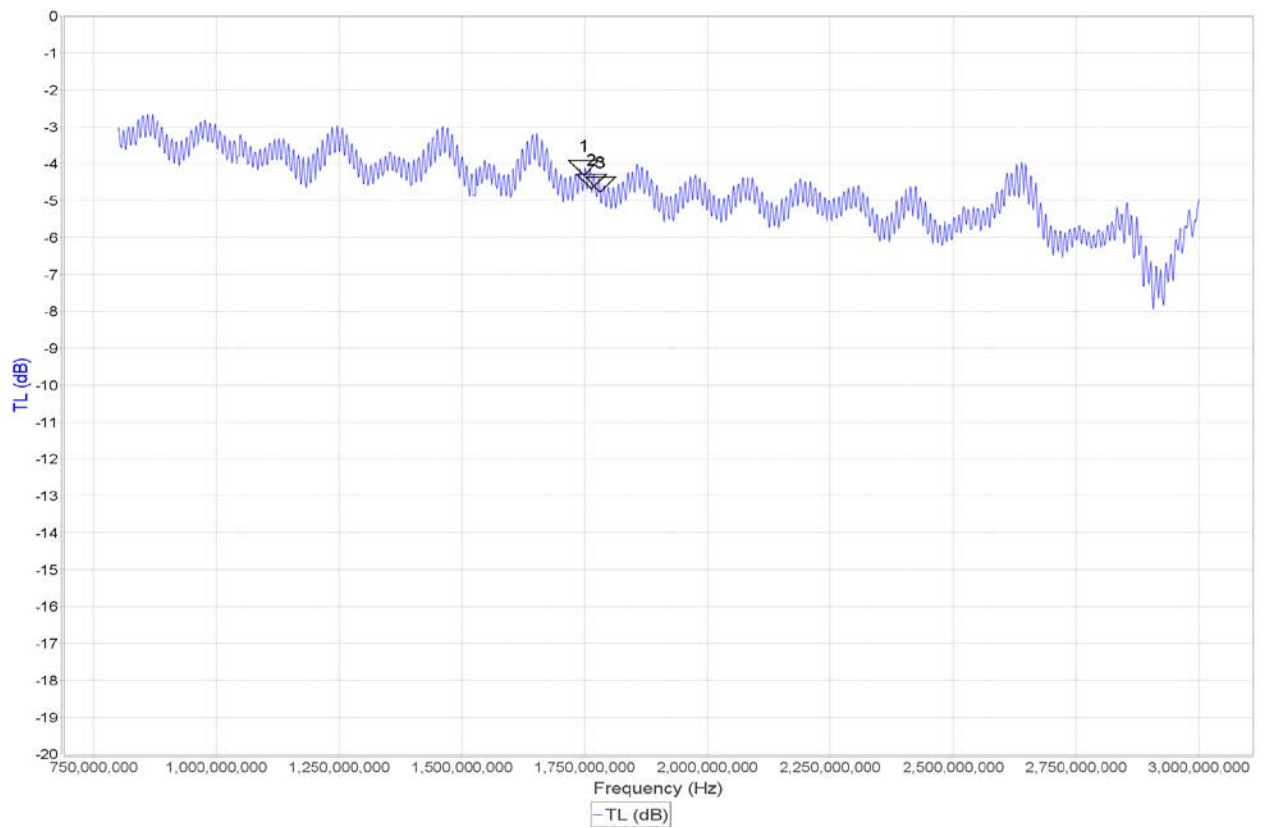
Marker	Freq. (Hz)	TL (dB)	TP (°)	Z (Ω)	Rs (Ω)	Xs (Ω)	Theta	gr (ns)
1	818,286,424	-3.40	-112.70	0.0	0.0	0.0	0.0	49.6
2	822,506,368	-3.09	179.63	0.0	0.0	0.0	0.0	43.4
1-2	4,219,944	0.31	292.33	0.0	0.0	0.0	0.0	---
3	830,946,256	-2.99	36.06	0.0	0.0	0.0	0.0	43.5
4	842,199,440	-2.90	-151.63	0.0	0.0	0.0	0.0	43.5



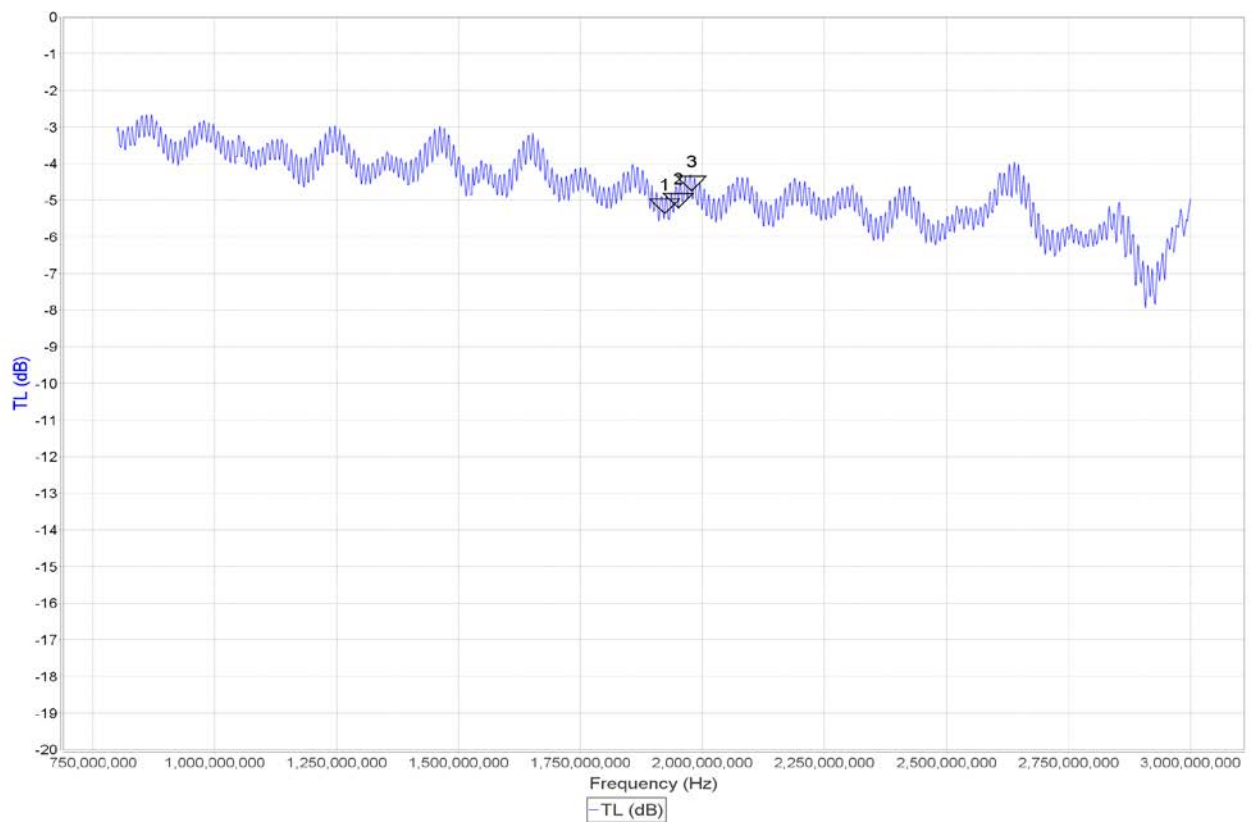
Marker	Freq. (Hz)	TL (dB)	TP (°)	Z (Ω)	Rs (Ω)	Xs (Ω)	Theta	gr (ns)
1	902,685,304	-3.72	-83.48	0.0	0.0	0.0	0.0	47.1
2	908,311,896	-3.38	179.20	0.0	0.0	0.0	0.0	45.0
1-2	5,626,592	0.35	262.68	0.0	0.0	0.0	0.0	---
3	912,531,840	-3.81	110.83	0.0	0.0	0.0	0.0	46.9



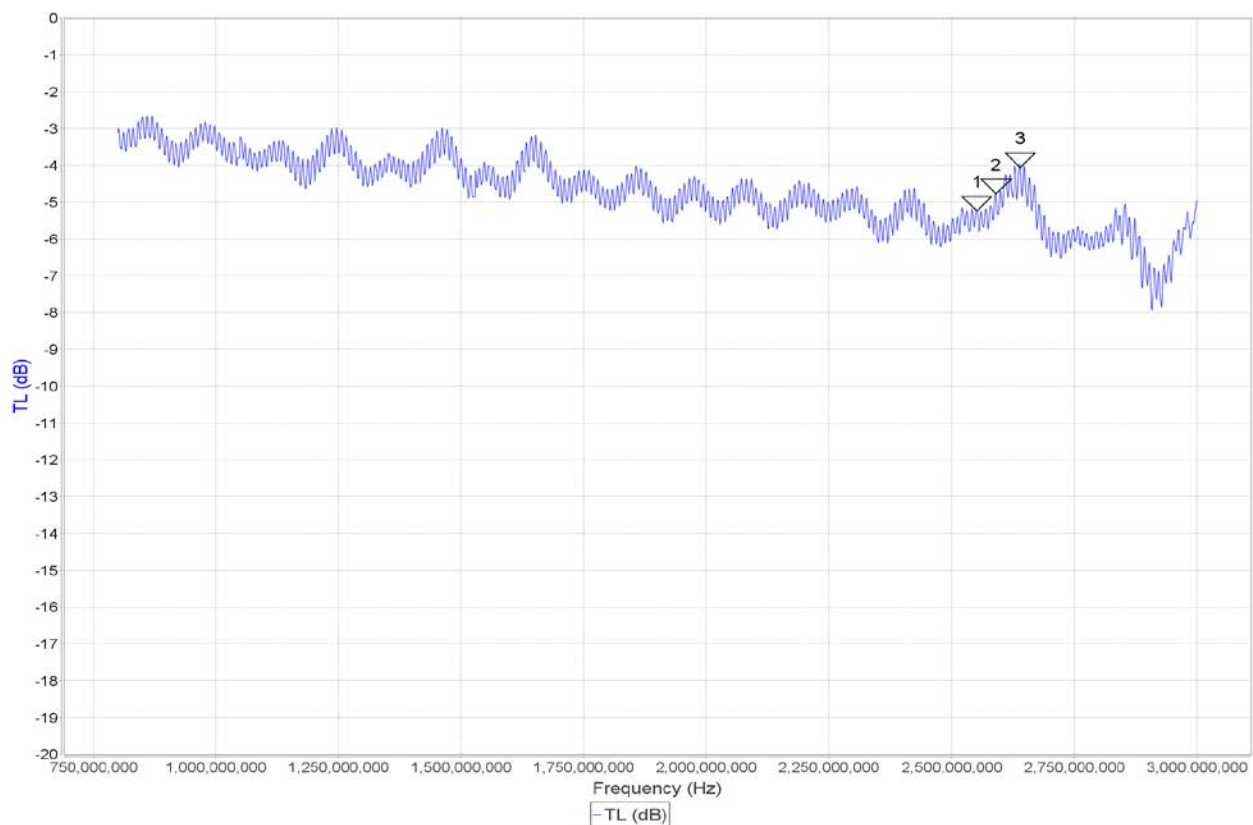
Marker	Freq. (Hz)	TL (dB)	TP (°)	Z (Ω)	Rs (Ω)	Xs (Ω)	Theta	gr (ns)
1	1,431,584,952	-3.43	30.37	0.0	0.0	0.0	0.0	44.4
2	1,445,651,432	-3.96	154.04	0.0	0.0	0.0	0.0	48.2
1-2	14,066,480	0.54	123.67	0.0	0.0	0.0	0.0	---
3	1,459,717,912	-3.05	-83.76	0.0	0.0	0.0	0.0	45.1



Marker	Freq. (Hz)	TL (dB)	TP (°)	Z (Ω)	Rs (Ω)	Xs (Ω)	Theta	gr (ns)
1	1,748,080,752	-4.32	111.38	0.0	0.0	0.0	0.0	46.0
2	1,763,553,880	-4.69	-142.82	0.0	0.0	0.0	0.0	48.7
1-2	15,473,128	0.38	254.20	0.0	0.0	0.0	0.0	---
3	1,781,840,304	-4.77	-87.29	0.0	0.0	0.0	0.0	45.7



Marker	Freq. (Hz)	TL (dB)	TP (°)	Z (Ω)	Rs (Ω)	Xs (Ω)	Theta	gr (ns)
1	1,922,505,104	-5.37	63.63	0.0	0.0	0.0	0.0	49.6
2	1,950,638,064	-5.21	-49.26	0.0	0.0	0.0	0.0	50.9
1-2	28,132,960	0.15	112.89	0.0	0.0	0.0	0.0	---
3	1,977,364,376	-4.74	-132.59	0.0	0.0	0.0	0.0	45.3



Marker	Freq. (Hz)	TL (dB)	TP (°)	Z (Ω)	Rs (Ω)	Xs (Ω)	Theta	gr (ns)
1	2,551,276,760	-5.24	-45.28	0.0	0.0	0.0	0.0	42.7
2	2,590,662,904	-4.78	8.99	0.0	0.0	0.0	0.0	43.4
1-2	39,386,144	0.47	54.27	0.0	0.0	0.0	0.0	---
3	2,639,895,584	-4.06	-102.45	0.0	0.0	0.0	0.0	44.8

○ お問い合わせ



株式会社IDY

〒101-0025

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